Cisco Evolved Programmable Network Manager 2.1.3 RESTCONF API Guide

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Americas Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
http://www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 527-0883

Abstract

The Cisco NBI OSS Integration Guide for RESTCONF gives information on OSS Integration using RESTCONF northbound interfaces.

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1 Preface

This guide provides information about the RESTCONF Northbound APIs supported by Cisco Evolved Programmable Network (EPN) Manager. OSS operators can use this document to integrate Cisco EPN Manager with their OSS system.

1.1 Conventions

This document uses the following conventions:

Convention	Indication
bold	Indicates commands, keywords, and user-entered text.
italic	Indicates document titles, new or emphasized terms, and arguments for which you supply values.
[]	Indicates elements that are optional.
{x|y|z}	Indicates required alternative keywords grouped within brackets and separated by vertical bars.
[x|y|z]	Indicates optional alternative keywords grouped in brackets and separated by vertical bars.
String	Indicates a nonsuited set of characters. Do not use quotation marks around the string or the string will include the quotation marks.
`courier font`	Indicates code snippets and XML.
<>	Indicates nonprinting characters such as passwords.
[ ]	Indicates default responses to system prompts.
!,#	Indicates a comment when used at the beginning of a line of code.
Note	Means reader take note. Notes contain helpful suggestions or references to material not covered in the publication.

1.2 Additional User Documentation

The RESTCONF and YANG Specifications can be obtained from IETF.

1.3 Obtaining Documentation, Obtaining Support, and Security Guidelines

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly What's New in Cisco Product Documentation, which also lists all new and revised Cisco technical documentation, at:
http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html

Subscribe to the What's New in Cisco Product Documentation as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service and Cisco currently supports RSS version 2.0.

2 Northbound RESTCONF Interface

Cisco EPN Manager implements the RESTCONF API as a standards-based Northbound Interface for integrating Cisco EPN Manager with a standards-compliant OSS. It is a set of RESTFul services confirmed to the RESTCONF/YANG specification.

The Cisco EPN Manager implementation of the RESTCONF/YANG interface supports the retrieval of device inventory, circuit inventory, circuit provisioning and notifications about respective resource changes and provisioning. This includes:

- Managed Elements and Equipment Inventory
- Termination Point and Topological Link Inventory
- Virtual Connection (RFS) Resource Inventory
- Service (CFS) Inventory
- Service Provisioning
- Inventory Object Create, Delete and Attribute Value Change (AVC) Notifications

2.1 RESTCONF and Web Services Standards

RESTCONF NBI in Cisco EPN Manager is a RESTFul Web Services Interface that follows the IETF Draft specification of RESTCONF protocol for defining its interfaces and YANG specification for defining the data model. The following W3C and IETF standards are used:

- RESTCONF Protocol – RFC 8040 (January, 2017)
- YANG Specification – RFC 6020
- RESTful Web Services (JAX-RS)
- XML Schema version 1.0 (XSD)
- Hypertext Transfer Protocol HTTP 1.1 - RFCs 7230-7237

While no standard exists for information model exposed by this interface, the model is roughly based on TeleManagement Forum (TMF) standards governing the modeling of physical and service inventory.

2.2 Communication Patterns

RESTCONF interfaces supported by Cisco EPN Manager use REST (Representational State Transfer) techniques. REST is stateless and uses a client-server protocol (HTTP 1.1).

2.3 Batch Retrieval

The operations in the API would return a single or multiple objects. In case of operations that return multiple objects, set of standard query parameters are defined to manage the number of objects retrieved per request. The following http query parameters can be used to control the batch retrieval.

Request Query Params

Query Param	Description
.startIndex	0 based index as a start index of the data to be retrieved. Note the dot (.) prefix in the parameter name. This is required to identify this as a special parameter.
.maxCount	Maximum number of objects to be retrieved. Note the dot (.) prefix in the parameter name. This is required to identify this as a special parameter.

The response for the data API always returns a list container with **startIndex** and **lastIndex** as first two elements of the container data to help with the batch sequence.

2.4 Fully Distinguished Name (FDN)

Inventory objects in this interface has attributes representing FDN (Fully Distinguished Name). These attributes are used as identifiers of the object or as a reference to the object in query parameters or in the returns data wherever a reference to the object is needed.

This FDN is a formatted string that consists of a set of type/value pairs with the following syntax:

- Sequence of <type>=<value> pairs separated by "!" where:
  - <type> is a constant value defined in the data model to represent the inventory object in the hierarchy, e.g. MD,ND,EQ,PTP,FTP, CTP, TL,VC,CFS, etc.
  - <value> is any text or sequence of <attrName>=<attrValue> pair separated by ";" that represents the attribute/value pairs of the inventory object constitutes a unique value within the local scope of the object represented by the type.

The following are some examples for the FDNs:

- Node FDN= "MD=CISCO_EPNM!ND=asr9k-cluster.cisco.com"
- Equipment FDN = "MD=CISCO_EPNM!ND=asr9k-cluster.cisco.com!EQ=name=subslot 0/3 transceiver 0;partnumber=ONS-SI-155-SR-MM"
- Termination Point FDN = "MD=CISCO_EPNM!ND=ME3800-Automation!CTP=name=GigabitEthernet0/2;lr=lr-ip;ADDRESS=192.168.100. 31"

Note: It is assumed that the devices in the network managed by Cisco EPN Manager have unique names and that this is continuously ensured by the network operator. If two or more devices have the same name, the API will not produce consistent results when using the Object Name as input to any of the APIs.

2.4.1 Supported FDNs (Fully Distinguished Name) for the Inventory Objects

The following table list all the supported FDNs for Inventory objects handled with in the APIs.

Inventory Object	**FDN Format**	**Example**
Node (Device)	MD=CISCO_EPNM!ND=<node.name>	MD=CISCO_EPNM!ND=asr9k-cluster.cisco.com
Equipment	MD=CISCO_EPNM!ND=<node name>!EQ=name=<equipment. name>;partnumber=<equipment.part number>	MD=CISCO_EPNM!ND=asr9k-cluster.cisco.com!EQ=name=subslot 0/3 transceiver 0;partnumber=ONS-SI-155-SR-MM
PhysicalConnector	MD=CISCO_EPNM!ND=<node name>!EQ=name=<equipment. name>;partnumber=<equipment.part number!PC=name>	MD=CISCO_EPNM!ND=example.cisco.com !EQ=name=APPM-3-1!PC=ACHAN-3-1-1
Termination Point – PTP	MD=CISCO_EPNM!ND==<node name>!PTP=name=<discovered-name>;lr=<layer-rate>	MD=CISCO_EPNM!ND=isc-asr903b.cisco.com!PTP=name=SONET 0/2/3;lr=lr-dsr-oc3-and-stm1
Termination Point – FTP	MD=CISCO_EPNM!ND==<node name>!FTP=name=<discovered-name>;lr=<layer-rate>	MD=CISCO_EPNM!ND=ME3800-Automation!FTP=name=TenGigabitEthernet0/2;lr=lr-ten-megabit-ethernet

Termination Point – CTP	MD=CISCO_EPNM!ND==<node name>!CTP=name=<discovered-name>;lr=<layer-rate> Below are optional attribute=values in the type value: ADDRESS=<ip>;PWID=<pwid>;REMOTE_ADDRESS=<ip>	MD=CISCO_EPNM!ND=ME3800-Automation!CTP=name=GigabitEthernet0/2;lr=lr-ip;ADDRESS=192.168.100. 31 MD=CISCO_EPNM!ND=isc-cl-test-me3800x-1.cisco.com!CTP=name=PW_27_100.100.100.5;lr=lr-pseudowire;PWID=27;REMOTE_ADDRESS=100.100.100. 5
Topological Link	MD=CISCO_EPNM!TL=<tl.name>	MD=CISCO_EPNM!TL=LINK PW 100.100.100.5_145_192.169.105.65
Virtual Connection	MD=CISCO_EPNM!VC=<vc.name >	Discovered VC: MD=CISCO_EPNM!VC=EvcLink_EthPwLink #EPW_61.61.61.30_185_172.16.90.2 User Provisioned VC: MD=CISCO_EPNM!VC=MyService
Network Interface	MD=CISCO_EPNM!NI=<ni.name>	MD=CISCO_EPNM!NI=MyEplUni MD=CISCO_EPNM!NI=MyAccessEplEnni
Customer Facing Service	MD=CISCO_EPNM!CFS=<cfs.name>	MD=CISCO_EPNM!CFS=MyEPLService1
Customer	MD=CISCO_EPNM!CUSTOMER=<customer.name>	MD=CISCO_EPNM!CUSTOMER=MyGoldCustomer
QOS Policy	MD=CISCO_EPNM!POLICY_QOS=<name>	MD=CISCO_EPNM!POLICY_QOS=MyDeviceQoS
QOS Profile	MD=CISCO_EPNM!PROFILE_QOS=<name>	MD=CISCO_EPNM!PROFILE_QOS=MyUserDefineQoS
Service Profile	MD=CISCO_EPNM!PROFILE_SERVICE=<name>	MD=CISCO_EPNM!PROFILE_SERVICE=GoldEplServiceProfile1
Path	MD=CISCO_EPNM!PATH=<name>	MD=CISCO_EPNM!PATH=123_exp_path
Controller Port	MD=CISCO_EPNM!ND=<node.name>!CTRLP=<name>	MD=CISCO_EPNM!ND=NCS4206-146.4!CTRLP=MediaType 0/4/0

2.5 HTTP Security Protocol

Any OSS Client accessing the Cisco EPN Manager RESTCONF NBI should use the HTTPS with TLS 1.2.

As of Cisco EPN Manager 2.1, Transport Layer Security (TLS) 1.2 is only supported for HTTPS and TLS related secured communication, for example, RADIUS EAP-TLS. Support for TLS 1.0, TLS 1.1 and all versions of SSL has been disabled due to security vulnerabilities.

This means that all peer systems and clients (such as OSS Clients using the NBI) that transact with Cisco EPN Manager using HTTPS/TLS must support TLS 1.2. If they do not support TLS 1.2, they must be upgraded. Where possible, the Cisco EPN Manager documentation highlights the potentially affected systems. Please contact your Cisco representative for support in this regard, if necessary.

2.6 Authentication

The RESTCONF resource paths in Cisco EPN Manager are secured. To access these resource paths, use basic HTTP authentication.

2.7 Authorization

User credentials passed for accessing the RESTCONF resource paths require authorization to use the API. This authorization can be configured using Cisco EPN Manager's security management interface. In Cisco EPN

Manager, NBI read privileges are required to perform GET (retrieval) on the RESTCONF data interfaces, whereas to use the provisioning interfaces, you need NBI write privileges.

2.7.1 Virtual Domain Support

RESTCONF controls access to data by the virtual domain of the NBI user, as configured through the Cisco EPN Manager's security management interface. This interface allows an administrator to create virtual domains and assign them to users. Among other things, virtual domains contain a list of Network Devices (Nodes) accessible to the user. Refer the *Cisco EPN Manager User and Administration Guide* for details.

In general, a user may access all the data associated with a network device (Node) within the user's virtual domain. In case of the physical inventory, this is straight forward; if the user has access to a Node, the user may access any Chassis, Equipment, Module, and Physical Connector on that Node.

For services (QoS policies, Termination Points, Topological Links, Virtual Connections and Routes, and Customer Facing Services), RESTCONF allows access to the service data if **any** of the associated endpoints or policies are on a node that the user may access. However, note that for APIs where RESTCONF returns information about the service's endpoints, it includes data for authorized end points only, and omits data for end points on devices that are not accessible to the user.

For provisioning interfaces (Optical, CEM, Flex LSP, L2VPN, L3VPN, MPLS-TE, Model-Based Configuration, and Set Termination Point), NETCONF checks all resources, as identified by their Fully Distinguished Name (FDN), against the authorizations configured in the user's virtual domain. If the object identified by the FDN is not associated with a device in the user's virtual domain, RESTCONF reports that the resource is not accessible or does not exist. (For security reasons, RESTCONF does not confirm that the resource exists in scenarios where access is denied.)

RESTCONF currently supports one virtual domain per NBI user. Add all network devices accessible to a user to this single domain. Multiple NBI users may share the same virtual domain, but each user must have only one virtual domain.

2.8 License

A Cisco EPN Manager NBI license is required to use RESTCONF NBI resource path.

3 Supported Use Cases and Interfaces

The table below lists the use cases supported in the Cisco EPN Manager RESTCONF NBI:

Table - Supported Cisco EPN Manager RESTCONF NBI Use cases

Use case	API Path with Params
Retrieve List of Supported YANG Modules	
List All YANG Modules	/restconf/data/ietf-yang-library:modules-state
Retrieve Physical Inventory	
Get/Create Groups	/data/v1/cisco-resource-physical:group
Get/Update/Delete Group given its FDN (Fully Distinguished Name)	/data/v1/cisco-resource-physical:group?fdn=<value>
Get All Nodes	/data/v1/cisco-resource-physical:node
Get Node given its FDN (Fully Distinguished Name)	/data/v1/cisco-resource-physical:node?fdn=<value>
Get All Chassis	/data/v1/cisco-resource-physical:chassis
Get Chassis given its FDN (Fully Distinguished Name)	/data/v1/cisco-resource-physical:chassis?fdn=<value>
Get All Equipment	/data/v1/cisco-resource-physical:equipment
Get Equipment given its FDN (Fully Distinguished Name)	/data/v1/cisco-resource-physical:equipment?fdn=<value>
Get All Modules	/data/v1/cisco-resource-physical:module
Get Module given its FDN (Fully Distinguished Name)	/data/v1/cisco-resource-physical:module?fdn=<value>
Get All Physical Connectors	/data/v1/cisco-resource-physical:physicalconnector
Get Physical Connector given its FDN (Fully Distinguished Name)	/data/v1/cisco-resource-physical:physicalconnector?fdn=<value>
Get All Optical Network Settings	/data/v1/cisco-resource-optical:optical-nesettings
Get All Optical Network Settings (Fully Distinguished Name)	/data/v1/cisco-resource-optical:optical-nesettings?node-fdn=<value>
Retrieve TerminationPoint Resource	
Get All TerminationPoints	/data/v1/cisco-resource-ems:termination-point
Get TerminationPoint given its FDN (Fully Distinguished Name)	/data/v1/cisco-resource-ems:termination-point?fdn=<value>
Get All Physical Termination Points	/data/v1/cisco-resource-ems:termination-point?type=PTP
Get All Physical Termination Points for Device	/data/v1/cisco-resource-ems:termination-point?type=PTP&ndFdn=<value>
Get All Floating Termination Points	/data/v1/cisco-resource-ems:termination-point?type=FTP
Get All Floating Termination Points for Device	/data/v1/cisco-resource-ems:termination-point?type=FTP&ndFdn=<value>
Get All Connection Termination Points	/data/v1/cisco-resource-ems:termination-point?type=CTP
Get All Connection Termination Points for Device	/data/v1/cisco-resource-ems:termination-point?type=CTP&ndFdn=<value>
Get Contained Connection Termination Points	/data/v1/cisco-resource-ems:termination-point?fdn=<value>&containedCTP=true
Get Contained In Use Connection Termination Points	/data/v1/cisco-resource-ems:termination-point?fdn=<value>& containedInUseCTP=true
Retrieve Topological Links	
Get All Topological links	/data/v1/cisco-resource-network:topological-link
Get a Topological Link given a FDN	/data/v1/cisco-resource-network:topological-link?fdn=<value>
Get a Topological Link given a topo-	/data/v1/cisco-resource-network:topological-link?topo-

Layer	layer=<value>
Retrieve Virtual Connection Resource	
Get All Virtual Connections	/data/v1/cisco-service-network:virtual-connection
Get All Virtual Connections for a specific type	/data/v1/cisco-service-network:virtual-connection?type=<value>
Get a Virtual Connection given its FDN (Fully Distinguished Name)	/data/v1/cisco-service-network:virtual-connection?fdn=<value>
Get All Virtual Connection referencing a given Termination point	/data/v1/cisco-service-network:virtual-connection?tpFdn=<value>
Multi Layer Trace	
Get Multi Layer Trace for a given vcFDN	/data/v1/cisco-resource-network:virtual-connection-multi-layer-route?vcFdn=<value>
MPLSTE Explicit Path	
Get All MPLS TE Explicit Paths	/data/v1/cisco-resource-ems:mpls-te-explicit-path
Get an MPLS TE Explicit Path	/data/v1/cisco-resource-ems:mpls-te-explicit-path?path-ref=<value>
Retrieve Customer Facing Service Resource	
Get All Customer Facing Services of a given type	/data/v1/cisco-service-network:customer-facing-service?type=<value>
Get All Customer Facing Services of a given type and sub-type	/data/v1/cisco-service-network:customer-facing-service?type=<type value>&subtype=<sub-type value>
Get Customer Facing Services given its FDN	/data/v1/cisco-service-network:customer-facing-service?fdn=<value>
QoS Policy Retrieval	
Get All QoS Policies in a batch	/data/v1/cisco-qos:qos-policy
Get QoS Policy for a given FDN	/data/v1/cisco-qos:qos-policy?fdn=<value>
Get All QoS Policies for a given device	/data/v1/cisco-qos:qos-policy?ndFdn=<value>
QoS Profile Retrieval	
Get All QoS Profiles in a batch	/data/v1/cisco-qos:qos-profile
Get QoS Profile for an given FDN	/data/v1/cisco-qos:qos-profile?fdn=<value>
CLI Template Retrieval	
Get All CLI Template in a batch	/data/v1/cisco-resource-activation:cli-template
Get CLI Template for a given template name	/data/v1/cisco-resource-activation:cli-template?name=<cli-template-name>
Set Termination Point	
Set attributes on a Termination Point	/operations/v1/cisco-resource-activation:set-termination-point
Service Activation	
Provision a Service	/operations/v1/cisco-service-activation:provision-service
Modify a Service	/operations/v1/cisco-service-activation:modify-service
Terminate a Service	/operations/v1/cisco-service-activation:terminate-service
Roll a Service	/operations/v1/cisco-service-activation:roll-service
Customer CRUD	/data/v1/cisco-customer:customer
Standalone OAM Performance Test	
Execute Performance Test	/operations/v1/cisco-service-oam:service-oam-config
Get Performance Test Result	/operations/v1/cisco-service-oam:service-oam-config/{request-id}
Resource Activation	
Run CLI Configuration Template – TBC (Template Based Configuration)	/operations/v1/cisco-resource-activation:run-cli-configuration
CLI Configuration Template Run Status	/operations/v1/cisco-resource-activation:get-cli-configuration-run-status/{job-name}
MPLS TE explicit path - Create	/operations/v1/cisco-resource-activation:create-explicit-path
MPLS TE explicit path - Modify	/operations/v1/cisco-resource-activation:modify-explicit-path

MPLS TE explicit path - Terminate	/operations/v1/cisco-resource-activation:terminate-explicit-path
Performance Metrics	
Optical Power And Span Loss for Links	/data/v1/cisco-resource-network:perf-metrics
Alarm Retrieval	
Get All Alarms in a batch	/data/v1/cisco-rtm:alarm
Get All Alarms by given Node reference	/data/v1/cisco-rtm:alarm?nd-ref=<value>
Get All Alarms by given Termination point reference	/data/v1/cisco-rtm:alarm?tp-ref=<value>
Get All Alarms by given Equipment reference	/data/v1/cisco-rtm:alarm?eq-ref=<value>
Get All Alarms by given precieved severity	/data/v1/cisco-rtm:alarm?precieved-severity=<value>
Alarm Handling	
Alarm Ack/UnAck/Clear/Delete	/data/v1/cisco-alarm:handle-alarm
Alarm to Service association	
Get All Alarms by Service name	data/v1/cisco-rtm:impacting-alarms-by-service?cfs-ref=<value>
Patch cord	
Create Patchcord	/operations/v1/cisco-resource-activation:create-patch-cord
Delete Patchcord	/operations/v1/cisco-resource-activation:delete-patch-cord
SRRG	
Get All SRRGs present in EPNM	/data/v1/cisco-resource-network:shared-risk-resource-group
Get SRRG by FDN	/data/v1/cisco-resource-network:shared-risk-resource-group?fdn=<value>
Performance Metrics for Topological Link	
Get Performance metrics for a given Topological Link	/data/v1/cisco-resource-network:perf-metrics?tlFdn=<value>
MediaType Controller	
Get/Update MediaType Controller	/data/v1/cisco-nrf-controller:controller-port
LMP Link	
Create LMP Link	/operations/v1/cisco-resource-activation:lmp-link-resource
Delete LMP Link	/operations/v1/cisco-resource-activation:lmp-link-resource?fdn=<lmpFdn>
Retrieve LMP Link	/ data/v1/cisco-resource-network:topological-link?fdn=< lmpFdn>
AINS – Automatic In-Service	
Create LMP Link	/operations/v1/cisco-nrf-physical:reserve-equipment

4 RESTCONF Interface Details

This section provides details about the supported RESTCONF interfaces.

4.1 YANG Module List Retrieval

This interface, defined by the RESTCONF specification, retrieves a list of YANG modules supported by Cisco EPN Manager. A YANG module defines how a portion of the data store is structured on the server. Use this information to discover the RESTCONF interfaces implemented on the server. See RFC 7895, Yang Module Library for more information about this interface.

Note: YANG modules are not to be confused with the Module object defined by EPN-M to model a line card.

Resource	**Description**
modules-state	Retrieves list of interfaces exposing YANGs.
HTTP Method	**Resource Path**
GET	/restconf/data/ietf-yang-library:modules-state
Query Parameters	
None	
Response Message	
Response Content Type	application/xml, application/yang-data+xml, application/json, application/yang-data+json
Response Data	0 or more module descriptions of type model – see the RESTCONF Specification for details.
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.

4.1.1 Yang Module Data

Name	**Type**	**Description**
Module	Container element	Holds the data for YANG module description.

4.2 RESTCONF Protocol Capabilities

As mandated in RESTCONF RFC 8040, Cisco EPN Manager supports an interface to retrieve the optional functions supported by the server. Cisco EPN Manager supports a limited form of the depth parameter (depth=1) to allow efficient retrieval of entities without traversing collections. It also reports that the server returns all populated leaf values (default values are not suppressed). This is part of the RESTCONF Monitoring Module described in Section 9.3 of RFC 8040.

Resource	**Description**
restconf-state/capabilities	Retrieves list of optional features.
HTTP Method	**Resource Path**
GET	/restconf/data/ietf-restconf-monitoring:restconf-state/capabilities
Query Parameters	
None	
Response Message	
Response Content	application/xml, application/yang-data+xml, application/json, application/yang-

Type	data+json
Response Data	0 or more capability URIs– see the RESTCONF RFC 8040 Section 9.1 for details.
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.

4.2.1 Yang Module Data

Name	Type	Description
List a capability URIs	List elements	Describes optional feature support proved by server

4.3 RESTCONF Stream Resources

As mandated in RESTCONF RFC 8040, Cisco EPN Manager supports an interface to retrieve the optional stream resources supported by the server. These resources are:

- Attribute Value Change (AVC) Notifications for create, update, and delete notifications of inventory data resources. See the section on notifications for details.
- Service Activation Notifications for results of service create, modify, and delete actions through the operations interface. See the section on notifications.
- Template-base Configuration Notifications for the results of configuration change request through the operation interface. See the section on notifications.
- All is a convenience interface to register for all notifications.

The notification received by the user are restricted by his/her permissions based on device access permitted by the user's virtual domain(s).

Resource	**Description**
restconf-state/capabilities	Retrieves list of supported streams.
HTTP Method	**Resource Path**
GET	/restconf/data/ietf-restconf-monitoring:restconf-state/streams
Query Parameters	
None	
Response Message	
Response Content Type	application/xml, application/yang-data+xml, application/json, application/yang-data+json
Response Data	0 or more capability URIs – see the RESTCONF RFC 8040 Section 9.1 for details.
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.

4.3.1 Yang Module Data

Name	Type	Description
List a capability URIs	List elements	Describes optional feature support proved by server.

4.4 Group Retrieval

This interface provides the operations required to retrieve the details of groups of nodes. Each group object contains identifying information and a list of Fully Distinguished Names of the nodes in the group. Nodes may appear in more than one group. Groups are created through the graphical user interface (GUI) and through this API. The Group may contain information about the physical location of the group by street address and/or latitude and longitude. The RESTCONF API also supports creating, updating, and deleting Groups. See RFC 8040 Sections 4.4, 4.5, and 4.7 for information about POST, PUT, and DELETE processing in RESTCONF.

Resource	**Description**	
Group	Retrieves groups of the nodes in the system.	
HTTP Method	**Resource Path**	
GET, POST, PUT, DELETE	/data/v1/cisco-resource-physical:group	
Query Parameters		
Name	**Type**	**Description**
Fdn	String	Fully Distinguished Name (FDN) of the group to retrieve.
Name	String	Name of the group to retrieve (unique).
Description	String	Description of the group to retrieve (not unique).
Message Body (POST, PUT)		
Group	Group	Data to create or update the Group.
Response Message		
Response Content Type	application/xml, application/yang-data+xml, application/json, application/yang-data+json	
Response Data	0 or more groups of type group – see yang model for the data details.	
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.	

4.4.1 Group Data

Name	**Type**	**Description**
Group	Container element	Holds the data for group.

4.5 Node Retrieval

This interface provides the operations required to retrieve node details. Each node object contains its own attributes and contains a list of the equipment instances contained within it. A node may contain the latitude and longitude of its physical location. Nodes are created through discovery of devices whose credentials are entered into the system through the graphical user interface (GUI). The RESTCONF API for nodes is read-only.

Note: Nodes were previously known as Managed Elements. The name was changed to align with the IETF standards.

Resource	**Description**	
Node	Retrieves the Nodes in the system.	
HTTP Method	**Resource Path**	
GET	/data/v1/cisco-resource-physical:node	
Query Parameters		
Name	**Type**	**Description**

Fdn	String	Fully Distinguished Name (FDN) of the Node to retrieve.
Name	String	Name of the Node to retrieve (unique).
Description	String	Description of the Node to retrieve (not unique).
<attribute>	Varies	Uses any non-collection attribute to retrieve Node object(s).
Response Message		
Response Content Type	application/xml, application/yang-data+xml, application/json, application/yang-data+json	
Response Data	0 or more Nodes of type **node** – see yang model for the data details.	
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.	

4.5.1 Node Data

Name	Type	Description
Node	Container element	Holds the data for a node.

4.6 Equipment Retrieval

This interface provides the operations required to retrieve equipment details. Each equipment object contains its own attributes and contains a list of FDN of the equipment instances contained within it. If it is contained within another equipment instance, the FDN of that instance is shown. Equipment may contain physical connectors (explained below). Equipment is created through discovery on devices whose credentials are entered into the system through the graphical user interface (GUI). The RESTCONF API for equipment is read-only.

Note: Equipment is a super class of Chassis and Module. This interface retrieves Chassis, Module, and Equipment objects.

Resource	**Description**	
Equipment	Retrieves the Equipment in the system.	
HTTP Method	**Resource Path**	
GET	/data/v1/cisco-resource-physical:equipment	
Query Parameters		
Name	**Type**	**Description**
Fdn	String	Fully Distinguished Name (FDN) of the Equipment to retrieve.
Name	String	Name of the Equipment to retrieve (not unique).
Description	String	Description of the Equipment to retrieve (not unique).
<attribute>	Varies	Uses any non-collection attribute to retrieve Equipment object(s).
Response Message		
Response Content Type	application/xml, application/yang-data+xml, application/json, application/yang-data+json	
Response Data	0 or more Equipment of type **equipment** – see yang model for the data details.	
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.	

4.6.1 Equipment Data

Name	Type	Description
Equipment	Container element	Holds the data for an Equipment instance.

4.7 Chassis Retrieval

This interface provides the operations required to retrieve Chassis details. Each Chassis object contains its own attributes and contains a list of FDN of the equipment instances contained within it. Typically, a chassis object is contained directly by a node and does not have a containing equipment FDN. Chassis are created through discovery on devices whose credentials are entered into the system through the graphical user interface (GUI). The RESTCONF API for chassis is read-only.

Note: Chassis is a subclass of Equipment. This interface retrieves only Chassis objects along with any additional attributes defined for Chassis.

Resource	**Description**	
Equipment	Retrieves the Chassis instances in the system	
HTTP Method	**Resource Path**	
GET	/data/v1/cisco-resource-physical:chassis	
Query Parameters		
Name	**Type**	**Description**
Fdn	String	Fully Distinguished Name (FDN) of the Chassis to retrieve.
Name	String	Name of the Chassis to retrieve (not unique).
Description	String	Description of the Chassis to retrieve (not unique)
<attribute>	Varies	Uses any non-collection attribute to retrieve Chassis object(s).
Response Message		
Response Content Type	application/xml, application/yang-data+xml, application/json, application/yang-data+json	
Response Data	0 or more Chassis of type **chassis** – see yang model for the data details.	
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.	

4.7.1 Chassis Data

Name	Type	Description
Chassis	Container element	Holds the data for a Chassis.

4.8 Module Retrieval

This interface provides the operations required to retrieve module details. Each module object contains its own attributes and contains a list of FDN of the equipment instances contained within it. Typically, a module object is contained within an equipment object and has a Containing equipment FDN. Equipment containing physical connectors (explained below) are often but not always Modules. Modules are created through discovery on devices whose credentials are entered into the system through the graphical user interface (GUI). The RESTCONF API for module is read-only.

Note: Module is sub class of Equipment. This interface retrieves only Module objects along with any additional attributes defined for Module.

Resource	**Description**
Module	Retrieves the Modules in the system.

HTTP Method	Resource Path	
GET	/data/v1/cisco-resource-physical:module	
Query Parameters		
Name	**Type**	**Description**
Fdn	String	Fully Distinguished Name (FDN) of the Module to retrieve.
Name	String	Name of the Module to retrieve (not unique).
Description	String	Description of the Module to retrieve (not unique).
<attribute>	Varies	Uses any non-collection attribute to retrieve Module object(s).
Response Message		
Response Content Type	application/xml, application/yang-data+xml, application/json, application/yang-data+json	
Response Data	0 or more Modules of type **module** – see yang model for the data details.	
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.	

4.8.1 Module Data

Name	Type	Description
Module	Container element	Holds the data for a Module.

4.9 Physical Connector Retrieval

This interface provides the operations required to retrieve PhysicalConnector details. A physical connector represents a connector capable of transmitting signals or power. Each PhysicalConnector object contains its own attributes and the FDN of the equipment instance that contains it. Equipment containing PhysicalConnectors are often but not always Modules. PhysicalConnectors are created through discovery on devices whose credentials are entered into the system through the graphical user interface (GUI). The RESTCONF API for PhysicalConnectors is read-only.

Note: PhysicalConnector is not a subclass of Equipment.

Resource	Description	
PhysicalConnector	Retrieves the PhysicalConnectors in the system.	
HTTP Method	**Resource Path**	
GET	/data/v1/cisco-resource-physical:physicalconnector	
Query Parameters		
Name	**Type**	**Description**
Fdn	String	Fully Distinguished Name (FDN) of the Module to retrieve.
Name	String	Name of the PhysicalConnector to retrieve (not unique).
Description	String	Description of the PhysicalConnector to retrieve (not unique).
<attribute>	varies	Uses any non-collection attribute to retrieve PhysicalConnector object(s).
Response Message		
Response Content Type	application/xml, application/yang-data+xml, application/json, application/yang-data+json	
Response Data	0 or more PhysicalConnectors of type **physical-connector** – see yang model for the data details.	
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors.	

	• 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.

4.9.1 PhysicalConnector Data

Name	Type	Description
physical-connector	Container element	Holds the data for a PhysicalConnector.

4.10 Optical Network Element Settings

This interface provides the operations to retrieve the node type of optical devices. The node-fdn attribute identifies the associated node object. The node-type indicates the role of the device in an optical network. The node-type attribute was not added to the node object to avoid adding optical-specific information to node objects that are not optical devices.

By default, this interface returns the node object as well as the above two attributes. If you are not interested in the node information, you can suppress it with the ?.depth=1 query string. (See example, below.)

Resource	**Description**	
OpticalNESettings	Retrieves the settings information for optical nodes in the system.	
HTTP Method	**Resource Path**	
GET	/data/v1/cisco-resource-optical:optical-nesettings	
Query Parameters		
Name	**Type**	**Description**
node-fdn	String	Fully Distinguished Name (FDN) of the associated node.
node-type	String	Optical node type, e.g.: ROADM (not unique).
Response Message		
Response Content Type	application/xml, application/yang-data+xml, application/json, application/yang-data+json	
Response Data	0 or more OpticalNESetting objects of type **optical-nesettings** – see yang model for the data details.	
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.	

4.10.1 Optical Network Element Settings Data

Name	Type	Description
optical-nesettings	Container element	Holds the data for optical network elements settings

4.11 TerminationPoint Retrieval

This interface provides the operations required to retrieve TerminationPoint details.

Resource	**Description**
TerminationPoint	Retrieves TerminationPoints (and associated CEM and MPLS-TE details) in the system.
HTTP Method	**Resource Path**
GET	/data/v1/cisco-resource-ems:termination-point

Query Parameters		
Name	**Type**	**Description**
Fdn	String	Fully Distinguished Name (FDN) of the terminationPoint to retrieve a single terminationPoint. FDN = 'MD=<CISCO_EPNM>!ND=<nodename>!<type>=<tpname>
Type	String (CTP, PTP, FTP)	Type of the termination points to retrieve.
ndFdn	String	Fully Distinguished Name (FDN) of the Node. FDN = 'MD=<CISCO_EPNM>!ND=<nodename>
containedCTP	String(true/false)	Enables you to return Contained Connection Termination Points for a given Termination Point.
containedInUseCTP	String(true/false)	Enables you to return Contained In Use Connection Termination Points for a given Termination Point.
Response Message		
Response Content Type	application/xml, application/yang-data+xml, application/json, application/yang-data+json	
Response Data	0 or more terminationPoints of type **termination-point** – see yang model for the data details.	
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.	

4.11.1 TerminationPoint Data

Name	Type	Description
termination-point	Container element	Holds the data for physical and floating terminationPoint.
connection-termination-point	Container element	Holds the data for connection terminationPoint.

4.12 Set TerminationPoint

This interface provides the operations required to set attributes on a given TerminationPoint.

Resource	Description
TerminationPoint	Set TerminationPoint
HTTP Method	**Resource Path**
POST	/operations/v1/cisco-device-inventory:set-termination-point
Response Message	
Response Content Type	application/xml, application/yang-data+xml, application/json, application/yang-data+json
Response Data	The modified **termination-point** – see yang model for the data details. And result of modification on the feature.
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.

4.12.1 Set TerminationPoint Input Data

The table below provides the parameters that can be set on the Interfaces using the set-termination-point operation.

The PortConfig attribute in the request determines the group to which the attributes belong. The Sample Request/Response provided will give the different scenarios.

Parameter Name	Type	Allowed Values	Description
Port Config: SONET_PORT_CONFIG			
adminStatus	String	UP DOWN	Used to specify the admin status for the given TP. Can be set separately.
operStatus	String	UP DOWN	Specifies the operational status of the TP. Can be set separately.
Loopback	String		Specifies the values to be set for the loopback. Can be set separately.
portMode	ENUM	SONET ETHERNET OTN	Indicates the portMode for the TP. Can be set separately.
SONET Port Parameters portConf: SONET_PORT_CONFIG			
Framing	String	AUTO_DETECT C_BIT M23 DSX1_ESF DSX1_SF M23 CRC CRC4 GFP GFP_F GFP_T HDLC NO_CRC NOT_APPLICABLE UNFRAMED	Specifies the Framing for the TP. Has to be set with the clockSource value. **Note:** Cannot be set individually.
clockSource	String	LINE INTERNAL RECOVERED FREE_RUNNING ENHANCED	Specifies the clock source for the TP. Has to be set if framing is being set. **Note:** Cannot be set individually.
Rate	String	OC3 OC12 OC48 OC192	Indicates the rate to be set. Has to be set if clockSource and framing are being set. **Note:** Cannot be set individually.

Loopback	String	NETWORK NETWORK_LINE LOCAL NETWORK_PAYLOAD REMOTE REMOTE_LINE REMOTE_PAYLOAD	Indicates the loop back value to be set for the TP. Can be set separately.
SONET APS Parameters **portConfig:** **SONET_PORT_CONFIG**			
protectionGroupNumber	Integer	Range(0..255)	Mandatory for APS setting.
protectionRole	String	PRIMARY SECONDARY	Mandatory for APS setting.
protectionLoopBackIP	String	IP Address	Optional for APS setting.
protectionRevertiveTime	Integer	Range(1..255)	Optional for APS setting.
SONET LOP / HOP Parameters **portConfig:** **SONET_LOP_CONFIG – for LOP** **SONET_HOP_CONFIG – for HOP**			
Mode	ENUM	Unframed, VT1.5, CT3, T3	
Loopback	ENUM	LINE, NETWORK, REMOTE	
operStatus	ENUM	UP,DOWN	
adminStatus	ENUM	UP,DOWN	
Framing	ENUM	Auto-Detect, M23, C-Bit	
clockSource	ENUM	LINE, INTERNAL, RECOVERED, ENHANCED	
T1 / T3 Parameters **portConfig:** **T1_PORT_CONFIG – for T1** **T3_PORT_CONFIG – for T3**			
Loopback	ENUM	LINE, NETWORK, REMOTE	
operStatus	ENUM	UP,DOWN	
adminStatus	ENUM	UP,DOWN	
Framing	ENUM	Auto-Detect, M23, C-Bit	
clockSource	ENUM	LINE, INTERNAL, RECOVERED, ENHANCED	
Ethernet Parameters **portConfig** **ETHERNET_PORT_CONFIG**			
Loopback	ENUM	NO_LOOPBACK, OTHER, INTERNAL, LINE, DROP	
adminStatus	ENUM	UP,DOWN	
Speed	ENUM	AUTOSPEED	
duplexMode	ENUM	HALFDUPLEX,FULLDUPLEX	
ODU Port Config Parameters **portConfig** **ODU_PORT_CONFIG**			

Gcc	String	True (DEFAULT), false (remove the controller). **NOTE**: This attribute is mandatory for setting ODU parameters.	
Tsg	String	-	
ttiSent	String	-	
ttiSapiSent	String	-	
ttiDapiSent	String	-	
ttiOperatorSent	String	-	
ttiExpected	String	-	
ttiSapiExpected	String	-	
ttiDapiExpected	String	-	
ttiOperatorExpected	String	-	
SONET SDH Parameters **portConfig** **SONET_SDH_PORT_CONFIG**			
clockSource	ENUM	LOOP_TIMING, LOCAL_TIMING, LINE_TIMING, INTERNAL_TIMING	
Packet Termination Parameters **portConfig** **ODU_PACKET_TERMINATION_PORT_CONFIG**			
terminationMode	ENUM	ETHERNET	
Mapping	ENUM	GMP	
Ethernet FlowControl Parameters **portConfig** **ETHERNET_FLOWCONTROL_PORT_CONFIG**			
flowControl	ENUM	BIDIRECTIONAL, EGRESS, INGRESS	
WaveLength Parameters **portConfig** **WAVELENGTH_PORT_CONFIG**			
waveLength	Float		
TTi Parameters **portConfig** **TTI_PORT_CONFIG**			
trcLevel	String	Permitted values: • J0 • TTI-SM • TTI-PM **NOTE**: This attribute is mandatory for setting tti.	
trcMode	String	Permitted values: • AUTO • AUTO-NO-AIS • MAN	

		• MAN-NO-AIS • OFF **NOTE**: This attribute is mandatory for setting tti.	
ttiExpected	String	Free format. **NOTE**: This attribute is mandatory for setting tti.	
ttiSent	String	Free format. **NOTE**: This attribute is mandatory for setting tti.	
TCM Control Parameters **portConfig** **TCM_CONTROL_PORT_CONFIG**			
tcmId	Integer	Indicates the tandem connection monitoring field of the ODUk OH on which non-intrusive monitoring is performed. Valid values are integers from 1 to 6.	
tcmName	String	Tcm name	
tcmState	String	DISABLED, ENABLED	
perfMon	String	DISABLED, ENABLED	
signalDegradeBert	String	Signal degrade BER threshold - E_3, E4, E_5, D_6, E_7, E_8, and E_9.	
signalFailureBert	String	Signal failure BER threshold - E_3, E4, E_5, D_6, E_7, E_8, and E_9.	
ttiSent	String	Free format string.	
ttiSapiSent	String	Free format string.	
ttiDapiSent	String	Free format string.	
ttiOperatorSent	String	Free format string.	
ttiExpected	String	Free format string.	
ttiSapiExpected	String	Free format string.	
ttiDapiExpected	String	Free format string.	
ttiOperatorExpected	String	Free format string.	
ALS Parameters **portConfig** **ALS_PORT_CONFIG**			
alsMode	ENUM	DISABLED, AUTO, MANUAL_RESTART, MANUAL_RESTART_FOR_TEST.	
alsRecoveryInterval	Float	Value Ranging from 2.0 to 100.0.	
alsRecoveryPulseWidth	Float	Value Ranging from 60 to 100.	
NNI Control Parameters **portConfig** **NNI_CONTROLLER_PORT_CONFIG**			

nniControl			
ttiMode	String	TTI Mode – one of the following values SM, PM, TCM_1, TCM_2, TCM_3, TCM_4, TCM_5, TCM_6.	
adminWeight	String	<0-65535> Admin weight value.	
Optical Payload Parameters portConfig OPTICAL_PAYLOAD_PORT_CONFIG			
portMode	ENUM	One of the following values: ETHERNET, FC, OTN,SDH, SONET, and NONE (for removing breakout lane). **NOTE**: This attribute is mandatory along with laneNumber for identifying the lanes and its portMode.	
Framing	ENUM	One of the following values: OPYU0, OPU1, OPU1E, OPU2, OPU3, OPU3E1, OPU3E2, OPU4, OPU4FLEX, OPUFlex, OPU1F, OPU2F, and NONE (for removing breakout lane).	
Mapping	String	One of the following values: BMP, GMP, GFPF, GFPT, WIS. HDLC. HDLC_LEX, HDLC_X86, CBR, TRP, and NONE (for removing breakout lane).	
Rate	String	One of the following values: OC3, OC12, OC48, OC192, STM1, STM4, STM16, STM64, and NONE (for removing breakout lane).	
ODU Channelization portConfig ODU_CHANNELIZE_PORT_CONFIG			
channelize_ODU	Boolean		Optional attribute should be set to 'True' for creating the channel and 'false' for

			removing ODU channel.
ODU_Channel	String		Channel values eg: /ODU/0/1/2.
oduLayer	ENUM		Possible values: ODU0, ODU1, ODU2, ODU-FLEX, ODU1E, ODU2E, ODU2F, ODU3, ODU3E1, ODU3E2.
Tpn	NUMBER		Tributary Port Number, possible values: 1-80.
Tps	String		Tributary Slots, Tributary slot string separated by (:) or (-) from 1 to no of Time Slots in Parent ODU controller. Eg: 3:4
Admin State portConfig **ADMIN_STATE_PORT_CONFIG**			
adminStatus	ENUM	UP, DOWN	Optical interfaceAdmin status can be either UP or DOWN.
Sonet SDH portConfig **SONET_SDH_PORT_CONFIG**			
clockSource	ENUM	LOCAL_TIMING, LINE_TIMING, INTERNAL_TIMING	
OTN portConfig **OTN_PORT_CONFIG**			
fec	ENUM	STANDARD,ENHANCED,ENHANCED_I_4,ENHANCED_I_7, STANDARD,ENHANCED,ENHANCED_I_4,ENHANCED_I_7 NONE	
payloadmap	ENUM	ASYNC,ODU, SYNC, NOTAPPLICABLE	
Admssm	ENUM	SMC, DUS, PRS, RES, ST2, ST3E, STU, TNC, SETS, G811, G812L, G812T	
Syncmsg	Boolean	True or false	
gG709	Boolean	True or false	
gcc0	Boolean	True or false	
Sdber	ENUM	E_3,E_4,E_5,E_6, E_7,E_8, E_9	

trcMode	String	Permitted values: • AUTO • AUTO-NO-AIS • MAN • MAN-NO-AIS • OFF **NOTE**: This attribute is mandatory for setting tti.	
trcLevel	String	Permitted values: • J0 • TTI-SM • TTI-PM **NOTE**: This attribute is mandatory for setting tti.	
ttiSapiSent	String	Free format string.	
ttiDapiSent	String	Free format string.	
ttiOperatorSent	String	Free format string.	
ttiSapiExpected	String	Free format string.	
ttiDapiExpected	String	Free format string.	
ttiOperatorExpected	String	Free format string.	
BreakOut portConfig BREAKOUT_LANE_PORT_CONFIG			
portMode	ENUM	One of the following values: ETHERNET, FC, OTN, SDH, SONET, and NONE (for removing breakout lane). **NOTE**: This attribute is mandatory along with laneNumber for identifying the lanes and its portMode.	
framing	ENUM	NONE,OPU0,OPU1,OPU1E, OPU1F	
Rate	ENUM	OC3, OC12, OC48, OC192, STM1, STM4, STM16, STM64	
mapping	ENUM	BMP, GMP, GFPF, GFPT, WIS, HCLC, CBR, TRP, NONE	
laneNumber	Number		
LoopBack portConfig LOOP_BACK_PORT_CONFIG			
loopback	ENUM	NO_LOOPBACK, OTHER, INTERNAL, LINE, DROP	

Note: The Set Termination Point is supported for Cisco NCS4xx, Cisco NCS2K, Cisco ASR903, Cisco ASR904, Cisco ASR907, and Cisco ASR920 family of devices.

4.13 Topological Link Retrieval

This interface provides the operations required to retrieve topological link details.

Resource	**Description**	
Topological Link	Retrieves the Topological Links (CEM and MPLS-TE, etc.) in the system.	
HTTP Method	**Resource Path**	
GET	/data/v1/cisco-resource-network:topological-link	
Query Parameters		
Name	**Type**	**Description**
Fdn	String	Fully Distinguished Name (FDN) of the topological to retrieve a single topological link.
Response Message		
Response Content Type	application/xml, application/yang-data+xml, application/json, application/yang-data+json	
Response Data	0 or more topological links of type **topological-link** – see yang model for the data details.	
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.	

4.13.1 Topological Link Data

Name	**Type**	**Description**
Topology	Container element	Holds the data for topological link.

4.13.1.1 *Topological Link Data details*

The Topological-link container contains the following attributes mentioned in the table below:

Parameter Name	**Type**	**Description**
Fdn	String	Fully distinguished name of the topological Link. FDN = 'MD=<CISCO_EPNM>!TL=<tlname> Eg MD=CISCO_EPNM!TL=13.13.13.4-13.13.13.5 or Eg fdn=MD=CISCO_EPNM!TL=10.58.234.141:[WDMSIDE-A]--10.58.234.144:[WDMSIDE-A]
discovered-name	String	Name of the link alone without the complete FDN. Eg: 13.13.13.4-13.13.13.5
oper-stat	String	
Direction	String	Indicates the direction of the link.
Type	String	Indicates the type of the topological link.
link-type	String	This field will indicate if the topological links is either of the following: **-internal-patch-cord** **-cross-connect** **-open-ended.**
total-capacity		Total link capacity assigned.
used-capacity		Capacity utilized out of total link capacity.
member-of-ref	String	Applies to uni-directional links only. FDN of the container Bi-directional link, this Uni-directional link is part of. Not present

		if link is not part of any bi-directional link.
endpoint-list		Complex contained to hold the list of Endpoints.
end-point		Complex container to hold the endpoint information.
Endpoint-ref	String	FDN of the endpoint. Eg: MD=CISCO_EPNM!ND=SJ-NCS4206-21.cisco!CTP=name=BDI8-mpls layer;lr=lr-mpls
LOGO Attributes		Set of attributes to indicate the optical attributes that derive the feasibility of a path.
Noise		Indicates the noise level of the link.
noise-sigma		Indicates noise level variance of the link.
Pdl		Indicates polarization dependent loss of the link.
Pmd		Indicates polarization mode dispersion of the link.
fgdr-filter		Indicates fgdr-Filter Group Delay Ripple of the link.
sf-filter		Indicates self-filtering.
chromatic-dispersion		Indicates chromatic dispersion of the link.
chromatic-dispersion-slope		Indicates the chromatic dispersion slope of the link.

4.14 MPLS TE Explicit Path Retrieval

This interface provides the operations required to retrieve topological link details.

Resource	**Description**	
MPLS TE Explicit Path	Retrieves the MPLS TE Explicit Paths (Optical) in the system.	
HTTP Method	**Resource Path**	
GET	/data/v1/ cisco-resource-ems:mpls-te-explicit-path	
Query Parameters		
Name	**Type**	**Description**
Path-ref	String	Fully Distinguished Name (FDN) of the explicit path to retrieve a single MPLS TE Explicit Path Path-ref=MD=CISCO_EPNM!ND=cvg-scapa-223.cisco.com!PATH=223-225_OTU4 Path-ref= 'MD=<CISCO_EPNM>!ND=<nodename>!<PATH>=<pathname>
Response Message		
Response Content Type	application/xml, application/yang-data+xml, application/json, application/yang-data+json	
Response Data	0 or more MPLS TE Explicit Paths of type mpls-te-explicit-path. See the yang model for the data details.	
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.	

4.14.1 MPLS TE Explicit Path Data

Name	**Type**	**Description**
mpls-te-explicit-path-type	Container element	Holds the data for mpls te explicit path.

4.15 Virtual Connection Retrieval

This interface provides the operations required to retrieve virtual connection details which include the CEM and MPLS-TE RFS details.

Resource	**Description**	
Virtual Connection	Retrieves all Virtual Connections (CE, CEM, L3VPN and MPLS-TE, etc.) in the system or retrieve a specific set based on the input parameters.	
HTTP Method	**Resource Path**	
GET	/data/v1/cisco-service-network:virtual-connection	
Query Parameters		
Name	**Type**	**Description**
Type	String	Type of the virtual connection to retrieve. If not specified all types will be returned. Possible values: carrier-ethernet-vpn, tdm-cem, mpls-te-tunnel, and mpls-l3-vpn.
Fdn	String	Fully Distinguished Name (FDN) of the virtual connection to retrieve a single virtual connection. FDN = 'MD=<CISCO_EPNM>!VC=<vcname>
tpFdn	String	Fully Distinguished Name (FDN) of the termination-point. When this parameter is provided, all virtual connections that reference this termination-points will be returned.
Response Message		
Response Content Type	application/xml, application/yang-data+xml, application/json, application/yang-data+json	
Response Data	0 or more Virtual Connections of type virtual-connection. See the yang model for the data details.	
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.	

4.15.1 Virtual Connection Data

Name	**Type**	**Description**
virtual-connection	container	Container holds the virtual connection data.

Parameter Name	**Type**	**Allowed Values**	**Description**
Fdn	String		Fully distinguished name of the Virtual Connection. Eg: MD=CISCO_EPNM!VC=TRAIL-Do_NOT_DELETE_DEMO
discovered-name	String		Name of the link alone without the complete FDN. Eg: TRAIL-Do_NOT_DELETE_DEMO
admin-state	String	Up/Down	Indicates the admin state of the connection.
oper-state	String	Up/Down	Indicates operational state of connection.

vc-id	String		Its id of the virtual connection.
discovery-state	String		Indicates the discovered state of the connection.
Type	String		It represents multi-layer technology , i.e. mpls-te tunnel, Carrier-E, etc.
sub-type	String		Some Virtual Connections have different subtypes, i.e. Carrier-E EPL, Carrier-E EVPL, etc.
Topology	String		Define the topology; Default is point-to-point.
Direction	String		
Protection-type	String		Protection type can be of type Y-cable, splitter, one-plus-one -this applies to TE Tunnel and CEM too.
Protection-role	String		working, protecting, restore
Termination point list			Virtual Connection termination point list.
Fdn	String		Fully distinguished name of the Virtual Connection. Eg: MD=CISCO_EPNM!VC=TRAIL-Do_NOT_DELETE_DEMO
discovered-name	String		Name of the link alone without the complete FDN. Eg: TRAIL-Do_NOT_DELETE_DEMO
admin-state	String	Up/Down	Indicates the admin state of the connection.
oper-state	String	Up/Down	Indicates operational state of connection.
directionality	String	Uni-direction/bi-direction	Base identity for VC for direction.
is-edge-point	String		Indicates if the TP is an edge point of at least one virtual network, i.e. if it is an end point of a potential inter-network topological link.
ce-tp			
outer-vlan-tp-id	String		
untagged-default	String		
sv-id-list	String		
cv-id-list	String		
vid-rewrite-oper	String		
rewrite-is-symmetric	String		
Mtu	String		
Route name list			Virtual Connection route names including protecting/standby routes.
route-name	String		Indicates the route name used.
Te-tunnel			MPLS TE Tunnel specific attributes.
tunnel-id	String		Indicates the TE tunnel ID
tunnel-source	String		TE tunnel source IP
tunnel-destination	String		TE tunnel destination IP
association-id	String		TE tunnel association ID. Used for bi-directional TE tunnel association.

association-source-address	String		Source IP of the associated TE tunnel. Applicable to bi-direction TE tunnel.
global-id	String		global id (per Autonomous System) to enable MPLS TE tunnel source id unique globally.
co-routed-enabled	Boolean		A flag indicates whether the bi-directional tunnels share the same MPLS LSP route.
protection-type	String		This is obsolete. VC protection type is represented.
Och-nc			DWDM OCH NC circuit specific attributes.
restoration-type	String		
Restoration-status	String		
Activation-state	String		
regeneration-allowed	Boolean		
upstream-power-offset	String		
downstream-power-offset	String		
path-policy	String		
ignore-path-alarms	String		
circuit-diversity	String		
Revert	String		
Soak-time	String		
Frequency	String		
Width	String		
Priority	String		
optical-path-settings	String		
is-uni	Boolean		
is-wson	Boolean		
is-mandatory-freq	Boolean		
frequency-preference	String		
frequency-protected	String		
frequency-protected-preference	String		
is-mandatory-frequency-protected	Boolean		
failure-reason	String		
Och-trail			DWDM OCH Trail circuit specific attributes.
restoration-type	String		
Restoration-status	String		
Activation-state	String		
regeneration-allowed	Boolean		
upstream-power-offset	String		
downstream-power-offset	String		
path-policy	String		
ignore-path-alarms	String		

circuit-diversity	String		
Revert	String		
Soak-time	String		
Frequency	String		
Width	String		
Priority	String		
optical-path-settings	String		
is-uni	Boolean		
is-wson	Boolean		
is-mandatory-freq	Boolean		
frequency-preference	String		
frequency-protected	String		
frequency-protected-preference	String		
is-mandatory-frequency-protected	Boolean		
failure-reason	String		
Och-cc			DWDM OCH CC circuit specific attributes.
restoration-type	String		restoration type, none, restore, revert
Restoration-status	String		restoration type, none, failed, restored, restoring, revertible, reverting
Working-och-trail	String		Reference to the working OCH Trail.
Protected-och-trail	String		Reference to the protecting OCH Trail.
is-wson	Boolean		WSON indicator. Circuit is routed automatically or manually.
failure-reason	String		Indicates the failure reason for DWDM OCH Client Connection if any error exists during circuit provisioning.
Och-Trail-Uni			DWDM OCH Trail UNI circuit specific attributes.
restoration-type	String		restoration type, none, restore, revert
Restoration-status	String		restoration type, none, failed, restored, restoring, revertible, reverting
Tunnel-id	String		reference to the odu tunnel id
Source-address	String		source ip address
Signaled-name	String		Reference to the lsp signal
set-uni-cfg	String		OCH Trail UNI configuration indicator
och-nc-name	String		Reference to OCH NC that is automatically created as a result of this OCH Trail UNI creation
diverse-from-tunnel-id	String		Diverse from tunnel id
diverse-attribute-set-name	String		Diverse attribute et name
preferred-wave-length	String		

manage-constraints	Boolean		
Is-unnumbered	Boolean		
failure-reason	String		Indicates the failure reason for DWDM OCH Trail UNI if any error exists during circuit provisioning
Odu-Uni			DWDM ODU UNI circuit specific attributes.
Framing	String		ODU framing
Bit-rate	String		Circuit-bitrate
Tunnel-id	String		Associated tunnel-id
Source-address	String		Reference to the protecting OCH Trail
Diverse-from-tunnel-id	String		Diverse from tunnel
Odu-Tunnel			DWDM ODU Tunnel circuit specific attributes.
Framing	String		ODU framing
Bit-rate	String		Circuit-bitrate
Tunnel-id	String		Associated tunnel-id
Source-address	String		Reference to the protecting OCH Trail
Diverse-from-tunnel-id	String		Diverse from tunnel
signaled-name	String		OTN tunnel signed name
record-route	String		
Bandwidth	String		
Protection-profile	String		
diverse-attribute-name	String		
failure-reason	String		
	String		
te-tunnel-path-option-list	String		
path-preference	String		
protection-role	String	Working/protected	
path-type	String		
lock-down	String		
protected-by	String		
explicit-path-name	String		

4.16 Multi-Layer Trace Retrieval

This interface provides the operations required to retrieve multi-Layer trace for a given virtual connection. The interface can be used to retrieve the multi-layered routes for CEM, MPLS-TE-Tunnel, Optical and all the other supported virtual connections.

Resource	**Description**	
Virtual Connection Route	Retrieves all Virtual Connections routes in the system or retrieve specific set based on the input parameters.	
HTTP Method	**Resource Path**	
GET	/data/v1/cisco-resource-network:virtual-connection-multi-layer-route	
Query Parameters		
Name	**Type**	**Description**
vcFdn	String	Fully Distinguished Name (FDN) of the virtual connection for which the MLT should be retrieved.
Response Message		

Response Content Type	application/xml, application/yang-data+xml, application/json, application/yang-data+json
Response Data	0 or more connection (topological-link) of type **virtual-connection-multi-layer-route** – see yang model for the data details.
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.

4.16.1 Virtual Connection Multi-Layer Route Data

Name	Type	Description
virtual-connection-multi-layer-route	Container element	Holds the data from multi-layer route. There will be one **virtual-connection-multi-layer-route** entry per layer.
topo-index	Integer	Indicates the index of the layer in the order.
topology-layer		Indicates the name of the layer. Eg: och-link-layer, ops-link-layer, ots-link-layer.
protection-role		Indicates the protection role of the path.
protection-state		Indicates the protection state of the path.
tl-list	Container element	List of links for the given layer (represented by virtual-connection-multi-layer-route).
topological-link	Container element	Contains n number of topological-link entities as there are connections for the given layer. Both internal and external links are represented as topological-link.
tl-index		Index of the topological link inside the given layer.
fdn		FDN of the given topological link. FDN = 'MD=<CISCO_EPNM>!TL=<tlname> Eg MD=CISCO_EPNM!TL=13.13.13.4-13.13.13.5
is-cc		Indicates if the link is a cross connect or not.
direction		Indicates if the link is uni or bi directional link.
endpoint-list	Container element	List of endpoints for the particular topological-link.
endpoint	Container element	Contains information about the endpoint of the topological-link.
endpoint-ref	String	FDN of the termination point. Eg: MD=CISCO_EPNM!ND=cvg-scapa-90.cisco.com!CTP=name=Optics0/1/0/3;lr=lr-optical-channel
directionality	String	Contains the direction of the TP. Eg: uni-direction, bi-direction.

4.17 Customer Facing Service Retrieval

This interface provides the operations required to retrieve Customer Facing Service (CFS) details which include the services provisioned for CE, CEM, MPLS-TE, L3VPN and all other supported virtual connections.

Resource	Description

Customer Facing Service	Retrieves all Customer Facing Services (CE, CEM, MPLS-TE and L3VPN) in the system or retrieve a specific set based on the input parameters.	
HTTP Method	**Resource Path**	
GET	/data/v1/cisco-service-network:customer-facing-service	
Query Parameters		
Name	**Type**	**Description**
type	String	Type of the CFS to retrieve. If not specified all types will be returned. Possible values: carrier-ethernet-vpn, tdm-cem, mpls-te-tunnel, and mpls-l3-vpn.
subType	String	Sub Type of the CFS to retrieve. If not specified all sub types will be returned. Should be used in conjunction with Type.
fdn	String	Fully Distinguished Name (FDN) of the CFS to retrieve a single virtual connection. FDN: MD=<CISCO_EPNM>!CFS=<cfsname> Eg:MD=CISCO_EPNM!CFS=TE Link _192.169.106.12_500_10.140.0.1
Response Message		
Response Content Type	application/xml, application/yang-data+xml, application/json, application/yang-data+json	
Response Data	0 or more customer facing services of type **customer-facing-service** – see yang model for the data details.	
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.	

4.18 Network Interface Retrieval

This interface provides operations that retrieve network interface (UNI/ENNI) details. It can be used to retrieve network interfaces available in the system to provide them with provisioning input.

Resource	**Description**	
Network Interface	Retrieves all Network Interfaces (UNI/ENNI) in the system or retrieve specific set based on the input parameters.	
HTTP Method	**Resource Path**	
GET	/data/v1/cisco-service-network:network-interface	
Query Parameters		
Name	**Type**	**Description**
Fdn	String	Fully Distinguished Name (FDN) of the NI to retrieve a single Network Interface.
Response Message		
Response Content Type	application/xml, application/yang-data+xml, application/json, application/yang-data+json	
Response Data	0 or more network interfaces of type **network-interface** – see yang model for the data details.	
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error	

	response data for more details.

4.19 QoS Policy Retrieval

This API retrieves QoS policies in all devices in Cisco EPN Manager. This API can be used to get the FDN of the QoS policy which can be passed in the ingress/egress QoS policies in the order of the service that is being provisioned.

Resource	**Description**	
QoS Policy	Retrieves all QoS Policies in devices added to Cisco EPN Manager.	
HTTP Method	**Resource Path**	
GET	restconf/data/v1/cisco-qos:qos-policy	
Query Parameters		
Name	**Type**	**Description**
Fdn	String (FDN Format)	Fully Distinguished Name (FDN) of the QoS Policy. Given this, a corresponding single QoS Policy will be returned. FDN = MD=<CISCO_EPNM>!ND=<nd_name>!POLICY_QOS=<policyname> Eg: MD=CISCO_EPNM!ND=ASR901-CSG-2-DOMAIN2.cisco.com!POLICY_QOS=money
nfFdn	String (FDN Format)	Fully Distinguished Name (FDN) of the device. Given this, all the QoS Policies for that device will be returned.
Response Message		
Response Content Type	application/xml, application/yang-data+xml, application/json, application/yang-data+json	
Response Data	0 or more QoS Policies type **qos-policy** – see yang model for the data details.	
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.	

4.20 QoS Profile Retrieval

This API retrieves QoS profiles in Cisco EPN Manager. This API can be used to get the FDN of the QoS profile which can be passed as a user defined policy for the ingress/egress QoS policies in the order data of the provisioned service.

Resource	**Description**	
QoS Profile	Retrieves all QoS Profile in Cisco EPN Manager.	
HTTP Method	**Resource Path**	
GET	restconf/data/v1/cisco-qos:qos-profile	
Query Parameters		
Name	**Type**	**Description**
Fdn	String (FDN Format)	Fully Distinguished Name (FDN) of the QoS Profile. Given this, a corresponding QoS Profile will be returned FDN MD=<CISCO_EPNM>!PROFILE_QOS=<profilename>.
Response Message		
Response Content Type	application/xml, application/yang-data+xml, application/json, application/yang-data+json	
Response Data	0 or more QoS Profiles of type **qos-profile** – see yang model for the data details.	

HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.

4.21 CLI Template Retrieval

This API retrieves CLI templates in Cisco EPN Manager. This API can be used to get the CLI template name and parameters which can be passed to run CLI configuration in resource activation.

Resource	**Description**	
CLI Template	Retrieves all CLI template in Cisco EPN Manager.	
HTTP Method	**Resource Path**	
GET	/data/v1/cisco-resource-activation:cli-template	
Query Parameters		
Name	**Type**	**Description**
name	String	CLI Template name; a corresponding CLI template will be returned.
Response Message		
Response Content Type	application/xml, application/yang-data+xml, application/json, application/yang-data+json	
Response Data	0 or more CLI template of type **cli-template** – see yang model for the data details.	
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.	

4.22 IPSLA Profile Retrieval

This API retrieves IPSLA profiles for L3VPN services in Cisco EPN Manager. This API can be used to get the FDN of the IPSLA profile which can be passed via L3VPN service provision.

Resource	**Description**
QoS Profile	Retrieves all ISPLA Profile in Cisco EPN Manager.
HTTP Method	**Resource Path**
GET	restconf/data/v1/cisco-service-network:ipsla-profile
Query Parameters	
Response Message	
Response Content Type	application/xml, application/yang-data+xml, application/json, application/yang-data+json
Response Data	0 or more IPSLA Profiles of type **ipsla-profile** – see yang model for the data details.
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.

4.23 Service Activation

4.23.1 Operations

The following sub-sections provide the details of the operations that can be used for service activation.

4.23.2 Provision Service

Operation	**Description**
Provision a Service	This operation can be used to provision a service.
HTTP Method	**Resource Path**
POST	/operations/v1/cisco-service-activation:provision-service
Request Message	
Request Content Type	application/xml, application/yang.operation +xml, application/json, application/yang.operation+json
Request Data	Request data of type **provision-service-request** that contains the details of the service type and **order-data** and other related data – see yang model for the data details.
Response Message	
Response Content Type	application/xml, application/yang.operation +xml, application/json, application/yang.operation+json
Response Data	Return a provisioning response of type **provision-service-response** that contains the details of the execution which includes service reference details, device CLI details, etc. – see yang model for the data details.
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.

4.23.2.1.1 Provision Service Request

Name	**Type**	**Description**
provision-service-request	Container element	Holds the data for provisioning a service.
service-order-data	service-order-data type	Container holding the service order data – see the order data sections for details on each service type data.

4.23.2.1.2 Provision Service Response

Name	**Type**	**Description**
provision-service-response	Container element	Holds the data for provision service response.
cfs-ref	String (FDN)	FDN of the service to be created. e.g., MD=CISCO_EPNM!CUSTOMER=Infrastructure
ni-ref	String (FDN)	FDN of the Network Interface (UNI/ENNI) e.g., MD=CISCO_EPNM!NI=<NI Name>
request-id	uuid	Request id to track the provisioning request.
service-name	String	Service name.
service-type	String	Service type.
service-subtype	String	Service subtype.
Preview	Boolean	Is preview true/false.

request-time	DateTime	Request time.
completion-time	DateTime	Completion time.
deploy-results	Container element	Holds the response for provision.
Result	Container element	Holds the response for provision.
node-ref	String (FDN)	FDN for the node.
State	String	Provisioning state. (SUCCESSFUL, FAILED, NOT_STARTED, NOT_APPLICABLE)
Info	String	Provision information.
Config	String	Device configuration.
Error	String	Error in provisioning.
rollback-config	String	Rollback Device configuration.
rollback-errors	String	Error in rollback provisioning.
work-flow-result	Container element	Holds the response for provision in case of Workflows.
cfs-ref	String (FDN)	FDN of the service to be created.
ni-ref	String (FDN)	FDN of the Network Interface (UNI/ENNI).
service-type	String	Service type.
work-flow-index	String	Workflow index.
work-flow-name	String	Workflow name.
Result	Container element in Workflow Results	Holds the response for provision in case of Workflows.
node-ref	String (FDN)	FDN for the node.
State	String	Provisioning state. (SUCCESSFUL, FAILED, NOT_STARTED, NOT_APPLICABLE)
Info	String	Provision information.
Config	String	Device configuration.
Error	String	Error in provisioning.
rollback-config	String	Rollback Device configuration.
rollback-errors	String	Error in rollback provisioning.
completion-status	String	Provisioning state. (SUCCESS, FAILED, PENDING, SUBMITTED).
Error	String	Error in provisioning.
validation-error	String	Validation Error in provisioning.
request-validation-error	String	Request Validation Error in provisioning.
test-ref	Container element	Holds the test id's for provision in case of service test included.
test-id	String	List of test id's invoked.

4.23.2.2 *Modify Service*

Operation	**Description**
Modify existing service	This operation can be used to modify existing service.
HTTP Method	**Resource Path**
POST	/operations/v1/cisco-service-activation:modify-service
Request Message	
Request Content Type	application/xml, application/yang.operation +xml, application/json, application/yang.operation+json
Request Data	Request data of type modify-service-request that contains the details of the service type and order-data and other related data – see yang model for the data details.
Response Message	
Response Content Type	application/xml, application/yang.operation +xml, application/json,

	application/yang.operation+json
Response Data	Return a modify response of type **modify-service-response** that contains the details of the execution that includes service reference details, device cli details, etc. – see yang model for the data details.
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.

4.23.2.2.1 Modify Service Request

Name	Type	Description
modify-service-request	Container element	Holds the data for modifying an existing service.
cfs-ref	String (FDN)	FDN of the service to be modified.
ni-ref	String (FDN)	FDN of the Network Interface (UNI/ENNI) to be modified. This field is needed instead of cfs-ref in Network Interface (UNI/ENNI) modification case only.
service-order-data	service-order-data type	Container holding the service order data – see the order data sections for details on each service type data.

4.23.2.2.2 Modify Service Response

Name	Type	Description
modify-service-response	Container element	Holds the data for modify service response.
Refer Provision-service-response		

4.23.2.3 *Terminate Service*

Operation	Description
Terminate existing Service	This operation can be used to terminate existing service.
HTTP Method	**Resource Path**
POST	/operations/v1/cisco-service-activation:terminate-service
Request Message	
Request Content Type	application/xml, application/yang.operation +xml, application/json, application/yang.operation+json
Request Data	Request data of type **terminate-service-request** that contains the details of the service type and service reference and other related data – see yang model for the data details.
Response Message	
Response Content Type	application/xml, application/yang.operation +xml, application/json, application/yang.operation+json
Response Data	Return a provisioning response of type **terminate-service-response** that contains the details of the execution that includes service reference details, device cli details, etc. – see yang model for the data details.
HTTP Status Code	• 200 OK- Success with response message-body • 401, 403– Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed.

	Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.

4.23.2.3.1 Terminate Service Request

Name	Type	Description
terminate-service-request	Container element	Holds the data for terminating the service.
cfs-ref	String (FDN)	FDN of the service to be terminated.
ni-ref	String (FDN)	FDN of the Network Interface (UNI/ENNI) to be terminated. This field is needed instead of cfs-ref in Network Interface (UNI/ENNI) termination case only.

4.23.2.3.2 Terminate Service Response

Name	**Type**	**Description**
terminate-service-response	Container element	Holds the data for terminating the service's response.
Refer Provision-service-response		

CEM, Optical and MPLS-TE service provisioning is supported through the set of operations defined as RESTCONF Operations. When the OSS client uses this interface for service provisioning, a set of CFS (Customer Facing Service) and RFS (Resource Facing Service) objects will be created or modified to handle the service management in Cisco EPN Manager.

The API provides support for provisioning the following services:

Technology	**Service Type**	**Service Sub Type**
CE	carrier-ethernet-vpn	EPL, EVPL, ACESS EPL, ACESS EVPL, EP-LAN, EVP-LAN, EP-Tree, EVP-Tree
CEM	tdm-cem	T1, T3, E1,E3,VT1.5,VT2,OC1,OC3, OC12,OC48
MPLS-TE	mpls-te-tunnel	Bidirectional, Unidirectional TE Tunnel, Layer 3 Link
L3VPN	mpls-l3-vpn	L3VPN
Optical	optical	OCHNC, OCHCC, OCHTrail, OCHTrail-UNI, OPU-Over-ODU, ODU_UNI, ODU_TUNNEL

4.23.2.4 *Roll Service*

Operation	**Description**
Roll from one service to another service	Given local connect CEM service as roll-from-service and CEM service between 2 devices as roll-to-service, delete the CEM roll-from-service and modify CEM roll-to-service connect moving Z endpoint to roll-from-service Z endpoint.
HTTP Method	**Resource Path**
POST	/operations/v1/cisco-service-activation:roll-service
Request Message	
Request Content Type	application/xml, application/yang.operation +xml, application/json, application/yang.operation+json
Request Data	Request data of type modify-service-request that contains the details of the service type and order-data and other related data – see yang model for the data details.
Response Message	

Response Content Type	application/xml, application/yang.operation +xml, application/json, application/yang.operation+json
Response Data	Return a modify response of type **roll-service-response** that contains the details of the execution that includes service reference details, device cli details, etc. – see yang model for the data details.
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.

4.23.2.4.1 Roll Service Request

Name	Type	Description
modify-service-request	Container element	Holds the data for modifying an existing service.
cfs-ref	String (FDN)	FDN of the service to be modified.
ni-ref	String (FDN)	FDN of the Network Interface (UNI/ENNI) to be modified. This field is needed instead of cfs-ref in Network Interface (UNI/ENNI) modification case only.
service-order-data	service-order-data type	Container holding the service order data – see the order data sections for details on each service type data.

4.23.2.4.2 Roll Service Response

Name	Type	Description
modify-service-response	Container element	Holds the data for modify service response.
Refer Provision-service-response		

4.23.2.5 *Force Terminate Service*

Operation	Description
Terminate existing Service	This operation can be used to force terminate delete failed services. It's not applicable to optical services currently.
HTTP Method	**Resource Path**
POST	/operations/v1/cisco-service-activation:terminate-service
Request Message	
Request Content Type	application/xml, application/yang.operation +xml, application/json, application/yang.operation+json
Request Data	Request data of type **terminate-service-request** that contains the details of the service type and service reference and other related data – see yang model for the data details.
Response Message	
Response Content Type	application/xml, application/yang.operation +xml, application/json, application/yang.operation+json
Response Data	Return a provisioning response of type **terminate-service-response** that contains the details of the execution that includes service reference details, device cli details, etc. – see yang model for the data details.
HTTP Status Code	• 200 OK- Success with response message-body • 401, 403– Authentication and Authorization errors.

	• 400 Bad Request- Invalid request message. • 500 Internal Server Error- operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.

4.23.2.5.1 Force Terminate Service Request

Name	Type	Mandatory	Description
terminate-service-request	Container element	Yes	Holds the data for terminating the service.
cfs-ref	String (FDN)	Yes	FDN of the service to be terminated.
service-name	String	No	Name of the service being deleted.
service-type	String	Yes	Service type of the service being deleted.
service-subtype	String	Yes	Service sub type of the service being deleted.
force-delete	Boolean	Yes	For force delete/terminate of a service value of this tag should be “true” or else EPNM will consider it as regular service terminate.

4.23.2.5.2 Force Terminate Service Response

Name	Type	Description
terminate-service-response	Container element	Holds the data for terminating the service’s response.
Refer Provision-service-response		

CEM, Optical and MPLS-TE service provisioning is supported through the set of operations defined as RESTCONF Operations. When the OSS client uses this interface for service provisioning, a set of CFS (Customer Facing Service) and RFS (Resource Facing Service) objects will be created or modified to handle the service management in Cisco EPN Manager.

The API provides support for Termination of the following services:

Technology	Service Type	Service Sub Type
CE	carrier-ethernet-vpn	EPL, EVPL, ACESS EPL, ACESS EVPL, EP-LAN, EVP-LAN, EP-Tree, EVP-Tree
CEM	tdm-cem	T1, T3, E1,E3,VT1.5,VT2,OC1,OC3, OC12,OC48
MPLS-TE	mpls-te-tunnel	Bidirectional, Unidirectional, TE Tunnel, Layer 3 Link
L3VPN	mpls-l3-vpn	L3VPN

```
<?xml version="1.0" encoding="UTF-8"?>
<p:terminate-service-request
xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="urn:cisco:params:xml:ns:yang:service:activation:
v1 restconf-terminate-request-schema.xsd ">
<p:cfs-ref>MD=CISCO_EPNM!CFS= TestEvplService</p:cfs-ref>
<p:service-order-data>
<p:service-name>TestEvplService</p:service-name>
<p:service-type>carrier-ethernet-vpn</p:service-type>
<p:service-subtype>EVPL</p:service-subtype>
<p:force-delete>true</p:force-delete>
</p:service-order-data>
```

```
    </p:terminate-service-request>
```

4.23.3 Service Order Data

The following sub-sections provide the details of each service provisioning order data which is required in the provision and modify operations of the service activation interface as a POST data in a request object.

4.23.3.1 *Service Order Data – Carrier Ethernet (CE)*

The table below lists the Order Data elements and the supported values for carrier ethernet services. Note that the table below describes all the elements in service order data combined for service and endpoint configuration for all the CE services (ELINE, ELAN, ETREE, and EACCESS).

Carrier Ethernet Service Order Data	**Data Type**	**Mandatory**	**Modifiable**	**Applicable to Service Type**	**Description**
service-name	String	Yes	No	All	Unique name to identify the circuit/VC.
service-description	String	No	Yes	All	Description of the VC that will help to identify the VC.
service-type	String	Yes	No	All	Service Type. Possible value: carrier-ethernet-vpn
service-subtype	String	Yes	No	All	Service SubType. Possible Values: EPL, EVPL, ACESS EPL, ACESS EVPL, EP-LAN, EVP-LAN, EP-Tree, EVP-Tree
customer-ref	String	No	No	All	Customer FDN. e.g., MD=CISCO_EPNM!CUSTOMER=<customer name> default value of CUSTOMER is “Infrastructure”
service-activate	Boolean	No	Yes	All	Activate Service. Default value is: true
termination-point-list	List container	Yes	N/A	All	List of connection termination point configurations.
network-interface-list	List container	Yes	N/A	All	List of network interface configurations.
forwarding-path	container	Yes	N/A		List of Forward paths.
ce-data	container	Yes	N/A	All	Container for CE service configuration.
bundling	Boolean	No	Yes	EVPL, EVP-LAN, EVP-TREE	Enables multiple VLANs on this VC. Multiple CE-VLAN IDs are bundled to one EVC. Default value: true
ccm-interval	String	No	Yes		Service-wide setting for all Maintenance Entities – e.g. 1 sec. Mandatory when ‘enable-cfm’ is True

Carrier Ethernet Service Order Data	Data Type	Mandatory	Modifiable	Applicable to Service Type	Description
ce-vlan-id-preservation	Boolean	No	Yes	EVPL, EVP-LAN, EVP-TREE	CE-VLAN ID Preservation. Ensures that the CE-VLAN ID of an egress service frame is identical in value to the CE-VLAN ID of the corresponding ingress service frame. This must be enabled, if bundling is enabled.
ce-vlan-cos-preservation	Boolean	No	Yes	EVPL, EVP-LAN, EVP-TREE	CE-VLAN ID CoS Preservation. Ensures that the CE-VLAN CoS of an egress service frame is identical in value to the CE-VLAN CoS of the corresponding ingress service frame. The CoS markings are unaltered.
mtu-size	Integer	No	Yes	All	Service MTU. The maximum size, in bytes, of any frame passing through the VC. Values can be between 1522 and 9216. The service MTU must be lower than or equal to the MTU defined on the UNI.
enable-cfm	Boolean	No	Yes	All	True/false for enable CFM. Default is 'true'
cfm-domain-name	String	No	Yes	All	This represent CFM domain name used.
cfm-domain-level	String	No	Yes	All	This represents CFM domain level. Possible value : 1 to 7
configure-remote-mep	boolean	No	Yes	All	Flag to indicate for configuring remote mep or not. Default value : false.
fault-management-map	FaultManagementMapType	No	N/A	All	Service OAM - Define the probe profiles between MEP Groups (groups of UNIs whose membership to a group is marked at each endpoint). See the entries in this container below in Fault Management Map Data.
max-uni-endpoints	Integer	No	No	All	Max UNI endpoints , default: 2
vpn-id	Long	No	No	All	Vpn Id
auto-allocate-vlan-id	Boolean	No	Yes	EVPL, Access EVPL, EVP-LAN, EVP-Tree	Indicator for auto allocation of VLAN Id, allowed values:true/false; Default value: false

The table below lists the containers for Fault Management map entries applicable to different types of fault management maps:

Carrier Ethernet Service Order Data	Data Type	Mandatory	Modifiable	Applicable to Service Type	Description
fault-management-map	Container element	Yes	N/A	All	Container for Fault Management Map Entries.
Entry	Container element for entries	Yes	N/A	All	Zero or more elements of the Fault Management Map Entry.
Fault Management Map Entry Data		Yes	N/A	All	Container of the entries for Fault Management Map.
From	String	Yes	Yes	All	Value should be one of - ENNI Z, UNI Z, UNI A, or ENNI A. The source of the traffic flow across the EVC/OVC.
To	String	Yes	Yes	All	Value should be one of - ENNI Z, UNI Z, UNI A, or ENNI A. The destination of the traffic flow across the EVC/OVC.
Cos	String	Yes	Yes	All	Values: • EXTRA HIGH • HIGH • HIGHEST AVAILABLE • LOW • MEDIUM The Class of Service identifier that should be associated with the frame.

Carrier Ethernet Service Order Data	Data Type	Mandatory	Modifiable	Applicable to Service Type	Description
oam-profile	String	Yes	Yes	All	Provide a name to the profile that can be identified for the set of OAM attributes that should be applied to the frame to enable performance monitoring. **Note:** This is just a label. The actual values should be passed through CChk, SEDM, DEDM, and SyLM elements mentioned below. For example: – Performance Monitoring 1: Enables continuity check and synthetic loss measurement. (CChk=Yes, SEDM= No, DEDM=No, SyLM=Yes, SLM=No). – Performance Monitoring 2: Enables continuity check, synthetic loss measurement, and single-ended delay measurement (CChk=Yes, SEDM= Yes, DEDM=No, SyLM=Yes, SLM=No). – Performance Monitoring 3: Enables continuity check, synthetic loss measurement, and dual-ended delay measurement (CChk=Yes, SEDM= No, DEDM=Yes, SyLM=Yes, SLM=No).

Carrier Ethernet Service Order Data	Data Type	Mandatory	Modifiable	Applicable to Service Type	Description
termination-point-list	Container	Yes	N/A	All	termination point list
termination-point-config	Container	Yes	N/A	All except UNI , QoS Profile	termination point config
tp-ref	String (FDN)	Yes	No	All	FDN of the port to use - set of RNDs that consists of MD, ME and PTP or FTP instance ids. For example: “MD=CISCO_EPNM!ND=tmh-chn-mvso-asr9k-2.cisco.com!FTP=name=GigabitEthernet0/4;lr=lr-gigabit-ethernet ”
directionality	Identity	Yes	No	All	source, sink, and bi-directional.
ingress-qos-policy-ref	String (FDN)	No	Yes	All except EVP-Tree	Ingress QOS Policy Reference. FDN of the existing QOS profile with MD, PROFILE_QOS RDNs. e.g., MD=CISCO_EPNM!ND=tmh-chn-mvso-asr9k-3!POLICY_QOS=TestQosProfile
egress-qos-policy-ref	String (FDN)	No	Yes	All except EVP-Tree	Egress QOS Policy Reference. FDN of the existing QOS profile with MD, PROFILE_QOS RDNs. e.g., MD=CISCO_EPNM!ND=tmh-chn-mvso-asr9k-3!POLICY_QOS=TestQosProfile
network-interface-name	String	No	No	All	It’s the name of the new NI being created Mandatory while creating new UNI e.g., any unique uni name like UniA , UniZ etc.
network-interface-ref	String (FDN)	No	No	All	It’s the FDN of the existing NI being re-used. Mandatory while re-using existing UNI e.g., MD=CISCO_EPNM!NI=<name of the existing UNI>
ce-data	Container	Yes	N/A	All	Container for CE Endpoint configuration

l2-cp-profile	String	No	Yes	All except EVPL	Layer 2 Control Protocol Profile. Profile that determines how the various communication protocols are handled. Frames using the various protocols are tunneled, dropped, or peered. Refer to MEF 6.1 for details. Values: EPL, Access EPL: MEF Option1 or MEF Option2 Access EVPL: EVPL/EVP-LAN/EVP-Tree EP-LAN, EP-Tree: MEF EP-LAN/EP-Tree EVP-LAN, EVP-Tree: MEF EVPL/EVP-LAN/EVP-Tree
Untagged	Boolean	No	Yes	EVPL, EVP-LAN, EVP-TREE	Untagged – true/false. Preserves a VLAN ID for untagged traffic. If there is no bundling, only one VLAN is allowed, therefore, if the Untagged check box is selected, you cannot specify an additional VLAN ID.
mep-group	String	No	Yes	E-LAN	Name of the Mep Group – UNI A or UNI Z. For CFM configuration, specify the group to which this endpoint belongs. Based on your selection, a CFM service will be created and a MEP ID will be assigned.
service-vlan-list	String	No	Yes	Access EPL, EVPL	Service VLAN Id.
qinq-data	Container	Yes	N/A	EVPL, Access EVPL, EVP-LAN	QinQ Configuration

The table below describes the different endpoint data types and lists the services, they are applicable to:

Carrier Ethernet Service Order Data	**Data Type**	**Mandatory**	**Modifiable**	**Applicable to Service Type**	**Description**
network-interface-list	Container	Yes	N/A	All	Network Interface config list
network-interface	Container	Yes	N/A	All	Network Interface config.
operation	Enum	No	N/A	All	add, update, and remove.
Ref	String (FDN)	No	No	All	FDN of the existing NI – set of RDNs that consists of MD and NI. Mandatory for Modify operation e.g., MD=CISCO_EPNM!NI=<name of the existing uni>

Carrier Ethernet Service Order Data	Data Type	Mandatory	Modifiable	Applicable to Service Type	Description
Name	String	No	No	All	Name of the new NI to be created. Mandatory while creating new UNI e.g., name of the new uni like UniA , UniZ etc.
ce-data	Container	Yes	N/A		Container for CE Network Interface configuration.
description	String	No	Yes	All	Description of the new NI to be created.
Activate	Boolean	Yes	Yes	All	true/false for Activate NI. Default =true
designation	String	No	No	E-TREE	Possible Values: Root or Leaf.
use-p2-p-connection-with-root	Boolean	No	Yes		Possible Values: true , false
ingress-qos-policy-ref	String (FDN)	No	No	All except EVP-Tree	Ingress QOS Policy Reference. FDN of the existing QOS profile with MD, PROFILE_QOS RDNs. e.g., MD=CISCO_EPNM!ND=tmh-chn-mvso-asr9k-3!POLICY_QOS=TestQosProfile
egress-qos-policy-ref	String (FDN)	No	No	All except EVP-Tree	Egress QOS Policy Reference. FDN of the existing QOS profile with MD, PROFILE_QOS RDNs. e.g., MD=CISCO_EPNM!ND=tmh-chn-mvso-asr9k-3!POLICY_QOS=TestQosProfile
Mtu	Integer	Yes	No	All	The maximum transmission size, in bytes, of a packet passing through the interface. The MTU of the UNI must be greater than or equal to the MTU defined on the service level. MTU Value should be between 1522 and 9216 Default value: 1522
Speed	String	No	No	All	Port speed. You can reduce the speed if this is supported on the port. The port speed provided has to be equal to or smaller than the speed of the port selected.

Carrier Ethernet Service Order Data	Data Type	Mandatory	Modifiable	Applicable to Service Type	Description
Mode	String	Yes	No	All	Mode – values: • FULL DUPLEX—Uses simultaneous communication in both directions between the UNI and the customer's access switch, assuming that both sides support full duplex. If one side does not support full duplex, the port will be brought down. • AUTO NEGOTIATION —Uses the mode that is agreed upon between the two devices, depending on what is supported. Full Duplex will be attempted but if one device does not support it, half duplex will be used. Default value: FULL DUPLEX
enable-link-management	Boolean	No	Yes	All	Enable/disable IEEE 803.1ah Link Management (E-LMI) Enables the customer access switch to get information about this UNI, VLAN IDs, and services on the UNI, and so on. Default value: false
enable-link-oam	Boolean	No	No	All	Enables IEEE 803.1ah link operation and maintenance. If Link OAM is enabled, you will see events relating to the state of the link between this UNI and the customer's access switch. Default value: false **NOTE**: For **LAG** Ports this parameter should be set to false.
ce-vlan-id	String	No	No	EVPL, EVP-LAN, EVP-TREE	Untagged CE-VLAN ID – e.g. 1333. The ID of the CE-VLAN assigned to untagged traffic.
service-multiplexing	Boolean	No	No	EVPL, EVP-LAN, EVP-TREE	Allows multiple services to be provisioned on this UNI. Default value: true
Bundling	Boolean	No	Yes	EVPL, EVP-LAN, EVP-TREE	UNI Allows Bundling. Allows the use of multiple VLANs for this UNI. Default value: false
designation	String	No	No	EP-TREE, EVP-TREE	Designation. Select the role of the UNI in the VC. Values: Root or Leaf.
operator-ref	String (FDN)	No	No	Access EPL, Access EVPL	FDN of the customer object – set of RDN types with MD, CUSTOMER.

Carrier Ethernet Service Order Data	Data Type	Mandatory	Modifiable	Applicable to Service Type	Description
protection-mechanism	String	No	No	Access EPL, Access EVPL	Protection Mechanism. Specify a protection mechanism if ENNI comprises of more than one port. Values: None, Link Aggregation, and other.
frame-format	String	No	No	Access EPL, Access EVPL	Frame Format Values: Double Tagged.
all-to-one-bundling	Boolean	No	No		true or false.

The table below describes the match and advanced criteria for the QinQ Configuration (applicable to only EVPL, Access EVPL, and EVP-LAN):

Carrier Ethernet Service Order Data	Data Type	Mandatory	Modifiable	Applicable to Service Type	Description
qinq-data	Container	Yes	N/A	EVPL, Access EVPL, EVP-LAN, EVP-Tree	QinQ Configuration
match-type	MatchTypeEnumType	Yes	Yes	EVPL, Access EVPL, EVP-LAN, EVP-Tree	Possible Values: default, dot1q, dot1ad, and untagged.
vlan-id-list	String	Yes	Yes	EVPL, Access EVPL, EVP-LAN, EVP-Tree	Outer VLANs. The VLAN or range of VLANs to be used for this service, e.g. 12 or 123-145, 155.
inner-vlan-id-list	String	No	Yes	EVPL, Access EVPL, EVP-LAN, EVP-Tree	Inner VLANs The VLAN or range of VLANs to be used, e.g. 12 or 123-145, 155.
Untagged	Boolean	No	Yes	EVPL, Access EVPL, EVP-LAN, EVP-Tree	Allow the service frames to be untagged (one service allowed per UNI). Default value: false
priority-tagged	Boolean	No	Yes	EVPL, Access EVPL, EVP-LAN, EVP-Tree	Mentions priority tagged or not Default value: false
match-exact	Boolean	No	Yes	EVPL, Access EVPL, EVP-LAN, EVP-Tree	Mentions do exact match or not Default value: false

Carrier Ethernet Service Order Data	Data Type	Mandatory	Modifiable	Applicable to Service Type	Description
qinq-data	Container	Yes	N/A	EVPL, Access EVPL, EVP-LAN, EVP-Tree	QinQ Configuration
vlan-cos	String	No	Yes	EVPL, Access EVPL, EVP-LAN, EVP-Tree	Outer VLAN CoS e.g., any string value
inner-vlan-cos	String	No	Yes	EVPL, Access EVPL, EVP-LAN, EVP-Tree	Inner VLAN CoS e.g., any string value
ether-type	EtherType	No	Yes	EVPL, Access EVPL, EVP-LAN, EVP-Tree	Container for EtherType options that holds following elements: ipv4, ipv6, pppoeAll, pppoeDiscovery, and pppoeSession.
ipv4	Boolean	No	Yes	EVPL, Access EVPL, EVP-LAN, EVP-Tree	Ethertype - ipv4 Default value = false
ipv6	Boolean	No	Yes	EVPL, Access EVPL, EVP-LAN, EVP-Tree	Ethertype -ipv6 Default value = false
pppoe-all	Boolean	No	Yes	EVPL, Access EVPL, EVP-LAN, EVP-Tree	Ethertype -pppoeAll Default value = false
pppoe-discovery	Boolean	No	Yes	EVPL, Access EVPL, EVP-LAN, EVP-Tree	Ethertype -pppoeDiscovery Default value = false
pppoe-session	Boolean	No	Yes	EVPL, Access EVPL, EVP-LAN, EVP-Tree	Ethertype - pppoeSession Default value = false
rewrite-definition	rewrite-definition-type	No	Yes	EVPL, Access EVPL, EVP-LAN, EVP-Tree	Container element for Rewrite Definition (Advanced Frame Manipulation). Contains the following elements: pop-operation, push-operation, and translate-operation.
pop-operation	Container	No	N/A	EVPL, Access EVPL, EVP-LAN, EVP-Tree	Pop action configuration container element.

Carrier Ethernet Service Order Data	Data Type	Mandatory	Modifiable	Applicable to Service Type	Description
qinq-data	Container	Yes	N/A	EVPL, Access EVPL, EVP-LAN, EVP-Tree	QinQ Configuration
push-operation	Container	No	N/A	EVPL, Access EVPL, EVP-LAN, EVP-Tree	Push action configuration container element.
translate-operation	translate-operation-type	No	N/A	EVPL, Access EVPL, EVP-LAN, EVP-Tree	Translate action configuration container element.
tag-count	tag-count-enum-type	No	Yes	EVPL, Access EVPL, EVP-LAN, EVP-Tree	Values: one and two. Child element of pop-operation and push-operation.
tag-translation	Tag-translation-enum-type	No	Yes	EVPL, Access EVPL, EVP-LAN, EVP-Tree	Values: one-to-one, one-to-two, two-to-one, two-to-two Child element of translate-operation.
match-type	match-type-enum-type	No	Yes	EVPL, Access EVPL, EVP-LAN, EVP-Tree	Values: dot1q and dot1ad. Child element of push-operation, translate-operation.
inner-vlan-id	String	No	Yes	EVPL, Access EVPL, EVP-LAN, EVP-Tree	VLAN ID Child element of push-operation, translate-operation.
outer-vlan-id	String	No	Yes	EVPL, Access EVPL, EVP-LAN, EVP-Tree	VLAN ID Child element of push-operation, translate-operation.

Carrier Ethernet Service Order Data	Data Type	Mandatory	Modifiable	Applicable to Service Type	Description
forwarding-path	Container element	Yes	N/A	EPL/EVPL over tunnel	Container for Forwarded Path entries.
pseudowire-settings	Container element for entries	No	N/A	EPL, EVPL	Container for Pseudowire Settings.

Carrier Ethernet Service Order Data	Data Type	Mandatory	Modifiable	Applicable to Service Type	Description
preferred-path-ref	String (FDN)	Yes (for bi-directional-tunnel)	Yes	EPL, EVPL	Preferred Path reference for bi-directional-tunnel. e.g., MD=CISCO_EPNM!VC=<existing path name> where “existing path name” could be any value like “TE Link 301_6.6.6.6_0”
src-dest-preferred-path-ref	String (FDN)	Yes (for uni-directional tunnel)	Yes	EPL, EVPL	Preferred Path reference from source to detination e.g., MD=CISCO_EPNM!VC=<existing path name> where “existing path name” could be any value like “TE Link 301_6.6.6.6_0”
dest-src-preferred-path-ref	String (FDN)	Yes (for uni-directional tunnel)	Yes	EPL, EVPL	Preferred Path reference from destination to source e.g., MD=CISCO_EPNM!VC=<existing path name> where “existing path name” could be any value like “TE Link 301_6.6.6.6_0”
enable-control-word	Boolean	No	Yes	EPL, EVPL	Enable Control Word Default value = true
fallback-to-ldp	Boolean	No	Yes	EPL, EVPL	Fallback to LDP Default value = false
interworking-option	String	No	Yes	EPL, EVPL	Interworking Option
service-bandwidth	Long	No	Yes	EPL	Service bandwidth
pw-bandwidth	String	No	Yes	EPL	Pseudowire bandwidth
mpls-te-data	Container element for mpls te data	No	N/A	EPL, EVPL	Container for MPLS TE
te-tunnel-type	String	No	No	EPL, EVPL	Tunnel Type: values – uni-directional, bi-directional For EPL, default value is bi-directional For EVPL, default value is uni-directional
enable-fault-oam	Boolean	No	Yes	EPL, EVPL	Enable fault OAM True/False, Default is True
protection-type	Enum (Working, Working+Protected)	Yes	Yes	EPL, EVPL	Type of MPLS Tunnel Path Protection.
enable-autoroute	Boolean	No	Yes	EPL, EVPL	Enable Auto Route True/False, Default is True
enable-frr	Boolean	No	Yes	EVPL	Enable Fast Re-route. Applicable for uni-directional tunnel only

Carrier Ethernet Service Order Data	Data Type	Mandatory	Modifiable	Applicable to Service Type	Description
enable-auto-bandwidth	Boolean	No	Yes	EVPL	Enable Auto Bandwidth. Applicable for uni-directional tunnel only
enable-autoroute	Boolean	No	Yes	EVPL	This attribute specifies whether to enable autoroute option
enable-lockdown	Boolean	No	Yes	EVPL	This attribute specifies whether to enable lockdown option
protection-type	Enum	No	Yes	EVPL	This attributes specifies protection type and allowed values are: Working, protected, working+protected, working+restore, working+protected+restore
tunnel-setting	Container	Yes	N/A	EPL, EVPL	Container for tunnel settings.
affinity-bits	String (Range: 0x0-0xFFFFFFFF, Default: 0x0)	No	Yes	EPL, EVPL	Affinity Value
affinity-mask	String (Range: 0x0-0xFFFFFFFF, Default: 0x0)	No	Yes	EPL, EVPL	Affinity mask on desired link attributes.
bfd-settings	Container	No	N/A	EPL, EVPL	Container for bfd settings.
Enable	Boolean	Yes	No	EPL, EVPL	Enable bfd.
min-interval	integer(Range: 15 to 200 Default: 100)	Yes	Yes	EPL, EVPL	The minimum control packet interval for BFD sessions in milliseconds.
multiplier	integer (default 3)	Yes	Yes	EPL, EVPL	Number of times a packet is missed before BFD declares the session down.

The table below lists the containers for Y1731 test config entries applicable to different types of CE services.

Carrier Ethernet Service Order Data	Data Type	Mandatory	Modifiable	Applicable to Service Type	Description
y1731-test-config	**Container**	**No**	**N/A**	**EPL, EVPL**	**Container for y1731 test data. Refer section 4.23.4.1.3 for details**
y1731-result-list	**Container**	**No**	**N/A**	**EPL,EVPL**	**Container for Y1731 result list**
y1731-result-row	**Container**	**No**	**N/A**	**EPL,EVPL**	**Container for Y1731 result row**
service-ref	String	No	Yes	EPL,EVPL	service reference (fdn) for this test results. e.g., MD=CISCO_EPNM!CFS=CemLink#Con_26551659
source-tp-ref	String	No	Yes	EPL,EVPL	source tp reference (fdn) e.g., MD=CISCO_EPNM!ND=SJ-NCS4216-23.CISCO!PTP=name=T1 0/5/21;lr=lr-t1

destination-tp-ref	String	No	Yes	EPL,EVPL	destination tp reference (fdn) e.g., MD=CISCO_EPNM!ND=SJ-NCS4206-21.CISCO!PTP=name=T1 0/3/21;lr=lr-t1
delay-result	**Container**	**No**	**Yes**	**EPL,EVPL**	**Container for delay result**
Availability	Int	No	Yes	EPL,EVPL	Availability
status	String	No	Yes	EPL,EVPL	Status
two-way-delay	String	No	Yes	EPL,EVPL	Two Way Delay
two-way-delay-unit	String	No	Yes	EPL,EVPL	Two Way Delay Unit
two-way-jitter	String	No	Yes	EPL,EVPL	Two Way Jitter
two-way-jitter-unit	String	No	Yes	EPL,EVPL	Two Way Jitter Unit
loss-result	**Container**	**No**	**N/A**	**EPL,EVPL**	**Container for loss result**
availability	Int	No	Yes	EPL,EVPL	Availability
backward-fLR	String	No	Yes	EPL,EVPL	Backward FLR
forward-fLR	String	No	Yes	EPL,EVPL	Forward FLR
status	String	No	Yes	EPL,EVPL	Status
y1564-test-config	**Container**	**No**	**N/A**	**EPL, EVPL**	**Container for y1564 test data. Refer section 4.23.4.1.2 for details**
y1564-result	**Container**	**No**	**N/A**	**EPL,EVPL**	**Container of the Y1564 result**
service-ref	String	No	Yes	EPL,EVPL	service reference (fdn) for this test results. e.g., MD=CISCO_EPNM!CFS=CemLink#Con_26551659
source-tp-ref	String	No	Yes	EPL,EVPL	source tp reference (fdn) e.g., MD=CISCO_EPNM!ND=SJ-NCS4216-23.CISCO!PTP=name=T1 0/5/21;lr=lr-t1
destination-tp-ref	String	No	Yes	EPL,EVPL	destination tp reference (fdn) e.g., MD=CISCO_EPNM!ND=SJ-NCS4206-21.CISCO!PTP=name=T1 0/3/21;lr=lr-t1
source-device-name	String	No	Yes	EPL,EVPL	Source Device Name
destination-device-name	String	No	Yes	EPL,EVPL	Destination Device Name
source-eFP	Int	No	Yes	EPL,EVPL	Source EFP
destination-eFP	Int	No	Yes	EPL,EVPL	Destination EFP
duration	String	No	Yes	EPL,EVPL	test duration
timestamp	String	No	Yes	EPL,EVPL	Timestamp
steps	String	No	Yes	EPL,EVPL	Steps
throughput	String	No	Yes	EPL,EVPL	Throughput

y1564-result-row-list	Container	No	N/A	EPL,EVPL	Container for Y1564 Result Row List
y1564-result-row	**Container**	**No**	**N/A**	**EPL,EVPL**	**Container for Y1564 Result Row**
availability	String	No	Yes	EPL,EVPL	Availability
bytes-received	String	No	Yes	EPL,EVPL	bytes received
bytes-transmitted	String	No	Yes	EPL,EVPL	bytes transmitted
packets-size	String	No	Yes	EPL,EVPL	packet size
packets-received	String	No	Yes	EPL,EVPL	packets received
packets-transmitted	String	No	Yes	EPL,EVPL	packets transmitted
duration	String	No	Yes	EPL,EVPL	test duration
frame-loss	String	No	Yes	EPL,EVPL	frame loss
frame-loss-rate	String	No	Yes	EPL,EVPL	frame-loss-rate
configured-rate	Int	No	Yes	EPL,EVPL	configured-rate
actual-rate	Int	No	Yes	EPL,EVPL	actual rate
range	String	No	Yes	EPL,EVPL	Range
step	Int	No	Yes	EPL,EVPL	Step

4.23.3.2 *Service Order Data – CEM*

CEM Service Order Data	Data Type	Mandatory	Modifiable	Description
service-type	String (CEM)	Yes	No	The type of service.
service-subtype	String (t1,t3,e1,e3,vt1.5,vt2,sts1, sts3,sts48,sts192, DS0)	Yes	No	Service subtypes
service-template	String	No	Yes	The template to be associated with the service.
customer-ref	FDN	No	No	Customer FDN
service-name	String	Yes	No	A unique name for the service.
service-description	String	No	Yes	A unique description about the service.
service-activate	Boolean	No	Yes	Turn service on/off.
frame-type	Enum (CEP, SATOP, CESoPSN)	No	No	CEM Framing Type.
payload-	Integer (Range; 92-	No	Yes	The number of bytes in the payload of each

size	960)			packet.
dejitter-buffer-size	Integer (Range: 1 - 32)	No	Yes	The size of the buffer, in milliseconds.
idle-pattern-length	Integer	No	Yes	
idle-pattern	String (Range: 0x0 to 0xFF, Default: 0xFF)	No	Yes	The idle pattern option specifies the idle pattern to transmit when the circuit goes down.
dummy-mode	Enum (last-frame, user-defined)	No	Yes	Dummy mode enables a bit pattern for filling in for lost or corrupted frames.
dummy-pattern	String (Range: 0x0 to 0xFF, Default: 0xFF)	No	Yes	User Define Dummy Pattern
rtp-header-enabled	Boolean	No	Yes	Enable RTP Header.
rtp-header-compression-enabled	Boolean	No	Yes	Enable RTP Compression.
termination-point-list	Container	Yes	N/A	termination point list
termination-point-config	Container	Yes	N/A	termination point config
tp-ref	String (FDN)	Yes	No	port reference FDN for working path controller.
ingress-qos-policy-ref	String (FDN)	No	Yes	QoS policy FDN for ingress policy in FDN format e.g., MD=CISCO_EPNM!ND=tmh-chn-mvso-asr9k-3!POLICY_QOS=TestQosProfile
egress-qos-policy-ref	String (FDN)	No	Yes	QoS policy FDN for egress policy in FDN format. e.g., MD=CISCO_EPNM!ND=tmh-chn-mvso-asr9k-3!POLICY_QOS=TestQosProfile
working-path	PathType	Yes	No	Working path
protecting-path	PathType	No	No	Protection path
clock-source	String (Line, Internal)	No	Yes	Clock Source
recovered-clock	String (Adaptive Clock Recovery, Differential Clock Recovery)	No	Yes	Recovered Clock
higher-order-path				
available-path-ref	String	No	No	High Order Path reference FDN.
path-mode	String	Yes	No	Mode of the path used Allowed values: STS1, STS3C, STM1, STS12C, STM4, STS48C, STM16, STS192C,

				STM64, T3,E3, VT15, VT2, T1, E1, STS3C_VCAT, CT3, CT3_E1, VC11_T1, VC12_E1, UNFRAMED.
lower-order-path	String			Low Order Path
available-path-ref	String	No	No	Low Order Path reference
ds0-time-slots	String	No	No	Comma separated ds0 time slot numbers.
forwarding-path	Container element	Yes	N/A	Container for Forwarded Path entries.
pseudowire-settings	Container element for entries	No	N/A	Container for Pseudowire Settings.
preferred-path-ref	String (FDN)	Yes	Yes	Preferred Path reference, FDN of Bi-directional tunnel e.g., MD=CISCO_EPNM!VC=<existing path name> where “existing path name” could be any value like “TE Link 301_6.6.6.6_0”
enable-control-word	Boolean	No	Yes	Enable Control Word Default value = true
fallback-to-ldp	Boolean	No	Yes	Fallback to LDP Default value = false
interworking-option	String	No	Yes	Interworking Option Default value = could be left blank
service-bandwidth	Long	No	Yes	Interworking Option
pw-bandwidth	String	No	Yes	Service bandwidth
mpls-te-data	Container	No	N/A	Container for MPLS TE
te-tunnel-type	String	No	No	Tunnel Type: values – uni-directional, bi-directional For CEM. Default value: bi-directional
enable-fault-oam	Boolean	No	Yes	Enable fault OAM true/false. Defaut value: true
protection-type	Enum	Yes	Yes	Type of MPLS Tunnel Path Protection. Working, Working+Protected Default value = Working
enable-autoroute	Boolean	No	Yes	Enable Auto Route true/false. Default value: true

enable-frr	Boolean	No	Yes	Enable Fast Re-route. Applicable for uni-directional tunnel only Default value: false
enable-auto-bandwidth	Boolean	No	Yes	Enable Auto Bandwidth. Applicable for uni-directional tunnel only Default value: false
enable-autoroute	Boolean	No	Yes	This attribute specifies whether to enable autoroute option Default value: false
enable-lockdown	Boolean	No	Yes	This attribute specifies whether to enable lockdown option Default value: false
protection-type	Enum	No	Yes	This attributes specifies protection type and allowed values are: Working , Working+Protected, Working+Restore, Working+Protected+Restore Default value: Working
bfd-settings	Container	No	N/A	Container for bfd settings.
Enable	Boolean	Yes	No	Enable BFD Default value: true
min-interval	integer	Yes	Yes	The minimum control packet interval for BFD sessions in milliseconds. Range: 15 to 200 Default value: 100
Multiplier	integer	Yes	Yes	Number of times a packet is missed before BFD declares the session down. Range: 3 to 50 Default value: 3

The table below lists the containers for BERT config entries applicable to different types of CEM services.

CEM Service Order Data	**Data Type**	**Mandatory**	**Modifiable**	**Description**
bert-config	**Container**	**No**	**N/A**	**Container for bert config. Refer section 4.23.4.1.1 for details**
bert-result-list	**Container**	**No**	**N/A**	**Container of the BERT Result List**
bert-result	**Container**	**No**	**N/A**	**Container of the BERT result**
service-ref	String	No	N/A	FDN of the customer facing service
source-tp-ref	String	No	N/A	FDN of the source port. If not specified, takes source end tp-ref of the provisioning order data e.g. , MD=CISCO_EPNM!ND=SJ-NCS4216-23.CISCO!PTP=name=T1 0/5/21;lr=lr-t1
destination-tp-ref	String	No	N/A	FDN of the destination port. If not specified, takes sink end tp-ref in the provisioning order data. e.g., MD=CISCO_EPNM!ND=SJ-NCS4206-21.CISCO!PTP=name=T1 0/3/21;lr=lr-t1
unmanaged-destination	Boolean	No	Yes	“true” if destination is unmanaged. default “false”
Direction	Enum (system,line)	No	Yes	Test direction
Errors	Int	No	Yes	error count

duration	Int (minutes)	No	Yes	Duration in minutes
pattern	String	No	Yes	bert patterns. valid values: 0s, 1s, 2^11, 2^15, 2^20-O153, 2^20-QRSS, 2^23, alt-0-1

4.23.3.3 *Service Order Data – UNI*

The table below lists the Order Data elements and the supported values for UNI. Note that the table below describes all the elements in service order data combined for service and endpoint configuration for UNI.

UNI Service Order Data	**Data Type**	**Mandatory**	**Modifiable**	**Description**
service-name	String	Yes	No	Unique name to identify the circuit/VC.
service-description	String	No	Yes	Description of the VC that will help to identify the VC.
service-type	String	Yes	No	Service Type. Possible value: carrier-ethernet-vpn
service-subtype	String	Yes	No	Service SubType. Possible Values: UNI
customer-ref	String	No	No	Customer FDN. e.g., D=CISCO_EPNM!CUSTOMER=<customer name> Default value of “customer name” is “Infrastructure”
service-activate	Boolean	No	Yes	Activate Service. Default value = true
termination-point-list	List container	Yes	N/A	List of connection termination point configurations.
termination-point-config	Container	Yes	N/A	termination point config
tp-ref	String (FDN)	Yes	No	FDN of the port to use - set of RNDs that consists of MD, ME and PTP or FTP instance ids. For example: “MD=CISCO_EPNM!ND=tmh-chn-mvso-asr9k-2.cisco.com!FTP=name=GigabitEthernet0/4;lr=lr-gigabit-ethernet”
network-interface-name	String	No	No	Name of the new NI to be created. Mandatory while creating new UNI e.g., new uni name like UniA , UniZ etc.
network-interface-ref	String	No	No	Name of the existing NI to be re-used. Mandatory while using existing UNI e.g.,MD=CISCO_EPNM!NI=<existing NI name>
network-interface-list	List container	Yes	N/A	List of network interface configurations.
network-interface	Container	Yes	N/A	Network Interface config.

UNI Service Order Data	Data Type	Mandatory	Modifiable	Description
Ref	String (FDN)	No	No	FDN of the existing NI – set of RDNs that consists of MD and NI. Mandatory for Modify operation e.g., MD=CISCO_EPNM!NI=<existing uni name> Note: existing uni name value should be same as the one mentioned for “network-interface-ref”.
name	String	No	No	Name of the new NI to be created. Mandatory while creating new UNI e.g., it’s value should be same as the value mentioned for “network-interface-name” tag
ce-data	ce-data-network-interface-type	Yes	N/A	Container for CE Network Interface configuration.
description	String	No	Yes	Description of the new NI to be created.
activate	Boolean	Yes	Yes	true/false for Activate NI. Default value: true
ingress-qos-policy-ref	String (FDN)	No	No	Ingress QOS Policy Reference. FDN of the existing QOS profile with MD, PROFILE_QOS RDNs. e.g., MD=CISCO_EPNM!ND=tmh-chn-mvso-asr9k-3!POLICY_QOS=<TestQosProfile>
egress-qos-policy-ref	String (FDN)	No	No	Egress QOS Policy Reference. FDN of the existing QOS profile with MD, PROFILE_QOS RDNs. e.g., MD=CISCO_EPNM!ND=tmh-chn-mvso-asr9k-3!POLICY_QOS=<TestQosProfile>
mtu	Integer	Yes	No	The Maximum Transmission Size, in bytes, of a packet passing through the interface. The MTU of the UNI must be greater than or equal to the MTU defined on the service level. MTU Value should be between 1522 and 9216 Default value: 1522
speed	String	No	No	Port speed. You can reduce the speed if this is supported on the port.

UNI Service Order Data	Data Type	Mandatory	Modifiable	Description
mode	String	Yes	No	Mode – values: • FULL DUPLEX—Uses simultaneous communication in both directions between the UNI and the customer's access switch, assuming that both sides support full duplex. If one side does not support full duplex, the port will be brought down. • AUTO NEGOTIATION —Uses the mode that is agreed upon between the two devices, depending on what is supported. Full Duplex will be attempted but if one device does not support it, half duplex will be used. Default value: FULL DUPLEX
enable-link-management	Boolean	No	Yes	Enables the customer access switch to get information about this UNI, VLAN IDs, and services on the UNI, and so on. Default value = false
enable-link-oam	Boolean	No	No	Enables IEEE 803.1ah link operation and maintenance. If Link OAM is enabled, you will see events relating to the state of the link between this UNI and the customer's access switch. **NOTE**: For **LAG** Ports this parameter should be set to false.
ce-vlan-id	String	No	No	Untagged CE-VLAN ID – e.g. 1333. The ID of the CE-VLAN assigned to untagged traffic.
service-multiplexing	Boolean	No	No	Allows the UNI to participate in more than one EVC instance. Default value: true
Bundling	Boolean	No	Yes	UNI Allows Bundling. Allows the use of multiple VLANs for this UNI. Default value: false
all-to-one-bundling	Boolean	No	No	true or false. Default value: false

4.23.3.4 *Service Order Data – ENNI*

The table below lists the Order Data elements and the supported values for ENNI. Note that the table below describes all the elements in service order data combined for service and endpoint configuration for ENNI.

ENNI Service Order Data	Data Type	Mandatory	Modifiable	Description
service-name	String	Yes	No	Unique name to identify the circuit/VC.
service-description	String	No	Yes	Description of the VC that will help to identify the VC.
service-type	String	Yes	No	Service Type. Possible value: carrier-ethernet-vpn
service-subtype	String	Yes	No	Service SubType. Possible Values: ENNI

ENNI Service Order Data	Data Type	Mandatory	Modifiable	Description
customer-ref	String	No	No	Customer FDN. e.g., D=CISCO_EPNM!CUSTOMER=<customer name> Default value of “customer name” is “Infrastructure”
service-activate	Boolean	No	Yes	Activate Service. Default value = true
termination-point-list	List container	Yes	N/A	List of connection termination point configurations.
termination-point-config	Container	Yes	N/A	termination point config
tp-ref	String (FDN)	Yes	No	FDN of the port to use - set of RNDs that consists of MD, ME and PTP or FTP instance ids. For example: “MD=CISCO_EPNM!ND=tmh-chn-mvso-asr9k-2.cisco.com!FTP=name=GigabitEthernet0/4;lr=lr-gigabit-ethernet”
network-interface-name	String	No	No	Name of the new NI to be created. Mandatory while creating new ENNI e.g., new uni name like UniA , UniZ etc.
network-interface-ref	String	No	No	Name of the existing NI to be re-used. Mandatory while using existing ENNI e.g.,MD=CISCO_EPNM!NI=<existing NI name>
network-interface-list	List container	Yes	N/A	List of network interface configurations.
network-interface	Container	Yes	N/A	Network Interface config.
Ref	String (FDN)	No	No	FDN of the existing NI – set of RDNs that consists of MD and NI. Mandatory for Modify operation e.g., MD=CISCO_EPNM!NI=<existing uni name> Note: existing uni name value should be same as the one mentioned for “network-interface-ref”.
name	String	No	No	Name of the new NI to be created. Mandatory while creating new ENNI e.g., it’s value should be same as the value mentioned for “network-interface-name” tag
ce-data	ce-data-network-interface-type	Yes	N/A	Container for CE Network Interface configuration.
description	String	No	Yes	Description of the new NI to be created.

ENNI Service Order Data	Data Type	Mandatory	Modifiable	Description
activate	Boolean	Yes	Yes	true/false for Activate NI. Default value: true
ingress-qos-policy-ref	String (FDN)	No	No	Ingress QOS Policy Reference. FDN of the existing QOS profile with MD, PROFILE_QOS RDNs. e.g., MD=CISCO_EPNM!ND=tmh-chn-mvso-asr9k-3!POLICY_QOS=<TestQosProfile>
egress-qos-policy-ref	String (FDN)	No	No	Egress QOS Policy Reference. FDN of the existing QOS profile with MD, PROFILE_QOS RDNs. e.g., MD=CISCO_EPNM!ND=tmh-chn-mvso-asr9k-3!POLICY_QOS=<TestQosProfile>
mtu	Integer	Yes	No	The Maximum Transmission Size, in bytes, of a packet passing through the interface. The MTU of the ENNI must be greater than or equal to the MTU defined on the service level. MTU Value should be between 1522 and 9216 Default value: 1522
speed	String	No	No	Port speed. You can reduce the speed if this is supported on the port.
mode	String	Yes	No	Mode – values: • FULL DUPLEX—Uses simultaneous communication in both directions between the UNI and the customer's access switch, assuming that both sides support full duplex. If one side does not support full duplex, the port will be brought down. • AUTO NEGOTIATION —Uses the mode that is agreed upon between the two devices, depending on what is supported. Full Duplex will be attempted but if one device does not support it, half duplex will be used. Default value: FULL DUPLEX
enable-link-management	Boolean	No	Yes	Enables the customer access switch to get information about this ENNI, VLAN IDs, and services on the UNI, and so on. Default value = false
enable-link-oam	Boolean	No	No	Enables IEEE 803.1ah link operation and maintenance. If Link OAM is enabled, you will see events relating to the state of the link between this ENNI and the customer's access switch. **NOTE**: For **LAG** Ports this parameter should be set to false.
ce-vlan-id	String	No	No	Untagged CE-VLAN ID – e.g. 1333. The ID of the CE-VLAN assigned to untagged traffic.

ENNI Service Order Data	Data Type	Mandatory	Modifiable	Description
service-multiplexing	Boolean	No	No	Allows the ENNI to participate in more than one EVC instance. Default value: true
Bundling	Boolean	No	Yes	ENNI Allows Bundling. Allows the use of multiple VLANs for this ENNI. Default value: false
all-to-one-bundling	Boolean	No	No	true or false. Default value: false

4.23.3.5 *QoS policy support*

- The device discovered QoS policy is supported for CEM provisioning: ingress-qos-policy-ref and egress-qos-policy-ref.
- It requires the QoS policy to be configured on the device and discovered in Cisco EPN Manager.
- This means on the CEM request service end, the QoS policy device should be the same as the network interface device.

4.23.3.6 *Partial service support*

- One of the "<termination-point-config>" in a CEM provisioning request can be an Unmanaged endpoint.
- If both 2 "<termination-point-config>" are unmanaged, an error occurs.
- Use this XML structure for an unmanaged endpoint in the request:

```
 <ns:termination-point-config>
<p:directionality>sink</p:directionality>
          <ns:unmanaged-termination-point>
              <ns:device-name>testabc2</ns:device-name>
              <ns:new-device>true</ns:new-device>
              <ns:device-ip-address>3.2.1.3</ns:device-ip-address>
              <ns:device-ldp-address>2.3.1.6</ns:device-ldp-address>
              <ns:vc-id>200</ns:vc-id>
          </ns:unmanaged-termination-point>
 </ns:termination-point-config>
```

  - <device-name> is mandatory. Use a string as a third party device name.
  - <directionality> is mandatory. Allowed values are source, sink and bidirectional
  - <new-device> is boolean and is used to indicate a new or existing device.
    - If it is true, you also need to provide a <device-ip-address> which should not exist in Cisco EPN Manager.
    - If it is false, there is no need to provide a <device-ip-address>. However you need to provide the third party device with the same <device-name> that exists in Cisco EPN Manager.
  - <device-ip-address> is the management IP address of the third party device. When <new-device> is true, the <device-ip-address> should not exist in Cisco EPN Manager.
  - <device-ldp-address> is the LDP IP address on the third party LDP configuration.
  - <vc-id> is an integer for vc.

4.23.3.7 *Service Order Data - MPLS Layer3 Link*

service-order-data - Order Data for MPLS-TE Service				
Service Configuration				
Data	**Type**	**Mandatory**	**Modifiable**	**Description**
service-name	String	Yes	Yes	A unique name for the L3 Link.
service-description	String	No	Yes	Description of L3 Link.

service-type	String (mpls-te-tunnel)	Yes	No	The type of service.
service-subtype	String (layer3-link)	Yes	No	Service subtypes.
l3-link-data	Container	Yes	No	Container for Layer3 link settings.
l2-discovery-protocol	String	Yes	Yes	L2 discovery protocol used for L3 Link. Possible values: NONE ,CDP , LLDP and ALL Default: NONE
routing-protocol	String	Yes	No	Routing protocol value used for L3 Link. Possible values: OSPF , BGP and ISIS Default: OSPF
link-vlan	Integer	No	Yes	Link VLAN in the range from 1 to 4094.
enable-mpls-te	Boolean	No	Yes	This is a flag to enable MPLS TE on the L3 Link. Default value: false
termination-point-list	**List container**	**Yes**	**No**	**List of termination point configurations.**
termination-point-config		**Yes**	**No**	**Termination point config.**
Directionality	Enum	Yes	No	Values: source, sink, and bidirectional.
tp-ref	fdn	Yes	No	FDN - is device from/to where link is created. e.g., MD=CISCO_EPNM!ND=EPNNCS4216-120.20!FTP=name=GigabitEthernet0/2/0;lr=lr-gigabit-ethernet
ip-address	String	Yes	No	IP address of A or Z end.
subnet-mask	String	Yes	No	Subnet mask of A or Z end. Possible values: 8 to 31.
ingress-qos-policy-ref	fdn	No	Yes	Ingress QOS Policy Reference. FDN of the existing QOS profile with MD, POLICY_QOS RDNs. e.g., ingress-qos-policy-ref>MD=CISCO_EPNM!ND=EPASR907-120.22.SWIM.cisco.com!POLICY_QOS=<qos policy name>
egress-qos-policy-ref	fdn	No	Yes	Egress QOS Policy Reference. FDN of the existing QOS profile with MD, POLICY_QOS RDNs. e.g., MD=CISCO_EPNM!ND=EPASR907-120.22.SWIM.cisco.com!POLICY_QOS==<qos policy name>
L3-link-data	Container	Yes	No	Container for L3 Link Data.
enable-bv-interface	Boolean	No	No	This is a flag to enable bridge + virtual interface on the L3 Link. Default value: true
loopback-interface-ref	String	No	No	This is required only for OSPF and ISIS. Not applicable for BGP. e.g., MD=CISCO_EPNM!ND=EPNNCS4216-120.41!FTP=name=Loopback79;lr=lr-loopback
Ospf	Container	No	No	Container for OSPF data. **Note:** This tag is mandatory when value of "routing-protocol" is OSPF.

process-id	String	Yes	No	OSPF process ID configured on the device.
Area	String	No	No	Allowed Value: '0' , NOTE: NCS4K supports only one OSPF instance and it should have area id is 0.
Metric	String	No	Yes	OSPF link Path selection metric. Value within 1-65535 range.
enable-synce	Boolean	No	Yes	Flag to indicate synce enable or not for OSPF L3 Link. Default value: false
synce-bridge-domain	Boolean	No	No	Flag to indicate sync e bridge domain or not for OSPF L3 Link. Default value: false
mpls-te	Container	No	No	Container for MPLS TE.
te-metric	String	No	Yes	TE Tunnel path selection metric. Value within 1-65535 range.
te-attributes	String	No	Yes	TE related attributes values used for L3 Link. Possible values: 00, 03, 0 or 3.
is-percentage	Boolean	No	Yes	Flag indicate link bandwidth allocation in percentage. Default value: false
bandwidth-unit	String	No	Yes	This attribute specifies the associated transport link Bandwidth (Units in Kbps, Mbps or Gbps).
global-bandwidth	String	No	Yes	Total Bandwidth reserved for the interface in percentage or Bandwidth Unit for input.
subpool-bandwidth	String	No	Yes	Portion of bandwidth reserved for the interface in percentage or Bandwidth Unit for input.
Isis	Container	No	No	Container for ISIS data. **Note:** This tag is mandatory when value of "routing-protocol" is ISIS.
process-id	String	Yes	Yes	ISIS process id configured on the device.
Networks	String	Yes	No	Network Id configured on the device.
Metric	String	No	Yes	ISIS metric used for L3 Link. Value within 1-65535 range.
circuit-type	String	No	Yes	Circuit type used. Possible values: NONE ,Level-1, Level-2-only, Level-1-2 Default value: NONE
level1-metric	String	No	Yes	Level1 metric , it will be used only when value of "circuit-type" is Level-1 or Level-1-2 Value within 1-65535 range.
level2-metric	String	No	Yes	Level2 metric , it will be used only when value of "circuit-type" is Level-2-only or Level-1-2 Value within 1-65535 range.
authentication-mode	String	No	Yes	Authentication mode used. Possible values: HMAC_SHA1, HMAC_SHA256, HMAC_SHA384, HMAC_SHA512, HMAC_MD5, TEXT
authentication-key-chain	String	No	Yes	Authentication key chain configured on the device.

authentication-for-send-only	Boolean	No	Yes	Flag to indicate authentication-for-send-only. Default value: false
enable-synce	Boolean	No	Yes	Flag to indicate synce enable or not. Default value: false
synce-bridge-domain	Boolean	No	No	Flag to indicate sync e bridge domain or not. Default value: false
Bgp	Container	No	No	Container for BGP data. **Note:** This tag is mandatory when value of "routing-protocol" is BGP.
bgp-as-number	String	Yes	No	Bgp as number configured on the device for BGP link.
route-policy	String	No	Yes	Route policy configured on the device used for BGP link.
route-reflector-client	Boolean	No	Yes	Flag to indicate route reflector client to be used or not. Default value: false
use-aigp	Boolean	No	Yes	Flag to indicate use-aigp or not. Default value: false
update-source-ref	String	No	Yes	Update source for BGP link. This should not be part of user input when value of "use-aigp" true. e.g., MD=CISCO_EPNM!ND=NCS4206-C!FTP=name=BDI1;lr=lr-bridge
password-type	String	No	Yes	Password type used for BGP L3 Link. Possible values: Encrypted or PlainText Default value: Encrypted
password	String	No	Yes	Password used for BGP L3 Link.
enable-mpls	Boolean	No	Yes	Flag to indicate enable mpls or not. Default value: false
enable-synce	Boolean	No	Yes	Flag to indicate enable sync e or not. Default value: false
synce-bridge-domain	Boolean	No	No	Flag to indicate enable sync e bridge domain or not. Default value: false
bfd-settings	Container	No	No	Container for BFD Settings.
bfd-template	String	No	Yes	Bfd template configured on selected device and port of L3 Link.
bfd-min-interval	String	No	No	Bfd min interval to be used for L3 Link. This tag should be used as input only when "bfd-template" is not used. Default value =100.
bfd-multiplier	String	No	Yes	Bfd multiplier to be used for L3 Link. This tag should be used as input only when "bfd-template" is not used.
bfd-fast-detect	Boolean	No	Yes	Flag to indicate bfd fast detect to be used or not for the L3 Link. This tag should be used as input only when "bfd-template" is not used.

4.23.3.8 *Service Order Data - MPLS-TE*

	service-order-data - Order Data for MPLS-TE Service
	Service Configuration

Data	Type	Mandatory	Description
service-type	String (mpls-te-tunnel)	Yes	The type of service.
service-subtype	String (Bidirectional TE Tunnel)	Yes	Service subtypes
service-template	String	No	The template to be associated with the service.
Customer	Fdn	Yes	Customer FDN
service-name	String	Yes	A unique name for the service.
service-description	String	No	A unique description about the service.
	Tunnel Configuration		
Data	**Type**		**Description**
termination-point-list	List container	Yes	List of connection termination point configurations.
directionality	Enum	Yes	Values: source, sink, and bidirectional.
nd-ref	Fdn	Yes	Source Node FDN - is device from where tunnel is created.
mpls-te-data	Container	No	Container for MPLS-TE data.
routing-process	Container	Yes	Container for routing details.
router-address	String	Yes	Routing process address for which MPLS TE router is enabled.
routing-process-id	String	Yes	Routing process id.
loopback-address	String	Yes	Loopback address.
	Path Configuration		
forwarding-path	Container	No	Container for Forwarded Path entries.
mpls-te-data	Container	No	Container for MPLS-TE data.
te-tunnel-type	Enum(uni-directional, bi-directional)	No	Type of te tunnel
tunnel-service-profile-ref	String (FDN)	No	Service profile refrence for tunnel. e.g. MD=CISCO_EPNM!PROFILE_SERVICE=TE-Bi
wrap-protection	Boolean	No	Wrap Protection
enable-fault-oam	Boolean	No	Enable fault OAM
enable-frr	Boolean	No	This attribute specifies whether to enable autoroute option.
enable-auto-bandwidth	Boolean	No	This attribute specifies whether to enable autobandwidth option.
enable-autoroute	Boolean	No	This attribute specifies whether to enable autoroute option.
enable-lockdown	boolean	No	This attribute specifies whether to enable lockdown option.
protection-type	Enum (Working, Working+Protected, Working+Restore, Working+Protected+Restore)	Yes	Type of MPLS Tunnel Path Protection.
tunnel-setting		No	Container for tunnel settings.
global-id	Integer (Range:1-4294967295)	Yes (for bi-directional-tunnel),	ID used with association ID and source address to form bidirectional tunnel uniqueness.

		No (for uni-directional-tunnel)	
affinity-bits	String (Range: 0x0-0xFFFFFFFF, Default: 0x0)	No	Affinity Value
affinity-mask	String (Range: 0x0-0xFFFFFFFF, Default: 0x0)	No	Affinity mask on desired link attributes.
setup-priority	Integer (Range:0-7, Default: 7)	No	Tunnel Setup Priority
hold-priority	Integer (Range:0-7, Default: 7)	No	Tunnel Hold Priority
enable-record-route	boolean	No	This attribute specifies whether to enable record route option.
bandwidth-pool-type	String (Global, Subpool, Empty)	Yes	This attribute specifies whether global or subpool bandwidth reservation is used
bandwidth	Integer	Yes	This attribute specifies the associated transport tunnel Bandwidth
auto-bandwidth-frequency	Integer	No	This attribute specifies the auto bandwidth frequency.
max-bandwidth	String	No	This attribute specifies the associated transport tunnel max Bandwidth
bandwidth-change-frequency	string	No	This attribute specifies the bandwidth change frequency.
max-auto-bandwidth	string	No	This attribute specifies the maximum auto bandwidth.
min-auto-bandwidth	String	No	This attribute specifies the minimum auto bandwidth.
enable-bw-collection	string	No	This attribute specifies if auto bandwidth collection is enabled. Applicable only for Uni directional tunnel.
adjustment-threshold	Integer	No	This attribute specifies the auto bandwidth adjustment threshold. Applicable only for Uni directional tunnel.
overflow-limit	Integer	No	This attribute specifies the auto bandwidth overflow limit. Applicable only for Uni directional tunnel.
overflow-threshold	Integer	No	This attribute specifies the auto bandwidth overflow threshold. Applicable only for Uni directional tunnel.
BFD Settings			
bfd-settings	Container	No	Container for bfd settings.
Enable	Boolean	No	Enable bfd.
min-interval	integer(Range: 15 to 200 Default: 100)	Yes	The minimum control packet interval for BFD sessions in milliseconds.
Multiplier	integer (default 3)	Yes	Number of times a packet is missed before BFD declares the session down.
	MplsTe Path Options		
mpls-te-path-options	mpls-path-options	No	Container for MPLS-TE path options.

working-path	mpls-path	No	Container for working path.
protection-path	mpls-path	No	Container for protection path.
restore-path	mpls-path	No	Container for restore path.
	Mpls Path		
new-lsp-attribute-list	Boolean	No	Specifies if the path uses a new or existing lsp path. Applicable only for Bi directional te tunnel.
lsp-attribute-list-name	String		Name of the lsp attribute list. Applicable only for Bi directional te tunnel.
lsp-attributes	Mpls-lsp-attribute-type		Container for the new LSP attribute configuration. Applicable only for Bi directional te tunnel.
	Mpls lsp attribute type		
affinity-bits	String	No	This attribute specifies Affinity bits on desired link attributes
affinity-mask	String	No	This attribute specifies Affinity mask on desired link attributes
setup-priority	Int	No	This attribute specifies the associated transport tunnel Setup Priority. Range:0-7, Default: 7
hold-priority	Int	No	This attribute specifies the associated transport tunnel Hold Priority. Range:0-7, Default: 7
enable-record-route	boolean	no	This attribute specifies whether to enable record route option.
path-type	Enum (dynamic, explicit)	Yes	Path type enum
is-existing-path	Boolean	No	Choose a new or existing path option.
explicit-path-name	String	No	IP explicit path name.
explicit-path-hop	Container	No	Explicit path hop container.
node-ref	String	No	Node Fdn
interface-ip-address	String	No	Mpls interface ip address.
constraint-type	Enum (include, exclude)	No	Explicit path constraint type.

4.23.3.9 *Service Order Data - MPLS L3VPN*

This section describes the order data required for provisioning MPLS L3VPN services.

service-order-data - Order Data for MPLS L3VPN Service		
Service Configuration		
Data	**Type**	**Description**
service-type	String	The type of service.
Service-subtype	String	Service sub type. Supported value: UNICAST.
service-activate	Boolean	Option to activate the service.
customer-ref	FDN	Customer FDN.
service-name	String	Name for the service.
service-profile-ref	String (FDN)	Service profile referece used to create a service. e.g.

		MD=CISCO_EPNM!PROFILE_SERVICE=CEM-Profile1
service-description	String	Service description.
service-mtu	Integer(Default 1520)	Maximum Transmission Unit that interfaces can optimally process.
create-full-mesh	Boolean	Enables you to create a Full Mesh.
enter-full-mesh-prefix	Boolean	Allows you to enter full mesh prefix value from User Input.
full-mesh-prefix	Integer	The actual full mesh prefix value.
Route Target Allocation		
Data	**Type**	**Description**
address-family	String	Address family- either IPv4 or IPv6.
route-target	String	Route target value for which the interface enables packets to pass through if they have the matching ID.
VRF Details		
vrf-device-name	String	Device FDN.
vrf-description	String	A unique description about the VRF.
vrf-name	String	The name for the VRF.
Route Targets		
ip-v4-route-target/ip-v6-route-target	String	The Route Target value.
Direction	Enum (Import/Export/Both/None)	Direction of the packet flow through the interface (based on the match with the route target ID).
Route Distribution		
Protocol	Enum	Supported values are: OSPF, RIP, Connected, and Static.
Metric	Boolean	Option to enable autoroute.
route-policy	String	Types of Routing Policy the VRF will use for Route Distribution.
routing-process-id	Integer	The process-id argument that identifies the OSPF process.
route-match-type	String	
UNI		
uni-name	String	Name of the UNI.
Port	String	Port ID as FDN.
Device	String	Device name as FDN.
create-uni	Boolean	Value determines if new UNI is being created or existing UNI is being used.
vrf-name-select	String	To VRF under which the UNI is being created.
is-auto-rd	Boolean	Flag to indicate auto route distinguisher
route-distinguisher	String	Route Distinguisher
enable-link-oam	Boolean	To enable or disable Link Operations, Administration, and Maintenance.
service-multiplexing	Boolean	Allows multiple services to be provisioned on this UNI.

uni-duplex-mode	Enum (FULL DUPLEX/ AUTO NEGOTIATION)	Duplex mode setting.
sep-ipv6-address	IPv6	Service end-point IPv6 address.
sep-outer-vlan	Integer	Outer VLAN ID.
sep-ipv4-subnet-mask	Integer	Subnet mask value.
sep-ipv6-subnet-mask	Integer	Subnet mask value.
uni-mtu	Integer	Maximum Transmission Unit that UNI can optimally process.
uni-description	String	A unique description about the UNI.
enable-link-management	Boolean	
existing-uni-id	Integer	If choosing the existing UNI instead of creating new UNI.
service-state	Boolean (default true)	Service state
Use-irb	Boolean (default true)	Use integrated routing and bridging.
Encapsulation	Enum	TAGGED UNTAGGED DEFAULT.
BGP Neighbors		
Device	String	Device id FDN
Vrf	String	VRF name to which it is associated.
ip-address	IP Address	IP address of the neighbor- either IPv4 or IPv6.
neighbor-as	Integer (1-65536)	Autonomous System number of the neighbor.
ingress-rp	String	
egress-rp	String	
local-as	Integer (1-65536)	Local Autonomous system number.
as-action	String	-

IPSLA Details		
operation-name	String	Name of the IPSLA name.
operation-vrf	String	-
operation-source-port-ref	String	Port FDN
operation-destination-port-ref	String	Port FDN
ipsla-operation-type	String	UDP ECHO, ICMP ECHO, ICMP JITTER, and UDP JITTER.
operation-source-device-ref	String	-
reaction-action-variable	String	CONNECTION LOSS, RTT, TIMEOUT ERROR, and VERIFY ERROR.
reaction-action-type	Enum	NONE, TRAP AND TRIGGER, TRAP ONLY, and TRIGGER ONLY.

reaction-upper-threshold-value	String	Reaction action type will be triggered when this upper threshold value is breached.
operation-destination-device-ref	String	-
reaction-lower-threshold-value	String	Reaction action type will be triggered when this lower threshold value is breached.
reaction-threshold-type	String	AVERAGE, CONSECUTIVE, IMMEDIATE, NEVER, X out of Y occurrences.
average-number-value	Integer	Determines the average number of entities.
consecutive-n-values	Integer	The threshold breach is applied for n entities.
reaction-x-axis-values	Integer	Determines the number of occurrence out of Y.
reaction-y-axis-values	Integer	Determines the total occurrence of the given entity.
simple-frequency-value	Integer	Indicates the periodicity of this SLA (how frequently this check should be performed).
simple-life-time-value	Integer	Indicates that if the event does not occur, the check will be performed after the time (in milli seconds) specified in this value.
simple-age-out-value	Integer	Indicates the maximum time in milliseconds until when this IPSLA should function.
start-now	Boolean	Indicates that the execution can start immediately.
start-time	Integer	Indicates that the execution must start after the given number of seconds.

4.23.3.10 *Service Order Data – Optical*

The table below lists the Order Data elements and the supported values for optical services. Note that the table below describes all the elements in the service order data combined for service and endpoint configuration for all the optical services (OCHNC, OCHCC, OCHTrail, OCHTRAIL_UNI, OPU_OVER_ODU, ODU_TUNNEL and ODU_UNI).

Optical Service Order Data	**Data Type**	**Applicable to Service Type**	**Description**
service-name	String	All	Unique name to identify the circuit/VC.
service-description	String	All	Description of the VC that will help to identify the VC.
service-type	String		Service Type. Possible value: **optical** – for Optical Services **explicit-path** – for MPLS TE Explicit Path

Optical Service Order Data	Data Type	Applicable to Service Type	Description
service-subtype	String		Service SubType. Possible Values: **OCHNC, OCHCC, OCHTrail, OCHTRAIL_UNI, ODU_TUNNEL and ODU_UNI** – for Optical Services **mplste-explicit-path** – for MPLS TE Explicit Path
customer-ref	String		Customer FDN.
mutual-diverse	Boolean	**OCHTRAIL_UNI**	For mutual Diverse from one another.
diverse-from-name	String	**OCHTRAIL_UNI**	Diverse from Service name.
diverse-from-cfs-ref	FDN	**OCHTRAIL_UNI and ODU UNI**	Diversing current Service from the service which have the same AEND owning Entity value.
service-activate	Boolean		Activate Service.
direction	String		Service/Circuit direction. Possible Values: BIDIRECTIONAL.
optical-data	ce-data-service-type		Container for OPTICAL service configuration.
termination-point-list	List container	All	List of connection termination point configurations.

The table below describes the optical data types and lists the services they are applicable to:

Optical Service Order Data	Data Type	Applicable to Service Type	Description
optical-data		All	Optical data for service provisioning.
Uni	Boolean	All	UNI Allows Bundling. Allows the use of multiple VLANs for this UNI.
Label	String	All	Label for service provisioning.
Protection	String	All	Protection Mechanism for service provisioning.
Validation	Boolean	OCHNC, OCHCC, OCHTrail and OCHTRAIL_UNI	True or false.
optical-threshold	String	OCHNC, OCHCC, OCHTrail and OCHTRAIL_UNI	Optical Threshold for service provisioning.
optical-threshold-protected	String	OCHNC, OCHCC and OCHTrail.	Optical Threshold Protected for service provisioning.
up-stream-channel-power-offset	String	OCHNC, OCHCC and OCHTrail.	Up Stream Channel Power Offset for service provisioning.
down-stream-channel-power-offset	String	OCHNC, OCHCC and OCHTrail.	Down Stream Channel Power Offset for service provisioning.
ignore-path-alarm	Boolean	OCHNC, OCHCC and OCHTrail.	True or false.
allow-regeneration	Boolean	OCHNC, OCHCC, OCHTrail and OCHTRAIL_UNI	True or false.
restoration	String	OCHNC, OCHCC, OCHTrail and OCHTRAIL_UNI	Restoration for service provisioning.

Revert	String	OCHNC, OCHCC and OCHTrail.	Revert for service provisioning.
soak-time	String	OCHNC and OCHTrail.	Soak Time for service provisioning.
Priority	String	OCHNC, OCHCC, OCHTrail and OCHTRAIL_UNI	Priority for service provisioning.
validation-restoration	String	OCHNC, OCHCC and OCHTrail.	Validation Restoration for service provisioning.
optical-threshold-restoration	String	OCHNC, OCHCC and OCHTrail.	Optical Threshold Restoration for service provisioning.
optical-threshold-restoration-protected	String	OCHNC, OCHCC and OCHTrail.	Optical Threshold Restoration Protected for service provisioning.
Frequency	String	OCHNC and OCHTrail.	Frequency for service provisioning.
Width	String	OCHNC and OCHTrail.	Width for service provisioning.
frequency-required	Boolean	OCHNC and OCHTrail.	True or false.
frequency-protected	String	OCHNC and OCHTrail.	Frequency Protected for service provisioning.
width-protected	String	OCHNC and OCHTrail.	Width Protected for service provisioning.
frequency-protected-required	Boolean	OCHNC and OCHTrail.	True or false.
open-end	Boolean	OCHTrail, ODU_TUNNEL and ODU_UNI	True or false.
record-route	Boolean	ODU_TUNNEL and ODU_UNI	True or false.
otn-service-type	String	ODU_TUNNEL and ODU_UNI	OTN Service Type for service provisioning.
bandwidth	String	ODU_TUNNEL and ODU_UNI	Bandwidth for service provisioning.
framing-type	String	ODU_TUNNEL and ODU_UNI	Framing Type for service provisioning.
bit-rate	String	ODU_TUNNEL and ODU_UNI	Bit Rate for service provisioning.
protection-profile	String	ODU_TUNNEL and ODU_UNI	Protection Profile for service provisioning.

The table below describes the different endpoint data types and lists the services they are applicable to:

Optical Service Order Data	**Data Type**	**Applicable to Service Type**	**Description**
termination-point-list		All	termination point list
termination-point-config	container	All	termination point config

Optical Service Order Data	Data Type	Applicable to Service Type	Description
tp-ref	String (FDN)	All	FDN of the port to use - set of RNDs that consists of MD, ME and PTP or FTP instance ids. For example: "MD=CISCO_EPNM!ND=M6-234-248!FTP=name=PCHAN-2-14-RX;lr=LR_PHYSICAL_OPTICAL"
directionality	Identity	All	Source, Sink, and Bi-directional.
optical-data	**optical-data-termination point-config-type**	OCHNC	**Container for OPTICAL Endpoint configuration**
ochnc-data	container	OCHNC	
drop-port-ref	String	OCHNC	FDN of the port to use as drop port - set of RNDs that consists of MD, ME and PTP or FTP instance ids. For example: "MD=CISCO_EPNM!ND=M6-234-248!FTP=name=PCHAN-2-14-RX;lr=LR_PHYSICAL_OPTICAL"

4.23.4 Templates Support

The following sub-sections provide the details of service provisioning with template support in the order which is required in the provision and modify operations of the service activation interface as a POST data in a request object.

The table below lists the Template Order Data elements and the supported values for any service.

Template Order Data	Data Type	Applicable to Service Type	Description
service-templates		All	Container for Templates service configuration.
service-template		All	Container for Template service configuration.
Type	template-type-enum-type	All	Type. Possible value: preconfig and postconfig
Name	String	All	Template name.
Usage	String	All	Template Usage. Eg: Service Create Only
Variables		All	Container for Variables configuration.
Variable		All	Container for Variable configuration.
Name	String	All	Variable name.
Value	String	All	Variable value.
required	String	All	Variable Required.
description	String		Variable Description.
devices			Container for Devices configuration.
Device			Container for Device configuration.
nd-ref	fdn		Node FDN - is device identifier
nd-name	String		Node name.

4.23.4.1 Template Request Example

POST /restconf/operations/v1/cisco-service-provision:provision-service HTTP/1.1
Host: <epnm-host>
Content Type: application/yang.operation+xml

```
<?xml version="1.0" encoding="UTF-8"?>
<provision-service-request xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1">
        <service-order-data>
          <service-templates>
            <service-template>
              <type>preconfig</type>
              <name>Turn_On_FEX</name>
              <usage>Service Create Only</usage>
              <variables>
                <variable>
                  <name>name</name>
                  <value>value</value>
                </variable>
              </variables>
              <devices>
                <device>
                  <nd-ref>MD=CISCO_EPNM!ND=M6-234-248</nd-ref>
                </device>
              </devices>
            </service-template>
          </service-templates>

           <!-- Service specific order data here -->

        </service-order-data>
</provision-service-request>
```

4.23.5 Service Performance Test Support

The following sections provide the details of service performance test support.
The Service Performance Test can be conducted standalone as well as part of service provisioning.

4.23.5.1 *Standalone Service Performance Test Execution*

Restconf NBI supports standalone performance test execution.

Operation	**Description**
service-oam-config	This operation is to run service performance test, including BERT, Y1564 and Y1731 performance test.
HTTP Method	**Resource Path**
POST	/operations/v1/cisco-service-oam:service-oam-config
Request Message	
Request Content Type	application/xml, application/yang.operation +xml, application/json, application/yang.operation+json
Request Data	Request data of type **service-oam-config** that contains the details of the service performance test.
Response Message	
Response Content Type	application/xml, application/yang.operation +xml, application/json, application/yang.operation+json
Response Data	Return response of type **service-oam-results** that contains the information of the service performance test which can be used to retrieve the service performance test result.
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors.

	• 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.

4.23.5.1.1 Request for BERT

Name	Type	Description
service-oam-config	Container element	Holds service test config data
bert-config	Container element	Holds bert test config data
service-ref	String (FDN)	CFS fdn
source-tp-ref	String (FDN)	source tp fdn
destination-tp-ref	String (FDN)	destination tp fdn
unmanaged-destination	String	the destination is unmanaged or not: true or false
Direction	String	test traffic direction: system or line
Errors	String	Inject Errors, value range 0 to 255
Duration	String	Test duration time in minutes, value between 1 to 14400
Pattern	String	BERT pattern, valid value: 0s, 1s, 2^9, 2^11, 2^15, 2^23, 2^31, 2^20-O151, 2^20-O153

4.23.5.1.2 Request for Y1564

Name	Type	Description
service-oam-config	Container element	Holds service test config data
Y1564-test-config	Container element	Holds Y1564 test config data
service-ref	String (FDN)	CFS fdn
source-tp-ref	String (FDN)	source tp fdn
destination-tp-ref	String (FDN)	destination tp fdn
is-one-way	Boolean	is one way test flag
Duration	int	Time duration for traffic generation in secs.
is-custom-rates	Boolean	mode selection CIR/EIR or Custom rates
Rates	String	Bytes to send in kbps. Ex: 1000 kbps
eir-rate	int	EIR rate value in kbps
cir-rate	int	CIR rate value in kbps
is-step-load-cir	Boolean	In mode of CIR/EIR, points if requires additional 3 rates for 25% 50% and 75% from CIR value
packet-size	int	Packet size in bytes
ip-type	String	Possible Values: IPv4, IPv6
inner-tag	Container element	Holds inner vlan data
vlan-id	String	Vlan id. Allowed Values: 1 to 4094
outer-tag	Container element	Holds outer vlan data
vlan-id	String	Vlan id. Allowed Values: 1 to 4094

acceptable-flr	int	Acceptance criteria for Frame Lost
acceptable-ftd	int	Acceptance criteria for Delay
acceptable-fdv	int	Acceptance criteria for Jitter
is-unmanaged-me3600	Boolean	In case of unmanaged destination, points if type of unmanaged device is ME3600

4.23.5.1.3 Request for Y1731

Name	Type	Description
service-oam-config	Container element	Holds service test config data
Y1731-test-config	Container element	Holds Y1731 test config data
service-ref	String (FDN)	CFS fdn
source-tp-ref	String (FDN)	source tp fdn
destination-tp-ref	String (FDN)	destination tp fdn
is-loss-required	Boolean	is loss required test flag
is-delay-required	Boolean	is delay required test flag
Cos	String	cos value
probe-length	int	probe length in seconds
burst-interval	int	Burst interval in seconds
packet-count	int	Packet count
packet-size	int	Packet size in bytes
packet-interval	int	Packet interval in milli-secs
Duration	int	Time duration for traffic generation in mins

4.23.5.1.4 Response

Name	Type	Description
service-oam-results	Container element	Holds the data for response of template execution.
request-id	String	request-id which is to get performance test result
service-ref	String	CFS fdn
test-ids	String	test id

4.23.5.2 *Standalone Service Performance Test Retrieval*

This API retrieves standalone service performance test result in Cisco EPN Manager.

Resource	Description	
	Retrieves standalone service performance test result in Cisco EPN Manager.	
HTTP Method	**Resource Path**	
GET	operations/v1/cisco-service-oam:service-oam-config/{request-id}	
Path Parameters		
Name	**Type**	**Description**
request-id	String	The request-id which in the response of standalone service performance test execution. Given this, the performance test result will be returned.
Response Message		
Response Content Type	application/xml, application/yang-data+xml, application/json, application/yang-data+json	

Response Data	0 or 1 **service-oam-results** – see yang model for the data details.
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.

4.23.6 Consolidated Provisioning Support

The consolidated provisioning is supported in Cisco EPN Manager service activation. In one provision request, user can do the following 3 tasks together:

- Provisioning MPLS TE tunnel, providing <mpls-te-data>
- Provisioning CE or CEM, providing <ce-data> or <cem-data>
- Executing service performance test, providing < service-oam-config>

The following scenario are supported:

- mpls-te, ce, Y1731
- mpls-te, ce, Y1564
- mpls-te, cem, BERT

Each service-order-data sub-section such as mpls-te, ce, cem are the same as when those used in non-consolidated fashion.
Please find consolidated provisioning example in chapter 7.

4.23.7 Service Profile Support

Service Profiles contain pre-defined provisioning request (order data) that can be used in provisioning each circuit/VC type.

In NBI Provisioning request, a service profile reference can be used to get provisioning request data to be used in the provisioning. If the provisioning data is provided in the request along with the service profile reference, but the user provided data and the data stored in the service profile gets merged with user provided data overriding the profile data before the request is sent to execute provisioning.

Service profile can be created using EPNM Service Profile wizard GUI. For more information on how to create the service profile please refer to EPNM User and Administrative Guide under section “Create Circuit/VC Profiles”.
Typical workflow to use the NBI with service profiles is

1. Create service profile using EPNM Service Profile wizard GUI
2. Retrieve the service profile details using Service Profile Retrieval NBI
3. Use the FDN of the service profile (retrieved from the retrieval NBI) as a service profile reference in the NBI provisioning request.
4. Add any data to NBI provisioning request to override what is there in the service profile
5. Execute provision nbi with service profile reference.

4.23.7.1 *Service Profile Reference*

When using the service profile reference in the NBI service provisioning request, the immune required data that is need is

1. Service type
2. Service subtype
3. Service name

Sample provisioning request with service profile:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:provision-service-request
xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
```

```
    xmlns:y1="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xsi:schemaLocation="urn:cisco:params:xml:ns:yang:sa:v1 cisco-service-
activation.xsd urn:cisco:params:xml:ns:yang:service:activation:v1
restconf-provisioning-request-schema.xsd ">
    <p:service-order-data>
        <p:service-profile-ref>MD=CISCO_EPNM!PROFILE_SERVICE=epl-
profile2</p:service-profile-ref>
        <p:service-name>MyEplService1</p:service-name>
        <p:service-description>My Epl Service 1</p:service-description>
        <p:service-type>carrier-ethernet-vpn</p:service-type>
        <p:service-subtype>EPL</p:service-subtype>
    </p:service-order-data>
</p:provision-service-request>
```

4.23.7.2 *Service Profile Retrieval*

This API retrieves Service Profiles in Cisco EPN Manager. This API can be used to get the FDN of the Service Profile which can be passed in the service profile reference (as FDN) in service provision request.

Resource	**Description**	
Service Profile	Retrieves all Service Profiles added in Cisco EPN Manager.	
HTTP Method	**Resource Path**	
GET	/data/v1/ cisco-service-profile:service-profile	
Query Parameters		
Name	**Type**	**Description**
Fdn	String (FDN Format)	Fully Distinguished Name (FDN) of the Service Profile. Given this, a corresponding single Service will be returned. FDN: MD=<CISCO_EPNM>!PROFILE_SERVICE=<profilename>.
Type	String	Service type for which the service profiles will be retrieved. If not specified all service profiles for all service types will be returned. Possible values: carrier-ethernet-vpn, tdm-cem, mpls-te-tunnel, layer3-link, mpls-l3-vpn,optical
Subtype	String	Service subtype for which the of the CFS to retrieve. If not specified all sub types will be returned. Should be used in conjunction with Type.
Response Message		
Response Content Type	application/xml, application/yang-data+xml, application/json, application/yang-data+json	
Response Data	Contains 0 or more Service Profiles of type **service-profile** – see yang model for the data details.	
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.	

4.24 Customer CRUD

Customer resource path to create, retrieve, update, and delete Customer values.

4.24.1 Retrieve Customer

Resource	**Description**

Customer	Customer resource that is used in the provisioning order data. Retrieves the Customer resource.	
HTTP Method	**Resource Path**	
GET	/data/v1/cisco-customer:customer/{name}	
Path Parameters		
Name	**Type**	**Description**
Name	String	Customer Name – to retrieve a single customer resource. Without this parameter, all Customers will be retrieved.
Response Message		
Response Content Type	application/xml, application/yang-data+xml, application/json, application/yang-data+json	
Response Data	0 or more customer resources of type **customer** – see yang model for the data details.	
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.	

4.24.2 Create Customer

Resource	**Description**
Customer	Creates a Customer Resource - Customer resource that is used in the provisioning order data.
HTTP Method	**Resource Path**
POST	/data/v1/cisco-customer:customer/
Request Message	
Request Content Type	application/xml, application/yang.operation +xml, application/json, application/yang.operation+json
Request Data	Request data of type **customer** that contains the details of the customer – see yang model for the data details.
Response Message	
Response Content Type	application/xml, application/yang.operation +xml, application/json, application/yang.operation+json
Response Data	No response if the operation succeeds. Error message is displayed if the operation fails.
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.

4.24.3 Update Customer

Resource	**Description**
Customer	Update the customer - Customer resource that is used in the provisioning order data.
HTTP Method	**Resource Path**
PUT	/data/v1/cisco-customer:customer/{name}
Path Parameters	

Name	Type	Description
Name	String	Name of the customer which will be updated.
Request Message		
Request Content Type	application/xml, application/yang.operation +xml, application/json, application/yang.operation+json	
Request Data	Request data of type **customer** that contains the details of the customer – see yang model for the data details.	
Response Message		
Response Content Type	application/xml, application/yang.operation +xml, application/json, application/yang.operation+json	
Response Data	No response if the operation succeeds. Error messages is displayed if the operation fails.	
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.	

4.24.4 Delete Customer

Resource	Description	
Customer	Deletes the Customer - Customer resource that is used in the provisioning order data.	
HTTP Method	**Resource Path**	
DELETE	/data/v1/cisco-customer:customer/{name}	
Path Parameters		
Name	**Type**	**Description**
Name	String	Name of the customer for the delete operation.
Response Message		
Response Content Type	application/xml, application/yang-data+xml, application/json, application/yang-data+json	
Response Data	Error response or no data	
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.	

4.25 Resource Activation

RESTCONF NBI supports the setting up of the resource level configuration using various operations like Termination Point Configuration, Template Based Configuration (TBC), and Model Based Configuration (MBC).
The operations listed below are supported as part of Resource Activation.

4.25.1 Operations

4.25.1.1 *CLI Configuration Execution*

Restconf NBI supports configuration using CLI Templates. Invoking this NBI will run the CLI Configuration in the template on the target device with the set of parameters applied.

Operation	Description
run-cli-configuration	This operation can be used to run cli configuration using templates.
HTTP Method	**Resource Path**
POST	/operations/v1/cisco-resource-activation:run-cli-configuration
Request Message	
Request Content Type	application/xml, application/yang.operation +xml, application/json, application/yang.operation+json
Request Data	Request data of type run-cli-configuration that contains the details of the template to run.
Response Message	
Response Content Type	application/xml, application/yang.operation +xml, application/json, application/yang.operation+json
Response Data	Return response of type config-response that contains the details of the job executing the cli configuration which can be used to check the status.
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.

4.25.1.1.1 Run CLI Configuration Request

Name	Type	Description
run-cli-configuration	Container element	Holds the data for template details.
template-name	String	Template Name of which the CLI template to be configured on devices.
target-list	List	List of device target of which the CLI template to be deployed.
target	Container element	Holds the target deploy information including device and corresponding configuration parameters
node-ref	String (FDN)	FDN of the device where the cli from the template gets executed.
parameter-list	List	List of name/value pairs for the parameters for the template.
name	String	Name of the parameter.
value	String	Value of the parameter.

4.25.1.1.2 Run CLI Configuration Response

Name	Type	Description
config-response	Container element	Holds the data for response of template execution.
job-name	String	Name of the job executing the template – can be used to check the status.
message	String	A message from job execution.

4.25.1.2 *CLI Configuration Run Status Retrieval*

Restconf NBI to get the status of the Templates based CLI Configuration which is scheduled to execute.

Operation	Description
get-cli-configuration-run-status	This operation can be used to check the status of the CLI template execution.

HTTP Method	Resource Path
GET	/operations/v1/cisco-resource-activation:get-cli-configuration-run-status/{job-name}
Request Message	
Request Content Type	application/xml, application/yang.operation +xml, application/json, application/yang.operation+json
Request path parameter	job-name: of the CLI template execution
Response Message	
Response Content Type	application/xml, application/yang.operation +xml, application/json, application/yang.operation+json
Response Data	Return response of type config-response that contains the details of the job executing the cli configuration which can be used to check the status.
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.

4.25.1.2.1 Response

Name	Type	Description
config-response	Container element	Holds the data for response.
job-status	Container element	Holds the job status of the CLI template execution.
job-name	String	Name of the job executing the template.
run-id	String	ID number of the job execution.
run-status	String	The job execution status which could be SCHEDULED, RUNNING, or COMPLETED.
Status	String	The job execution result status which could be SUCCESS or FAILED.
Duration	String	Time on CLI template job execution.
start-time	String	Time that the job started to run.
completion-time	String	Time that the job finished.
deploy-result-list	List	List of CLI template deploy result.
deploy-result	Container element	Holds the deploy result on each target device
node-ref	String (FDN)	FDN of the device where the cli from the template gets executed.
Transcript	String	CLI config let commands executed on the device.
Message	String	Exception message.

4.26 MPLS TE Explicit Path Create/ Modify/ Terminate

MPLS TE Explicit path create/ modify and terminate are supported through a set of operations defined as RESTCONF operations. Support for creating, modifying and deleting an Optical MPLS TE Explicit path is provided. The mpls-te-explicit-path-request type wrapper object is used for these operations.

Operation	Description
create-explicit-path modify-explicit-path terminate-explicit-path	This operation can be used to create/ modify/ terminate an MPLS TE Explicit Path.

HTTP Method	Resource Path
POST	/operations/v1/cisco-resource-activation:create-explicit-path /operations/v1/cisco-resource-activation:modify-explicit-path /operations/v1/cisco-resource-activation:terminate-explicit-path
Request Message	
Request Content Type	application/xml, application/yang.operation +xml, application/json, application/yang.operation+json
Request Data	mplste-explicit-path-type
Response Message	
Response Content Type	application/xml, application/yang.operation +xml, application/json, application/yang.operation+json
Response Data	Returns if the MPLS TE Explicit path is created created/ modified/ terminated successfully.
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.

4.26.1 MPLS TE Explicit Path Data

mplste-explicit-path-type	Data Type	Description
node-ref	String	On the node where the explicit path will be provisioned (4K device).
Path-name	String	Explicit path name
Path-hop	PathHop	Ordered list of Path Hop with constraints.

4.26.2 MPLS TE Explicit Path Entry Data

Each Path entry contains the fields described in the table below:

path-entries	Data Type	Description
node-ref	String	FDN of a device (eg: **MD=CISCO_EPNM!ND=NCS2006-239-20**) making up explicit path.
Constraint-level-type	String	Path Constraint level Type, Possible Values: • strict • loose • none
constraint-type	String	Path Constraint Type; Possible Values: • next • include • exclude • srlg

path-entries	Data Type	Description
tp-ref	String	FDN of PTP/CTP (ODU Controller) making up explicit path. (Eg: **MD=CISCO_EPNM!ND=NCS2006-239-20!FTP=name=PCHAN-2-34-RX;lr=lr-optical-channel**) This fields is applicable only for Path Constraint type 'strict'.

4.27 Protection Profile Retrieval

Protection Profile can retrieve all the protection profile values, with the protection profile fdn a matching protection profile will be also be retrieved if available.

Resource	Description	
protection-profile	Retrieves all Protection Profile in devices added to Cisco EPN Manager.	
HTTP Method	**Resource Path**	
GET	restconf/data/v1/cisco-resource-ems:protection-profile	
Query Parameters		
Name	**Type**	**Description**
fdn	String (FDN Format)	Fully Distinguished Name (FDN) of the Protection Profile. Given this, a corresponding single Protection Profile will be returned. FDN = MD=<CISCO_EPNM>!ND=<nd_name>!PPF=<profilename> Eg: MD=CISCO_EPNM!ND=cvg-scapa-229.cisco.com!PPF=123
Response Message		
Response Content Type	application/xml, application/yang-data+xml, application/json, application/yang-data+json	
Response Data	0 or more Protection Profile type **protection-profile**	
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.	

4.28 Protection Profile Create/ Modify/ Terminate

Protection Profile create/ modify and terminate are supported through a set of operations defined as RESTCONF operations.

Operation	Description
create-protection-profile modify-protection-profile delete-protection-profile	This operation can be used to create/ modify/ terminate an Protection Profile.
HTTP Method	**Resource Path**
POST	/operations/v1/cisco-resource-activation:create-protection-profile /operations/v1/cisco-resource-activation:modify-protection-profile /operations/v1/cisco-resource-activation:delete-protection-profile
Request Message	
Request Content Type	application/xml, application/yang.operation +xml, application/json, application/yang.operation+json

Response Message	
Response Content Type	application/xml, application/yang.operation +xml, application/json, application/yang.operation+json
Response Data	Returns if the MPLS TE Explicit path is created created/ modified/ terminated successfully.
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.

4.28.1 Protection Profile request Data

Name	Data Type	Description
protection-profile-ref	String	FDN of a protection profile(eg: **MD=CISCO_EPNM!ND=cvg-scapa-221.cisco.com!PPF=Test_PPF_profile_name4**)
profile-name	String	Protection Profile name (optional)
protection-type	String	Protection Type; Possible Values: • ONE_PLUS_ONE_BDIR_APS • ONE_PLUS_ONE_UNIDIR_APS • ONE_PLUS_ONE_UNIDIR_NO_APS • ONE_PLUS_ONE_PLUS_R_BIDIR_APS • YCABLE • SPLITTER • PSM • NONE
protection-mode	String	Protection mode Type; Possible Values: • REVERTIVE • NON_REVERTIVE
vc-mode	String	vc mode Type; Possible Values: • VC_MODE_I • VC_MODE_N • VC_MODE_S
tcm-id	String	Tcm-id; Possible Values: • TCM1 • TCM2 • TCM3 • TCM4 • TCM5 • TCM6 • NONE
hold-of-timer	Integer	Hold of timer will accept the number
Wait-to-restore-timer	Integer	Will accept numbers in multiples of 60

4.29 Patchcord Create/ Delete

Patch cord create/ modify and terminate are supported through a set of operations defined as RESTCONF operations.

The internal patchcord is treated as a topological link. The RDN type is “TL”.

Operation	Description
create-patch-cord delete-patch-cord	This operation can be used to create/ delete internal Patchcords on NCS2K
HTTP Method	**Resource Path**
POST	/operations/v1/cisco-resource-activation:create-patch-cord /operations/v1/cisco-resource-activation:delete-patch-cord
Request Message	
Request Content Type	application/xml, application/yang.operation +xml, application/json, application/yang.operation+json
Response Message	
Response Content Type	application/xml, application/yang.operation +xml, application/json, application/yang.operation+json
Response Data	Returns if the Patch cord is created created/ deleted successfully.
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.

4.29.1 Patchcord Create Request Data

Name	Data Type	Description
node-ref	String	FDN of the node on which the patch cord is to be created.
a-end-tp-ref	String	FDN of the A End Termination point for the patchcord.
z-end-tp-ref	String	FDN of the Z End Termination point for the patchcord.
Direction	String	Indicates the direction; Possible values: BIDIRECTIONAL UNIDIRECTIONAL
Wavelength	String	Wavelength; Possible values: NA

4.29.2 Patchcord Delete Request Data

Name	Data Type	Description
node-ref	String	FDN of the node on which the patch cord is to be created.
patch-cord-ref	String	FDN of the patchcord. Eg: MD=CISCO_EPNM!TL=10.58.234.141:PSLINE-1-14-10-TX--10.58.234.141:PSLINE-1-1-10-RX

4.30 Shared Risk Resource Assign Link and Node

4.30.1 Create a SRRG link

POST URL: https://{ServerIP} /restconf/operations/v1/cisco-resource-activation:create-shared-risk-resource-group

4.30.1.1 *Request*

```
<?xml version="1.0" encoding="UTF-8"?>
<p:shared-risk-resource-group-config
      xmlns:p="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:sb:srrg:v1 cisco-
srrg.xsd ">
      <!--<p:fdn>MD=CISCO_EPNM!SRRG=4187677632</p:fdn> -->
      <p:user-label>MYSRRGCreate</p:user-label>
      <p:description>Test_Description </p:description>
      <!-- <p:srrg-id>49333899</p:srrg-id> -->
      <p:resource-fdn-list>
            <p:resource-fdn>MD=CISCO_EPNM!ND=454A-234-157</p:resource-fdn>
            <p:resource-fdn>MD=CISCO_EPNM!TL=10.58.234.66:[WDMSIDE-A]--
10.58.234.157:[WDMSIDE-B]</p:resource-fdn>
      </p:resource-fdn-list>
</p:shared-risk-resource-group-config>
```

4.30.1.2 *Response*

```
<ns19:shared-risk-resource-group
      xmlns:ns41="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns40="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns39="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns38="urn:ietf:params:xml:ns:yang:ietf-restconf"
      xmlns:ns37="urn:cisco:params:xml:ns:yang:service:activation:status:v
1"
      xmlns:ns36="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
      xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns32="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns31="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
      xmlns:ns30="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns29="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
      xmlns:ns28="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns26="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns24="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
      xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical-ops:v1"
      xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
      xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
```

```
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
      xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
      <ns19:fdn>MD=CISCO_EPNM!SRRG=4187700874</ns19:fdn>
      <ns19:description>Test_Description </ns19:description>
      <ns19:user-label>MYSRRGCreate</ns19:user-label>
      <ns19:resource-fdn-list>
            <ns19:resource-fdn>MD=CISCO_EPNM!ND=454A-234-
157</ns19:resource-fdn>
            <ns19:resource-fdn>MD=CISCO_EPNM!TL=10.58.234.66:[WDMSIDE-A]--
10.58.234.157:[WDMSIDE-B]</ns19:resource-fdn>
      </ns19:resource-fdn-list>
      <ns19:status>OPERATION_SUCCESSFUL</ns19:status>
</ns19:shared-risk-resource-group>
```

4.30.2 Assign SRRG to a Link

POST URL: https://{ServerIP}/restconf/operations/v1/cisco-resource-activation:assign-shared-risk-resource-group

4.30.2.1 *Request*

POST URL: https://{ServerIP}/restconf/operations/v1/cisco-resource-activation:assign-shared-risk-resource-group

```
<?xml version="1.0" encoding="UTF-8"?>
<p:shared-risk-resource-group-config
      xmlns:p="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:sb:srrg:v1 cisco-
srrg.xsd ">
      <p:fdn>MD=CISCO_EPNM!SRRG=4187700874</p:fdn>
      <p:user-label>MYSRRGCreate</p:user-label>
      <p:description>Test_Description </p:description>
      <!-- <p:srrg-id>49333899</p:srrg-id> -->
      <p:resource-fdn-list>
            <p:resource-fdn>MD=CISCO_EPNM!TL=10.58.234.50:[WDMSIDE-B]--
10.58.234.57:[WDMSIDE-A]
            </p:resource-fdn>
      </p:resource-fdn-list>
</p:shared-risk-resource-group-config>
```

4.30.2.2 *Response*

```
<ns19:shared-risk-resource-group
      xmlns:ns41="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns40="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns39="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns38="urn:ietf:params:xml:ns:yang:ietf-restconf"
      xmlns:ns37="urn:cisco:params:xml:ns:yang:service:activation:status:v
1"
      xmlns:ns36="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
      xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns32="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns31="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
```

```
      xmlns:ns30="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns29="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
      xmlns:ns28="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns26="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns24="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
      xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical-ops:v1"
      xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
      xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
      xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
      <ns19:fdn>MD=CISCO_EPNM!SRRG=4187700874</ns19:fdn>
      <ns19:description>Test_Description </ns19:description>
      <ns19:user-label>MYSRRGCreate</ns19:user-label>
      <ns19:resource-fdn-list>
            <ns19:resource-fdn>MD=CISCO_EPNM!ND=454A-234-
66</ns19:resource-fdn>
            <ns19:resource-fdn>MD=CISCO_EPNM!TL=10.58.234.50:[WDMSIDE-B]--
10.58.234.57:[WDMSIDE-A]
            </ns19:resource-fdn>
      </ns19:resource-fdn-list>
      <ns19:status>OPERATION_SUCCESSFUL</ns19:status>
</ns19:shared-risk-resource-group>
```

4.30.1 Assign SRRG to a Node

4.30.1.1 *Request*

```
<?xml version="1.0" encoding="UTF-8"?>
<p:shared-risk-resource-group-config
      xmlns:p="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:sb:srrg:v1 cisco-
srrg.xsd ">
      <p:fdn>MD=CISCO_EPNM!SRRG=4187700874</p:fdn>
      <p:user-label>MYSRRGCreate</p:user-label>
      <p:description>Test_Description </p:description>
      <!-- <p:srrg-id>49333899</p:srrg-id> -->
      <p:resource-fdn-list>
```

```
            <p:resource-fdn>MD=CISCO_EPNM!TL=10.58.234.50:[WDMSIDE-B]--
10.58.234.57:[WDMSIDE-A]
            </p:resource-fdn>
      </p:resource-fdn-list>
</p:shared-risk-resource-group-config>
```

4.30.1.2 *Response*

```
<ns19:shared-risk-resource-group
      xmlns:ns41="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns40="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns39="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns38="urn:ietf:params:xml:ns:yang:ietf-restconf"
      xmlns:ns37="urn:cisco:params:xml:ns:yang:service:activation:status:v
1"
      xmlns:ns36="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
      xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns32="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns31="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
      xmlns:ns30="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns29="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
      xmlns:ns28="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns26="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns24="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
      xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical-ops:v1"
      xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
      xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
      xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
      <ns19:fdn>MD=CISCO_EPNM!SRRG=4187700874</ns19:fdn>
      <ns19:description>Test_Description </ns19:description>
      <ns19:user-label>MYSRRGCreate</ns19:user-label>
      <ns19:resource-fdn-list>
            <ns19:resource-fdn>MD=CISCO_EPNM!ND=454A-234-
66</ns19:resource-fdn>
            <ns19:resource-fdn>MD=CISCO_EPNM!TL=10.58.234.50:[WDMSIDE-B]--
```

```
10.58.234.57:[WDMSIDE-A]
            </ns19:resource-fdn>
      </ns19:resource-fdn-list>
      <ns19:status>OPERATION_SUCCESSFUL</ns19:status>
</ns19:shared-risk-resource-group>
```

4.31 Shared Risk Resource UnAssign Node and Link

4.31.1 UnAssign SRRG to a Link

POST URL: https://{ServerIP}/restconf/operations/v1/cisco-resource-activation:unassign-shared-risk-resource-group

4.31.1.1 *Request*

```
<?xml version="1.0" encoding="UTF-8"?>
<p:shared-risk-resource-group-config
      xmlns:p="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:sb:srrg:v1 cisco-srrg.xsd ">
      <p:fdn>MD=CISCO_EPNM!SRRG=4187700874</p:fdn>
      <p:user-label>MYSRRGCreate</p:user-label>
      <p:description>Test_Description </p:description>
      <!-- <p:srrg-id>49333899</p:srrg-id> -->
      <p:resource-fdn-list>
            <p:resource-fdn>MD=CISCO_EPNM!ND=454A-234-66</p:resource-fdn>
            <p:resource-fdn>MD=CISCO_EPNM!TL=10.58.234.50:[WDMSIDE-B]--
10.58.234.57:[WDMSIDE-A]
            </p:resource-fdn>
      </p:resource-fdn-list>
</p:shared-risk-resource-group-config>
```

4.31.1.2 *Response*

```
<ns19:shared-risk-resource-group
      xmlns:ns41="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns40="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns39="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns38="urn:ietf:params:xml:ns:yang:ietf-restconf"
      xmlns:ns37="urn:cisco:params:xml:ns:yang:service:activation:status:v1"
      xmlns:ns36="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
      xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns32="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns31="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
      xmlns:ns30="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns29="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
      xmlns:ns28="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns26="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns24="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
      xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical-ops:v1"
      xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
```

```
      xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
      xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
      <ns19:fdn>MD=CISCO_EPNM!SRRG=4187700874</ns19:fdn>
      <ns19:description>Test_Description </ns19:description>
      <ns19:user-label>MYSRRGCreate</ns19:user-label>
      <ns19:resource-fdn-list>
            <ns19:resource-fdn>MD=CISCO_EPNM!ND=454A-234-
66</ns19:resource-fdn>
            <ns19:resource-fdn>MD=CISCO_EPNM!TL=10.58.234.50:[WDMSIDE-B]--
10.58.234.57:[WDMSIDE-A]
            </ns19:resource-fdn>
      </ns19:resource-fdn-list>
      <ns19:status>OPERATION_SUCCESSFUL</ns19:status>
</ns19:shared-risk-resource-group>
```

4.31.2 UnAssign SRRG to a Node

4.31.2.1 *Request*

```
<?xml version="1.0" encoding="UTF-8"?>
<p:shared-risk-resource-group-config
      xmlns:p="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:sb:srrg:v1 cisco-
srrg.xsd ">
      <p:fdn>MD=CISCO_EPNM!SRRG=4187700874</p:fdn>
      <p:user-label>MYSRRGCreate</p:user-label>
      <p:description>Test_Description </p:description>
      <!-- <p:srrg-id>49333899</p:srrg-id> -->
      <p:resource-fdn-list>
            <p:resource-fdn>MD=CISCO_EPNM!ND=454A-234-66</p:resource-fdn>
            <p:resource-fdn>MD=CISCO_EPNM!TL=10.58.234.50:[WDMSIDE-B]--
10.58.234.57:[WDMSIDE-A]
            </p:resource-fdn>
      </p:resource-fdn-list>
</p:shared-risk-resource-group-config>
```

4.31.2.2 *Response*

```
<ns19:shared-risk-resource-group
      xmlns:ns41="urn:cisco:params:xml:ns:yang:restconf:party"
```

```
xmlns:ns40="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns39="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns38="urn:ietf:params:xml:ns:yang:ietf-restconf"
      xmlns:ns37="urn:cisco:params:xml:ns:yang:service:activation:status:v
1"
      xmlns:ns36="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
      xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns32="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns31="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
      xmlns:ns30="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns29="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
      xmlns:ns28="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns26="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns24="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
      xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical-ops:v1"
      xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
      xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
      xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
      <ns19:fdn>MD=CISCO_EPNM!SRRG=4187700874</ns19:fdn>
      <ns19:description>Test_Description </ns19:description>
      <ns19:user-label>MYSRRGCreate</ns19:user-label>
      <ns19:resource-fdn-list>
            <ns19:resource-fdn>MD=CISCO_EPNM!ND=454A-234-
66</ns19:resource-fdn>
            <ns19:resource-fdn>MD=CISCO_EPNM!TL=10.58.234.50:[WDMSIDE-B]--
10.58.234.57:[WDMSIDE-A]
            </ns19:resource-fdn>
      </ns19:resource-fdn-list>
      <ns19:status>OPERATION_SUCCESSFUL</ns19:status>
</ns19:shared-risk-resource-group>
```

4.32 Shared Risk Resource Group Retrieval

Resource	Description

Shared Risk Resource Group Attributes	SRRG Attributes will be retrieved.	
HTTP Method	**Resource Path**	
GET	/restconf/data/v1/cisco-resource-network:shared-risk-resource-group?fdn<value>	
Query Parameters		
Name	**Type**	**Description**
Fdn	String	FDN of the SRRG. Eg: MD=CISCO_EPNM!SRRG=2222. Where SRRG is indicator. The value in this field is the same as present in srrg-id field.
Response Message		
Response Content Type	application/xml, application/yang-data+xml, application/json, application/yang-data+json	
Response Data	0 or more SRRG resources of type **SRRG Attributes** – see yang model for the data details.	
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.	

4.32.1 Shared Risk Resource Group Retrieval Data

Name	**Type**	**Description**
srrg-id	String	Unique SRRG ID. The SRRG ID is a unique field.
Fdn	String	FDN of the SRRG. Eg: MD=CISCO_EPNM!SRRG=2222. Where SRRG is indicator. The value in this field is the same as present in srrg-id field.
user-label	String	The user defined name assigned to the SRRG. This field is not unique.
Name	String	The display name configured for the SRRG

4.33 Performance Metrics Retrieval on Topological Link– Optical Span Loss

Resource	**Description**	
Topological Link metrics	Performance Metrics for the given topological Link.	
HTTP Method	**Resource Path**	
GET	/restconf/data/v1/cisco-resource-network:perf-metrics?tlFdn=<value>	
Query Parameters		
Name	**Type**	**Description**
tlFdn	String	FDN of the Topological Link on which the Performance Metrics has to be retreived. Eg: /restconf/data/v1/cisco-resource-network:perf-metrics?tlFdn=MD=CISCO_EPNM!TL=10.58.234.42:[WDMSIDE-B]--10.58.234.55:[WDMSIDE-A]
Response Message		
Response Content Type	application/xml, application/yang-data+xml, application/json, application/yang-data+json	
Response Data	The Performance metrics for the given Topological Link.	

HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.

4.33.1 Performance Metrics for Topological Link Retrieval Data

Name	Type	Description
topological-link-metrics	Complex Object	Container Object
span-loss-direction	String	Indicates the direction of the Span; Possible values: **A to Z** **Z to A**
span-loss-value	Float	The span loss value

4.34 Alarm Retrieval

Alarm Retrieval through Restconf with various filters.

Resource	**Description**	
Alarm	Alarm resource which will retrieves all the alrams and retrieves alarms based on filters.	
HTTP Method	**Resource Path**	
GET	/restconf/data/v1/cisco-rtm:alarm?{filter}	
Query Parameters		
Name	**Type**	**Description**
tp-ref	String	Alarms with the matching termination point reference will be retrieved MD=<CISCO_EPNM>!ND=<nodenmae>!CTP=name=OTU20/6/0/7;lr=lr-och-transport-unit-2
nd-ref	String	Alarms with the matching node reference will be retrieved MD=<CISCO_EPNM>!ND=<nodename>
eq-ref	String	Alarms with the matching equipment reference will be retrieved MD=<CISCO_EPNM>!ND=<nodename>!EQ=<name=PWR-B;partnumber=15454-M6-DC>
Perceived-severity	String	Alarms with the matching perceived severity will be retrieved, possible severity values consist of (critical, major, minor, warning, cleared, interminate
Response Message		
Response Content Type	application/xml, application/yang-data+xml, application/json, application/yang-data+json	
Response Data	0 or more alarm resources of type **alarm** – see yang model for the data details.	
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.	

4.34.1 Alarm data type

alarm -type	Data Type	Description
Alarm	**Container element**	Container element holds the information about Alarm
alarm-identifier	**Container element**	Holds event, resource and cause associated to the alarm
description	String	Description of the Alarm
Category	String	Category of alarm like Optical
source-object-ref	Fdn String	FDN for the Source device associcated with Alarm (Eg: MD=CISCO_EPNM!ND=ncs2006-239-72 or MD=CISCO_EPNM!ND=NCS4009-Automation!CTP=name=OTU20/6/0/7;lr=lr-och-transport-unit-2 or MD=CISCO_EPNM!ND=ncs2006-239-72!EQ=name=PWR-B;partnumber=15454-M6-DC)
source-object-name	String	Source device name associated with the Alarm
Node-ref	String	Device name associated wth the Alarm
cause-type	String	Cause Type will have possible values • root-cause • symptom • cause-unknown
ack-state	String	Acknowledge state of the Alarm will contain possible values • acknowledged • unacknowledged
remote-interface-ip-address	String	Device ip address associated with Alarm
perceived-severity	String	Alarm severity with the following possible values • cleared • indeterminate • minor • major • critical • warning
system-received-time	String	Alarm occurred time
system-update-time	String	Last updated time of the alarm
node-event-time	String	Device timestamp of the alarm
probable-cause	String	Probable cause of the alarm
service-affecting	String	Service Affecting with respect to alarm will have following values • service-affecting • non-service-affecting • service-affecting-unknown
Note	**container**	Note details related to the Alarm

4.34.2 Alarm Identifier type

Alarm-identifier	Data Type	Description
event-identifier	String	Alarm id of the Alarm

Alarm-identifier	Data Type	Description
resource-object-ref	Fdn String	FDN for the Resource object reference device associcated with Alarm (Eg: **MD=CISCO_EPNM!ND=ncs2006-239-72 or MD=CISCO_EPNM!ND=NCS4009-Automation!CTP=name=OTU20/6/0/7;lr=lr-och-transport-unit-2 or MD=CISCO_EPNM!ND=ncs2006-239-72!EQ=name=PWR-B;partnumber=15454-M6-DC**)
probable-cause	String	Probable cause of the alarm

4.34.3 Note type

Note	Data Type	Description
creator-id	String	Note creator possibly username
Text	String	Note text
Note-time	String	time stamp when note created

4.35 Controller Port

Controller Port resource path to retrieve and update media type controller mode.

4.35.1 Retrieve ControllerPort

Resource	Description	
ControllerPort	Retrieves the Controller Port.	
HTTP Method	**Resource Path**	
GET	/data/v1/cisco-nrf-controller:controller-port	
Query Parameters		
Name	**Type**	**Description**
Fdn	String (FDN Format)	Fully Distinguished Name (FDN) of the. Given this, a corresponding single Controller Port will be returned. FDN = MD=<CISCO_EPNM>!ND=<nd_name>!CTRLP =<name> Eg: MD=CISCO_EPNM!ND=NCS4206-146.4!CTRLP=MediaType 0/4/0
ndFdn	String (FDN Format)	Fully Distinguished Name (FDN) of the device. Given this, all the controller ports of this device are returned
Response Message		
Response Content Type	application/xml, application/yang-data+xml, application/json, application/yang-data+json	
Response Data	0 or more controller port resources of type controller-port – see yang model for the data details.	
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.	
Response Data	No response if the operation succeeds. Error message is displayed if the operation fails.	

HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.

4.35.2 Update ControllerPort – MediaType Controller Mode

Resource	**Description**
ControllerPort	Update the controller port – controller-port, specifically the MediaType Controller's mode can be updated
HTTP Method	**Resource Path**
PUT	/data/v1/cisco-nrf-controller:controller-port
Request Message	
Request Content Type	application/xml, application/yang.operation +xml, application/json, application/yang.operation+json
Request Data	Request data of type **controller-port** that contains the details of the controller-port – see yang model for the data details. NOTE: only "mode" of the MediaType controller can be updated. See example request/response sections for api invocation and data
Response Message	
Response Content Type	application/xml, application/yang.operation +xml, application/json, application/yang.operation+json
Response Data	No response if the operation succeeds. Error messages is returned if the operation fails.
HTTP Status Code	• 200 OK - Success with response message-body • 401, 403 – Authentication and Authorization errors. • 400 Bad Request - Invalid request message. • 500 Internal Server Error - operation-failed. Please refer to RESTCONF RFC 8040 for status codes and standard error response data for more details.

4.36 LMP Link Create / Delete

4.36.1 LMP Link Creation

POST URL: https://{ServerIP}/restconf/operations/v1/cisco-resource-activation:lmp-link-resource

4.36.1.1 Request

```
<?xml version="1.0" encoding="UTF-8"?>
<p:topo-link-create-request xmlns:p="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
       <p:source-endpoint>
              <p:endpoint-ref>MD=CISCO_EPNM!ND=NCS2KE-235-159!PTP=name=PSLINE-5-1-11-
RX;lr=LR_PHYSICAL_OPTICAL
              </p:endpoint-ref>
       </p:source-endpoint>
       <p:dest-endpoint>
              <p:dest-endpoint-ref>MD=CISCO_EPNM!ND=cvg-frodo-
85.cisco.com!PTP=name=Optics0/4/0/22;lr=LR_PHYSICAL_OPTICAL
              </p:dest-endpoint-ref>
       </p:dest-endpoint>
```

```
</p:topo-link-create-request>
```

4.36.1.2 *Response*

```
<?xml version="1.0" encoding="UTF-8"?>
<ns17:topo-link-create-response
       xmlns:ns38="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns37="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
       xmlns:ns36="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns35="urn:ietf:params:xml:ns:yang:ietf-restconf"
       xmlns:ns34="urn:cisco:params:xml:ns:yang:service:activation:status:v1"
       xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
       xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
       xmlns:ns31="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns30="urn:cisco:params:xml:ns:yang:restconf:foundation"
       xmlns:ns29="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns28="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
       xmlns:ns27="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns26="urn:cisco:params:xml:ns:yang:service:action:v1"
       xmlns:ns25="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns24="urn:cisco:params:xml:ns:yang:sb:customer:v1"
       xmlns:ns23="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
       xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical-ops:v1"
       xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
       xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
       xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
       xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
       xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
       xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
       xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
       xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
       xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
       xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
       xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
       xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
       xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
       xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
       <ns17:result>CREATED</ns17:result>
       <ns17:message>LMP Link is created successfully</ns17:message>
</ns17:topo-link-create-response>
```

4.36.2 LMP Link Deletion

DELETE URL: https://{ServerIP}/restconf/operations/v1/cisco-resource-activation:lmp-link-resource?fdn=MD=CISCO_EPNM!TL=10.58.235.85:49--10.58.235.159:2130706710

4.36.2.1 *Response*

```
<?xml version="1.0" encoding="UTF-8"?>
<ns17:topo-link-create-response
       xmlns:ns38="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns37="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
       xmlns:ns36="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns35="urn:ietf:params:xml:ns:yang:ietf-restconf"
       xmlns:ns34="urn:cisco:params:xml:ns:yang:service:activation:status:v1"
       xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
```

```
       xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
       xmlns:ns31="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns30="urn:cisco:params:xml:ns:yang:restconf:foundation"
       xmlns:ns29="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns28="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
       xmlns:ns27="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns26="urn:cisco:params:xml:ns:yang:service:action:v1"
       xmlns:ns25="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns24="urn:cisco:params:xml:ns:yang:sb:customer:v1"
       xmlns:ns23="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
       xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical-ops:v1"
       xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
       xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
       xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
       xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
       xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
       xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
       xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
       xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
       xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
       xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
       xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
       xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
       xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
       xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
       <ns17:result>DELETED</ns17:result>
       <ns17:message>LMP Link is deleted successfully</ns17:message>
</ns17:topo-link-create-response>
```

4.36.3 LMP Link Retrieval

4.36.3.1 *Request*

GET: request URL:https://{server_IP}/restconf/data/v1/cisco-resource-network:topological-link?fdn=MD=CISCO_EPNM!TL=10.58.235.159:2130706714--10.58.235.221:505

4.36.3.2 *Reponse*

```
<ns4:response-message
xmlns:ns41="urn:cisco:params:xml:ns:yang:restconf:party"
      xmlns:ns40="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns39="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns38="urn:ietf:params:xml:ns:yang:ietf-restconf"
      xmlns:ns37="urn:cisco:params:xml:ns:yang:service:activation:status:v
1"
      xmlns:ns36="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
      xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns32="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns31="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
      xmlns:ns30="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns29="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
```

```
      xmlns:ns28="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns26="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns24="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
      xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical-ops:v1"
      xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
      xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
      xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
      <ns4:header>
            <ns4:firstIndex>0</ns4:firstIndex>
            <ns4:lastIndex>0</ns4:lastIndex>
      </ns4:header>
      <ns4:data>
            <ns17:topological-link>
                  <ns17:fdn>MD=CISCO_EPNM!TL=10.58.235.159:2130706714--
10.58.235.221:505
                  </ns17:fdn>
                  <ns17:discovered-name>10.58.235.159:2130706714--
10.58.235.221:505
                  </ns17:discovered-name>
                  <ns17:type>OCH</ns17:type>
                  <ns17:endpoint-list>
                        <ns17:endpoint>
                              <ns17:endpoint-ref>MD=CISCO_EPNM!ND=cvg-
scapa-221.cisco.com!CTP=name=Optics0/6/0/10;lr=lr-optical-section
                              </ns17:endpoint-ref>
                              <ns17:performance-metrics>
                                    <ns17:power-tx>-0.53</ns17:power-tx>
                                    <ns17:power-rx>-5.66</ns17:power-rx>
                              </ns17:performance-metrics>
                        </ns17:endpoint>
                        <ns17:endpoint>
                              <ns17:endpoint-ref>MD=CISCO_EPNM!ND=NCS2KE-
235-159!CTP=name=PSLINE-5-1-13-RX&amp;PSLINE-5-1-13-TX;lr=lr-optical-
section
                              </ns17:endpoint-ref>
                        </ns17:endpoint>
```

```
                </ns17:endpoint-list>
            </ns17:topological-link>
        </ns4:data>
</ns4:response-message>
```

4.37 PCE Computation Path

4.37.1 Request

```
http:// <ServerIP>/restconf/data/v1/cisco-resource-network:vc-path?src-tp-fdn=<Source TP FDN>&dest-tp-fdn=<Destination TP FDN>
```

4.37.2 Response

```
<ns4:response-message
xmlns:ns41="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns40="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
xmlns:ns39="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns38="urn:ietf:params:xml:ns:yang:ietf-restconf"
xmlns:ns37="urn:cisco:params:xml:ns:yang:service:activation:status:v1"
xmlns:ns36="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns32="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns31="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
xmlns:ns30="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns29="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
xmlns:ns28="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns26="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
xmlns:ns24="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical-ops:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
```

```
        <ns4:lastIndex>0</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns31:path-list>
            <ns31:path-index>0</ns31:path-index>
            <ns31:path>
                <ns31:protection-role>working-path</ns31:protection-role>
                <ns31:segment-list>
                    <ns31:segment>
                        <ns31:a-endpoint-ref>MD=CISCO_EPNM!ND=NCS2006-239-
56!CTP=name=CHAN-2-7-2;lr=lr-optical-channel</ns31:a-endpoint-ref>
                        <ns31:z-endpoint-ref>MD=CISCO_EPNM!ND=NCS2006-239-
60!CTP=name=CHAN-6-7-2;lr=lr-optical-channel</ns31:z-endpoint-ref>
                        <ns31:optical-channel>
                            <ns31:actual-
value>1529.553357142857066719443537294864654541015625</ns31:actual-value>
                        </ns31:optical-channel>
                        <ns31:optical-zone>zone-invalid</ns31:optical-
zone>
                    </ns31:segment>
                </ns31:segment-list>
                <ns31:endpoint-list>
                    <ns31:endpoint>
                        <ns31:ip-address>10.58.239.56</ns31:ip-address>
                        <ns31:endpoint-ref>MD=CISCO_EPNM!ND=NCS2006-239-
56!FTP=name=LINE-1-5-3-RX&amp;amp;LINE-1-5-3-TX;lr=lr-optical-transmission-
section</ns31:endpoint-ref>
                    </ns31:endpoint>
                    <ns31:endpoint>
                        <ns31:ip-address>10.58.239.55</ns31:ip-address>
                        <ns31:endpoint-ref>MD=CISCO_EPNM!ND=NCS2006-239-
55!CTP=name=LINE-1-5-3-RX&amp;amp;LINE-1-5-3-TX;lr=lr-optical-transmission-
section</ns31:endpoint-ref>
                    </ns31:endpoint>
                    <ns31:endpoint>
                        <ns31:ip-address>10.58.239.55</ns31:ip-address>
                        <ns31:endpoint-ref>MD=CISCO_EPNM!ND=NCS2006-239-
55!FTP=name=LINE-2-6-3-RX&amp;amp;LINE-2-6-3-TX;lr=lr-optical-transmission-
section</ns31:endpoint-ref>
                    </ns31:endpoint>
                    <ns31:endpoint>
                        <ns31:ip-address>10.58.239.60</ns31:ip-address>
                        <ns31:endpoint-ref>MD=CISCO_EPNM!ND=NCS2006-239-
60!CTP=name=LINE-2-6-3-RX&amp;amp;LINE-2-6-3-TX;lr=lr-optical-transmission-
section</ns31:endpoint-ref>
                    </ns31:endpoint>
                </ns31:endpoint-list>
            </ns31:path>
        </ns31:path-list>
    </ns4:data>
</ns4:response-message>
```


4.38 OTDR link scan

Optical Time Domain Reflectometry is used to provide information about basic characteristic of the Optical fiber among Optical nodes, like Insertion Loss and concentrate point of reflection.

OTDR Scan will be performed on a given topological link. The API is asynchronous in nature. This will initiate a onetime OTDR scan on the OTDR equipment associated with the topological link. The test id associated with the scan will be returned to the user.

The user can download the OTDR SOR file by sending request on the file download URL (Eg: https://{EPNM-SERVER-IP}/restconf/operations/v1/cisco-network-resource-oam:network-resource-oam-config/otdr-scan-test-sor-file/{test-id}?check-ready=true) with the test id associated to the last scan. The SOR file contain details of the last scan. The User will require a third party SOR file reader to read the SOR file.

Sl.no	Name	Type	Description
1	network-resource-oam-request	Container	Holds input request parameters
2	tl-ref	String	FDN of the topological Link
3	scan-direction	QName	Indicates the scan direction to use: Allowed values: a-tx-to-z-rx – Translates to TX_RX a-rx-to-z-tx – Translates to RX z-tx-to-a-rx – Translates to TX
4	distance-profile	QName	Indicates the allowed distance profile parameters: Allowed values: scan-auto-mode scan-expert-mode scan-event scan-zone-one scan-zone-two scan-zone-three scan-zone-four

4.38.1 Request

POST URL : https://<ServerIp>/restconf/data/v1/cisco-network-resource-oam:network-resource-oam-config

```
<?xml version="1.0" encoding="UTF-8"?>
<network-resource-oam-request
      xmlns="urn:cisco:params:xml:ns:yang:network-resource:oam:v1">
      <otdr-scan>
            <tl-ref>MD=CISCO_EPNM!TL=10.58.234.40:[1]--
10.58.234.41:[1]</tl-ref>
            <scan-direction>a-rx-to-z-tx</scan-direction>
            <distance-profile>scan-auto-mode</distance-profile>
      </otdr-scan>
</network-resource-oam-request>
```

4.38.2 Response

```
{
      "noam.network-oam-results-response":{
      "noam.test-ids":1001,
```

```
      "noam.request-id":"otdr-scan$1001$MD=CISCO_EPNM!TL=10.58.234.40:[1]--10.58.234.41:[1]"
      }
}
```

4.38.3 Getting SOR file

URL to Download SOR file:
https://{server_IP}/restconf/operations/v1/cisco-network-resource-oam:network-resource-oam-config/otdr-scan-test-sor-file/1001?check-ready=true

4.38.3.1 *When Not Ready*

```
{
      "rc.errors": {
            "error": {
            "error-type": "application",
            "error-tag":
            "OPERATION_FAILED",
            "error-message": "Last OTDR Scan is Not yet Ready for generating SOR File, Try Again"
            }
      }
}
```

4.38.3.2 *When Ready*

```
The SOR file will be present for download. Sample name of the file will be as below with .sor

With 64834771_RX_baseline_PPM-1-1-2_10.58.234.40_2016_7_229_0_52CEST.sor
```

4.39 AINS - Automatic In-Service

NCS42xx and ASR9xx platforms shall support to manage equipment and port state model in two modes in default, namely Transport mode and router mode.

In “Transport mode” system shall support subset of generic state requirements for Network Elements (NEs) as per GR1093. In “Router mode” system shall support Cisco standard representation for Equipment and port model. “Transport mode” is super set of “Router mode”.

Below table gives details about input request arguments:

Sl.no	Name	Type	Description
1	reserve-equipment-request	Container	Holds input request parameters
2	nd-ref	String	FDN of the network device
3	parent-resource-name	String	Slot Names for the AINS
4	product-id	String	Product Id for the AINS

4.39.1 Request

POST URL : https://<ServerIp>/restconf/data/v1/cisco-nrf-physical:reserve-equipment

```
<p:reserve-equipment-request
      xmlns:p="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
```

```
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:nrf-physical:v1
cisco-nrf-physical.xsd ">
      <p:node-ref>MD=CISCO_EPNM!ND=EPNNCS4216-120.20.Cisco.com</p:node-
ref>
      <p:parent-resource-name>subslot 0/12</p:parent-resource-name>
      <p:product-id>NCS4200-1T8S-10CS</p:product-id>
</p:reserve-equipment-request>
```

4.39.2 Response

```
<ns4:response-message
xmlns:ns41="urn:cisco:params:xml:ns:yang:restconf:party"
      xmlns:ns40="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns39="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns38="urn:ietf:params:xml:ns:yang:ietf-restconf"
      xmlns:ns37="urn:cisco:params:xml:ns:yang:service:activation:status:v
1"
      xmlns:ns36="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
      xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns32="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns31="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
      xmlns:ns30="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns29="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
      xmlns:ns28="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns26="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns24="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
      xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical-ops:v1"
      xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
      xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
      xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
      <ns4:header>
            <ns4:firstIndex>0</ns4:firstIndex>
            <ns4:lastIndex>0</ns4:lastIndex>
      </ns4:header>
      <ns4:data>
```

```
            <ns23:reserve-equipment-response>
                  <ns23:result>
                        <ns23:status>OPERATION_SUCCESSFUL</ns23:status>
                  </ns23:result>
            </ns23:reserve-equipment-response>
      </ns4:data>
</ns4:response-message>
```

4.40 Equipment Operations – Reserve, Reload, Provision

NCS2K platforms shall support the ability to reserve/pre-provision a card slot. For cards that already exist, users will have the ability to set the card mode by provisioning the card. Finally, a user may also choose to reload the card.

4.40.1 Reserve Equipment

Below is the required inputs to reserve/pre-provision a NCS2K device.

Sl.no	Name	Type	Description
1	reserve-equipment-request	Container	Holds input request parameters
2	nd-ref	String	FDN of the network device
3	parent-resource-name	String	Slot location of the card
4	product-id	String	Product Id for the card
5	resource-type	String	MODULE

4.40.1.1 *Request*

POST URL : https://<ServerIp>/restconf/data/v1/cisco-nrf-physical:reserve-equipment

```
<p:reserve-equipment-request
      xmlns:p="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:nrf-physical:v1 cisco-nrf-physical.xsd ">
      <p:node-ref>MD=CISCO_EPNM!ND=NCS2006-239-56</p:node-ref>
      <p:parent-resource-name>shelf=2/slot=8</p:parent-resource-name>
      <p:product-id>TNC</p:product-id>
      <p:resource-type>MODULE</p:resource-type>
<p:reserve-equipment-request/>
```

4.40.1.2 *Response*

```
      <p:reserve-equipment-response
xmlns:p="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:nrf-physical:v1 cisco-nrf-physical.xsd ">
      <p:node-ref>MD=CISCO_EPNM!ND=NCS2006-239-56</p:node-ref>
      <p:parent-resource-name>shelf=2/slot=8</p:parent-resource-name>
      <p:product-id>TNC</p:product-id>
      <p:resource-type>MODULE</p:resource-type>
      <p:resource-ref>MD=CISCO_EPNM!ND=NCS2006-239-56!EQ=name=SLOT-2-8</p:resource-ref>
</p:reserve-equipment-response>
```

4.40.2 Unreserve Equipment

The payload is exactly the same as Reserve Equipment. For response, you will receive a 200 message on success. The only difference is that you must change the payload to be:
`<p:unreserve-equipment-request>`

4.40.3 Reload Equipment

This api allows a user to reload an already provisioned card on an NCS2K device.

4.40.3.1 *Request*

POST URL : https://<ServerIp>/restconf/data/v1/cisco-nrf-physical:reload-equipment

```
<p:provision-equipment-request
      xmlns:p="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:nrf-physical:v1 cisco-
nrf-physical.xsd ">
      <p:resource-ref>MD=CISCO_EPNM!ND=NCS2006-239-56!EQ=name=SLOT-4-
1;partnumber=15454-M-TNC-K9</p:node-ref>
<p:provision-equipment-request/>
```

4.40.3.2 *Response*

200 Response on success.

4.40.4 Provision Equipment (Card Mode)

Allows a user to set the card operating mode for a card. For available card operating modes, see the yang file.

4.40.4.1 *Request*

POST URL : https://<ServerIp>/restconf/data/v1/cisco-nrf-physical:provision-equipment

```
<p:provision-equipment-request
      xmlns:p="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:nrf-physical:v1 cisco-
nrf-physical.xsd ">
      <p:operation>create</p:operation>
      <p:resource-ref>MD=CISCO_EPNM!ND=ncs2006-239-71!EQ=name=SLOT-
2</p:resource-ref>
      <p:operating-mode>
            <p:mode>EQ_MODE_TXPP_10G</p:mode>
            <p:trunk-client-port>
                  <p:client-port>7</p:client-port>
                  <p:trunk-port>7&8</p:trunk-port>
            </p:trunk-client-port>
      </p:operating-mode>
<p: provision-equipment-request/>
```

4.40.4.2 *Response*

```
<p:provision-equipment-response
      xmlns:p="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
```

```
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:nrf-physical:v1 cisco-
nrf-physical.xsd ">
      <p:operation>create</p:operation>
      <p:resource-ref>MD=CISCO_EPNM!ND=ncs2006-239-71!EQ=name=SLOT-
2</p:resource-ref>
      <p:operating-mode>
            <p:mode>EQ_MODE_TXPP_10G</p:mode>
            <p:trunk-client-port>
                  <p:client-port>7</p:client-port>
                  <p:trunk-port>7&8</p:trunk-port>
            </p:trunk-client-port>
      </p:operating-mode>
      <p:result>
            <p:status>sample status</p:status>
            <p:message>sample message</p:message>
      </p:result>
<p: provision-equipment-response />
```

4.40.5 Unprovision Equipment (Card Mode)

Allows a user to delete the card mode for a specific card. Request and response are essentially the same. Main difference being change from provision to unprovision:

```
<p: unprovision-equipment-response />
```

and operation from “create” to “delete”

4.40.5.1 *Request*

POST URL : https://<ServerIp>/restconf/data/v1/cisco-nrf-physical:unprovision-equipment

```
<p:unprovision-equipment-request
      xmlns:p="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:nrf-physical:v1 cisco-
nrf-physical.xsd ">
      <p:operation>delete</p:operation>
      <p:resource-ref>MD=CISCO_EPNM!ND=ncs2006-239-71!EQ=name=SLOT-
2</p:resource-ref>
      <p:operating-mode>
            <p:mode>EQ_MODE_TXPP_10G</p:mode>
            <p:trunk-client-port>
                  <p:client-port>7</p:client-port>
                  <p:trunk-port>7&8</p:trunk-port>
            </p:trunk-client-port>
      </p:operating-mode>
<p:unprovision-equipment-request/>
```

4.40.5.2 *Response*

```
<p:provision-equipment-response
      xmlns:p="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:nrf-physical:v1 cisco-
nrf-physical.xsd ">
      <p:operation>delete</p:operation>
      <p:resource-ref>MD=CISCO_EPNM!ND=ncs2006-239-71!EQ=name=SLOT-
2</p:resource-ref>
      <p:operating-mode>
```

```
            <p:mode>EQ_MODE_TXPP_10G</p:mode>
            <p:trunk-client-port>
                  <p:client-port>7</p:client-port>
                  <p:trunk-port>7&8</p:trunk-port>
            </p:trunk-client-port>
      </p:operating-mode>
      <p:result>
            <p:status>sample status</p:status>
            <p:message>sample message</p:message>
      </p:result>
<p: provision-equipment-response />
```

4.41 Protection Switch Action

Automatic protection switching (APS) is a protection mechanism for SONET networks that enables SONET connections to switch to another SONET circuit when a circuit failure occurs. A protect interface serves as the backup interface for the working interface. When the working interface fails, the protect interface quickly assumes its traffic load.

4.41.1 Force Switch on Working path

4.41.1.1 *Request*

POST URL : https://<ServerIp>/restconf/data/v1/cisco-service-action:protection-switch

```
<?xml version="1.0" encoding="UTF-8"?>
<sact:protection-switch-service-action-request
      xmlns:sact="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
      <sact:vc-ref>MD=CISCO_EPNM!CFS=AGELMO_OCHNC-PSM-PROTECTED_CTC
      </sact:vc-ref>
      <sact:action-type>force-switch</sact:action-type>
      <sact:protection-role>working-path</sact:protection-role>
</sact:protection-switch-service-action-request>
```

4.41.1.2 *Response*

```
<ns26:protection-switch-service-response
      xmlns:ns37="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns36="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns34="urn:ietf:params:xml:ns:yang:ietf-restconf"
      xmlns:ns33="urn:cisco:params:xml:ns:yang:service:activation:status:v
1"
      xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
      xmlns:ns31="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns30="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns29="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns28="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns27="urn:cisco:params:xml:ns:yang:yang-push:v1"
      xmlns:ns26="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns24="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical-ops:v1"
      xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
```

```
      xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
      xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
      <ns26:vc-ref>MD=CISCO_EPNM!CFS=AGELMO_OCHNC-PSM-PROTECTED_CTC
      </ns26:vc-ref>
      <ns26:status>COMPLETED</ns26:status>
      <ns26:result>SUCCESS</ns26:result>
      <ns26:node-ref>MD=CISCO_EPNM!ND=454A-234-50</ns26:node-ref>
      <ns26:device-configuration>Message :
            OPR-PROTNSW-OTS::LINE-2-1-2-RX:123::FRCD;
      </ns26:device-configuration>
</ns26:protection-switch-service-response>
```

4.41.2 Force switch on protected path

4.41.2.1 *Request*

POST URL: https://<ServerIp>/restconf/data/v1/cisco-service-action:protection-switch

```
<?xml version="1.0" encoding="UTF-8"?>
<sact:protection-switch-service-action-request
      xmlns:sact="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
      <sact:vc-ref>MD=CISCO_EPNM!CFS=AGELMO_OCHNC-PSM-PROTECTED_CTC
      </sact:vc-ref>
      <sact:action-type>force-switch</sact:action-type>
      <sact:protection-role>protect-path</sact:protection-role>
</sact:protection-switch-service-action-request>
```

4.41.2.2 *Response*

```
<ns26:protection-switch-service-response
      xmlns:ns37="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns36="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns34="urn:ietf:params:xml:ns:yang:ietf-restconf"
      xmlns:ns33="urn:cisco:params:xml:ns:yang:service:activation:status:v
1"
      xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
      xmlns:ns31="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns30="urn:cisco:params:xml:ns:yang:restconf:location"
```

```
xmlns:ns29="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns28="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns27="urn:cisco:params:xml:ns:yang:yang-push:v1"
      xmlns:ns26="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns24="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical-ops:v1"
      xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
      xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
      xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
      <ns26:vc-ref>MD=CISCO_EPNM!CFS=AGELMO_OCHNC-PSM-PROTECTED_CTC
      </ns26:vc-ref>
      <ns26:status>COMPLETED</ns26:status>
      <ns26:result>SUCCESS</ns26:result>
      <ns26:node-ref>MD=CISCO_EPNM!ND=454A-234-50</ns26:node-ref>
      <ns26:device-configuration>Message :
            OPR-PROTNSW-OTS::LINE-2-1-1-RX:123::FRCD;
      </ns26:device-configuration>
</ns26:protection-switch-service-response>
```

4.41.3 Lockout on working path

4.41.3.1 *Request*

POST URL: https://<ServerIp>/restconf/data/v1/cisco-service-action:protection-switch

```
<?xml version="1.0" encoding="UTF-8"?>
<sact:protection-switch-service-action-request
      xmlns:sact="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
      <sact:vc-ref>MD=CISCO_EPNM!CFS=AGELMO_OCHNC-PSM-PROTECTED_CTC
      </sact:vc-ref>
      <sact:action-type>lockout</sact:action-type>
      <sact:protection-role>working-path</sact:protection-role>
</sact:protection-switch-service-action-request>
```

4.41.3.2 *Response*

```
<ns26:protection-switch-service-response
```

```
      xmlns:ns37="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns36="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns34="urn:ietf:params:xml:ns:yang:ietf-restconf"
      xmlns:ns33="urn:cisco:params:xml:ns:yang:service:activation:status:v
1"
      xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
      xmlns:ns31="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns30="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns29="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns28="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns27="urn:cisco:params:xml:ns:yang:yang-push:v1"
      xmlns:ns26="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns24="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical-ops:v1"
      xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
      xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
      xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
      <ns26:vc-ref>MD=CISCO_EPNM!CFS=AGELMO_OCHNC-PSM-PROTECTED_CTC
      </ns26:vc-ref>
      <ns26:status>COMPLETED</ns26:status>
      <ns26:result>SUCCESS</ns26:result>
      <ns26:node-ref>MD=CISCO_EPNM!ND=454A-234-50</ns26:node-ref>
      <ns26:device-configuration>Message :
            OPR-PROTNSW-OTS::LINE-2-1-1-RX:123::LOCKOUT;
      </ns26:device-configuration>
</ns26:protection-switch-service-response>
```

4.41.4 Manual switch on working path

4.41.4.1 *Request*

POST URL: https://<ServerIp>/restconf/data/v1/cisco-service-action:protection-switch

```
<?xml version="1.0" encoding="UTF-8"?>
<sact:protection-switch-service-action-request
      xmlns:sact="urn:cisco:params:xml:ns:yang:service:action:v1"
```

```
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
      <sact:vc-ref>MD=CISCO_EPNM!CFS=AGELMO_OCHNC-PSM-PROTECTED_CTC
      </sact:vc-ref>
      <sact:action-type>manual-switch</sact:action-type>
      <sact:protection-role>working-path</sact:protection-role>
      </sact:protection-switch-service-action-request>
```

4.41.4.2 *Response*

```
<ns28:protection-switch-service-response
      xmlns:ns41="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns40="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns39="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns38="urn:ietf:params:xml:ns:yang:ietf-restconf"
      xmlns:ns37="urn:cisco:params:xml:ns:yang:service:activation:status:v
1"
      xmlns:ns36="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
      xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns32="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns31="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
      xmlns:ns30="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns29="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
      xmlns:ns28="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns26="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns24="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
      xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical-ops:v1"
      xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
      xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
      xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
      <ns28:vc-ref>MD=CISCO_EPNM!CFS=AGELMO_OCHNC-PSM-PROTECTED_CTC
      </ns28:vc-ref>
      <ns28:status>COMPLETED</ns28:status>
      <ns28:result>SUCCESS</ns28:result>
      <ns28:node-ref>MD=CISCO_EPNM!ND=454A-234-50</ns28:node-ref>
      <ns28:device-configuration>Message :
```

```
            OPR-PROTNSW-OTS::LINE-2-1-2-RX:123::MAN;
      </ns28:device-configuration>
</ns28:protection-switch-service-response>
```

4.41.1 Manual switch on Protected path

4.41.1.1 *Request*

POST URL: https://<ServerIp>/restconf/data/v1/cisco-service-action:protection-switch

```
<?xml version="1.0" encoding="UTF-8"?>
<sact:protection-switch-service-action-request
      xmlns:sact="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
      <sact:vc-ref>MD=CISCO_EPNM!CFS=AGELMO_OCHNC-PSM-PROTECTED_CTC
      </sact:vc-ref>
      <sact:action-type>manual-switch</sact:action-type>
      <sact:protection-role> protect-path</sact:protection-role>
      </sact:protection-switch-service-action-request>
```

4.41.1.2 *Response*

```
<ns28:protection-switch-service-response
      xmlns:ns41="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns40="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns39="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns38="urn:ietf:params:xml:ns:yang:ietf-restconf"
      xmlns:ns37="urn:cisco:params:xml:ns:yang:service:activation:status:v
1"
      xmlns:ns36="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
      xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns32="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns31="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
      xmlns:ns30="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns29="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
      xmlns:ns28="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns26="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns24="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
      xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical-ops:v1"
      xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
      xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
```

```
      xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
      xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
      <ns28:vc-ref>MD=CISCO_EPNM!CFS=AGELMO_OCHNC-PSM-PROTECTED_CTC
      </ns28:vc-ref>
      <ns28:status>COMPLETED</ns28:status>
      <ns28:result>SUCCESS</ns28:result>
      <ns28:node-ref>MD=CISCO_EPNM!ND=454A-234-50</ns28:node-ref>
      <ns28:device-configuration>Message :
            OPR-PROTNSW-OTS::LINE-2-1-2-RX:123::MAN;
      </ns28:device-configuration>
</ns28:protection-switch-service-response>
```

4.41.2 Clear Action –Protection Switch

4.41.2.1 *Request*

POST URL: https://<ServerIp>/restconf/data/v1/cisco-service-action:protection-switch

```
<?xml version="1.0" encoding="UTF-8"?>
<sact:protection-switch-service-action-request
      xmlns:sact="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
      <sact:vc-ref>MD=CISCO_EPNM!CFS=AGELMO_OCHNC-PSM-PROTECTED_CTC
      </sact:vc-ref>
      <sact:action-type>clear</sact:action-type>
      <sact:protection-role>working-path</sact:protection-role>
</sact:protection-switch-service-action-request>
```

4.41.2.2 *Response*

```
<ns28:protection-switch-service-response
      xmlns:ns41="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns40="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns39="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns38="urn:ietf:params:xml:ns:yang:ietf-restconf"
      xmlns:ns37="urn:cisco:params:xml:ns:yang:service:activation:status:v
1"
      xmlns:ns36="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
      xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns32="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns31="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
      xmlns:ns30="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns29="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
      xmlns:ns28="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns26="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns24="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
      xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical-ops:v1"
```

```
      xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
      xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
      xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
      <ns28:vc-ref>MD=CISCO_EPNM!CFS=AGELMO_OCHNC-PSM-PROTECTED_CTC
      </ns28:vc-ref>
      <ns28:status>COMPLETED</ns28:status>
      <ns28:result>SUCCESS</ns28:result>
      <ns28:node-ref>MD=CISCO_EPNM!ND=454A-234-50</ns28:node-ref>
      <ns28:device-configuration>Message : Command executed
Successfully.</ns28:device-configuration>
</ns28:protection-switch-service-response>
```

4.42 Provision 5G slot mode to EOWYN Line card

This API helps operator to provision 5G slot mode in Eowyn line card.
Below table gives details about input request arguments:

Sl.no	Name	Type	Description
1	node-ref	String(FDN)	Node ref of the node being used. e.g. MD=CISCO_EPNM!ND=EPNNCS4206-120.19
2	operating-mode	Container	Container for the possible modes
3	mode	String	Indicates mode to be used. Allowed value : EQ_MODE_5G
4	resource-name	String	Slot to be used e.g. slot0/3

4.42.1 Request

POST URL: https://<ServerIp>/restconf/data/v1/cisco-nrf-physical:provision-equipment

```
<?xml version="1.0" encoding="UTF-8"?>
<p:provision-equipment-request
      xmlns:p="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:p1="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:xsi=http://www.w3.org/2001/XMLSchema-instance
```

```
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:nrf-physical:v1
../../../target/classes/generated-sources/pyang/xsd/cisco-nrf-physical.xsd
">
      <p:node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-120.19</p:node-ref>
      <p:operating-mode>
            <p:mode>EQ_MODE_5G</p:mode>
      </p:operating-mode>
      <p:resource-name>slot0/3</p:resource-name>
</p:provision-equipment-request>
```

4.42.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
<ns4:response-message
xmlns:ns41="urn:cisco:params:xml:ns:yang:restconf:party"
      xmlns:ns40="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns39="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns38="urn:ietf:params:xml:ns:yang:ietf-restconf"
      xmlns:ns37="urn:cisco:params:xml:ns:yang:service:activation:status:v
1"
      xmlns:ns36="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
      xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns32="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns31="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
      xmlns:ns30="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns29="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
      xmlns:ns28="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns26="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns24="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
      xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical-ops:v1"
      xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
      xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
```

```
      xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
      <ns4:header>
            <ns4:firstIndex>0</ns4:firstIndex>
            <ns4:lastIndex>0</ns4:lastIndex>
      </ns4:header>
      <ns4:data>
            <ns23:provision-equipment-response>
                  <ns23:operating-mode>
                        <ns23:mode>EQ_MODE_5G</ns23:mode>
                        <ns23:result>
                              <ns23:status> SUCCESS</ns23:status>
                              <ns23:message>Success</ns23:message>
                        </ns23:result>
                  </ns23:operating-mode>
            </ns23:provision-equipment-response>
      </ns4:data>
</ns4:response-message>
```

5 Troubleshooting

The table below provides some issues you might encounter when setting up the OSS integration layer. It also describes the steps to troubleshoot each issue.

Problem Description	Indication	Probable Cause	Troubleshooting Procedure
No response to HTTP GET request	Client reports it could not get any response to the query (server is not listening at port).	Server is down. SSL certificate not installed.	Verify that server is up by logging through GUI. Install SSL certificate on server. Then examine logs/console.log for errors.
401 or 403	Server returns 404 Not Found and “No service was found.”	The credentials are incorrect.	Verify that a basic Authorization header with valid user/password is included in the request.
Module not found	Server returns 500 Internal Server Error and an error message stating that the module was not found.	The URL is incorrect.	Issue a ../restconf/vi/modules request to get a list of supported URLs and correct the URL in the request.
Invalid column	Server returns 500 Internal Server Error and an error message stating that “x is not a valid column in the database”.	The query arguments contain an invalid column name, pagination directive, or sorting directive.	Correct the column or directive in the query parameters.
No content	Server returns 204 No Content and no message body.	The query arguments or the URL do not match any objects.	Alter the URL or the query parameters to match one or more objects.
Data are returned in the wrong format	Expected XML format and retrieved JSON. Expected JSON format and retrieved XML.	Accept header missing or incorrect in the request.	Specify application/<desired format> in the Accept header.
Server error with no error message	Sent a valid URL and server returns a 500 Internal Server Error with no error message field.	Unsupported format in Accept header.	Specify supported format in the Accept header.
Server returns an array with no records	Server returns 200 OK and a body with an empty of the requested object type.	No objects of the requested type in the database.	Verify that services that generate this type of object are provisioned in Cisco EPN Manager.

6 YANG Schema for Cisco EPN Manager RESTCONF NBI Data Modules

Download Yang and XSD Schema files.

7 Cisco EPN Manager RESTCONF NBI Request and Response Samples

This appendix provides sample Requests and Responses for CEM and MPLS-TE Provisioning and Retrieval API.

7.1 YANG Modules

7.1.1 List Supported YANG Modules

7.1.1.1 *Request*

GET /restconf/restconf/data/ietf-yang-library:modules-state HTTP/1.1
Host: <epnm-host>
Accept: application/yang-data+xml
Authorization: Basic …

7.1.1.2 *Response*

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/yang-data+xml

```
<ns2:modules-state xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-
yang-library">
    <module-set-id>2016-09-16</module-set-id>
    <module>
        <description>Acknowledge Alarm</description>
        <name>cisco-alarm</name>

<namespace>urn:cisco:params:xml:ns:yang:alarms:v1</namespace>
        <namespacePrefix>alm</namespacePrefix>
        <operation>false</operation>
        <released>true</released>

<resourcePath>https://example.cisco.com/restconf/data/v1/cisco-
alarm:handle-alarm</resourcePath>
        <revision>2015-05-18</revision>
        <rootResourceName>handle-alarm</rootResourceName>

<schema>https://example.cisco.com/restconf/schema/v1/cisco-
alarms</schema>
    </module>
    <module>
        <description>Customer Resource</description>
        <name>cisco-customer</name>

<namespace>urn:cisco:params:xml:ns:yang:sb:customer:v1</namespace>
        <namespacePrefix>cu</namespacePrefix>
        <operation>false</operation>
        <released>true</released>

<resourcePath>https://example.cisco.com/restconf/data/v1/cisco-
customer:customer</resourcePath>
        <revision>2016-05-10</revision>
        <rootResourceName>customer</rootResourceName>

<schema>https://example.cisco.com/restconf/schema/v1/cisco-
```

```
customer</schema>
    </module>
    <module>
        <description>A subscription interface to register for
notifications. Also provides details on existing
subscriptions</description>
        <name>cisco-notifications</name>
        <operation>false</operation>
        <released>true</released>

<resourcePath>https://example.cisco.com/restconf/data/v1/cisco-
notifications:subscription</resourcePath>
        <revision>2016-01-01</revision>
        <rootResourceName>subscription</rootResourceName>

<schema>https://example.cisco.com/restconf/schema/v1/cisco-yang-
push</schema>
    </module>
    <module>
        <description>QoS Policy Resource</description>
        <name>cisco-qos</name>
        <namespace>urn:cisco:params:xml:ns:yang:qos:v1</namespace>
        <namespacePrefix>qos</namespacePrefix>
        <operation>false</operation>
        <released>true</released>

<resourcePath>https://example.cisco.com/restconf/data/v1/cisco-
qos:qos-policy</resourcePath>
        <revision>2016-05-10</revision>
        <rootResourceName>qos-policy</rootResourceName>

<schema>https://example.cisco.com/restconf/schema/v1/cisco-
qos</schema>
    </module>
    <module>
        <description>QoS Profile Resource</description>
        <name>cisco-qos</name>
        <namespace>urn:cisco:params:xml:ns:yang:qos:v1</namespace>
        <namespacePrefix>qos</namespacePrefix>
        <operation>false</operation>
        <released>true</released>

<resourcePath>https://example.cisco.com/restconf/data/v1/cisco-
qos:qos-profile</resourcePath>
        <revision>2016-05-10</revision>
        <rootResourceName>qos-profile</rootResourceName>

<schema>https://example.cisco.com/restconf/schema/v1/cisco-
qos</schema>
    </module>
    <module>
        <description>Assign Shared Risk Resource
Group</description>
        <name>cisco-resource-activation</name>

<namespace>urn:cisco:params:xml:ns:yang:sb:srrg:v1</namespace>
```

```
            <namespacePrefix>srrg</namespacePrefix>
            <operation>true</operation>
            <released>true</released>

        <resourcePath>https://example.cisco.com/restconf/operations/v1/cis
        co-resource-activation:assign-shared-risk-resource-
        group</resourcePath>
            <revision>2014-01-01</revision>
            <rootResourceName>assign-shared-risk-resource-
        group</rootResourceName>

        <schema>https://example.cisco.com/restconf/schema/v1/cisco-
        srrg</schema>
        </module>
        <module>
            <description>Get the available CLI template in
        system.</description>
            <name>cisco-resource-activation</name>
            <namespace>urn:cisco:params:xml:ns:yang:ra:v1</namespace>
            <namespacePrefix>ra</namespacePrefix>
            <operation>false</operation>
            <released>true</released>

        <resourcePath>https://example.cisco.com/restconf/data/v1/cisco-
        resource-activation:cli-template</resourcePath>
            <revision>2015-04-02</revision>
            <rootResourceName>cli-template</rootResourceName>

        <schema>https://example.cisco.com/restconf/schema/v1/cisco-
        resource-activation</schema>
        </module>
        <module>
            <description>Create configuration</description>
            <name>cisco-resource-activation</name>
            <namespace>urn:cisco:params:xml:ns:yang:ra:v1</namespace>
            <namespacePrefix>ra</namespacePrefix>
            <operation>true</operation>
            <released>true</released>

        <resourcePath>https://example.cisco.com/restconf/operations/v1/cis
        co-resource-activation:create-config</resourcePath>
            <revision>2015-05-18</revision>
            <rootResourceName>create-config</rootResourceName>

        <schema>https://example.cisco.com/restconf/schema/v1/cisco-
        resource-activation</schema>
        </module>
        <module>
            <description>Create Explicit Path</description>
            <name>cisco-resource-activation</name>
            <namespace>urn:cisco:params:xml:ns:yang:ra:v1</namespace>
            <namespacePrefix>ra</namespacePrefix>
            <operation>true</operation>
            <released>true</released>

        <resourcePath>https://example.cisco.com/restconf/operations/v1/cis
```

```
co-resource-activation:create-explicit-path</resourcePath>
        <revision>2015-05-18</revision>
        <rootResourceName>create-explicit-path</rootResourceName>

<schema>https://example.cisco.com/restconf/schema/v1/cisco-
resource-activation</schema>
    </module>
    <module>
        <description>Create Internal Patch Cord</description>
        <name>cisco-resource-activation</name>
        <namespace>urn:cisco:params:xml:ns:yang:ra:v1</namespace>
        <namespacePrefix>ra</namespacePrefix>
        <operation>true</operation>
        <released>true</released>

<resourcePath>https://example.cisco.com/restconf/operations/v1/cis
co-resource-activation:create-patch-cord</resourcePath>
        <revision>2015-05-18</revision>
        <rootResourceName>create-patch-cord</rootResourceName>

<schema>https://example.cisco.com/restconf/schema/v1/cisco-
resource-activation</schema>
    </module>
    <module>
        <description>Create Protection Profile</description>
        <name>cisco-resource-activation</name>
        <namespace>urn:cisco:params:xml:ns:yang:ra:v1</namespace>
        <namespacePrefix>ra</namespacePrefix>
        <operation>true</operation>
        <released>true</released>

<resourcePath>https://example.cisco.com/restconf/operations/v1/cis
co-resource-activation:create-protection-profile</resourcePath>
        <revision>2015-05-18</revision>
        <rootResourceName>create-protection-
profile</rootResourceName>

<schema>https://example.cisco.com/restconf/schema/v1/cisco-
resource-activation</schema>
    </module>
    <module>
        <description>Create Shared Risk Resource
Group</description>
        <name>cisco-resource-activation</name>

<namespace>urn:cisco:params:xml:ns:yang:sb:srrg:v1</namespace>
        <namespacePrefix>srrg</namespacePrefix>
        <operation>true</operation>
        <released>true</released>

<resourcePath>https://example.cisco.com/restconf/operations/v1/cis
co-resource-activation:create-shared-risk-resource-
group</resourcePath>
        <revision>2014-01-01</revision>
        <rootResourceName>create-shared-risk-resource-
group</rootResourceName>
```

```
<schema>https://example.cisco.com/restconf/schema/v1/cisco-
srrg</schema>
    </module>
    <module>
        <description>Delete configuration</description>
        <name>cisco-resource-activation</name>
        <namespace>urn:cisco:params:xml:ns:yang:ra:v1</namespace>
        <namespacePrefix>ra</namespacePrefix>
        <operation>true</operation>
        <released>true</released>

<resourcePath>https://example.cisco.com/restconf/operations/v1/cis
co-resource-activation:delete-config</resourcePath>
        <revision>2015-05-18</revision>
        <rootResourceName>delete-config</rootResourceName>

<schema>https://example.cisco.com/restconf/schema/v1/cisco-
resource-activation</schema>
    </module>
    <module>
        <description>Delete explicit-path</description>
        <name>cisco-resource-activation</name>
        <namespace>urn:cisco:params:xml:ns:yang:ra:v1</namespace>
        <namespacePrefix>ra</namespacePrefix>
        <operation>true</operation>
        <released>true</released>

<resourcePath>https://example.cisco.com/restconf/operations/v1/cis
co-resource-activation:delete-explicit-path</resourcePath>
        <revision>2015-05-18</revision>
        <rootResourceName>delete-explicit-path</rootResourceName>

<schema>https://example.cisco.com/restconf/schema/v1/cisco-
resource-activation</schema>
    </module>
    <module>
        <description>Delete Internal Patch Cord</description>
        <name>cisco-resource-activation</name>
        <namespace>urn:cisco:params:xml:ns:yang:ra:v1</namespace>
        <namespacePrefix>ra</namespacePrefix>
        <operation>true</operation>
        <released>true</released>

<resourcePath>https://example.cisco.com/restconf/operations/v1/cis
co-resource-activation:delete-patch-cord</resourcePath>
        <revision>2015-05-18</revision>
        <rootResourceName>delete-patch-cord</rootResourceName>

<schema>https://example.cisco.com/restconf/schema/v1/cisco-
resource-activation</schema>
    </module>
    <module>
        <description>Delete Protection Profile</description>
        <name>cisco-resource-activation</name>
        <namespace>urn:cisco:params:xml:ns:yang:ra:v1</namespace>
```

```
            <namespacePrefix>ra</namespacePrefix>
            <operation>true</operation>
            <released>true</released>

        <resourcePath>https://example.cisco.com/restconf/operations/v1/cis
        co-resource-activation:delete-protection-profile</resourcePath>
            <revision>2015-05-18</revision>
            <rootResourceName>delete-protection-
        profile</rootResourceName>

        <schema>https://example.cisco.com/restconf/schema/v1/cisco-
        resource-activation</schema>
        </module>
        <module>
            <description>Delete Shared Risk Resource
        Group</description>
            <name>cisco-resource-activation</name>

        <namespace>urn:cisco:params:xml:ns:yang:sb:srrg:v1</namespace>
            <namespacePrefix>srrg</namespacePrefix>
            <operation>true</operation>
            <released>true</released>

        <resourcePath>https://example.cisco.com/restconf/operations/v1/cis
        co-resource-activation:delete-shared-risk-resource-
        group</resourcePath>
            <revision>2014-01-01</revision>
            <rootResourceName>delete-shared-risk-resource-
        group</rootResourceName>

        <schema>https://example.cisco.com/restconf/schema/v1/cisco-
        srrg</schema>
        </module>
        <module>
            <description>Get the job status and result of CLI template
        execution</description>
            <name>cisco-resource-activation</name>
            <namespace>urn:cisco:params:xml:ns:yang:ra:v1</namespace>
            <namespacePrefix>ra</namespacePrefix>
            <operation>true</operation>
            <released>true</released>

        <resourcePath>https://example.cisco.com/restconf/operations/v1/cis
        co-resource-activation:get-cli-configuration-run-
        status</resourcePath>
            <revision>2015-04-02</revision>
            <rootResourceName>get-cli-configuration-run-
        status</rootResourceName>

        <schema>https://example.cisco.com/restconf/schema/v1/cisco-
        resource-activation</schema>
        </module>
        <module>
            <description>Modify configuration</description>
            <name>cisco-resource-activation</name>
            <namespace>urn:cisco:params:xml:ns:yang:ra:v1</namespace>
```

```
            <namespacePrefix>ra</namespacePrefix>
            <operation>true</operation>
            <released>true</released>

        <resourcePath>https://example.cisco.com/restconf/operations/v1/cis
        co-resource-activation:modify-config</resourcePath>
            <revision>2015-05-18</revision>
            <rootResourceName>modify-config</rootResourceName>

        <schema>https://example.cisco.com/restconf/schema/v1/cisco-
        resource-activation</schema>
        </module>
        <module>
            <description>Modify explicit-path</description>
            <name>cisco-resource-activation</name>
            <namespace>urn:cisco:params:xml:ns:yang:ra:v1</namespace>
            <namespacePrefix>ra</namespacePrefix>
            <operation>true</operation>
            <released>true</released>

        <resourcePath>https://example.cisco.com/restconf/operations/v1/cis
        co-resource-activation:modify-explicit-path</resourcePath>
            <revision>2015-05-18</revision>
            <rootResourceName>modify-explicit-path</rootResourceName>

        <schema>https://example.cisco.com/restconf/schema/v1/cisco-
        resource-activation</schema>
        </module>
        <module>
            <description>Modify Protection Profile</description>
            <name>cisco-resource-activation</name>
            <namespace>urn:cisco:params:xml:ns:yang:ra:v1</namespace>
            <namespacePrefix>ra</namespacePrefix>
            <operation>true</operation>
            <released>true</released>

        <resourcePath>https://example.cisco.com/restconf/operations/v1/cis
        co-resource-activation:modify-protection-profile</resourcePath>
            <revision>2015-05-18</revision>
            <rootResourceName>modify-protection-
        profile</rootResourceName>

        <schema>https://example.cisco.com/restconf/schema/v1/cisco-
        resource-activation</schema>
        </module>
        <module>
            <description>Execution of CLI template
        configuration</description>
            <name>cisco-resource-activation</name>
            <namespace>urn:cisco:params:xml:ns:yang:ra:v1</namespace>
            <namespacePrefix>ra</namespacePrefix>
            <operation>true</operation>
            <released>true</released>

        <resourcePath>https://example.cisco.com/restconf/operations/v1/cis
        co-resource-activation:run-cli-configuration</resourcePath>
```

```
            <revision>2015-04-02</revision>
            <rootResourceName>run-cli-configuration</rootResourceName>

        <schema>https://example.cisco.com/restconf/schema/v1/cisco-
        resource-activation</schema>
        </module>
        <module>
            <description>Set Termination Point.</description>
            <name>cisco-resource-activation</name>
            <namespace>urn:cisco:params:xml:ns:yang:ra:v1</namespace>
            <namespacePrefix>ra</namespacePrefix>
            <operation>true</operation>
            <released>true</released>

        <resourcePath>https://example.cisco.com/restconf/operations/v1/cis
        co-resource-activation:set-termination-point</resourcePath>
            <revision>2016-05-10</revision>
            <rootResourceName>set-termination-point</rootResourceName>

        <schema>https://example.cisco.com/restconf/schema/v1/cisco-
        resource-activation</schema>
        </module>
        <module>
            <description>UnAssign Shared Risk Resource
        Group</description>
            <name>cisco-resource-activation</name>

        <namespace>urn:cisco:params:xml:ns:yang:sb:srrg:v1</namespace>
            <namespacePrefix>srrg</namespacePrefix>
            <operation>true</operation>
            <released>true</released>

        <resourcePath>https://example.cisco.com/restconf/operations/v1/cis
        co-resource-activation:unassign-shared-risk-resource-
        group</resourcePath>
            <revision>2014-01-01</revision>
            <rootResourceName>unassign-shared-risk-resource-
        group</rootResourceName>

        <schema>https://example.cisco.com/restconf/schema/v1/cisco-
        srrg</schema>
        </module>
        <module>
            <description>MPLS TE Explicit Path</description>
            <name>cisco-resource-ems</name>
            <namespace>urn:cisco:params:xml:ns:yang:nrf-mpls-te-
        extension:v1</namespace>
            <namespacePrefix>mplste</namespacePrefix>
            <operation>false</operation>
            <released>true</released>

        <resourcePath>https://example.cisco.com/restconf/data/v1/cisco-
        resource-ems:mpls-te-explicit-path</resourcePath>
            <revision>2016-07-10</revision>
            <rootResourceName>mpls-te-explicit-path</rootResourceName>
```

```
<schema>https://example.cisco.com/restconf/schema/v1/cisco-mpls-
te-extension</schema>
    </module>
    <module>
        <description>Protection Profile</description>
        <name>cisco-resource-ems</name>
        <namespace>urn:cisco:params:xml:ns:yang:protection-
profile:v1</namespace>
        <namespacePrefix>protectionprofile</namespacePrefix>
        <operation>false</operation>
        <released>true</released>

<resourcePath>https://example.cisco.com/restconf/data/v1/cisco-
resource-ems:protection-profile</resourcePath>
        <revision>2016-07-10</revision>
        <rootResourceName>protection-profile</rootResourceName>

<schema>https://example.cisco.com/restconf/schema/v1/cisco-
protection-profile</schema>
    </module>
    <module>
        <description>Termination Point</description>
        <name>cisco-resource-ems</name>
        <namespace>urn:cisco:params:xml:ns:yang:nrf-
tp:v1</namespace>
        <namespacePrefix>tp</namespacePrefix>
        <operation>false</operation>
        <released>true</released>

<resourcePath>https://example.cisco.com/restconf/data/v1/cisco-
resource-ems:termination-point</resourcePath>
        <revision>2016-05-10</revision>
        <rootResourceName>termination-point</rootResourceName>

<schema>https://example.cisco.com/restconf/schema/v1/cisco-
termination-point</schema>
    </module>
    <module>
        <description>Perf Metrics</description>
        <name>cisco-resource-network</name>

<namespace>urn:cisco:params:xml:ns:yang:nrp_perf.v1</namespace>
        <namespacePrefix>vc</namespacePrefix>
        <operation>false</operation>
        <released>true</released>

<resourcePath>https://example.cisco.com/restconf/data/v1/cisco-
resource-network:perf-metrics</resourcePath>
        <revision>2014-01-01</revision>
        <rootResourceName>perf-metrics</rootResourceName>

<schema>https://example.cisco.com/restconf/schema/v1/cisco-
performance-analytics</schema>
    </module>
    <module>
        <description>Shared Risk Resource Group</description>
```

```
            <name>cisco-resource-network</name>
            <namespace>urn:cisco:params:xml:ns:yang:nrf-
        srrg:v1</namespace>
            <namespacePrefix>tl</namespacePrefix>
            <operation>false</operation>
            <released>true</released>

        <resourcePath>https://example.cisco.com/restconf/data/v1/cisco-
        resource-network:shared-risk-resource-group</resourcePath>
            <revision>2014-01-01</revision>
            <rootResourceName>shared-risk-resource-
        group</rootResourceName>

        <schema>https://example.cisco.com/restconf/schema/v1/cisco-
        srrg</schema>
        </module>
        <module>
            <description>Topological Link</description>
            <name>cisco-resource-network</name>
            <namespace>urn:cisco:params:xml:ns:yang:nrf-
        topology:v1</namespace>
            <namespacePrefix>tl</namespacePrefix>
            <operation>false</operation>
            <released>true</released>

        <resourcePath>https://example.cisco.com/restconf/data/v1/cisco-
        resource-network:topological-link</resourcePath>
            <revision>2014-01-01</revision>
            <rootResourceName>topological-link</rootResourceName>

        <schema>https://example.cisco.com/restconf/schema/v1/cisco-
        topology</schema>
        </module>
        <module>
            <description>VirtualConnectionMultiLayerRoute and
        Topology</description>
            <name>cisco-resource-network</name>
            <namespace>urn:cisco:params:xml:ns:yang:nrf-
        topology:v1</namespace>
            <namespacePrefix>tl</namespacePrefix>
            <operation>false</operation>
            <released>true</released>

        <resourcePath>https://example.cisco.com/restconf/data/v1/cisco-
        resource-network:virtual-connection-multi-layer-
        route</resourcePath>
            <revision>2014-01-01</revision>
            <rootResourceName>virtual-connection-multi-layer-
        route</rootResourceName>

        <schema>https://example.cisco.com/restconf/schema/v1/cisco-
        topology</schema>
        </module>
        <module>
            <description>OpticalNetworkElementSettings for RC_Node
        objects</description>
```

```
            <name>cisco-resource-optical</name>

        <namespace>urn:cisco:params:xml:ns:yang:restconf:resource:opt</nam
        espace>
            <operation>false</operation>
            <released>true</released>

        <resourcePath>https://example.cisco.com/restconf/data/v1/cisco-
        resource-optical:optical-nesettings</resourcePath>
            <revision>2014-01-01</revision>
            <rootResourceName>optical-nesettings</rootResourceName>

        <schema>https://example.cisco.com/restconf/schema/v1/cisco-
        resource-optical</schema>
        </module>
        <module>
            <description>A specialization of Equipment that can
        contain other pieces of Equipment (such as enclosure, frame, and
        so on).</description>
            <name>cisco-resource-physical</name>

        <namespace>urn:cisco:params:xml:ns:yang:restconf:resource:physical
        </namespace>
            <operation>false</operation>
            <released>true</released>

        <resourcePath>https://example.cisco.com/restconf/data/v1/cisco-
        resource-physical:chassis</resourcePath>
            <revision>2014-01-01</revision>
            <rootResourceName>chassis</rootResourceName>

        <schema>https://example.cisco.com/restconf/schema/v1/cisco-
        physical-equipment</schema>
        </module>
        <module>
            <description>Represents a piece of hardware that has some
        well-specified function (for example, a line card, memory board,
        or power supply). The structure of an Equipment instance can be
        compound so that an instance of Equipment can contain one or more
        instances of Equipment (containment is represented by linking two
        instances of Equipment using the EquipmentHasEquipment
        association).</description>
            <name>cisco-resource-physical</name>

        <namespace>urn:cisco:params:xml:ns:yang:restconf:resource:physical
        </namespace>
            <operation>false</operation>
            <released>true</released>

        <resourcePath>https://example.cisco.com/restconf/data/v1/cisco-
        resource-physical:equipment</resourcePath>
            <revision>2014-01-01</revision>
            <rootResourceName>equipment</rootResourceName>

        <schema>https://example.cisco.com/restconf/schema/v1/cisco-
        physical-equipment</schema>
```

```
        </module>
        <module>
            <description>This object represent automatic and user
defined groups to which ManagedElements may belong.</description>
            <name>cisco-resource-physical</name>

<namespace>urn:cisco:params:xml:ns:yang:resource:device</namespace
>
            <operation>false</operation>
            <released>true</released>

<resourcePath>https://example.cisco.com/restconf/data/v1/cisco-
resource-physical:group</resourcePath>
            <revision>2014-01-01</revision>
            <rootResourceName>group</rootResourceName>

<schema>https://example.cisco.com/restconf/schema/v1/cisco-
physical-node</schema>
        </module>
        <module>
            <description>Represents a physical module or adapter
card.</description>
            <name>cisco-resource-physical</name>

<namespace>urn:cisco:params:xml:ns:yang:restconf:resource:physical
</namespace>
            <operation>false</operation>
            <released>true</released>

<resourcePath>https://example.cisco.com/restconf/data/v1/cisco-
resource-physical:module</resourcePath>
            <revision>2014-01-01</revision>
            <rootResourceName>module</rootResourceName>

<schema>https://example.cisco.com/restconf/schema/v1/cisco-
physical-equipment</schema>
        </module>
        <module>
            <description>This object represents a device managed by
EPNM. Also known as a managed element (ME).</description>
            <name>cisco-resource-physical</name>

<namespace>urn:cisco:params:xml:ns:yang:resource:device</namespace
>
            <operation>false</operation>
            <released>true</released>

<resourcePath>https://example.cisco.com/restconf/data/v1/cisco-
resource-physical:node</resourcePath>
            <revision>2014-01-01</revision>
            <rootResourceName>node</rootResourceName>

<schema>https://example.cisco.com/restconf/schema/v1/cisco-
physical-node</schema>
        </module>
        <module>
```

```
            <description>Represents a connector, able to transmit
        signals or power when in a connection. For example, an RJ11 jack
        (socket) is a kind of PhysicalConnector.</description>
            <name>cisco-resource-physical</name>

        <namespace>urn:cisco:params:xml:ns:yang:restconf:resource:physical
        </namespace>
            <operation>false</operation>
            <released>true</released>

        <resourcePath>https://example.cisco.com/restconf/data/v1/cisco-
        resource-physical:physical-connector</resourcePath>
            <revision>2014-01-01</revision>
            <rootResourceName>physical-connector</rootResourceName>

        <schema>https://example.cisco.com/restconf/schema/v1/cisco-
        physical-equipment</schema>
        </module>
        <module>
            <description>Alarm</description>
            <name>cisco-rtm</name>

        <namespace>urn:cisco:params:xml:ns:yang:alarms:v1</namespace>
            <namespacePrefix>alarm</namespacePrefix>
            <operation>false</operation>
            <released>true</released>

        <resourcePath>https://example.cisco.com/restconf/data/v1/cisco-
        rtm:alarm</resourcePath>
            <revision>2014-01-01</revision>
            <rootResourceName>alarm</rootResourceName>

        <schema>https://example.cisco.com/restconf/schema/v1/cisco-
        alarms</schema>
        </module>
        <module>
            <description>Alarm</description>
            <name>cisco-rtm</name>

        <namespace>urn:cisco:params:xml:ns:yang:alarms:v1</namespace>
            <namespacePrefix>alm</namespacePrefix>
            <operation>false</operation>
            <released>true</released>

        <resourcePath>https://example.cisco.com/restconf/data/v1/cisco-
        rtm:alarm-with-root-cause</resourcePath>
            <revision>2014-01-02</revision>
            <rootResourceName>alarm-with-root-cause</rootResourceName>

        <schema>https://example.cisco.com/restconf/schema/v1/cisco-
        alarms</schema>
        </module>
        <module>
            <description>Alarm</description>
            <name>cisco-rtm</name>
```

```
<namespace>urn:cisco:params:xml:ns:yang:alarms:v1</namespace>
        <namespacePrefix>alm</namespacePrefix>
        <operation>false</operation>
        <released>true</released>

<resourcePath>https://example.cisco.com/restconf/data/v1/cisco-
rtm:alarm-with-symptom</resourcePath>
        <revision>2014-01-02</revision>
        <rootResourceName>alarm-with-symptom</rootResourceName>

<schema>https://example.cisco.com/restconf/schema/v1/cisco-
alarms</schema>
    </module>
    <module>
        <description>Customer Facing Service Action</description>
        <name>cisco-service-action</name>
        <namespace>urn:cisco:params:xml:ns:yang:si-
service:v1</namespace>
        <namespacePrefix>cfs</namespacePrefix>
        <operation>false</operation>
        <released>true</released>

<resourcePath>https://example.cisco.com/restconf/data/v1/cisco-
service-action:protection-action</resourcePath>
        <revision>2014-01-01</revision>
        <rootResourceName>protection-action</rootResourceName>

<schema>https://example.cisco.com/restconf/schema/v1/cisco-
customer-facing-service</schema>
    </module>
    <module>
        <description>Request to modify a service.</description>
        <name>cisco-service-activation</name>

<namespace>urn:cisco:params:xml:ns:yang:service:activation:v1</nam
espace>
        <namespacePrefix>sa</namespacePrefix>
        <operation>true</operation>
        <released>true</released>

<resourcePath>https://example.cisco.com/restconf/operations/v1/cis
co-service-activation:modify-service</resourcePath>
        <revision>2016-05-10</revision>
        <rootResourceName>modify-service</rootResourceName>

<schema>https://example.cisco.com/restconf/schema/v1/cisco-
service-activation</schema>
    </module>
    <module>
        <description>Request to provision a service.</description>
        <name>cisco-service-activation</name>

<namespace>urn:cisco:params:xml:ns:yang:service:activation:v1</nam
espace>
        <namespacePrefix>sa</namespacePrefix>
        <operation>true</operation>
```

```
            <released>true</released>

        <resourcePath>https://example.cisco.com/restconf/operations/v1/cis
        co-service-activation:provision-service</resourcePath>
            <revision>2016-05-10</revision>
            <rootResourceName>provision-service</rootResourceName>

        <schema>https://example.cisco.com/restconf/schema/v1/cisco-
        service-activation</schema>
        </module>
        <module>
            <description>Request to test a Service.</description>
            <name>cisco-service-activation</name>

        <namespace>urn:cisco:params:xml:ns:yang:service:activation:v1</nam
        espace>
            <namespacePrefix>sa</namespacePrefix>
            <operation>true</operation>
            <released>true</released>

        <resourcePath>https://example.cisco.com/restconf/operations/v1/cis
        co-service-oam:service-oam-config</resourcePath>
            <revision>2016-05-10</revision>
            <rootResourceName>cisco-service-oam</rootResourceName>

        <schema>https://example.cisco.com/restconf/schema/v1/cisco-
        service-activation</schema>
        </module>
        <module>
            <description>Request to terminate a service.</description>
            <name>cisco-service-activation</name>

        <namespace>urn:cisco:params:xml:ns:yang:service:activation:v1</nam
        espace>
            <namespacePrefix>sa</namespacePrefix>
            <operation>true</operation>
            <released>true</released>

        <resourcePath>https://example.cisco.com/restconf/operations/v1/cis
        co-service-activation:terminate-service</resourcePath>
            <revision>2016-05-10</revision>
            <rootResourceName>terminate-service</rootResourceName>

        <schema>https://example.cisco.com/restconf/schema/v1/cisco-
        service-activation</schema>
        </module>
        <module>
            <description>Request to roll a service.</description>
            <name>cisco-service-activation</name>

        <namespace>urn:cisco:params:xml:ns:yang:service:activation:v1</nam
        espace>
            <namespacePrefix>sa</namespacePrefix>
            <operation>true</operation>
            <released>true</released>
            <resourcePath>https://epnm-dev-
```

```
lnx96/restconf/operations/v1/cisco-service-activation:roll-
service</resourcePath>
        <revision>2016-02-15</revision>
        <rootResourceName>roll-service</rootResourceName>
        <schema>https://epnm-dev-lnx96/restconf/schema/v1/cisco-
service-activation</schema>
    </module>
    <module>
        <description>Customer Facing Service</description>
        <name>cisco-service-network</name>
        <namespace>urn:cisco:params:xml:ns:yang:si-
service:v1</namespace>
        <namespacePrefix>cfs</namespacePrefix>
        <operation>false</operation>
        <released>true</released>

<resourcePath>https://example.cisco.com/restconf/data/v1/cisco-
service-network:customer-facing-service</resourcePath>
        <revision>2014-01-01</revision>
        <rootResourceName>customer-facing-
service</rootResourceName>

<schema>https://example.cisco.com/restconf/schema/v1/cisco-
customer-facing-service</schema>
    </module>
    <module>
        <description>IPSLA Profile Resource</description>
        <name>cisco-service-network</name>
        <namespace>urn:cisco:params:xml:ns:yang:nrf-
ipsla:v1</namespace>
        <namespacePrefix>ipsla</namespacePrefix>
        <operation>false</operation>
        <released>true</released>

<resourcePath>https://example.cisco.com/restconf/data/v1/cisco-
service-network:ipsla-profile</resourcePath>
        <revision>2014-01-01</revision>
        <rootResourceName>ipsla-profile</rootResourceName>

<schema>https://example.cisco.com/restconf/schema/v1/cisco-ipsla-
profile</schema>
    </module>
    <module>
        <description>Network Interface Resource</description>
        <name>cisco-service-network</name>

<namespace>urn:cisco:params:xml:ns:yang:sb:networkinterface:v1</na
mespace>
        <namespacePrefix>ni</namespacePrefix>
        <operation>false</operation>
        <released>true</released>

<resourcePath>https://example.cisco.com/restconf/data/v1/cisco-
service-network:network-interface</resourcePath>
        <revision>2014-01-01</revision>
        <rootResourceName>network-interface</rootResourceName>
```

```
<schema>https://example.cisco.com/restconf/schema/v1/cisco-
network-interface</schema>
    </module>
    <module>
        <description>Virtual Connection</description>
        <name>cisco-service-network</name>
        <namespace>urn:cisco:params:xml:ns:yang:nrf-
virtualconnection:v1</namespace>
        <namespacePrefix>vc</namespacePrefix>
        <operation>false</operation>
        <released>true</released>

<resourcePath>https://example.cisco.com/restconf/data/v1/cisco-
service-network:virtual-connection</resourcePath>
        <revision>2014-01-01</revision>
        <rootResourceName>virtual-connection</rootResourceName>

<schema>https://example.cisco.com/restconf/schema/v1/cisco-
virtualconnection</schema>
    </module>
    <module>
        <description>Virtual Connection Route</description>
        <name>cisco-service-network</name>
        <namespace>urn:cisco:params:xml:ns:yang:nrf-
virtualforward:v1</namespace>
        <namespacePrefix>vf</namespacePrefix>
        <operation>false</operation>
        <released>true</released>

<resourcePath>https://example.cisco.com/restconf/data/v1/cisco-
service-network:virtual-connection-route</resourcePath>
        <revision>2014-01-01</revision>
        <rootResourceName>virtual-connection-
route</rootResourceName>

<schema>https://example.cisco.com/restconf/schema/v1/cisco-
virtualforward</schema>
    </module>
    <module>
        <description>Service Profile Resource</description>
        <name>cisco-service-profile</name>
        <namespace>urn:cisco:params:xml:ns:yang:sb:service-
profile:v1</namespace>
        <namespacePrefix>spro</namespacePrefix>
        <operation>false</operation>
        <released>true</released>

<resourcePath>https://example.cisco.com/restconf/data/v1/cisco-
service-profile:service-profile</resourcePath>
        <revision>2016-11-28</revision>
        <rootResourceName>service-profile</rootResourceName>

<schema>https://example.cisco.com/restconf/schema/v1/cisco-
service-profile</schema>
    </module>
```

```
</ns2:modules-state>
```

7.2 Groups

7.2.1 Get All Groups

7.2.1.1 *Request*

GET /restconf/data/v1/cisco-resource-physical:group HTTP/1.1
Host: <epnm-host>
Accept: application/yang-data+xml
Authorization: Basic …

7.2.1.2 *Response*

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/yang-data+xml

```
<ns4:response-message
xmlns:ns27="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns26="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns25="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>1</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns25:group>
            <ns25:containing-group>MD=CISCO_EPNM!GR=All
Locations</ns25:containing-group>
            <ns25:fdn>MD=CISCO_EPNM!GR=New York</ns25:fdn>
            <ns25:location>
                <ns26:name>New York1492187851208</ns26:name>
                <ns27:geographic-point>
                    <ns26:name>New York-GPS-
1492187851209</ns26:name>
                    <ns27:geographic-address></ns27:geographic-
address>
                    <ns27:geographic-coordinates>
                        <ns27:altitude>
                            <ns26:double-amount>0.0</ns26:double-
amount>
                        </ns27:altitude>
                        <ns27:latitude>
                            <ns26:units>hr</ns26:units>
                            <ns26:double-
amount>40.762469</ns26:double-amount>
                        </ns27:latitude>
                        <ns27:longitude>
                            <ns26:units>hr</ns26:units>
                            <ns26:double-amount>-
73.973944</ns26:double-amount>
                        </ns27:longitude>
                    </ns27:geographic-coordinates>
                </ns27:geographic-point>
```

```
                    <ns27:street-address-line1>600 5th Ave, Manhattan,
New York, New York 10022, United States</ns27:street-address-line1>
            </ns25:location>
            <ns25:name>New York</ns25:name>
            <ns25:node>MD=CISCO_EPNM!ND=ASR901-CSG-2-
DOMAIN1.cisco.com</ns25:node>
            <ns25:node>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN3.cisco.com</ns25:node>
            <ns25:node>MD=CISCO_EPNM!ND=ASR9K-CN-ABR2</ns25:node>
            <ns25:node>MD=CISCO_EPNM!ND=ASR-9K-MTG1</ns25:node>
            <ns25:node>MD=CISCO_EPNM!ND=ASR901-CSG-2-
DOMAIN2.cisco.com</ns25:node>
            <ns25:node>MD=CISCO_EPNM!ND=ASR9001-120-164</ns25:node>
            <ns25:node>MD=CISCO_EPNM!ND=ASR9K-CN-
ABR4.test</ns25:node>
            <ns25:node>MD=CISCO_EPNM!ND=ASR903-PAN-5</ns25:node>
            <ns25:node>MD=CISCO_EPNM!ND=ASR9K-CN-
ABR3.cisco.com</ns25:node>
            <ns25:node>MD=CISCO_EPNM!ND=EPNASR9910-104-120-
69</ns25:node>
            <ns25:node>MD=CISCO_EPNM!ND=ASR9K-CN-
ABR1.cisco.com</ns25:node>
            <ns25:node>MD=CISCO_EPNM!ND=ASR903-AGN-
1.cisco</ns25:node>
            <ns25:node>MD=CISCO_EPNM!ND=ASR903-PAN-6</ns25:node>
            <ns25:node>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com</ns25:node>
            <ns25:node>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN.cisco.com</ns25:node>

<ns25:node>MD=CISCO_EPNM!ND=M03.asr9922.plk.pl</ns25:node>
            <ns25:node>MD=CISCO_EPNM!ND=tmh-chn-mvso-asr9k-
3.cisco.com</ns25:node>
        </ns25:group>
        <ns25:group>
            <ns25:contained-group>MD=CISCO_EPNM!GR=Metro
Core</ns25:contained-group>
            <ns25:contained-group>MD=CISCO_EPNM!GR=Cisco Network
Convergence System 4000 Series</ns25:contained-group>
            <ns25:contained-group>MD=CISCO_EPNM!GR=Cisco Network
Convergence System 2000 Series</ns25:contained-group>
            <ns25:contained-group>MD=CISCO_EPNM!GR=Cisco Network
Convergence System 1000 Series</ns25:contained-group>
            <ns25:containing-group>MD=CISCO_EPNM!GR=Device
Type</ns25:containing-group>
            <ns25:description>Optical Networking</ns25:description>
            <ns25:fdn>MD=CISCO_EPNM!GR=Optical Networking</ns25:fdn>
            <ns25:name>Optical Networking</ns25:name>
            <ns25:node>MD=CISCO_EPNM!ND=Genoa</ns25:node>
            <ns25:node>MD=CISCO_EPNM!ND=Firenze</ns25:node>
            <ns25:node>MD=CISCO_EPNM!ND=cvg-rosco-
41.cisco.com</ns25:node>
            <ns25:node>MD=CISCO_EPNM!ND=Venice</ns25:node>
            <ns25:node>MD=CISCO_EPNM!ND=ios</ns25:node>
            <ns25:node>MD=CISCO_EPNM!ND=Battipaglia</ns25:node>
            <ns25:node>MD=CISCO_EPNM!ND=NCS4016-1</ns25:node>
```

```
                    <ns25:node>MD=CISCO_EPNM!ND=Milan</ns25:node>
                    <ns25:node>MD=CISCO_EPNM!ND=Bologna</ns25:node>
                    <ns25:node>MD=CISCO_EPNM!ND=dwdm05-VSO2</ns25:node>
                    <ns25:node>MD=CISCO_EPNM!ND=Barberino</ns25:node>
                    <ns25:node>MD=CISCO_EPNM!ND=OLA1</ns25:node>
                    <ns25:node>MD=CISCO_EPNM!ND=OLA2</ns25:node>
                    <ns25:node>MD=CISCO_EPNM!ND=OLA3</ns25:node>
                    <ns25:node>MD=CISCO_EPNM!ND=cvg-mystique-
      44.cisco.com</ns25:node>
                    <ns25:node>MD=CISCO_EPNM!ND=cvg-frodo-
      86.cisco.com</ns25:node>
                    <ns25:node>MD=CISCO_EPNM!ND=OLA4</ns25:node>
                    <ns25:node>MD=CISCO_EPNM!ND=OLA5</ns25:node>
                    <ns25:node>MD=CISCO_EPNM!ND=Capaccio</ns25:node>
                    <ns25:node>MD=CISCO_EPNM!ND=Roma</ns25:node>
                    <ns25:node>MD=CISCO_EPNM!ND=Turin</ns25:node>
                    <ns25:node>MD=CISCO_EPNM!ND=454A-234-48</ns25:node>
                    <ns25:node>MD=CISCO_EPNM!ND=Verona</ns25:node>
                    <ns25:node>MD=CISCO_EPNM!ND=Vietri</ns25:node>
                    <ns25:node>MD=CISCO_EPNM!ND=Agropoli</ns25:node>
                    <ns25:node>MD=CISCO_EPNM!ND=nmtg-tme-m6-57-
      s13</ns25:node>
                    <ns25:node>MD=CISCO_EPNM!ND=NCS4009-2</ns25:node>
                </ns25:group>
            </ns4:data>
</ns4:response-message>
```

7.3 Nodes

7.3.1 Get all Nodes

7.3.1.1 *Request*

GET /restconf/data/v1/cisco-resource-physical:node?.startIndex=4&.maxCount=2 HTTP/1.1
Host: <epnm-host>
Accept: application/yang-data+xml
Authorization: Basic …

7.3.1.2 *Response*

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/yang-data+xml

```
        <ns4:response-message xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:party"
        xmlns:ns33="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
        xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:alarms"
        xmlns:ns31="urn:ietf:params:xml:ns:yang:ietf-restconf"
        xmlns:ns30="urn:cisco:params:xml:ns:yang:service:activation:status:v1"
        xmlns:ns29="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
        xmlns:ns28="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
        xmlns:ns27="urn:cisco:params:xml:ns:yang:restconf:location"
        xmlns:ns26="urn:cisco:params:xml:ns:yang:restconf:foundation"
        xmlns:ns25="urn:cisco:params:xml:ns:yang:resource:device"
        xmlns:ns24="urn:cisco:params:xml:ns:yang:yang-push:v1"
        xmlns:ns23="urn:cisco:params:xml:ns:yang:qos:v1"
        xmlns:ns22="urn:cisco:params:xml:ns:yang:sb:customer:v1"
```

```
xmlns:ns21="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:profile-protection:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:sb:srrg:v1" xmlns:ns17="urn:cisco:params:xml:ns:yang:nrp-
perf:v1" xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1" xmlns:ns12="urn:cisco:params:xml:ns:yang:si-
service:v1" xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1" xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-
tp:v1" xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
  <ns4:header>
    <ns4:firstIndex>4</ns4:firstIndex>
    <ns4:lastIndex>5</ns4:lastIndex>
  </ns4:header>
  <ns4:data>
    <ns25:node>
      <ns25:cluster-count>0</ns25:cluster-count>
      <ns25:collection-status>xde.fn.CallFailed: Failed to execute JavaScript: ReferenceError:
"serviceIds" is not defined. (Script#1):</ns25:collection-status>
      <ns25:collection-time>2017-05-05T00:35:25.109-07:00</ns25:collection-time>
      <ns25:communication-state>Reachable</ns25:communication-state>
      <ns25:creation-time>2017-04-14T09:38:58.825-07:00</ns25:creation-time>
      <ns25:description>Cisco IOS Software, 901 Software (ASR901-UNIVERSALK9-M), Version
15.4(3)S, RELEASE SOFTWARE (fc3)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2014 by Cisco Systems, Inc.
Compiled Sun 27-Jul-14 12:26 by prod_rel_team</ns25:description>
      <ns25:equipment-list>
        <ns28:equipment>
          <ns26:description>A901-6CZ-FT-A Chassis</ns26:description>
          <ns26:name>A901-6CZ-FT-A Chassis</ns26:name>
          <ns28:connectors></ns28:connectors>
          <ns28:contained-equipment-recurse></ns28:contained-equipment-recurse>
          <ns28:contained-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com!EQ=name=Chassis Slot;partnumber=A901-6CZ-FT-A</ns28:contained-equipment>
          <ns28:ent-physical-index>1</ns28:ent-physical-index>
          <ns28:equipment-type>CHASSIS</ns28:equipment-type>
          <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-1-DOMAIN1.cisco.com!EQ=name=A901-6CZ-
FT-A Chassis;partnumber=A901-6CZ-FT-A</ns28:fdn>
          <ns28:hardware-version>V01 </ns28:hardware-version>
          <ns28:is-field-replaceable-unit>FALSE</ns28:is-field-replaceable-unit>
          <ns28:is-physically-present>true</ns28:is-physically-present>
          <ns28:is-reporting-alarms-allowed>UNKNOWN</ns28:is-reporting-alarms-allowed>
          <ns28:manufacturer>Cisco</ns28:manufacturer>
          <ns28:part-number>A901-6CZ-FT-A</ns28:part-number>
```

```
            <ns28:serial-number>CAT1651U09L</ns28:serial-number>
            <ns28:service-state>UNKNOWN</ns28:service-state>
            <ns28:vendor-equipment-type>cevChassisASR901AC10G</ns28:vendor-equipment-type>
         </ns28:equipment>
         <ns28:equipment>
            <ns26:description>A901-6CZ-FT-A Chassis Slot </ns26:description>
            <ns26:name>Chassis Slot</ns26:name>
            <ns28:connectors></ns28:connectors>
            <ns28:contained-equipment-recurse></ns28:contained-equipment-recurse>
            <ns28:contained-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com!EQ=name=A901-6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-
A</ns28:contained-equipment>
            <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com!EQ=name=A901-6CZ-FT-A Chassis;partnumber=A901-6CZ-FT-A</ns28:containing-
equipment>
            <ns28:ent-physical-index>2</ns28:ent-physical-index>
            <ns28:equipment-type>OTHER</ns28:equipment-type>
            <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-1-DOMAIN1.cisco.com!EQ=name=Chassis
Slot;partnumber=A901-6CZ-FT-A</ns28:fdn>
            <ns28:hardware-version>V01 </ns28:hardware-version>
            <ns28:is-field-replaceable-unit>FALSE</ns28:is-field-replaceable-unit>
            <ns28:is-physically-present>true</ns28:is-physically-present>
            <ns28:is-reporting-alarms-allowed>UNKNOWN</ns28:is-reporting-alarms-allowed>
            <ns28:manufacturer>Cisco</ns28:manufacturer>
            <ns28:part-number>A901-6CZ-FT-A</ns28:part-number>
            <ns28:service-state>UNKNOWN</ns28:service-state>
            <ns28:vendor-equipment-type>cevContainerSlot</ns28:vendor-equipment-type>
         </ns28:equipment>
         <ns28:equipment>
            <ns26:description>A901-6CZ-FT-A Motherboard with Built-in 12GE, 2 10GE, 1FE, 8T1E1
</ns26:description>
            <ns26:name>A901-6CZ-FT-A Motherboard </ns26:name>
            <ns28:connectors>
               <ns28:physical-connector>
                  <ns26:description>eTSEC 1</ns26:description>
                  <ns26:name>FastEthernet0/0</ns26:name>
                  <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com!EQ=name=A901-6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-
A</ns28:containing-equipment>
                  <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-1-DOMAIN1.cisco.com!EQ=name=A901-
6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-A!PC=FastEthernet0/0</ns28:fdn>
               </ns28:physical-connector>
               <ns28:physical-connector>
                  <ns26:description>Gigabit Ethernet</ns26:description>
                  <ns26:name>GigabitEthernet0/9</ns26:name>
                  <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com!EQ=name=A901-6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-
A</ns28:containing-equipment>
                  <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-1-DOMAIN1.cisco.com!EQ=name=A901-
6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-A!PC=GigabitEthernet0/9</ns28:fdn>
               </ns28:physical-connector>
               <ns28:physical-connector>
```

```
                <ns26:description>E1 0/7</ns26:description>
                <ns26:name>E1 0/7</ns26:name>
                <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com!EQ=name=A901-6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-
A</ns28:containing-equipment>
                <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-1-DOMAIN1.cisco.com!EQ=name=A901-
6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-A!PC=E1 0/7</ns28:fdn>
            </ns28:physical-connector>
            <ns28:physical-connector>
                <ns26:description>Gigabit Ethernet</ns26:description>
                <ns26:name>GigabitEthernet0/7</ns26:name>
                <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com!EQ=name=A901-6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-
A</ns28:containing-equipment>
                <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-1-DOMAIN1.cisco.com!EQ=name=A901-
6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-A!PC=GigabitEthernet0/7</ns28:fdn>
            </ns28:physical-connector>
            <ns28:physical-connector>
                <ns26:description>TenGigabit Ethernet</ns26:description>
                <ns26:name>TenGigabitEthernet0/1</ns26:name>
                <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com!EQ=name=A901-6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-
A</ns28:containing-equipment>
                <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-1-DOMAIN1.cisco.com!EQ=name=A901-
6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-A!PC=TenGigabitEthernet0/1</ns28:fdn>
            </ns28:physical-connector>
            <ns28:physical-connector>
                <ns26:description>Gigabit Ethernet</ns26:description>
                <ns26:name>GigabitEthernet0/5</ns26:name>
                <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com!EQ=name=A901-6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-
A</ns28:containing-equipment>
                <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-1-DOMAIN1.cisco.com!EQ=name=A901-
6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-A!PC=GigabitEthernet0/5</ns28:fdn>
            </ns28:physical-connector>
            <ns28:physical-connector>
                <ns26:description>Gigabit Ethernet</ns26:description>
                <ns26:name>GigabitEthernet0/10</ns26:name>
                <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com!EQ=name=A901-6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-
A</ns28:containing-equipment>
                <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-1-DOMAIN1.cisco.com!EQ=name=A901-
6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-A!PC=GigabitEthernet0/10</ns28:fdn>
            </ns28:physical-connector>
            <ns28:physical-connector>
                <ns26:description>Gigabit Ethernet</ns26:description>
                <ns26:name>GigabitEthernet0/3</ns26:name>
                <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com!EQ=name=A901-6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-
A</ns28:containing-equipment>
                <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-1-DOMAIN1.cisco.com!EQ=name=A901-
6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-A!PC=GigabitEthernet0/3</ns28:fdn>
```

```
            </ns28:physical-connector>
            <ns28:physical-connector>
               <ns26:description>Gigabit Ethernet</ns26:description>
               <ns26:name>GigabitEthernet0/1</ns26:name>
               <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com!EQ=name=A901-6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-
A</ns28:containing-equipment>
               <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-1-DOMAIN1.cisco.com!EQ=name=A901-
6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-A!PC=GigabitEthernet0/1</ns28:fdn>
            </ns28:physical-connector>
            <ns28:physical-connector>
               <ns26:description>USB Port</ns26:description>
               <ns26:name>usb0</ns26:name>
               <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com!EQ=name=A901-6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-
A</ns28:containing-equipment>
               <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-1-DOMAIN1.cisco.com!EQ=name=A901-
6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-A!PC=usb0</ns28:fdn>
            </ns28:physical-connector>
            <ns28:physical-connector>
               <ns26:description>E1 0/0</ns26:description>
               <ns26:name>E1 0/0</ns26:name>
               <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com!EQ=name=A901-6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-
A</ns28:containing-equipment>
               <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-1-DOMAIN1.cisco.com!EQ=name=A901-
6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-A!PC=E1 0/0</ns28:fdn>
            </ns28:physical-connector>
            <ns28:physical-connector>
               <ns26:description>E1 0/2</ns26:description>
               <ns26:name>E1 0/2</ns26:name>
               <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com!EQ=name=A901-6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-
A</ns28:containing-equipment>
               <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-1-DOMAIN1.cisco.com!EQ=name=A901-
6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-A!PC=E1 0/2</ns28:fdn>
            </ns28:physical-connector>
            <ns28:physical-connector>
               <ns26:description>E1 0/4</ns26:description>
               <ns26:name>E1 0/4</ns26:name>
               <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com!EQ=name=A901-6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-
A</ns28:containing-equipment>
               <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-1-DOMAIN1.cisco.com!EQ=name=A901-
6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-A!PC=E1 0/4</ns28:fdn>
            </ns28:physical-connector>
            <ns28:physical-connector>
               <ns26:description>Gigabit Ethernet</ns26:description>
               <ns26:name>GigabitEthernet0/8</ns26:name>
               <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com!EQ=name=A901-6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-
A</ns28:containing-equipment>
```

```
                <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-1-DOMAIN1.cisco.com!EQ=name=A901-
6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-A!PC=GigabitEthernet0/8</ns28:fdn>
            </ns28:physical-connector>
            <ns28:physical-connector>
               <ns26:description>E1 0/6</ns26:description>
               <ns26:name>E1 0/6</ns26:name>
               <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com!EQ=name=A901-6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-
A</ns28:containing-equipment>
               <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-1-DOMAIN1.cisco.com!EQ=name=A901-
6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-A!PC=E1 0/6</ns28:fdn>
            </ns28:physical-connector>
            <ns28:physical-connector>
               <ns26:description>Gigabit Ethernet</ns26:description>
               <ns26:name>GigabitEthernet0/11</ns26:name>
               <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com!EQ=name=A901-6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-
A</ns28:containing-equipment>
               <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-1-DOMAIN1.cisco.com!EQ=name=A901-
6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-A!PC=GigabitEthernet0/11</ns28:fdn>
            </ns28:physical-connector>
            <ns28:physical-connector>
               <ns26:description>Gigabit Ethernet</ns26:description>
               <ns26:name>GigabitEthernet0/6</ns26:name>
               <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com!EQ=name=A901-6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-
A</ns28:containing-equipment>
               <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-1-DOMAIN1.cisco.com!EQ=name=A901-
6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-A!PC=GigabitEthernet0/6</ns28:fdn>
            </ns28:physical-connector>
            <ns28:physical-connector>
               <ns26:description>TenGigabit Ethernet</ns26:description>
               <ns26:name>TenGigabitEthernet0/0</ns26:name>
               <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com!EQ=name=A901-6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-
A</ns28:containing-equipment>
               <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-1-DOMAIN1.cisco.com!EQ=name=A901-
6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-A!PC=TenGigabitEthernet0/0</ns28:fdn>
            </ns28:physical-connector>
            <ns28:physical-connector>
               <ns26:description>Gigabit Ethernet</ns26:description>
               <ns26:name>GigabitEthernet0/4</ns26:name>
               <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com!EQ=name=A901-6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-
A</ns28:containing-equipment>
               <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-1-DOMAIN1.cisco.com!EQ=name=A901-
6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-A!PC=GigabitEthernet0/4</ns28:fdn>
            </ns28:physical-connector>
            <ns28:physical-connector>
               <ns26:description>Gigabit Ethernet</ns26:description>
               <ns26:name>GigabitEthernet0/2</ns26:name>
               <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-1-
```

```
DOMAIN1.cisco.com!EQ=name=A901-6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-
A</ns28:containing-equipment>
                <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-1-DOMAIN1.cisco.com!EQ=name=A901-
6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-A!PC=GigabitEthernet0/2</ns28:fdn>
            </ns28:physical-connector>
            <ns28:physical-connector>
              <ns26:description>Gigabit Ethernet</ns26:description>
              <ns26:name>GigabitEthernet0/0</ns26:name>
              <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com!EQ=name=A901-6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-
A</ns28:containing-equipment>
              <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-1-DOMAIN1.cisco.com!EQ=name=A901-
6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-A!PC=GigabitEthernet0/0</ns28:fdn>
            </ns28:physical-connector>
            <ns28:physical-connector>
              <ns26:description>E1 0/1</ns26:description>
              <ns26:name>E1 0/1</ns26:name>
              <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com!EQ=name=A901-6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-
A</ns28:containing-equipment>
              <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-1-DOMAIN1.cisco.com!EQ=name=A901-
6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-A!PC=E1 0/1</ns28:fdn>
            </ns28:physical-connector>
            <ns28:physical-connector>
              <ns26:description>E1 0/3</ns26:description>
              <ns26:name>E1 0/3</ns26:name>
              <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com!EQ=name=A901-6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-
A</ns28:containing-equipment>
              <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-1-DOMAIN1.cisco.com!EQ=name=A901-
6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-A!PC=E1 0/3</ns28:fdn>
            </ns28:physical-connector>
            <ns28:physical-connector>
              <ns26:description>E1 0/5</ns26:description>
              <ns26:name>E1 0/5</ns26:name>
              <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com!EQ=name=A901-6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-
A</ns28:containing-equipment>
              <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-1-DOMAIN1.cisco.com!EQ=name=A901-
6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-A!PC=E1 0/5</ns28:fdn>
            </ns28:physical-connector>
          </ns28:connectors>
          <ns28:contained-equipment-recurse></ns28:contained-equipment-recurse>
          <ns28:contained-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com!EQ=name=Fan2;partnumber=FAN</ns28:contained-equipment>
          <ns28:contained-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com!EQ=name=Fan1;partnumber=FAN</ns28:contained-equipment>
          <ns28:contained-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com!EQ=name=AC/DC Power supply;partnumber=POWER SUPPLY</ns28:contained-
equipment>
          <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com!EQ=name=Chassis Slot;partnumber=A901-6CZ-FT-A</ns28:containing-equipment>
```

```
            <ns28:ent-physical-index>3</ns28:ent-physical-index>
            <ns28:equipment-type>MODULE</ns28:equipment-type>
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FT-A Motherboard;partnumber=A901-6CZ-FT-A</ns28:fdn>
            <ns28:hardware-version>V01 </ns28:hardware-version>
            <ns28:is-field-replaceable-unit>FALSE</ns28:is-field-replaceable-unit>
            <ns28:is-physically-present>true</ns28:is-physically-present>
            <ns28:is-reporting-alarms-allowed>UNKNOWN</ns28:is-reporting-alarms-allowed>
            <ns28:manufacturer>Cisco</ns28:manufacturer>
            <ns28:part-number>A901-6CZ-FT-A</ns28:part-number>
            <ns28:service-state>UNKNOWN</ns28:service-state>
            <ns28:vendor-equipment-type>cevChassisASR901AC10G</ns28:vendor-equipment-type>
          </ns28:equipment>
          <ns28:equipment>
            <ns26:description>High Speed Fan2 Module for A901-6CZ-FT-A</ns26:description>
            <ns26:name>Fan2</ns26:name>
            <ns28:connectors></ns28:connectors>
            <ns28:contained-equipment-recurse></ns28:contained-equipment-recurse>
            <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com!EQ=name=A901-6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-
A</ns28:containing-equipment>
            <ns28:ent-physical-index>32</ns28:ent-physical-index>
            <ns28:equipment-type>FAN</ns28:equipment-type>
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DOMAIN1.cisco.com!EQ=name=Fan2;partnumber=FAN</ns28:fdn>
            <ns28:is-field-replaceable-unit>FALSE</ns28:is-field-replaceable-unit>
            <ns28:is-physically-present>true</ns28:is-physically-present>
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            <ns28:manufacturer>Cisco</ns28:manufacturer>
            <ns28:part-number>FAN</ns28:part-number>
            <ns28:serial-number>33-0629-01</ns28:serial-number>
            <ns28:service-state>UNKNOWN</ns28:service-state>
            <ns28:vendor-equipment-type>cevFanSinglePulse</ns28:vendor-equipment-type>
          </ns28:equipment>
          <ns28:equipment>
            <ns26:description>High Speed Fan1 Module for A901-6CZ-FT-A</ns26:description>
            <ns26:name>Fan1</ns26:name>
            <ns28:connectors></ns28:connectors>
            <ns28:contained-equipment-recurse></ns28:contained-equipment-recurse>
            <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com!EQ=name=A901-6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-
A</ns28:containing-equipment>
            <ns28:ent-physical-index>31</ns28:ent-physical-index>
            <ns28:equipment-type>FAN</ns28:equipment-type>
            <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com!EQ=name=Fan1;partnumber=FAN</ns28:fdn>
            <ns28:is-field-replaceable-unit>FALSE</ns28:is-field-replaceable-unit>
            <ns28:is-physically-present>true</ns28:is-physically-present>
            <ns28:is-reporting-alarms-allowed>UNKNOWN</ns28:is-reporting-alarms-allowed>
            <ns28:manufacturer>Cisco</ns28:manufacturer>
            <ns28:part-number>FAN</ns28:part-number>
            <ns28:serial-number>33-0629-01</ns28:serial-number>
```

```
            <ns28:service-state>UNKNOWN</ns28:service-state>
            <ns28:vendor-equipment-type>cevFanSinglePulse</ns28:vendor-equipment-type>
          </ns28:equipment>
          <ns28:equipment>
            <ns26:description>AC/DC Power Supply 1 (12V)</ns26:description>
            <ns26:name>AC/DC Power supply</ns26:name>
            <ns28:connectors></ns28:connectors>
            <ns28:contained-equipment-recurse></ns28:contained-equipment-recurse>
            <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN1.cisco.com!EQ=name=A901-6CZ-FT-A Motherboard;partnumber=A901-6CZ-FT-
A</ns28:containing-equipment>
            <ns28:ent-physical-index>30</ns28:ent-physical-index>
            <ns28:equipment-type>POWERSUPPLY</ns28:equipment-type>
            <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-1-DOMAIN1.cisco.com!EQ=name=AC/DC
Power supply;partnumber=POWER SUPPLY</ns28:fdn>
            <ns28:is-field-replaceable-unit>FALSE</ns28:is-field-replaceable-unit>
            <ns28:is-physically-present>true</ns28:is-physically-present>
            <ns28:is-reporting-alarms-allowed>UNKNOWN</ns28:is-reporting-alarms-allowed>
            <ns28:manufacturer>Cisco</ns28:manufacturer>
            <ns28:part-number>POWER SUPPLY</ns28:part-number>
            <ns28:serial-number>34-2593-01</ns28:serial-number>
            <ns28:service-state>UNKNOWN</ns28:service-state>
            <ns28:vendor-equipment-type>cevPowerSupplyAc150W</ns28:vendor-equipment-type>
          </ns28:equipment>
        </ns25:equipment-list>
        <ns25:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-1-DOMAIN1.cisco.com</ns25:fdn>
        <ns25:group>MD=CISCO_EPNM!GR=Routers</ns25:group>
        <ns25:group>MD=CISCO_EPNM!GR=Cisco ASR 901 10G Series Aggregation Services
Routers</ns25:group>
        <ns25:group>MD=CISCO_EPNM!GR=New York-Copy</ns25:group>
        <ns25:group>MD=CISCO_EPNM!GR=All Locations</ns25:group>
        <ns25:group>MD=CISCO_EPNM!GR=New York</ns25:group>
        <ns25:last-boot-time>2017-03-17T03:24:33.604-07:00</ns25:last-boot-time>
        <ns25:lifecycle-state>MANAGED_BUT_OUTOFSYNC</ns25:lifecycle-state>
        <ns25:management-address>10.56.23.16</ns25:management-address>
        <ns25:name>ASR901-CSG-1-DOMAIN1.cisco.com</ns25:name>
        <ns25:product-family>Routers</ns25:product-family>
        <ns25:product-series>Cisco ASR 901 10G Series Aggregation Services Routers</ns25:product-
series>
        <ns25:product-type>Cisco ASR901-6CZ-FT-A Router</ns25:product-type>
        <ns25:satellite-count>0</ns25:satellite-count>
        <ns25:software-type>IOS</ns25:software-type>
        <ns25:software-version>15.4(3)S</ns25:software-version>
        <ns25:sys-object-id>1.3.6.1.4.1.9.1.1727</ns25:sys-object-id>
        <ns25:sys-up-time>48 days, 21:11:50.02</ns25:sys-up-time>
      </ns25:node>
      <ns25:node>
        <ns25:cluster-count>0</ns25:cluster-count>
        <ns25:collection-status>xde.fn.CallFailed: Failed to execute JavaScript: ReferenceError:
"serviceIds" is not defined. (Script#1):</ns25:collection-status>
        <ns25:collection-time>2017-04-23T22:57:13.576-07:00</ns25:collection-time>
        <ns25:communication-state>Reachable</ns25:communication-state>
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        <ns25:creation-time>2017-04-14T09:38:58.994-07:00</ns25:creation-time>
        <ns25:description>Cisco IOS Software, 901 Software (ASR901-UNIVERSALK9-M), Version
15.4(3)S, RELEASE SOFTWARE (fc3)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2014 by Cisco Systems, Inc.
Compiled Sun 27-Jul-14 12:26 by prod_rel_team</ns25:description>
        <ns25:equipment-list>
          <ns28:equipment>
            <ns26:description>A901-12C-F-D Chassis</ns26:description>
            <ns26:name>A901-12C-F-D Chassis</ns26:name>
            <ns28:connectors></ns28:connectors>
            <ns28:contained-equipment-recurse></ns28:contained-equipment-recurse>
            <ns28:contained-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-2-
DOMAIN2.cisco.com!EQ=name=Chassis Slot;partnumber=A901-12C-F-D</ns28:contained-equipment>
            <ns28:ent-physical-index>1</ns28:ent-physical-index>
            <ns28:equipment-type>CHASSIS</ns28:equipment-type>
            <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-2-DOMAIN2.cisco.com!EQ=name=A901-12C-
F-D Chassis;partnumber=A901-12C-F-D</ns28:fdn>
            <ns28:hardware-version>V03 </ns28:hardware-version>
            <ns28:is-field-replaceable-unit>FALSE</ns28:is-field-replaceable-unit>
            <ns28:is-physically-present>true</ns28:is-physically-present>
            <ns28:is-reporting-alarms-allowed>UNKNOWN</ns28:is-reporting-alarms-allowed>
            <ns28:manufacturer>Cisco</ns28:manufacturer>
            <ns28:part-number>A901-12C-F-D</ns28:part-number>
            <ns28:serial-number>CAT1722U1H2</ns28:serial-number>
            <ns28:service-state>UNKNOWN</ns28:service-state>
            <ns28:vendor-equipment-type>cevChassisASR901E</ns28:vendor-equipment-type>
          </ns28:equipment>
          <ns28:equipment>
            <ns26:description>A901-12C-F-D Chassis Slot </ns26:description>
            <ns26:name>Chassis Slot</ns26:name>
            <ns28:connectors></ns28:connectors>
            <ns28:contained-equipment-recurse></ns28:contained-equipment-recurse>
            <ns28:contained-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-2-
DOMAIN2.cisco.com!EQ=name=A901-12C-F-D Motherboard;partnumber=A901-12C-F-
D</ns28:contained-equipment>
            <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-2-
DOMAIN2.cisco.com!EQ=name=A901-12C-F-D Chassis;partnumber=A901-12C-F-D</ns28:containing-
equipment>
            <ns28:ent-physical-index>2</ns28:ent-physical-index>
            <ns28:equipment-type>OTHER</ns28:equipment-type>
            <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-2-DOMAIN2.cisco.com!EQ=name=Chassis
Slot;partnumber=A901-12C-F-D</ns28:fdn>
            <ns28:hardware-version>V03 </ns28:hardware-version>
            <ns28:is-field-replaceable-unit>FALSE</ns28:is-field-replaceable-unit>
            <ns28:is-physically-present>true</ns28:is-physically-present>
            <ns28:is-reporting-alarms-allowed>UNKNOWN</ns28:is-reporting-alarms-allowed>
            <ns28:manufacturer>Cisco</ns28:manufacturer>
            <ns28:part-number>A901-12C-F-D</ns28:part-number>
            <ns28:service-state>UNKNOWN</ns28:service-state>
            <ns28:vendor-equipment-type>cevContainerSlot</ns28:vendor-equipment-type>
          </ns28:equipment>
```

```
            <ns28:equipment>
               <ns26:description>A901-12C-F-D Motherboard with Built-in 12GE, 1FE</ns26:description>
               <ns26:name>A901-12C-F-D Motherboard </ns26:name>
               <ns28:connectors>
                  <ns28:physical-connector>
                     <ns26:description>Gigabit Ethernet</ns26:description>
                     <ns26:name>GigabitEthernet0/8</ns26:name>
                     <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-2-
DOMAIN2.cisco.com!EQ=name=A901-12C-F-D Motherboard;partnumber=A901-12C-F-
D</ns28:containing-equipment>
                     <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-2-DOMAIN2.cisco.com!EQ=name=A901-
12C-F-D Motherboard;partnumber=A901-12C-F-D!PC=GigabitEthernet0/8</ns28:fdn>
                  </ns28:physical-connector>
                  <ns28:physical-connector>
                     <ns26:description>Gigabit Ethernet</ns26:description>
                     <ns26:name>GigabitEthernet0/6</ns26:name>
                     <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-2-
DOMAIN2.cisco.com!EQ=name=A901-12C-F-D Motherboard;partnumber=A901-12C-F-
D</ns28:containing-equipment>
                     <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-2-DOMAIN2.cisco.com!EQ=name=A901-
12C-F-D Motherboard;partnumber=A901-12C-F-D!PC=GigabitEthernet0/6</ns28:fdn>
                  </ns28:physical-connector>
                  <ns28:physical-connector>
                     <ns26:description>Gigabit Ethernet</ns26:description>
                     <ns26:name>GigabitEthernet0/4</ns26:name>
                     <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-2-
DOMAIN2.cisco.com!EQ=name=A901-12C-F-D Motherboard;partnumber=A901-12C-F-
D</ns28:containing-equipment>
                     <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-2-DOMAIN2.cisco.com!EQ=name=A901-
12C-F-D Motherboard;partnumber=A901-12C-F-D!PC=GigabitEthernet0/4</ns28:fdn>
                  </ns28:physical-connector>
                  <ns28:physical-connector>
                     <ns26:description>Gigabit Ethernet</ns26:description>
                     <ns26:name>GigabitEthernet0/11</ns26:name>
                     <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-2-
DOMAIN2.cisco.com!EQ=name=A901-12C-F-D Motherboard;partnumber=A901-12C-F-
D</ns28:containing-equipment>
                     <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-2-DOMAIN2.cisco.com!EQ=name=A901-
12C-F-D Motherboard;partnumber=A901-12C-F-D!PC=GigabitEthernet0/11</ns28:fdn>
                  </ns28:physical-connector>
                  <ns28:physical-connector>
                     <ns26:description>Gigabit Ethernet</ns26:description>
                     <ns26:name>GigabitEthernet0/3</ns26:name>
                     <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-2-
DOMAIN2.cisco.com!EQ=name=A901-12C-F-D Motherboard;partnumber=A901-12C-F-
D</ns28:containing-equipment>
                     <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-2-DOMAIN2.cisco.com!EQ=name=A901-
12C-F-D Motherboard;partnumber=A901-12C-F-D!PC=GigabitEthernet0/3</ns28:fdn>
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                     <ns26:name>GigabitEthernet0/1</ns26:name>
```

```
                <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-2-
DOMAIN2.cisco.com!EQ=name=A901-12C-F-D Motherboard;partnumber=A901-12C-F-
D</ns28:containing-equipment>
                <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-2-DOMAIN2.cisco.com!EQ=name=A901-
12C-F-D Motherboard;partnumber=A901-12C-F-D!PC=GigabitEthernet0/1</ns28:fdn>
            </ns28:physical-connector>
            <ns28:physical-connector>
               <ns26:description>Gigabit Ethernet</ns26:description>
               <ns26:name>GigabitEthernet0/9</ns26:name>
               <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-2-
DOMAIN2.cisco.com!EQ=name=A901-12C-F-D Motherboard;partnumber=A901-12C-F-
D</ns28:containing-equipment>
               <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-2-DOMAIN2.cisco.com!EQ=name=A901-
12C-F-D Motherboard;partnumber=A901-12C-F-D!PC=GigabitEthernet0/9</ns28:fdn>
            </ns28:physical-connector>
            <ns28:physical-connector>
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               <ns26:name>GigabitEthernet0/10</ns26:name>
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DOMAIN2.cisco.com!EQ=name=A901-12C-F-D Motherboard;partnumber=A901-12C-F-
D</ns28:containing-equipment>
               <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-2-DOMAIN2.cisco.com!EQ=name=A901-
12C-F-D Motherboard;partnumber=A901-12C-F-D!PC=GigabitEthernet0/10</ns28:fdn>
            </ns28:physical-connector>
            <ns28:physical-connector>
               <ns26:description>Gigabit Ethernet</ns26:description>
               <ns26:name>GigabitEthernet0/7</ns26:name>
               <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-2-
DOMAIN2.cisco.com!EQ=name=A901-12C-F-D Motherboard;partnumber=A901-12C-F-
D</ns28:containing-equipment>
               <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-2-DOMAIN2.cisco.com!EQ=name=A901-
12C-F-D Motherboard;partnumber=A901-12C-F-D!PC=GigabitEthernet0/7</ns28:fdn>
            </ns28:physical-connector>
            <ns28:physical-connector>
               <ns26:description>eTSEC 1</ns26:description>
               <ns26:name>FastEthernet0/0</ns26:name>
               <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-2-
DOMAIN2.cisco.com!EQ=name=A901-12C-F-D Motherboard;partnumber=A901-12C-F-
D</ns28:containing-equipment>
               <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-2-DOMAIN2.cisco.com!EQ=name=A901-
12C-F-D Motherboard;partnumber=A901-12C-F-D!PC=FastEthernet0/0</ns28:fdn>
            </ns28:physical-connector>
            <ns28:physical-connector>
               <ns26:description>Gigabit Ethernet</ns26:description>
               <ns26:name>GigabitEthernet0/5</ns26:name>
               <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-2-
DOMAIN2.cisco.com!EQ=name=A901-12C-F-D Motherboard;partnumber=A901-12C-F-
D</ns28:containing-equipment>
               <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-2-DOMAIN2.cisco.com!EQ=name=A901-
12C-F-D Motherboard;partnumber=A901-12C-F-D!PC=GigabitEthernet0/5</ns28:fdn>
            </ns28:physical-connector>
            <ns28:physical-connector>
```

```
                    <ns26:description>Gigabit Ethernet</ns26:description>
                    <ns26:name>GigabitEthernet0/2</ns26:name>
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DOMAIN2.cisco.com!EQ=name=A901-12C-F-D Motherboard;partnumber=A901-12C-F-
D</ns28:containing-equipment>
                    <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-2-DOMAIN2.cisco.com!EQ=name=A901-
12C-F-D Motherboard;partnumber=A901-12C-F-D!PC=GigabitEthernet0/2</ns28:fdn>
                  </ns28:physical-connector>
                  <ns28:physical-connector>
                    <ns26:description>Gigabit Ethernet</ns26:description>
                    <ns26:name>GigabitEthernet0/0</ns26:name>
                    <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-2-
DOMAIN2.cisco.com!EQ=name=A901-12C-F-D Motherboard;partnumber=A901-12C-F-
D</ns28:containing-equipment>
                    <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-2-DOMAIN2.cisco.com!EQ=name=A901-
12C-F-D Motherboard;partnumber=A901-12C-F-D!PC=GigabitEthernet0/0</ns28:fdn>
                  </ns28:physical-connector>
                </ns28:connectors>
                <ns28:contained-equipment-recurse></ns28:contained-equipment-recurse>
                <ns28:contained-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-2-
DOMAIN2.cisco.com!EQ=name=DC Power supply;partnumber=POWER SUPPLY</ns28:contained-
equipment>
                <ns28:contained-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-2-
DOMAIN2.cisco.com!EQ=name=DC Redundant Power supply;partnumber=POWER
SUPPLY</ns28:contained-equipment>
                <ns28:contained-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-2-
DOMAIN2.cisco.com!EQ=name=Fan1;partnumber=FAN</ns28:contained-equipment>
                <ns28:contained-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-2-
DOMAIN2.cisco.com!EQ=name=Fan2;partnumber=FAN</ns28:contained-equipment>
                <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-2-
DOMAIN2.cisco.com!EQ=name=Chassis Slot;partnumber=A901-12C-F-D</ns28:containing-equipment>
                <ns28:ent-physical-index>3</ns28:ent-physical-index>
                <ns28:equipment-type>MODULE</ns28:equipment-type>
                <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-2-DOMAIN2.cisco.com!EQ=name=A901-12C-
F-D Motherboard;partnumber=A901-12C-F-D</ns28:fdn>
                <ns28:hardware-version>V03 </ns28:hardware-version>
                <ns28:is-field-replaceable-unit>FALSE</ns28:is-field-replaceable-unit>
                <ns28:is-physically-present>true</ns28:is-physically-present>
                <ns28:is-reporting-alarms-allowed>UNKNOWN</ns28:is-reporting-alarms-allowed>
                <ns28:manufacturer>Cisco</ns28:manufacturer>
                <ns28:part-number>A901-12C-F-D</ns28:part-number>
                <ns28:service-state>UNKNOWN</ns28:service-state>
                <ns28:vendor-equipment-type>cevChassisASR901E</ns28:vendor-equipment-type>
              </ns28:equipment>
              <ns28:equipment>
                <ns26:description>DC Power Supply 1 (12A V)</ns26:description>
                <ns26:name>DC Power supply</ns26:name>
                <ns28:connectors></ns28:connectors>
                <ns28:contained-equipment-recurse></ns28:contained-equipment-recurse>
                <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-2-
DOMAIN2.cisco.com!EQ=name=A901-12C-F-D Motherboard;partnumber=A901-12C-F-
D</ns28:containing-equipment>
```

```
            <ns28:ent-physical-index>25</ns28:ent-physical-index>
            <ns28:equipment-type>POWERSUPPLY</ns28:equipment-type>
            <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-2-DOMAIN2.cisco.com!EQ=name=DC Power
supply;partnumber=POWER SUPPLY</ns28:fdn>
            <ns28:is-field-replaceable-unit>FALSE</ns28:is-field-replaceable-unit>
            <ns28:is-physically-present>true</ns28:is-physically-present>
            <ns28:is-reporting-alarms-allowed>UNKNOWN</ns28:is-reporting-alarms-allowed>
            <ns28:manufacturer>Cisco</ns28:manufacturer>
            <ns28:part-number>POWER SUPPLY</ns28:part-number>
            <ns28:serial-number>34-2593-01</ns28:serial-number>
            <ns28:service-state>UNKNOWN</ns28:service-state>
            <ns28:vendor-equipment-type>cevPowerSupplyDc150W</ns28:vendor-equipment-type>
          </ns28:equipment>
          <ns28:equipment>
            <ns26:description>DC Power Supply 2 (12B V)</ns26:description>
            <ns26:name>DC Redundant Power supply</ns26:name>
            <ns28:connectors></ns28:connectors>
            <ns28:contained-equipment-recurse></ns28:contained-equipment-recurse>
            <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-2-
DOMAIN2.cisco.com!EQ=name=A901-12C-F-D Motherboard;partnumber=A901-12C-F-
D</ns28:containing-equipment>
            <ns28:ent-physical-index>26</ns28:ent-physical-index>
            <ns28:equipment-type>POWERSUPPLY</ns28:equipment-type>
            <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-2-DOMAIN2.cisco.com!EQ=name=DC
Redundant Power supply;partnumber=POWER SUPPLY</ns28:fdn>
            <ns28:is-field-replaceable-unit>FALSE</ns28:is-field-replaceable-unit>
            <ns28:is-physically-present>true</ns28:is-physically-present>
            <ns28:is-reporting-alarms-allowed>UNKNOWN</ns28:is-reporting-alarms-allowed>
            <ns28:manufacturer>Cisco</ns28:manufacturer>
            <ns28:part-number>POWER SUPPLY</ns28:part-number>
            <ns28:serial-number>34-2593-01</ns28:serial-number>
            <ns28:service-state>UNKNOWN</ns28:service-state>
            <ns28:vendor-equipment-type>cevPowerSupplyDc150W</ns28:vendor-equipment-type>
          </ns28:equipment>
          <ns28:equipment>
            <ns26:description>High Speed Fan1 Module for A901-12C-F-D</ns26:description>
            <ns26:name>Fan1</ns26:name>
            <ns28:connectors></ns28:connectors>
            <ns28:contained-equipment-recurse></ns28:contained-equipment-recurse>
            <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-2-
DOMAIN2.cisco.com!EQ=name=A901-12C-F-D Motherboard;partnumber=A901-12C-F-
D</ns28:containing-equipment>
            <ns28:ent-physical-index>27</ns28:ent-physical-index>
            <ns28:equipment-type>FAN</ns28:equipment-type>
            <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-2-
DOMAIN2.cisco.com!EQ=name=Fan1;partnumber=FAN</ns28:fdn>
            <ns28:is-field-replaceable-unit>FALSE</ns28:is-field-replaceable-unit>
            <ns28:is-physically-present>true</ns28:is-physically-present>
            <ns28:is-reporting-alarms-allowed>UNKNOWN</ns28:is-reporting-alarms-allowed>
            <ns28:manufacturer>Cisco</ns28:manufacturer>
            <ns28:part-number>FAN</ns28:part-number>
            <ns28:serial-number>33-0629-01</ns28:serial-number>
```

```
            <ns28:service-state>UNKNOWN</ns28:service-state>
            <ns28:vendor-equipment-type>cevFanSinglePulse</ns28:vendor-equipment-type>
          </ns28:equipment>
          <ns28:equipment>
            <ns26:description>High Speed Fan2 Module for A901-12C-F-D</ns26:description>
            <ns26:name>Fan2</ns26:name>
            <ns28:connectors></ns28:connectors>
            <ns28:contained-equipment-recurse></ns28:contained-equipment-recurse>
            <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR901-CSG-2-
DOMAIN2.cisco.com!EQ=name=A901-12C-F-D Motherboard;partnumber=A901-12C-F-
D</ns28:containing-equipment>
            <ns28:ent-physical-index>28</ns28:ent-physical-index>
            <ns28:equipment-type>FAN</ns28:equipment-type>
            <ns28:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-2-
DOMAIN2.cisco.com!EQ=name=Fan2;partnumber=FAN</ns28:fdn>
            <ns28:is-field-replaceable-unit>FALSE</ns28:is-field-replaceable-unit>
            <ns28:is-physically-present>true</ns28:is-physically-present>
            <ns28:is-reporting-alarms-allowed>UNKNOWN</ns28:is-reporting-alarms-allowed>
            <ns28:manufacturer>Cisco</ns28:manufacturer>
            <ns28:part-number>FAN</ns28:part-number>
            <ns28:serial-number>33-0629-01</ns28:serial-number>
            <ns28:service-state>UNKNOWN</ns28:service-state>
            <ns28:vendor-equipment-type>cevFanSinglePulse</ns28:vendor-equipment-type>
          </ns28:equipment>
        </ns25:equipment-list>
        <ns25:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-2-DOMAIN2.cisco.com</ns25:fdn>
        <ns25:group>MD=CISCO_EPNM!GR=Routers</ns25:group>
        <ns25:group>MD=CISCO_EPNM!GR=Cisco ASR 901 Series Aggregation Services
Routers</ns25:group>
        <ns25:group>MD=CISCO_EPNM!GR=All Locations</ns25:group>
        <ns25:group>MD=CISCO_EPNM!GR=New York</ns25:group>
        <ns25:last-boot-time>2017-03-19T04:32:03.620-07:00</ns25:last-boot-time>
        <ns25:lifecycle-state>MANAGED_BUT_OUTOFSYNC</ns25:lifecycle-state>
        <ns25:management-address>10.56.23.25</ns25:management-address>
        <ns25:name>ASR901-CSG-2-DOMAIN2.cisco.com</ns25:name>
        <ns25:product-family>Routers</ns25:product-family>
        <ns25:product-series>Cisco ASR 901 Series Aggregation Services Routers</ns25:product-series>
        <ns25:product-type>Cisco ASR 901-E Router</ns25:product-type>
        <ns25:satellite-count>0</ns25:satellite-count>
        <ns25:software-type>IOS</ns25:software-type>
        <ns25:software-version>15.4(3)S</ns25:software-version>
        <ns25:sys-object-id>1.3.6.1.4.1.9.1.1522</ns25:sys-object-id>
        <ns25:sys-up-time>46 days, 18:59:51.70</ns25:sys-up-time>
      </ns25:node>
    </ns4:data>
</ns4:response-message>
```

7.4 Chassis

7.4.1 Get all Chassis

7.4.1.1 *Request*

GET /restconf/data/v1/cisco-resource-physical:equipment HTTP/1.1
Host: <epnm-host>
Accept: application/yang-data+xml
Authorization: Basic …

7.4.1.2 *Response*

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/yang-data+xml

```
<ns4:response-message
xmlns:ns28="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns26="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>1</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns28:chassis>
            <ns26:name>SHELF</ns26:name>
            <ns28:connectors></ns28:connectors>
            <ns28:contained-equipment-recurse></ns28:contained-
equipment-recurse>
            <ns28:contained-
equipment>MD=CISCO_EPNM!ND=Venice!EQ=name=SLOT-8;partnumber=15454-M-
TNC-K9</ns28:contained-equipment>
            <ns28:contained-
equipment>MD=CISCO_EPNM!ND=Venice!EQ=name=LCD-1;partnumber=NCS2006-
LCD</ns28:contained-equipment>
            <ns28:contained-
equipment>MD=CISCO_EPNM!ND=Venice!EQ=name=SLOT-6;partnumber=NCS2K-12-
AD-CCOFS</ns28:contained-equipment>
            <ns28:contained-
equipment>MD=CISCO_EPNM!ND=Venice!EQ=name=SLOT-7;partnumber=NCS2K-9-
SMR24FS-L</ns28:contained-equipment>
            <ns28:contained-
equipment>MD=CISCO_EPNM!ND=Venice!EQ=name=ECU-1;partnumber=NCS2006-
ECU</ns28:contained-equipment>
            <ns28:contained-
equipment>MD=CISCO_EPNM!ND=Venice!EQ=name=SLOT-2;partnumber=NCS2K-9-
SMR34FS-L</ns28:contained-equipment>
            <ns28:contained-
equipment>MD=CISCO_EPNM!ND=Venice!EQ=name=SLOT-3;partnumber=NCS2K-100G-
CK-C</ns28:contained-equipment>
            <ns28:contained-
equipment>MD=CISCO_EPNM!ND=Venice!EQ=name=SLOT-1;partnumber=15454-M-
TNC-K9</ns28:contained-equipment>
            <ns28:contained-
equipment>MD=CISCO_EPNM!ND=Venice!EQ=name=PWR-A;partnumber=NCS2006-
AC</ns28:contained-equipment>
```

```
            <ns28:contained-
equipment>MD=CISCO_EPNM!ND=Venice!EQ=name=PWR-B;partnumber=NCS2006-
AC</ns28:contained-equipment>
            <ns28:contained-
equipment>MD=CISCO_EPNM!ND=Venice!EQ=name=FAN-1;partnumber=NCS2006-
FTA</ns28:contained-equipment>
            <ns28:ent-physical-index>SHELF</ns28:ent-physical-index>
            <ns28:equipment-type>CHASSIS</ns28:equipment-type>

<ns28:fdn>MD=CISCO_EPNM!ND=Venice!EQ=name=SHELF;partnumber=NCS2006-
SA</ns28:fdn>
            <ns28:is-physically-present>true</ns28:is-physically-
present>
            <ns28:is-reporting-alarms-allowed>UNKNOWN</ns28:is-
reporting-alarms-allowed>
            <ns28:part-number>NCS2006-SA</ns28:part-number>
            <ns28:product-id>NCS2006-SA</ns28:product-id>
            <ns28:service-state>UNKNOWN</ns28:service-state>
            <ns28:vendor-equipment-type>WOM4C10KRA</ns28:vendor-
equipment-type>
        </ns28:chassis>
        <ns28:chassis>
            <ns26:description>Network Convergence System 1001 line
system 3 slots</ns26:description>
            <ns26:name>Rack 0</ns26:name>
            <ns28:assembly-revision>40  </ns28:assembly-revision>
            <ns28:clei-code>NOCLEICODE</ns28:clei-code>
            <ns28:connectors></ns28:connectors>
            <ns28:contained-equipment-recurse></ns28:contained-
equipment-recurse>
            <ns28:contained-equipment>MD=CISCO_EPNM!ND=cvg-mystique-
44.cisco.com!EQ=name=Rack 0-LineCard Chassis
backplane;partnumber=cevBackplaneNCS4K</ns28:contained-equipment>
            <ns28:contained-equipment>MD=CISCO_EPNM!ND=cvg-mystique-
44.cisco.com!EQ=name=Rack 0-Optical Module Slot
1;partnumber=cevContainerNCSLineCardSlot</ns28:contained-equipment>
            <ns28:contained-equipment>MD=CISCO_EPNM!ND=cvg-mystique-
44.cisco.com!EQ=name=Rack 0-Optical Module Slot
2;partnumber=cevContainerNCSLineCardSlot</ns28:contained-equipment>
            <ns28:contained-equipment>MD=CISCO_EPNM!ND=cvg-mystique-
44.cisco.com!EQ=name=Rack 0-Optical Module Slot
3;partnumber=cevContainerNCSLineCardSlot</ns28:contained-equipment>
            <ns28:contained-equipment>MD=CISCO_EPNM!ND=cvg-mystique-
44.cisco.com!EQ=name=Rack 0-Interconnect Board
Slot;partnumber=cevContainerNCSLineCardSlot</ns28:contained-equipment>
            <ns28:contained-equipment>MD=CISCO_EPNM!ND=cvg-mystique-
44.cisco.com!EQ=name=Rack 0-Route Processor
Slot;partnumber=zeroDotZero</ns28:contained-equipment>
            <ns28:ent-physical-index>8384513</ns28:ent-physical-index>
            <ns28:equipment-type>CHASSIS</ns28:equipment-type>
            <ns28:fdn>MD=CISCO_EPNM!ND=cvg-mystique-
44.cisco.com!EQ=name=Rack 0;partnumber=NCS1001-K9</ns28:fdn>
            <ns28:hardware-version>V00</ns28:hardware-version>
            <ns28:is-field-replaceable-unit>TRUE</ns28:is-field-
replaceable-unit>
            <ns28:is-physically-present>true</ns28:is-physically-
```

```
      present>
                  <ns28:is-reporting-alarms-allowed>UNKNOWN</ns28:is-
      reporting-alarms-allowed>
                  <ns28:manufacturer>CISCO SYSTEMS, INC</ns28:manufacturer>
                  <ns28:operational-state-code>enabled</ns28:operational-
      state-code>
                  <ns28:part-number>NCS1001-K9</ns28:part-number>
                  <ns28:product-id>NCS1001-K9</ns28:product-id>
                  <ns28:serial-number>CAT2043B00F</ns28:serial-number>
                  <ns28:service-state>UNKNOWN</ns28:service-state>
                  <ns28:vendor-equipment-
      type>1.3.6.1.4.1.9.12.3.1.3.1905</ns28:vendor-equipment-type>
              </ns28:chassis>
          </ns4:data>
</ns4:response-message>
```

7.5 Equipment

7.5.1 Get all Equipment

7.5.1.1 *Request*

GET /restconf/data/v1/cisco-resource-physical:equipment HTTP/1.1
Host: <epnm-host>
Accept: application/yang-data+xml
Authorization: Basic …

7.5.1.2 *Response*

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/yang-data+xml

```
      <ns4:response-message
      xmlns:ns28="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns26="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1">
          <ns4:header>
              <ns4:firstIndex>93</ns4:firstIndex>
              <ns4:lastIndex>95</ns4:lastIndex>
          </ns4:header>
          <ns4:data>
              <ns28:module>
                  <ns26:name>0/3</ns26:name>
                  <ns28:connectors></ns28:connectors>
                  <ns28:contained-equipment-recurse></ns28:contained-
      equipment-recurse>
                  <ns28:contained-equipment>MD=CISCO_EPNM!ND=cvg-mystique-
      44.cisco.com!EQ=name=0/3-FPGA
      Module;partnumber=cevModule</ns28:contained-equipment>
                  <ns28:contained-equipment>MD=CISCO_EPNM!ND=cvg-mystique-
      44.cisco.com!EQ=name=0/3-PSM-1x2-
      Switch;partnumber=cevSensorNCS4KMultiHostingMod</ns28:contained-
      equipment>
                  <ns28:contained-equipment>MD=CISCO_EPNM!ND=cvg-mystique-
      44.cisco.com!EQ=name=0/3-PSM-50/50-
      Splitter;partnumber=cevSensorNCS4KMultiHostingMod</ns28:contained-
      equipment>
```

```
            <ns28:containing-equipment>MD=CISCO_EPNM!ND=cvg-mystique-
44.cisco.com!EQ=name=Rack 0-Optical Module Slot
3;partnumber=cevContainerNCSLineCardSlot</ns28:containing-equipment>
            <ns28:ent-physical-index>16385</ns28:ent-physical-index>
            <ns28:equipment-type>MODULE</ns28:equipment-type>
            <ns28:fdn>MD=CISCO_EPNM!ND=cvg-mystique-
44.cisco.com!EQ=name=0/3;partnumber=NCS1K-PSM</ns28:fdn>
            <ns28:hardware-version>V99</ns28:hardware-version>
            <ns28:is-field-replaceable-unit>TRUE</ns28:is-field-
replaceable-unit>
            <ns28:is-physically-present>true</ns28:is-physically-
present>
            <ns28:is-reporting-alarms-allowed>UNKNOWN</ns28:is-
reporting-alarms-allowed>
            <ns28:manufacturer>CISCO SYSTEMS, INC</ns28:manufacturer>
            <ns28:operational-state-code>enabled</ns28:operational-
state-code>
            <ns28:part-number>NCS1K-PSM</ns28:part-number>
            <ns28:product-id>NCS1K-PSM</ns28:product-id>
            <ns28:serial-number>IIF2025003Y</ns28:serial-number>
            <ns28:service-state>INSERVICE</ns28:service-state>
            <ns28:vendor-equipment-
type>1.3.6.1.4.1.9.12.3.1.9.2.639</ns28:vendor-equipment-type>
        </ns28:module>
        <ns28:equipment>
            <ns26:description>Pluggable Optical Module
Container</ns26:description>
            <ns26:name>0/RP0-SFP Port</ns26:name>
            <ns28:connectors></ns28:connectors>
            <ns28:contained-equipment-recurse></ns28:contained-
equipment-recurse>
            <ns28:containing-equipment>MD=CISCO_EPNM!ND=cvg-mystique-
44.cisco.com!EQ=name=0/RP0-Hot Spot Sensor
Module;partnumber=zeroDotZero</ns28:containing-equipment>
            <ns28:ent-physical-index>800</ns28:ent-physical-index>
            <ns28:equipment-type>OTHER</ns28:equipment-type>
            <ns28:fdn>MD=CISCO_EPNM!ND=cvg-mystique-
44.cisco.com!EQ=name=0/RP0-SFP
Port;partnumber=cevContainerCXP</ns28:fdn>
            <ns28:is-field-replaceable-unit>FALSE</ns28:is-field-
replaceable-unit>
            <ns28:is-physically-present>true</ns28:is-physically-
present>
            <ns28:is-reporting-alarms-allowed>UNKNOWN</ns28:is-
reporting-alarms-allowed>
            <ns28:part-number>N/A</ns28:part-number>
            <ns28:product-id>N/A</ns28:product-id>
            <ns28:service-state>UNKNOWN</ns28:service-state>
            <ns28:vendor-equipment-type>cevContainerCXP</ns28:vendor-
equipment-type>
        </ns28:equipment>
        <ns28:chassis>
            <ns26:description>Network Convergence System 1001 line
system 3 slots</ns26:description>
            <ns26:name>Rack 0</ns26:name>
            <ns28:assembly-revision>40  </ns28:assembly-revision>
```

```
                <ns28:clei-code>NOCLEICODE</ns28:clei-code>
                <ns28:connectors></ns28:connectors>
                <ns28:contained-equipment-recurse></ns28:contained-
      equipment-recurse>
                <ns28:contained-equipment>MD=CISCO_EPNM!ND=cvg-mystique-
      44.cisco.com!EQ=name=Rack 0-LineCard Chassis
      backplane;partnumber=cevBackplaneNCS4K</ns28:contained-equipment>
                <ns28:contained-equipment>MD=CISCO_EPNM!ND=cvg-mystique-
      44.cisco.com!EQ=name=Rack 0-Optical Module Slot
      1;partnumber=cevContainerNCSLineCardSlot</ns28:contained-equipment>
                <ns28:contained-equipment>MD=CISCO_EPNM!ND=cvg-mystique-
      44.cisco.com!EQ=name=Rack 0-Optical Module Slot
      2;partnumber=cevContainerNCSLineCardSlot</ns28:contained-equipment>
                <ns28:contained-equipment>MD=CISCO_EPNM!ND=cvg-mystique-
      44.cisco.com!EQ=name=Rack 0-Optical Module Slot
      3;partnumber=cevContainerNCSLineCardSlot</ns28:contained-equipment>
                <ns28:contained-equipment>MD=CISCO_EPNM!ND=cvg-mystique-
      44.cisco.com!EQ=name=Rack 0-Interconnect Board
      Slot;partnumber=cevContainerNCSLineCardSlot</ns28:contained-equipment>
                <ns28:contained-equipment>MD=CISCO_EPNM!ND=cvg-mystique-
      44.cisco.com!EQ=name=Rack 0-Route Processor
      Slot;partnumber=zeroDotZero</ns28:contained-equipment>
                <ns28:ent-physical-index>8384513</ns28:ent-physical-index>
                <ns28:equipment-type>CHASSIS</ns28:equipment-type>
                <ns28:fdn>MD=CISCO_EPNM!ND=cvg-mystique-
      44.cisco.com!EQ=name=Rack 0;partnumber=NCS1001-K9</ns28:fdn>
                <ns28:hardware-version>V00</ns28:hardware-version>
                <ns28:is-field-replaceable-unit>TRUE</ns28:is-field-
      replaceable-unit>
                <ns28:is-physically-present>true</ns28:is-physically-
      present>
                <ns28:is-reporting-alarms-allowed>UNKNOWN</ns28:is-
      reporting-alarms-allowed>
                <ns28:manufacturer>CISCO SYSTEMS, INC</ns28:manufacturer>
                <ns28:operational-state-code>enabled</ns28:operational-
      state-code>
                <ns28:part-number>NCS1001-K9</ns28:part-number>
                <ns28:product-id>NCS1001-K9</ns28:product-id>
                <ns28:serial-number>CAT2043B00F</ns28:serial-number>
                <ns28:service-state>UNKNOWN</ns28:service-state>
                <ns28:vendor-equipment-
      type>1.3.6.1.4.1.9.12.3.1.3.1905</ns28:vendor-equipment-type>
              </ns28:chassis>
          </ns4:data>
</ns4:response-message>
```

7.6 Modules

7.6.1 Get all Modules

7.6.1.1 *Request*

GET /restconf/data/v1/cisco-resource-physical:module?.startIndex=4&.maxCount=2 HTTP/1.1
Host: <epnm-host>
Accept: application/yang-data+xml
Authorization: Basic …

7.6.1.2 *Response*

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/yang-data+xml

```
<ns4:response-message xmlns:ns28="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns26="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1">
  <ns4:header>
    <ns4:firstIndex>4</ns4:firstIndex>
    <ns4:lastIndex>5</ns4:lastIndex>
  </ns4:header>
  <ns4:data>
    <ns28:module>
      <ns26:name>NCS2006-AC</ns26:name>
      <ns28:assembly-revision>A0</ns28:assembly-revision>
      <ns28:clei-code>WOPUAD5SAA</ns28:clei-code>
      <ns28:connectors></ns28:connectors>
      <ns28:contained-equipment-recurse></ns28:contained-equipment-recurse>
      <ns28:containing-
equipment>MD=CISCO_EPNM!ND=Venice!EQ=name=SHELF;partnumber=NCS2006-
SA</ns28:containing-equipment>
      <ns28:ent-physical-index>PWR-A</ns28:ent-physical-index>
      <ns28:equipment-type>POWERSUPPLY</ns28:equipment-type>
      <ns28:fdn>MD=CISCO_EPNM!ND=Venice!EQ=name=PWR-A;partnumber=NCS2006-
AC</ns28:fdn>
      <ns28:hardware-version>V01</ns28:hardware-version>
      <ns28:is-physically-present>true</ns28:is-physically-present>
      <ns28:is-reporting-alarms-allowed>UNKNOWN</ns28:is-reporting-alarms-allowed>
      <ns28:operational-state-code>Unknown</ns28:operational-state-code>
      <ns28:part-number>NCS2006-AC</ns28:part-number>
      <ns28:product-id>NCS2006-AC</ns28:product-id>
      <ns28:product-name>NCS2006-AC</ns28:product-name>
      <ns28:serial-number>SNI1733CH0G</ns28:serial-number>
      <ns28:service-state>UNKNOWN</ns28:service-state>
      <ns28:vendor-equipment-type>WOPUAD5SAA</ns28:vendor-equipment-type>
    </ns28:module>
    <ns28:module>
      <ns26:name>NCS2006-AC</ns26:name>
      <ns28:assembly-revision>B0</ns28:assembly-revision>
      <ns28:clei-code>WOPUAD5SAA</ns28:clei-code>
      <ns28:connectors></ns28:connectors>
      <ns28:contained-equipment-recurse></ns28:contained-equipment-recurse>
      <ns28:containing-
equipment>MD=CISCO_EPNM!ND=Venice!EQ=name=SHELF;partnumber=NCS2006-
SA</ns28:containing-equipment>
      <ns28:ent-physical-index>PWR-B</ns28:ent-physical-index>
      <ns28:equipment-type>POWERSUPPLY</ns28:equipment-type>
      <ns28:fdn>MD=CISCO_EPNM!ND=Venice!EQ=name=PWR-B;partnumber=NCS2006-
AC</ns28:fdn>
      <ns28:hardware-version>V01</ns28:hardware-version>
      <ns28:is-physically-present>true</ns28:is-physically-present>
      <ns28:is-reporting-alarms-allowed>UNKNOWN</ns28:is-reporting-alarms-allowed>
```

```
                <ns28:operational-state-code>Unknown</ns28:operational-state-code>
                <ns28:part-number>NCS2006-AC</ns28:part-number>
                <ns28:product-id>NCS2006-AC</ns28:product-id>
                <ns28:product-name>NCS2006-AC</ns28:product-name>
                <ns28:serial-number>SNI1811CH0V</ns28:serial-number>
                <ns28:service-state>UNKNOWN</ns28:service-state>
                <ns28:vendor-equipment-type>WOPUAD5SAA</ns28:vendor-equipment-type>
              </ns28:module>
            </ns4:data>
          </ns4:response-message>
```

7.7 Physical Connectors

7.7.1 Get all Physical Connectors

7.7.1.1 *Request*

```
GET /restconf/data/v1/cisco-resource-physical:physicalconnector?.startIndex=900&.maxCount=5 HTTP/1.1
Host:  <epnm-host>
Accept: application/yang-data+xml
Authorization: Basic …
```

7.7.1.2 *Response*

```
HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/yang-data+xml
```

```
<ns4:response-message xmlns:ns28="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns26="urn:cisco:params:xml:ns:yang:restconf:foundation" xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-
common:v1">
  <ns4:header>
    <ns4:firstIndex>900</ns4:firstIndex>
    <ns4:lastIndex>904</ns4:lastIndex>
  </ns4:header>
  <ns4:data>
    <ns28:physical-connector>
      <ns26:description>GigabitEthernet Port</ns26:description>
      <ns26:name>GigabitEthernet0/0/1/6</ns26:name>
      <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR9K-CN-ABR2!EQ=name=module
0/0/1;partnumber=A9K-MPA-20X1GE</ns28:containing-equipment>
      <ns28:fdn>MD=CISCO_EPNM!ND=ASR9K-CN-ABR2!EQ=name=module 0/0/1;partnumber=A9K-MPA-
20X1GE!PC=GigabitEthernet0/0/1/6</ns28:fdn>
    </ns28:physical-connector>
    <ns28:physical-connector>
      <ns26:description>GigabitEthernet Port</ns26:description>
      <ns26:name>GigabitEthernet201/0/0/29</ns26:name>
      <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR9K-CN-ABR2!EQ=name=module
SAT201/0/CPU0;partnumber=ASR-9000v</ns28:containing-equipment>
      <ns28:fdn>MD=CISCO_EPNM!ND=ASR9K-CN-ABR2!EQ=name=module SAT201/0/CPU0;partnumber=ASR-
9000v!PC=GigabitEthernet201/0/0/29</ns28:fdn>
    </ns28:physical-connector>
    <ns28:physical-connector>
      <ns26:description>GigabitEthernet Port</ns26:description>
      <ns26:name>GigabitEthernet203/0/0/42</ns26:name>
```

```
        <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR9K-CN-ABR2!EQ=name=module
SAT203/0/CPU0;partnumber=ASR-9000v</ns28:containing-equipment>
        <ns28:fdn>MD=CISCO_EPNM!ND=ASR9K-CN-ABR2!EQ=name=module SAT203/0/CPU0;partnumber=ASR-
9000v!PC=GigabitEthernet203/0/0/42</ns28:fdn>
      </ns28:physical-connector>
      <ns28:physical-connector>
        <ns26:description>GigabitEthernet Port</ns26:description>
        <ns26:name>GigabitEthernet0/0/1/7</ns26:name>
        <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR9K-CN-ABR2!EQ=name=module
0/0/1;partnumber=A9K-MPA-20X1GE</ns28:containing-equipment>
        <ns28:fdn>MD=CISCO_EPNM!ND=ASR9K-CN-ABR2!EQ=name=module 0/0/1;partnumber=A9K-MPA-
20X1GE!PC=GigabitEthernet0/0/1/7</ns28:fdn>
      </ns28:physical-connector>
      <ns28:physical-connector>
        <ns26:description>GigabitEthernet Port</ns26:description>
        <ns26:name>GigabitEthernet201/0/0/23</ns26:name>
        <ns28:containing-equipment>MD=CISCO_EPNM!ND=ASR9K-CN-ABR2!EQ=name=module
SAT201/0/CPU0;partnumber=ASR-9000v</ns28:containing-equipment>
        <ns28:fdn>MD=CISCO_EPNM!ND=ASR9K-CN-ABR2!EQ=name=module SAT201/0/CPU0;partnumber=ASR-
9000v!PC=GigabitEthernet201/0/0/23</ns28:fdn>
      </ns28:physical-connector>
    </ns4:data>
</ns4:response-message>
```

7.8 Optical Network Element Settings

7.8.1 Get all Optical Network Element Settings

7.8.1.1 *Request*

```
GET /restconf/data/v1/restconf/data/v1/cisco-resource-optical:optical-nesettings?.depth=1&.maxCount=7
HTTP/1.1
Host:  <epnm-host>
Accept: application/yang-data+xml
Authorization: Basic …
```

7.8.1.2 *Response*

```
HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/yang-data+xml
```

```
<ns4:response-message xmlns:ns29="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1">
  <ns4:header>
    <ns4:firstIndex>0</ns4:firstIndex>
    <ns4:lastIndex>6</ns4:lastIndex>
  </ns4:header>
  <ns4:data>
    <ns29:optical-nesettings>
      <ns29:node-fdn>MD=CISCO_EPNM!ND=OLA1</ns29:node-fdn>
      <ns29:node-type>LINE</ns29:node-type>
    </ns29:optical-nesettings>
    <ns29:optical-nesettings>
      <ns29:node-fdn>MD=CISCO_EPNM!ND=Venice</ns29:node-fdn>
```

```
        <ns29:node-type>ROADM</ns29:node-type>
      </ns29:optical-nesettings>
      <ns29:optical-nesettings>
        <ns29:node-fdn>MD=CISCO_EPNM!ND=OLA5</ns29:node-fdn>
        <ns29:node-type>LINE</ns29:node-type>
      </ns29:optical-nesettings>
      <ns29:optical-nesettings>
        <ns29:node-fdn>MD=CISCO_EPNM!ND=Verona</ns29:node-fdn>
        <ns29:node-type>ROADM</ns29:node-type>
      </ns29:optical-nesettings>
      <ns29:optical-nesettings>
        <ns29:node-fdn>MD=CISCO_EPNM!ND=Bologna</ns29:node-fdn>
        <ns29:node-type>ROADM</ns29:node-type>
      </ns29:optical-nesettings>
      <ns29:optical-nesettings>
        <ns29:node-fdn>MD=CISCO_EPNM!ND=Battipaglia</ns29:node-fdn>
        <ns29:node-type>ROADM</ns29:node-type>
      </ns29:optical-nesettings>
      <ns29:optical-nesettings>
        <ns29:node-fdn>MD=CISCO_EPNM!ND=Genoa</ns29:node-fdn>
        <ns29:node-type>ROADM</ns29:node-type>
      </ns29:optical-nesettings>
    </ns4:data>
</ns4:response-message>
```

7.9 Termination Points

7.9.1 Get All Physical Termination Points

7.9.1.1 *Request*

GET /restconf/data/v1/cisco-resource-ems:termination-point?type=PTP HTTP/1.1
Host: <epnm-host>
Accept: application/yang-data+xml

7.9.1.2 *Response*

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/yang-data+xml

```
        <ns4:response-message
        xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
        xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:foundation"
        xmlns:ns18="urn:cisco:params:xml:ns:yang:resource:device"
        xmlns:ns17="urn:cisco:params:xml:ns:yang:yang-push:v1"
        xmlns:ns16="urn:cisco:params:xml:ns:yang:sb:customer:v1"
        xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
        xmlns:ns14="urn:cisco:params:xml:ns:yang:terminationpoint:configuration
        :v1" xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
        xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
        xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
        xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
        xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
        xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
        xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
```

```
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library"
xmlns:ns2="inet-uri">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>99</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns7:termination-point>
            <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-120.22.s!PTP=name=SONET
0/7/6;lr=LR_DSR_OC48_and_STM16</ns7:fdn>
            <ns7:discovered-name>SONET 0/7/6</ns7:discovered-name>
            <ns7:admin-state>ns4:admin-state-up</ns7:admin-state>
            <ns7:oper-state>ns4:oper-state-down</ns7:oper-state>
            <ns7:layer-rate
xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-layer-
rates:v1">ns21:LR_DSR_OC48_and_STM16</ns7:layer-rate>
            <ns7:directionality>ns4:bi-direction</ns7:directionality>
            <ns7:is-edge-point>true</ns7:is-edge-point>
            <ns7:type>PTP</ns7:type>
            <ns7:is-promiscuous>false</ns7:is-promiscuous>
            <ns7:is-span-monitored>false</ns7:is-span-monitored>
            <ns7:is-connector-present>true</ns7:is-connector-present>
            <ns7:tdm-port>
                <ns7:line-coding>NRZ</ns7:line-coding>
                <ns7:clock-source>LINE</ns7:clock-source>
                <ns7:loopback-mode>LOCAL</ns7:loopback-mode>
            </ns7:tdm-port>
        </ns7:termination-point>
        <ns7:termination-point>
            <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-120.22.s!PTP=name=SONET
0/7/7;lr=lr_sonet</ns7:fdn>
            <ns7:discovered-name>SONET 0/7/7</ns7:discovered-name>
            <ns7:admin-state>ns4:admin-state-up</ns7:admin-state>
            <ns7:oper-state>ns4:oper-state-down</ns7:oper-state>
            <ns7:layer-rate
xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-layer-
rates:v1">ns21:lr_sonet</ns7:layer-rate>
            <ns7:directionality>ns4:bi-direction</ns7:directionality>
            <ns7:is-edge-point>true</ns7:is-edge-point>
            <ns7:type>PTP</ns7:type>
            <ns7:is-promiscuous>false</ns7:is-promiscuous>
            <ns7:is-span-monitored>false</ns7:is-span-monitored>
            <ns7:is-connector-present>true</ns7:is-connector-present>
            <ns7:tdm-port></ns7:tdm-port>
        </ns7:termination-point>
        <ns7:termination-point>
            <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-120.22.s!PTP=name=SONET
0/7/4;lr=LR_DSR_OC48_and_STM16</ns7:fdn>
            <ns7:discovered-name>SONET 0/7/4</ns7:discovered-name>
            <ns7:admin-state>ns4:admin-state-up</ns7:admin-state>
            <ns7:oper-state>ns4:oper-state-down</ns7:oper-state>
            <ns7:layer-rate
xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-layer-
```

```
      rates:v1">ns21:LR_DSR_OC48_and_STM16</ns7:layer-rate>
                  <ns7:directionality>ns4:bi-direction</ns7:directionality>
                  <ns7:is-edge-point>true</ns7:is-edge-point>
                  <ns7:type>PTP</ns7:type>
                  <ns7:is-promiscuous>false</ns7:is-promiscuous>
                  <ns7:is-span-monitored>false</ns7:is-span-monitored>
                  <ns7:is-connector-present>true</ns7:is-connector-present>
                  <ns7:tdm-port>
                      <ns7:line-coding>NRZ</ns7:line-coding>
                      <ns7:clock-source>LINE</ns7:clock-source>
                      <ns7:loopback-mode>LOCAL</ns7:loopback-mode>
                  </ns7:tdm-port>
              </ns7:termination-point>
              <ns7:termination-point>
                  <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-120.22.s!PTP=name=SONET
      0/7/5;lr=lr_sonet</ns7:fdn>
                  <ns7:discovered-name>SONET 0/7/5</ns7:discovered-name>
                  <ns7:admin-state>ns4:admin-state-up</ns7:admin-state>
                  <ns7:oper-state>ns4:oper-state-not-applicable</ns7:oper-
      state>
                  <ns7:layer-rate
      xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-layer-
      rates:v1">ns21:lr_sonet</ns7:layer-rate>
                  <ns7:directionality>ns4:bi-direction</ns7:directionality>
                  <ns7:is-edge-point>true</ns7:is-edge-point>
                  <ns7:type>PTP</ns7:type>
                  <ns7:is-promiscuous>false</ns7:is-promiscuous>
                  <ns7:is-span-monitored>false</ns7:is-span-monitored>
                  <ns7:tdm-port></ns7:tdm-port>
              </ns7:termination-point>
              <ns7:termination-point>
                  <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-120.22.s!PTP=name=SONET
      0/7/2;lr=LR_DSR_OC3_STM1</ns7:fdn>
                  <ns7:discovered-name>SONET 0/7/2</ns7:discovered-name>
                  <ns7:description>360 test</ns7:description>
                  <ns7:admin-state>ns4:admin-state-up</ns7:admin-state>
                  <ns7:oper-state>ns4:oper-state-down</ns7:oper-state>
                  <ns7:layer-rate
      xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-layer-
      rates:v1">ns21:LR_DSR_OC3_STM1</ns7:layer-rate>
                  <ns7:directionality>ns4:bi-direction</ns7:directionality>
                  <ns7:is-edge-point>true</ns7:is-edge-point>
                  <ns7:type>PTP</ns7:type>
                  <ns7:is-promiscuous>false</ns7:is-promiscuous>
                  <ns7:is-span-monitored>false</ns7:is-span-monitored>
                  <ns7:is-connector-present>true</ns7:is-connector-present>
                  <ns7:tdm-port>
                      <ns7:line-coding>NRZ</ns7:line-coding>
                      <ns7:clock-source>LINE</ns7:clock-source>
                      <ns7:loopback-mode>NETWORK</ns7:loopback-mode>
                  </ns7:tdm-port>
              </ns7:termination-point>

      </ns4:data>
    </ns4:response-message>
```

7.9.2 Get All Floating Termination Points

7.9.2.1 *Request*

GET /restconf/data/v1/cisco-resource-ems:termination-point?type=FTP HTTP/1.1
Host: <epnm-host>
Accept: application/yang-data+xml

7.9.2.2 *Response*

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/yang-data+xml

```
    <ns4:response-message
    xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
    xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:foundation"
    xmlns:ns18="urn:cisco:params:xml:ns:yang:resource:device"
    xmlns:ns17="urn:cisco:params:xml:ns:yang:yang-push:v1"
    xmlns:ns16="urn:cisco:params:xml:ns:yang:sb:customer:v1"
    xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
    xmlns:ns14="urn:cisco:params:xml:ns:yang:terminationpoint:configuration:v1
    " xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
    xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
    xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
    xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
    xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
    xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
    xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
    xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
    xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
    xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
    xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
    uri">
        <ns4:header>
            <ns4:firstIndex>0</ns4:firstIndex>
            <ns4:lastIndex>99</ns4:lastIndex>
        </ns4:header>
        <ns4:data>
            <ns7:termination-point>
                <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-
    120.22.s!FTP=name=BDI222;lr=lr_bridge</ns7:fdn>
                <ns7:discovered-name>BDI222</ns7:discovered-name>
                <ns7:admin-state>ns4:admin-state-down</ns7:admin-state>
                <ns7:oper-state>ns4:oper-state-not-applicable</ns7:oper-state>
                <ns7:layer-rate xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-
    layer-rates:v1">ns21:lr_bridge</ns7:layer-rate>
                <ns7:directionality>ns4:bi-direction</ns7:directionality>
                <ns7:is-edge-point>true</ns7:is-edge-point>
                <ns7:type>FTP</ns7:type>
                <ns7:is-promiscuous>false</ns7:is-promiscuous>
                <ns7:is-span-monitored>false</ns7:is-span-monitored>
            </ns7:termination-point>
            <ns7:termination-point>
                <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-
    120.22.s!FTP=name=GigabitEthernet0/9/3/1;lr=lr-gigabit-
    ethernet_interface</ns7:fdn>
                <ns7:discovered-name>GigabitEthernet0/9/3/1</ns7:discovered-
```

```
    name>
                <ns7:admin-state>ns4:admin-state-up</ns7:admin-state>
                <ns7:oper-state>ns4:oper-state-down</ns7:oper-state>
                <ns7:layer-rate xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-
    layer-rates:v1">ns21:lr_ethernet_interface</ns7:layer-rate>
                <ns7:directionality>ns4:bi-direction</ns7:directionality>
                <ns7:is-edge-point>true</ns7:is-edge-point>
                <ns7:type>FTP</ns7:type>
                <ns7:is-promiscuous>false</ns7:is-promiscuous>
                <ns7:mtu>1508</ns7:mtu>
                <ns7:is-span-monitored>false</ns7:is-span-monitored>
                <ns7:is-connector-present>false</ns7:is-connector-present>
            </ns7:termination-point>
            <ns7:termination-point>
                <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-
    120.22.s!FTP=name=GigabitEthernet0/9/7/1;lr=lr-gigabit-
    ethernet_interface</ns7:fdn>
                <ns7:discovered-name>GigabitEthernet0/9/7/1</ns7:discovered-
    name>
                <ns7:admin-state>ns4:admin-state-down</ns7:admin-state>
                <ns7:oper-state>ns4:oper-state-down</ns7:oper-state>
                <ns7:layer-rate xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-
    layer-rates:v1">ns21:lr_ethernet_interface</ns7:layer-rate>
                <ns7:directionality>ns4:bi-direction</ns7:directionality>
                <ns7:is-edge-point>true</ns7:is-edge-point>
                <ns7:type>FTP</ns7:type>
                <ns7:is-promiscuous>false</ns7:is-promiscuous>
                <ns7:mtu>1504</ns7:mtu>
                <ns7:is-span-monitored>false</ns7:is-span-monitored>
                <ns7:is-connector-present>false</ns7:is-connector-present>
            </ns7:termination-point>
            <ns7:termination-point>
                <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-
    120.22.s!FTP=name=GigabitEthernet0/9/7/4;lr=lr-gigabit-
    ethernet_interface</ns7:fdn>
                <ns7:discovered-name>GigabitEthernet0/9/7/4</ns7:discovered-
    name>
                <ns7:admin-state>ns4:admin-state-down</ns7:admin-state>
                <ns7:oper-state>ns4:oper-state-down</ns7:oper-state>
                <ns7:layer-rate xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-
    layer-rates:v1">ns21:lr_ethernet_interface</ns7:layer-rate>
                <ns7:directionality>ns4:bi-direction</ns7:directionality>
                <ns7:is-edge-point>true</ns7:is-edge-point>
                <ns7:type>FTP</ns7:type>
                <ns7:is-promiscuous>false</ns7:is-promiscuous>
                <ns7:mtu>1508</ns7:mtu>
                <ns7:is-span-monitored>false</ns7:is-span-monitored>
                <ns7:is-connector-present>false</ns7:is-connector-present>
            </ns7:termination-point>
```

7.9.3 Get All Connection Termination Points

7.9.3.1 *Request*

GET /restconf/data/v1/cisco-resource-ems:termination-point?type=CTP HTTP/1.1
Host: <epnm-host>
Accept: application/yang-data+xml

7.9.3.2 *Response*

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/yang-data+xml

```
    <ns4:response-message
    xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
    xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:foundation"
    xmlns:ns18="urn:cisco:params:xml:ns:yang:resource:device"
    xmlns:ns17="urn:cisco:params:xml:ns:yang:yang-push:v1"
    xmlns:ns16="urn:cisco:params:xml:ns:yang:sb:customer:v1"
    xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
    xmlns:ns14="urn:cisco:params:xml:ns:yang:terminationpoint:configuration:v1
    " xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
    xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
    xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
    xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
    xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
    xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
    xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
    xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
    xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
    xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
    xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
    uri">
        <ns4:header>
            <ns4:firstIndex>0</ns4:firstIndex>
            <ns4:lastIndex>99</ns4:lastIndex>
        </ns4:header>
        <ns4:data>
            <ns7:termination-point>
                <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-
    120.22.s!CTP=name=CEM0/5/5:0;lr=lr_cem_grp</ns7:fdn>
                <ns7:discovered-name>CEM0/5/5:0</ns7:discovered-name>
                <ns7:admin-state>ns4:admin-state-up</ns7:admin-state>
                <ns7:oper-state>ns4:oper-state-up</ns7:oper-state>
                <ns7:layer-rate xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-
    layer-rates:v1">ns21:lr_cem_grp</ns7:layer-rate>
                <ns7:directionality>ns4:bi-direction</ns7:directionality>
                <ns7:is-edge-point>true</ns7:is-edge-point>
                <ns7:type>CTP</ns7:type>
                <ns7:is-promiscuous>false</ns7:is-promiscuous>
                <ns7:is-span-monitored>false</ns7:is-span-monitored>
                <ns7:tdm-cem-tp>
                    <ns7:tdm-cem-group-flowpoint>
                        <ns7:cem-grp-number>0</ns7:cem-grp-number>
                        <ns7:ds0bundle-time-
    slots>[ShortNumericRange[&lt;null&gt;,&lt;null&gt;,3,3],
    ShortNumericRange[&lt;null&gt;,&lt;null&gt;,12,6]]</ns7:ds0bundle-time-
    slots>
                        <ns7:cem-type>ns6:cesopsn</ns7:cem-type>
                        <ns7:payload-size>64</ns7:payload-size>
                        <ns7:dejitter-buffer-size>32</ns7:dejitter-buffer-
    size>
                        <ns7:idle-pattern>0xFF</ns7:idle-pattern>
                        <ns7:rtp-hdr-enabled>false</ns7:rtp-hdr-enabled>
```

```
                    <ns7:rtp-hdr-compression-enabled>false</ns7:rtp-hdr-
compression-enabled>
                </ns7:tdm-cem-group-flowpoint>
            </ns7:tdm-cem-tp>
        </ns7:termination-point>
        <ns7:termination-point>
            <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-120.22.s!CTP=name=SONET
0/7/6.17/1;lr=lr_vt</ns7:fdn>
            <ns7:discovered-name>SONET 0/7/6.17/1</ns7:discovered-name>
            <ns7:admin-state>ns4:admin-state-up</ns7:admin-state>
            <ns7:oper-state>ns4:oper-state-down</ns7:oper-state>
            <ns7:layer-rate xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-
layer-rates:v1">ns21:lr_vt</ns7:layer-rate>
            <ns7:directionality>ns4:bi-direction</ns7:directionality>
            <ns7:is-edge-point>true</ns7:is-edge-point>
            <ns7:type>CTP</ns7:type>
            <ns7:is-promiscuous>false</ns7:is-promiscuous>
            <ns7:is-span-monitored>false</ns7:is-span-monitored>
            <ns7:tdm-cem-tp>
                <ns7:tdm-cem-flowpoint-lo-path>
                    <ns7:payload-type>ns6:payload-type-ds1</ns7:payload-
type>
                    <ns7:framing>ns6:framing-unframed</ns7:framing>
                    <ns7:t1e1-number>1</ns7:t1e1-number>
                </ns7:tdm-cem-flowpoint-lo-path>
            </ns7:tdm-cem-tp>
        </ns7:termination-point>
        <ns7:termination-point>
            <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-
120.22.s!CTP=name=CEM0/7/1:0;lr=lr_cem_grp</ns7:fdn>
            <ns7:discovered-name>CEM0/7/1:0</ns7:discovered-name>
            <ns7:admin-state>ns4:admin-state-up</ns7:admin-state>
            <ns7:oper-state>ns4:oper-state-up</ns7:oper-state>
            <ns7:layer-rate xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-
layer-rates:v1">ns21:lr_cem_grp</ns7:layer-rate>
            <ns7:directionality>ns4:bi-direction</ns7:directionality>
            <ns7:is-edge-point>true</ns7:is-edge-point>
            <ns7:type>CTP</ns7:type>
            <ns7:is-promiscuous>false</ns7:is-promiscuous>
            <ns7:is-span-monitored>false</ns7:is-span-monitored>
            <ns7:tdm-cem-tp>
                <ns7:tdm-cem-group-flowpoint>
                    <ns7:cem-grp-number>0</ns7:cem-grp-number>
                    <ns7:cem-type>ns6:cep</ns7:cem-type>
                    <ns7:payload-size>783</ns7:payload-size>
                    <ns7:dejitter-buffer-size>6</ns7:dejitter-buffer-size>
                    <ns7:idle-pattern>0xFF</ns7:idle-pattern>
                    <ns7:rtp-hdr-enabled>false</ns7:rtp-hdr-enabled>
                    <ns7:rtp-hdr-compression-enabled>false</ns7:rtp-hdr-
compression-enabled>
                </ns7:tdm-cem-group-flowpoint>
            </ns7:tdm-cem-tp>
        </ns7:termination-point>
        <ns7:termination-point>
            <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-
120.22.s!CTP=name=EPL1;lr=lr_pseudowire; PWID=81070;REMOTE_ADDRESS=  3.
```

```
    4.  5.  6</ns7:fdn>
                <ns7:discovered-name>EPL1</ns7:discovered-name>
                <ns7:admin-state>ns4:admin-state-up</ns7:admin-state>
                <ns7:oper-state>ns4:oper-state-down</ns7:oper-state>
                <ns7:layer-rate xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-
    layer-rates:v1">ns21:lr_pseudowire</ns7:layer-rate>
                <ns7:directionality>ns4:bi-direction</ns7:directionality>
                <ns7:is-edge-point>true</ns7:is-edge-point>
                <ns7:type>CTP</ns7:type>
                <ns7:is-promiscuous>false</ns7:is-promiscuous>
                <ns7:is-span-monitored>false</ns7:is-span-monitored>
            </ns7:termination-point>
            <ns7:termination-point>
                <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-120.22.s!CTP=name=SONET
    0/7/2.2/4/1;lr=lr_vt</ns7:fdn>
                <ns7:discovered-name>SONET 0/7/2.2/4/1</ns7:discovered-name>
                <ns7:admin-state>ns4:admin-state-up</ns7:admin-state>
                <ns7:oper-state>ns4:oper-state-down</ns7:oper-state>
                <ns7:layer-rate xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-
    layer-rates:v1">ns21:lr_vt</ns7:layer-rate>
                <ns7:directionality>ns4:bi-direction</ns7:directionality>
                <ns7:is-edge-point>true</ns7:is-edge-point>
                <ns7:type>CTP</ns7:type>
                <ns7:is-promiscuous>false</ns7:is-promiscuous>
                <ns7:is-span-monitored>false</ns7:is-span-monitored>
                <ns7:tdm-cem-tp>
                    <ns7:tdm-cem-flowpoint-lo-path>
                        <ns7:payload-type>ns6:payload-type-ds1</ns7:payload-
    type>
                        <ns7:framing>ns6:framing-unframed</ns7:framing>
                        <ns7:clock-source>ns6:clock-source-
    internal</ns7:clock-source>
                        <ns7:vt15-number>4</ns7:vt15-number>
                        <ns7:t1e1-number>1</ns7:t1e1-number>
                    </ns7:tdm-cem-flowpoint-lo-path>
                </ns7:tdm-cem-tp>
            </ns7:termination-point>
```

7.9.4 Get All Physical Termination Points for Device

7.9.4.1 *Request*

GET /restconf/data/v1/cisco-resource-ems:termination-point?type=PTP&ndFdn=<Node FDN> HTTP/1.1
Ex: Node FDN = MD=CISCO_EPNM!ND=NCS4206-TEST-120.33
Host: <epnm-host>
Accept: application/yang-data+xml

7.9.4.2 *Response*

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/yang-data+xml

```
    <ns4:response-message
    xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
    xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:foundation"
    xmlns:ns18="urn:cisco:params:xml:ns:yang:resource:device"
    xmlns:ns17="urn:cisco:params:xml:ns:yang:yang-push:v1"
```

```
    xmlns:ns16="urn:cisco:params:xml:ns:yang:sb:customer:v1"
    xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
    xmlns:ns14="urn:cisco:params:xml:ns:yang:terminationpoint:configuration:v1
    " xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
    xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
    xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
    xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
    xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
    xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
    xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
    xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
    xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
    xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
    xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
    uri">
        <ns4:header>
            <ns4:firstIndex>0</ns4:firstIndex>
            <ns4:lastIndex>99</ns4:lastIndex>
        </ns4:header>
        <ns4:data>
            <ns7:termination-point>
                <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-120.22.s!PTP=name=SONET
    0/7/6;lr=LR_DSR_OC48_and_STM16</ns7:fdn>
                <ns7:discovered-name>SONET 0/7/6</ns7:discovered-name>
                <ns7:admin-state>ns4:admin-state-up</ns7:admin-state>
                <ns7:oper-state>ns4:oper-state-down</ns7:oper-state>
                <ns7:layer-rate xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-
    layer-rates:v1">ns21:LR_DSR_OC48_and_STM16</ns7:layer-rate>
                <ns7:directionality>ns4:bi-direction</ns7:directionality>
                <ns7:is-edge-point>true</ns7:is-edge-point>
                <ns7:type>PTP</ns7:type>
                <ns7:is-promiscuous>false</ns7:is-promiscuous>
                <ns7:is-span-monitored>false</ns7:is-span-monitored>
                <ns7:is-connector-present>true</ns7:is-connector-present>
                <ns7:tdm-port>
                    <ns7:line-coding>NRZ</ns7:line-coding>
                    <ns7:clock-source>LINE</ns7:clock-source>
                    <ns7:loopback-mode>LOCAL</ns7:loopback-mode>
                </ns7:tdm-port>
            </ns7:termination-point>
            <ns7:termination-point>
                <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-120.22.s!PTP=name=SONET
    0/7/7;lr=lr_sonet</ns7:fdn>
                <ns7:discovered-name>SONET 0/7/7</ns7:discovered-name>
                <ns7:admin-state>ns4:admin-state-up</ns7:admin-state>
                <ns7:oper-state>ns4:oper-state-down</ns7:oper-state>
                <ns7:layer-rate xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-
    layer-rates:v1">ns21:lr_sonet</ns7:layer-rate>
                <ns7:directionality>ns4:bi-direction</ns7:directionality>
                <ns7:is-edge-point>true</ns7:is-edge-point>
                <ns7:type>PTP</ns7:type>
                <ns7:is-promiscuous>false</ns7:is-promiscuous>
                <ns7:is-span-monitored>false</ns7:is-span-monitored>
                <ns7:is-connector-present>true</ns7:is-connector-present>
                <ns7:tdm-port></ns7:tdm-port>
            </ns7:termination-point>
```

```
            <ns7:termination-point>
                <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-120.22.s!PTP=name=SONET
    0/7/4;lr=LR_DSR_OC48_and_STM16</ns7:fdn>
                <ns7:discovered-name>SONET 0/7/4</ns7:discovered-name>
                <ns7:admin-state>ns4:admin-state-up</ns7:admin-state>
                <ns7:oper-state>ns4:oper-state-down</ns7:oper-state>
                <ns7:layer-rate xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-
    layer-rates:v1">ns21:LR_DSR_OC48_and_STM16</ns7:layer-rate>
                <ns7:directionality>ns4:bi-direction</ns7:directionality>
                <ns7:is-edge-point>true</ns7:is-edge-point>
                <ns7:type>PTP</ns7:type>
                <ns7:is-promiscuous>false</ns7:is-promiscuous>
                <ns7:is-span-monitored>false</ns7:is-span-monitored>
                <ns7:is-connector-present>true</ns7:is-connector-present>
                <ns7:tdm-port>
                    <ns7:line-coding>NRZ</ns7:line-coding>
                    <ns7:clock-source>LINE</ns7:clock-source>
                    <ns7:loopback-mode>LOCAL</ns7:loopback-mode>
                </ns7:tdm-port>
            </ns7:termination-point>
            <ns7:termination-point>
                <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-120.22.s!PTP=name=SONET
    0/7/5;lr=lr_sonet</ns7:fdn>
                <ns7:discovered-name>SONET 0/7/5</ns7:discovered-name>
                <ns7:admin-state>ns4:admin-state-up</ns7:admin-state>
                <ns7:oper-state>ns4:oper-state-not-applicable</ns7:oper-state>
                <ns7:layer-rate xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-
    layer-rates:v1">ns21:lr_sonet</ns7:layer-rate>
                <ns7:directionality>ns4:bi-direction</ns7:directionality>
                <ns7:is-edge-point>true</ns7:is-edge-point>
                <ns7:type>PTP</ns7:type>
                <ns7:is-promiscuous>false</ns7:is-promiscuous>
                <ns7:is-span-monitored>false</ns7:is-span-monitored>
                <ns7:tdm-port></ns7:tdm-port>
            </ns7:termination-point>
```

7.9.5 Get All Floating Termination Points for Device

7.9.5.1 *Request*

GET /restconf/data/v1/cisco-resource-ems:termination-point? type=FTP&ndFdn=<Node FDN> HTTP/1.1

Ex: Node FDN = MD=CISCO_EPNM!ND=ISR-3900_1

Host: <epnm-host>

Accept: application/yang-data+xml

7.9.5.2 *Response*

HTTP/1.1 200 OK

Server: <epnm-host>

Content-Type: application/yang-data+xml

```
    <ns4:response-message
    xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
    xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:foundation"
    xmlns:ns18="urn:cisco:params:xml:ns:yang:resource:device"
    xmlns:ns17="urn:cisco:params:xml:ns:yang:yang-push:v1"
    xmlns:ns16="urn:cisco:params:xml:ns:yang:sb:customer:v1"
    xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
```

```
xmlns:ns14="urn:cisco:params:xml:ns:yang:terminationpoint:configuration:v1
" xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>65</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns7:termination-point>
            <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-
120.22.s!FTP=name=BDI222;lr=lr_bridge</ns7:fdn>
            <ns7:discovered-name>BDI222</ns7:discovered-name>
            <ns7:admin-state>ns4:admin-state-down</ns7:admin-state>
            <ns7:oper-state>ns4:oper-state-not-applicable</ns7:oper-state>
            <ns7:layer-rate xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-
layer-rates:v1">ns21:lr_bridge</ns7:layer-rate>
            <ns7:directionality>ns4:bi-direction</ns7:directionality>
            <ns7:is-edge-point>true</ns7:is-edge-point>
            <ns7:type>FTP</ns7:type>
            <ns7:is-promiscuous>false</ns7:is-promiscuous>
            <ns7:is-span-monitored>false</ns7:is-span-monitored>
        </ns7:termination-point>
        <ns7:termination-point>
            <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-
120.22.s!FTP=name=GigabitEthernet0/9/3/1;lr=lr-gigabit-
ethernet_interface</ns7:fdn>
            <ns7:discovered-name>GigabitEthernet0/9/3/1</ns7:discovered-
name>
            <ns7:admin-state>ns4:admin-state-up</ns7:admin-state>
            <ns7:oper-state>ns4:oper-state-down</ns7:oper-state>
            <ns7:layer-rate xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-
layer-rates:v1">ns21:lr_ethernet_interface</ns7:layer-rate>
            <ns7:directionality>ns4:bi-direction</ns7:directionality>
            <ns7:is-edge-point>true</ns7:is-edge-point>
            <ns7:type>FTP</ns7:type>
            <ns7:is-promiscuous>false</ns7:is-promiscuous>
            <ns7:mtu>1508</ns7:mtu>
            <ns7:is-span-monitored>false</ns7:is-span-monitored>
            <ns7:is-connector-present>false</ns7:is-connector-present>
        </ns7:termination-point>
        <ns7:termination-point>
            <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-
120.22.s!FTP=name=GigabitEthernet0/9/7/1;lr=lr-gigabit-
ethernet_interface</ns7:fdn>
            <ns7:discovered-name>GigabitEthernet0/9/7/1</ns7:discovered-
name>
```

```
                <ns7:admin-state>ns4:admin-state-down</ns7:admin-state>
                <ns7:oper-state>ns4:oper-state-down</ns7:oper-state>
                <ns7:layer-rate xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-
    layer-rates:v1">ns21:lr_ethernet_interface</ns7:layer-rate>
                <ns7:directionality>ns4:bi-direction</ns7:directionality>
                <ns7:is-edge-point>true</ns7:is-edge-point>
                <ns7:type>FTP</ns7:type>
                <ns7:is-promiscuous>false</ns7:is-promiscuous>
                <ns7:mtu>1504</ns7:mtu>
                <ns7:is-span-monitored>false</ns7:is-span-monitored>
                <ns7:is-connector-present>false</ns7:is-connector-present>
            </ns7:termination-point>
            <ns7:termination-point>
                <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-
    120.22.s!FTP=name=GigabitEthernet0/9/7/4;lr=lr-gigabit-
    ethernet_interface</ns7:fdn>
                <ns7:discovered-name>GigabitEthernet0/9/7/4</ns7:discovered-
    name>
                <ns7:admin-state>ns4:admin-state-down</ns7:admin-state>
                <ns7:oper-state>ns4:oper-state-down</ns7:oper-state>
                <ns7:layer-rate xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-
    layer-rates:v1">ns21:lr_ethernet_interface</ns7:layer-rate>
                <ns7:directionality>ns4:bi-direction</ns7:directionality>
                <ns7:is-edge-point>true</ns7:is-edge-point>
                <ns7:type>FTP</ns7:type>
                <ns7:is-promiscuous>false</ns7:is-promiscuous>
                <ns7:mtu>1508</ns7:mtu>
                <ns7:is-span-monitored>false</ns7:is-span-monitored>
                <ns7:is-connector-present>false</ns7:is-connector-present>
            </ns7:termination-point>
            <ns7:termination-point>
                <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-
    120.22.s!FTP=name=GigabitEthernet0/9/7/5;lr=lr-gigabit-
    ethernet_interface</ns7:fdn>
                <ns7:discovered-name>GigabitEthernet0/9/7/5</ns7:discovered-
    name>
                <ns7:admin-state>ns4:admin-state-down</ns7:admin-state>
                <ns7:oper-state>ns4:oper-state-down</ns7:oper-state>
                <ns7:layer-rate xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-
    layer-rates:v1">ns21:lr_ethernet_interface</ns7:layer-rate>
                <ns7:directionality>ns4:bi-direction</ns7:directionality>
                <ns7:is-edge-point>true</ns7:is-edge-point>
                <ns7:type>FTP</ns7:type>
                <ns7:is-promiscuous>false</ns7:is-promiscuous>
                <ns7:mtu>1508</ns7:mtu>
                <ns7:is-span-monitored>false</ns7:is-span-monitored>
                <ns7:is-connector-present>false</ns7:is-connector-present>
            </ns7:termination-point>
```

7.9.6 Get All Connection Termination Points for Device

7.9.6.1 *Request*

GET /restconf/data/v1/cisco-resource-ems:termination-point? type=CTP&ndFdn=<Node FDN> HTTP/1.1

Ex: Node FDN = MD=CISCO_EPNM!ND=NCS4206-TEST-120.33

Host: <epnm-host>

Accept: application/yang-data+xml

7.9.6.2 *Response*

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/yang-data+xml

```
    <ns4:response-message
    xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
    xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:foundation"
    xmlns:ns18="urn:cisco:params:xml:ns:yang:resource:device"
    xmlns:ns17="urn:cisco:params:xml:ns:yang:yang-push:v1"
    xmlns:ns16="urn:cisco:params:xml:ns:yang:sb:customer:v1"
    xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
    xmlns:ns14="urn:cisco:params:xml:ns:yang:terminationpoint:configuration:v1
    " xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
    xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
    xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
    xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
    xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
    xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
    xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
    xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
    xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
    xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
    xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
    uri">
        <ns4:header>
            <ns4:firstIndex>0</ns4:firstIndex>
            <ns4:lastIndex>99</ns4:lastIndex>
        </ns4:header>
        <ns4:data>
            <ns7:termination-point>
                <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-
    120.22.s!CTP=name=CEM0/5/5:0;lr=lr_cem_grp</ns7:fdn>
                <ns7:discovered-name>CEM0/5/5:0</ns7:discovered-name>
                <ns7:admin-state>ns4:admin-state-up</ns7:admin-state>
                <ns7:oper-state>ns4:oper-state-up</ns7:oper-state>
                <ns7:layer-rate xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-
    layer-rates:v1">ns21:lr_cem_grp</ns7:layer-rate>
                <ns7:directionality>ns4:bi-direction</ns7:directionality>
                <ns7:is-edge-point>true</ns7:is-edge-point>
                <ns7:type>CTP</ns7:type>
                <ns7:is-promiscuous>false</ns7:is-promiscuous>
                <ns7:is-span-monitored>false</ns7:is-span-monitored>
                <ns7:tdm-cem-tp>
                    <ns7:tdm-cem-group-flowpoint>
                        <ns7:cem-grp-number>0</ns7:cem-grp-number>
                        <ns7:ds0bundle-time-
    slots>[ShortNumericRange[&lt;null&gt;,&lt;null&gt;,3,3],
    ShortNumericRange[&lt;null&gt;,&lt;null&gt;,12,6]]</ns7:ds0bundle-time-
    slots>
                        <ns7:cem-type>ns6:cesopsn</ns7:cem-type>
                        <ns7:payload-size>64</ns7:payload-size>
                        <ns7:dejitter-buffer-size>32</ns7:dejitter-buffer-
    size>
                        <ns7:idle-pattern>0xFF</ns7:idle-pattern>
```

```
                    <ns7:rtp-hdr-enabled>false</ns7:rtp-hdr-enabled>
                    <ns7:rtp-hdr-compression-enabled>false</ns7:rtp-hdr-
compression-enabled>
                </ns7:tdm-cem-group-flowpoint>
            </ns7:tdm-cem-tp>
        </ns7:termination-point>
        <ns7:termination-point>
            <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-120.22.s!CTP=name=SONET
0/7/6.17/1;lr=lr_vt</ns7:fdn>
            <ns7:discovered-name>SONET 0/7/6.17/1</ns7:discovered-name>
            <ns7:admin-state>ns4:admin-state-up</ns7:admin-state>
            <ns7:oper-state>ns4:oper-state-down</ns7:oper-state>
            <ns7:layer-rate xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-
layer-rates:v1">ns21:lr_vt</ns7:layer-rate>
            <ns7:directionality>ns4:bi-direction</ns7:directionality>
            <ns7:is-edge-point>true</ns7:is-edge-point>
            <ns7:type>CTP</ns7:type>
            <ns7:is-promiscuous>false</ns7:is-promiscuous>
            <ns7:is-span-monitored>false</ns7:is-span-monitored>
            <ns7:tdm-cem-tp>
                <ns7:tdm-cem-flowpoint-lo-path>
                    <ns7:payload-type>ns6:payload-type-ds1</ns7:payload-
type>
                    <ns7:framing>ns6:framing-unframed</ns7:framing>
                    <ns7:t1e1-number>1</ns7:t1e1-number>
                </ns7:tdm-cem-flowpoint-lo-path>
            </ns7:tdm-cem-tp>
        </ns7:termination-point>
        <ns7:termination-point>
            <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-
120.22.s!CTP=name=CEM0/7/1:0;lr=lr_cem_grp</ns7:fdn>
            <ns7:discovered-name>CEM0/7/1:0</ns7:discovered-name>
            <ns7:admin-state>ns4:admin-state-up</ns7:admin-state>
            <ns7:oper-state>ns4:oper-state-up</ns7:oper-state>
            <ns7:layer-rate xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-
layer-rates:v1">ns21:lr_cem_grp</ns7:layer-rate>
            <ns7:directionality>ns4:bi-direction</ns7:directionality>
            <ns7:is-edge-point>true</ns7:is-edge-point>
            <ns7:type>CTP</ns7:type>
            <ns7:is-promiscuous>false</ns7:is-promiscuous>
            <ns7:is-span-monitored>false</ns7:is-span-monitored>
            <ns7:tdm-cem-tp>
                <ns7:tdm-cem-group-flowpoint>
                    <ns7:cem-grp-number>0</ns7:cem-grp-number>
                    <ns7:cem-type>ns6:cep</ns7:cem-type>
                    <ns7:payload-size>783</ns7:payload-size>
                    <ns7:dejitter-buffer-size>6</ns7:dejitter-buffer-size>
                    <ns7:idle-pattern>0xFF</ns7:idle-pattern>
                    <ns7:rtp-hdr-enabled>false</ns7:rtp-hdr-enabled>
                    <ns7:rtp-hdr-compression-enabled>false</ns7:rtp-hdr-
compression-enabled>
                </ns7:tdm-cem-group-flowpoint>
            </ns7:tdm-cem-tp>
        </ns7:termination-point>
        <ns7:termination-point>
            <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-
```

```
    120.22.s!CTP=name=EPL1;lr=lr_pseudowire; PWID=81070;REMOTE_ADDRESS=  3.
    4.  5.  6</ns7:fdn>
                <ns7:discovered-name>EPL1</ns7:discovered-name>
                <ns7:admin-state>ns4:admin-state-up</ns7:admin-state>
                <ns7:oper-state>ns4:oper-state-down</ns7:oper-state>
                <ns7:layer-rate xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-
    layer-rates:v1">ns21:lr_pseudowire</ns7:layer-rate>
                <ns7:directionality>ns4:bi-direction</ns7:directionality>
                <ns7:is-edge-point>true</ns7:is-edge-point>
                <ns7:type>CTP</ns7:type>
                <ns7:is-promiscuous>false</ns7:is-promiscuous>
                <ns7:is-span-monitored>false</ns7:is-span-monitored>
            </ns7:termination-point>
            <ns7:termination-point>
                <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-120.22.s!CTP=name=SONET
    0/7/2.2/4/1;lr=lr_vt</ns7:fdn>
                <ns7:discovered-name>SONET 0/7/2.2/4/1</ns7:discovered-name>
                <ns7:admin-state>ns4:admin-state-up</ns7:admin-state>
                <ns7:oper-state>ns4:oper-state-down</ns7:oper-state>
                <ns7:layer-rate xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-
    layer-rates:v1">ns21:lr_vt</ns7:layer-rate>
                <ns7:directionality>ns4:bi-direction</ns7:directionality>
                <ns7:is-edge-point>true</ns7:is-edge-point>
                <ns7:type>CTP</ns7:type>
                <ns7:is-promiscuous>false</ns7:is-promiscuous>
                <ns7:is-span-monitored>false</ns7:is-span-monitored>
                <ns7:tdm-cem-tp>
                    <ns7:tdm-cem-flowpoint-lo-path>
                        <ns7:payload-type>ns6:payload-type-ds1</ns7:payload-
    type>
                        <ns7:framing>ns6:framing-unframed</ns7:framing>
                        <ns7:clock-source>ns6:clock-source-
    internal</ns7:clock-source>
                        <ns7:vt15-number>4</ns7:vt15-number>
                        <ns7:t1e1-number>1</ns7:t1e1-number>
                    </ns7:tdm-cem-flowpoint-lo-path>
                </ns7:tdm-cem-tp>
            </ns7:termination-point>
```

7.9.7 Get Single Termination Point

7.9.7.1 *Request*

GET /restconf/data/v1/cisco-resource-ems:termination-point? fdn=<Termination Point FDN> HTTP/1.1
Ex Termination Point FDN = MD=CISCO_EPNM!ND=NCS4206-TEST-120.33!CTP=name=CEM-PG57:16002;lr=lr_CEM_GRP
Host: <epnm-host>
Accept: application/yang-data+xml

7.9.7.2 *Response*

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/yang-data+xml

```
    <ns4:response-message
    xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
    xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:foundation"
```

```
    xmlns:ns18="urn:cisco:params:xml:ns:yang:resource:device"
    xmlns:ns17="urn:cisco:params:xml:ns:yang:yang-push:v1"
    xmlns:ns16="urn:cisco:params:xml:ns:yang:sb:customer:v1"
    xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
    xmlns:ns14="urn:cisco:params:xml:ns:yang:terminationpoint:configuration:v1
    " xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
    xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
    xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
    xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
    xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
    xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
    xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
    xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
    xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
    xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
    xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
    uri">
        <ns4:header>
            <ns4:firstIndex>0</ns4:firstIndex>
            <ns4:lastIndex>0</ns4:lastIndex>
        </ns4:header>
        <ns4:data>
            <ns7:termination-point>
                <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-120.22.s!CTP=name=SONET
    0/7/2.2/4/1;lr=lr_vt</ns7:fdn>
                <ns7:discovered-name>SONET 0/7/2.2/4/1</ns7:discovered-name>
                <ns7:admin-state>ns4:admin-state-up</ns7:admin-state>
                <ns7:oper-state>ns4:oper-state-down</ns7:oper-state>
                <ns7:layer-rate xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-
    layer-rates:v1">ns21:lr_vt</ns7:layer-rate>
                <ns7:directionality>ns4:bi-direction</ns7:directionality>
                <ns7:is-edge-point>true</ns7:is-edge-point>
                <ns7:type>CTP</ns7:type>
                <ns7:is-promiscuous>false</ns7:is-promiscuous>
                <ns7:is-span-monitored>false</ns7:is-span-monitored>
                <ns7:tdm-cem-tp>
                    <ns7:tdm-cem-flowpoint-lo-path>
                        <ns7:payload-type>ns6:payload-type-ds1</ns7:payload-
    type>
                        <ns7:framing>ns6:framing-unframed</ns7:framing>
                        <ns7:clock-source>ns6:clock-source-
    internal</ns7:clock-source>
                        <ns7:vt15-number>4</ns7:vt15-number>
                        <ns7:t1e1-number>1</ns7:t1e1-number>
                    </ns7:tdm-cem-flowpoint-lo-path>
                </ns7:tdm-cem-tp>
            </ns7:termination-point>
        </ns4:data>
    </ns4:response-message>
```

7.9.8 Get Contained Connection Termination Points

7.9.8.1 *Request*

GET /restconf/data/v1/cisco-resource-ems:termination-point? fdn=<Termination Point FDN> &containedCTP=true HTTP/1.1

Ex Termination Point FDN = > MD=CISCO_EPNM!ND=NCS4206-TEST-120.33!PTP=name=SONET

0/5/6;lr=lr_DSR_OC48_and_STM16
Host: <epnm-host>
Accept: application/yang-data+xml

7.9.8.2 *Response*

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/yang-data+xml

```
    <ns4:response-message
    xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
    xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:foundation"
    xmlns:ns18="urn:cisco:params:xml:ns:yang:resource:device"
    xmlns:ns17="urn:cisco:params:xml:ns:yang:yang-push:v1"
    xmlns:ns16="urn:cisco:params:xml:ns:yang:sb:customer:v1"
    xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
    xmlns:ns14="urn:cisco:params:xml:ns:yang:terminationpoint:configuration:v1
    " xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
    xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
    xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
    xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
    xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
    xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
    xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
    xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
    xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
    xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
    xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
    uri">
        <ns4:header>
            <ns4:firstIndex>0</ns4:firstIndex>
            <ns4:lastIndex>79</ns4:lastIndex>
        </ns4:header>
        <ns4:data>
            <ns7:termination-point>
                <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-120.22.s!CTP=name=SONET
    0/7/6.19 - 21;lr=lr_sts</ns7:fdn>
                <ns7:discovered-name>SONET 0/7/6.19 - 21</ns7:discovered-name>
                <ns7:admin-state>ns4:admin-state-up</ns7:admin-state>
                <ns7:oper-state>ns4:oper-state-down</ns7:oper-state>
                <ns7:layer-rate xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-
    layer-rates:v1">ns21:lr_sts</ns7:layer-rate>
                <ns7:directionality>ns4:bi-direction</ns7:directionality>
                <ns7:is-edge-point>true</ns7:is-edge-point>
                <ns7:type>CTP</ns7:type>
                <ns7:is-promiscuous>false</ns7:is-promiscuous>
                <ns7:is-span-monitored>false</ns7:is-span-monitored>
                <ns7:tdm-cem-tp>
                    <ns7:tdm-cem-flowpoint-ho-path>
                        <ns7:payload-type>ns6:payload-type-
    unspecified</ns7:payload-type>
                        <ns7:clock-source>ns6:clock-source-
    internal</ns7:clock-source>
                    </ns7:tdm-cem-flowpoint-ho-path>
                </ns7:tdm-cem-tp>
            </ns7:termination-point>
            <ns7:termination-point>
```

```
            <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-
120.22.s!CTP=name=CEM0/7/6:0;lr=lr_cem_grp</ns7:fdn>
            <ns7:discovered-name>CEM0/7/6:0</ns7:discovered-name>
            <ns7:admin-state>ns4:admin-state-up</ns7:admin-state>
            <ns7:oper-state>ns4:oper-state-up</ns7:oper-state>
            <ns7:layer-rate xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-
layer-rates:v1">ns21:lr_cem_grp</ns7:layer-rate>
            <ns7:directionality>ns4:bi-direction</ns7:directionality>
            <ns7:is-edge-point>true</ns7:is-edge-point>
            <ns7:type>CTP</ns7:type>
            <ns7:is-promiscuous>false</ns7:is-promiscuous>
            <ns7:is-span-monitored>false</ns7:is-span-monitored>
            <ns7:tdm-cem-tp>
                <ns7:tdm-cem-group-flowpoint>
                    <ns7:cem-grp-number>0</ns7:cem-grp-number>
                    <ns7:cem-type>ns6:cep</ns7:cem-type>
                    <ns7:payload-size>783</ns7:payload-size>
                    <ns7:dejitter-buffer-size>6</ns7:dejitter-buffer-size>
                    <ns7:idle-pattern>0xFF</ns7:idle-pattern>
                    <ns7:rtp-hdr-enabled>false</ns7:rtp-hdr-enabled>
                    <ns7:rtp-hdr-compression-enabled>false</ns7:rtp-hdr-
compression-enabled>
                </ns7:tdm-cem-group-flowpoint>
            </ns7:tdm-cem-tp>
        </ns7:termination-point>
        <ns7:termination-point>
            <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-120.22.s!CTP=name=SONET
0/7/6.2;lr=lr_sts</ns7:fdn>
            <ns7:discovered-name>SONET 0/7/6.2</ns7:discovered-name>
            <ns7:admin-state>ns4:admin-state-up</ns7:admin-state>
            <ns7:oper-state>ns4:oper-state-down</ns7:oper-state>
            <ns7:layer-rate xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-
layer-rates:v1">ns21:lr_sts</ns7:layer-rate>
            <ns7:directionality>ns4:bi-direction</ns7:directionality>
            <ns7:is-edge-point>true</ns7:is-edge-point>
            <ns7:type>CTP</ns7:type>
            <ns7:is-promiscuous>false</ns7:is-promiscuous>
            <ns7:is-span-monitored>false</ns7:is-span-monitored>
            <ns7:is-connector-present>false</ns7:is-connector-present>
            <ns7:tdm-cem-tp>
                <ns7:tdm-cem-flowpoint-ho-path>
                    <ns7:payload-type>ns6:payload-type-vt15-
vc11</ns7:payload-type>
                    <ns7:clock-source>ns6:clock-source-
internal</ns7:clock-source>
                </ns7:tdm-cem-flowpoint-ho-path>
            </ns7:tdm-cem-tp>
        </ns7:termination-point>
        <ns7:termination-point>
            <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-120.22.s!CTP=name=SONET
0/7/6.2/3/3;lr=lr_vt</ns7:fdn>
            <ns7:discovered-name>SONET 0/7/6.2/3/3</ns7:discovered-name>
            <ns7:admin-state>ns4:admin-state-up</ns7:admin-state>
            <ns7:oper-state>ns4:oper-state-down</ns7:oper-state>
            <ns7:layer-rate xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-
layer-rates:v1">ns21:lr_vt</ns7:layer-rate>
```

```
                <ns7:directionality>ns4:bi-direction</ns7:directionality>
                <ns7:is-edge-point>true</ns7:is-edge-point>
                <ns7:type>CTP</ns7:type>
                <ns7:is-promiscuous>false</ns7:is-promiscuous>
                <ns7:is-span-monitored>false</ns7:is-span-monitored>
                <ns7:tdm-cem-tp>
                    <ns7:tdm-cem-flowpoint-lo-path>
                        <ns7:payload-type>ns6:payload-type-ds1</ns7:payload-
    type>
                        <ns7:framing>ns6:framing-unframed</ns7:framing>
                        <ns7:clock-source>ns6:clock-source-
    internal</ns7:clock-source>
                        <ns7:vt15-number>3</ns7:vt15-number>
                        <ns7:t1e1-number>3</ns7:t1e1-number>
                    </ns7:tdm-cem-flowpoint-lo-path>
                </ns7:tdm-cem-tp>
            </ns7:termination-point>
```

7.9.9 Get Contained In use Connection Termination Points

7.9.9.1 *Request*

GET /restconf/data/v1/cisco-resource-ems:termination-point? fdn=<Termination Point FDN> &containedInUseCTP=true HTTP/1.1
Ex Termination Point FDN = > MD=CISCO_EPNM!ND=NCS4206-TEST-120.33!PTP=name=SONET 0/5/6;lr=lr_DSR_OC48_and_STM16
Host: <epnm-host>
Accept: application/yang-data+xml

7.9.9.2 *Response*

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/yang-data+xml

```
    <ns4:response-message
    xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
    xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:foundation"
    xmlns:ns18="urn:cisco:params:xml:ns:yang:resource:device"
    xmlns:ns17="urn:cisco:params:xml:ns:yang:yang-push:v1"
    xmlns:ns16="urn:cisco:params:xml:ns:yang:sb:customer:v1"
    xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
    xmlns:ns14="urn:cisco:params:xml:ns:yang:terminationpoint:configuratio
    n:v1" xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
    xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
    xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
    xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
    xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
    xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
    xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
    xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
    xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
    xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
    xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library"
    xmlns:ns2="inet-uri">
        <ns4:header>
            <ns4:firstIndex>0</ns4:firstIndex>
            <ns4:lastIndex>79</ns4:lastIndex>
```

```
    </ns4:header>
    <ns4:data>
        <ns7:termination-point>
            <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-120.22.s!CTP=name=SONET
0/7/6.19 - 21;lr=lr_sts</ns7:fdn>
            <ns7:discovered-name>SONET 0/7/6.19 - 21</ns7:discovered-
name>
            <ns7:admin-state>ns4:admin-state-up</ns7:admin-state>
            <ns7:oper-state>ns4:oper-state-down</ns7:oper-state>
            <ns7:layer-rate
xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-layer-
rates:v1">ns21:lr_sts</ns7:layer-rate>
            <ns7:directionality>ns4:bi-direction</ns7:directionality>
            <ns7:is-edge-point>true</ns7:is-edge-point>
            <ns7:type>CTP</ns7:type>
            <ns7:is-promiscuous>false</ns7:is-promiscuous>
            <ns7:is-span-monitored>false</ns7:is-span-monitored>
            <ns7:tdm-cem-tp>
                <ns7:tdm-cem-flowpoint-ho-path>
                    <ns7:payload-type>ns6:payload-type-
unspecified</ns7:payload-type>
                    <ns7:clock-source>ns6:clock-source-
internal</ns7:clock-source>
                </ns7:tdm-cem-flowpoint-ho-path>
            </ns7:tdm-cem-tp>
        </ns7:termination-point>
        <ns7:termination-point>
            <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-
120.22.s!CTP=name=CEM0/7/6:0;lr=lr_cem_grp</ns7:fdn>
            <ns7:discovered-name>CEM0/7/6:0</ns7:discovered-name>
            <ns7:admin-state>ns4:admin-state-up</ns7:admin-state>
            <ns7:oper-state>ns4:oper-state-up</ns7:oper-state>
            <ns7:layer-rate
xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-layer-
rates:v1">ns21:lr_cem_grp</ns7:layer-rate>
            <ns7:directionality>ns4:bi-direction</ns7:directionality>
            <ns7:is-edge-point>true</ns7:is-edge-point>
            <ns7:type>CTP</ns7:type>
            <ns7:is-promiscuous>false</ns7:is-promiscuous>
            <ns7:is-span-monitored>false</ns7:is-span-monitored>
            <ns7:tdm-cem-tp>
                <ns7:tdm-cem-group-flowpoint>
                    <ns7:cem-grp-number>0</ns7:cem-grp-number>
                    <ns7:cem-type>ns6:cep</ns7:cem-type>
                    <ns7:payload-size>783</ns7:payload-size>
                    <ns7:dejitter-buffer-size>6</ns7:dejitter-buffer-
size>
                    <ns7:idle-pattern>0xFF</ns7:idle-pattern>
                    <ns7:rtp-hdr-enabled>false</ns7:rtp-hdr-enabled>
                    <ns7:rtp-hdr-compression-enabled>false</ns7:rtp-
hdr-compression-enabled>
                </ns7:tdm-cem-group-flowpoint>
            </ns7:tdm-cem-tp>
        </ns7:termination-point>
        <ns7:termination-point>
            <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-120.22.s!CTP=name=SONET
```

```
    0/7/6.2;lr=lr_sts</ns7:fdn>
                <ns7:discovered-name>SONET 0/7/6.2</ns7:discovered-name>
                <ns7:admin-state>ns4:admin-state-up</ns7:admin-state>
                <ns7:oper-state>ns4:oper-state-down</ns7:oper-state>
                <ns7:layer-rate
    xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-layer-
    rates:v1">ns21:lr_sts</ns7:layer-rate>
                <ns7:directionality>ns4:bi-direction</ns7:directionality>
                <ns7:is-edge-point>true</ns7:is-edge-point>
                <ns7:type>CTP</ns7:type>
                <ns7:is-promiscuous>false</ns7:is-promiscuous>
                <ns7:is-span-monitored>false</ns7:is-span-monitored>
                <ns7:is-connector-present>false</ns7:is-connector-present>
                <ns7:tdm-cem-tp>
                    <ns7:tdm-cem-flowpoint-ho-path>
                        <ns7:payload-type>ns6:payload-type-vt15-
    vc11</ns7:payload-type>
                        <ns7:clock-source>ns6:clock-source-
    internal</ns7:clock-source>
                    </ns7:tdm-cem-flowpoint-ho-path>
                </ns7:tdm-cem-tp>
            </ns7:termination-point>
            <ns7:termination-point>
                <ns7:fdn>MD=CISCO_EPNM!ND=EPASR907-120.22.s!CTP=name=SONET
    0/7/6.2/3/3;lr=lr_vt</ns7:fdn>
                <ns7:discovered-name>SONET 0/7/6.2/3/3</ns7:discovered-
    name>
                <ns7:admin-state>ns4:admin-state-up</ns7:admin-state>
                <ns7:oper-state>ns4:oper-state-down</ns7:oper-state>
                <ns7:layer-rate
    xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-layer-
    rates:v1">ns21:lr_vt</ns7:layer-rate>
                <ns7:directionality>ns4:bi-direction</ns7:directionality>
                <ns7:is-edge-point>true</ns7:is-edge-point>
                <ns7:type>CTP</ns7:type>
                <ns7:is-promiscuous>false</ns7:is-promiscuous>
                <ns7:is-span-monitored>false</ns7:is-span-monitored>
                <ns7:tdm-cem-tp>
                    <ns7:tdm-cem-flowpoint-lo-path>
                        <ns7:payload-type>ns6:payload-type-
    ds1</ns7:payload-type>
                        <ns7:framing>ns6:framing-unframed</ns7:framing>
                        <ns7:clock-source>ns6:clock-source-
    internal</ns7:clock-source>
                        <ns7:vt15-number>3</ns7:vt15-number>
                        <ns7:t1e1-number>3</ns7:t1e1-number>
                    </ns7:tdm-cem-flowpoint-lo-path>
                </ns7:tdm-cem-tp>
            </ns7:termination-point>
```

7.9.10 Get FiberType And FiberLength for ALL TerminationPoint

7.9.10.1 *Request*

```
getFibertypeandFiberlength_All CTP
https://<server-ip>/restconf/data/v1/cisco-resource-ems:termination-
point?ndFdn=MD=CISCO_EPNM!ND=<device-name>&.startIndex=<start-
```

```
index>&.batchSize=<batch-size>
```

7.9.10.2 *Response*

```
<ns5:response-message
xmlns:ns37="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns36="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns34="urn:ietf:params:xml:ns:yang:ietf-restconf"
xmlns:ns33="urn:cisco:params:xml:ns:yang:service:activation:status:v1"
xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
xmlns:ns31="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns30="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns29="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns28="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns27="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns26="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns24="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:profile-protection:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns4="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns5:header>
        <ns5:firstIndex>600</ns5:firstIndex>
        <ns5:lastIndex>699</ns5:lastIndex>
    </ns5:header>
    <ns5:data>
        <ns8:termination-point>
            <ns8:fdn>MD=CISCO_EPNM!ND=tcc40!CTP=name=PLINE-9-8-TX;lr=lr-
optical-section</ns8:fdn>
            <ns8:discovered-name>PLINE-9-8-TX</ns8:discovered-name>
            <ns8:alias-name>PUNIT-9/8(COM-TX 1-8[4-8-TX])</ns8:alias-name>
            <ns8:admin-state>ns5:admin-state-up</ns8:admin-state>
            <ns8:oper-state>ns5:oper-state-up</ns8:oper-state>
            <ns8:layer-rate xmlns:ns38="urn:cisco:params:xml:ns:yang:nrf-
optical-circuit-extension:v1">ns38:lr-optical-section</ns8:layer-rate>
            <ns8:directionality>ns5:bi-direction</ns8:directionality>
            <ns8:is-edge-point>true</ns8:is-edge-point>
```

```
            <ns8:type>CTP</ns8:type>
            <ns8:is-promiscuous>false</ns8:is-promiscuous>
            <ns8:is-span-monitored>false</ns8:is-span-monitored>
            <ns8:is-trap-enabled>false</ns8:is-trap-enabled>
            <ns8:optical-attributes></ns8:optical-attributes>
        </ns8:termination-point>
        <ns8:termination-point>
            <ns8:fdn>MD=CISCO_EPNM!ND=tcc40!PTP=name=PLINE-3-7-RX;lr=lr-
optical-physical</ns8:fdn>
            <ns8:discovered-name>PLINE-3-7-RX</ns8:discovered-name>
            <ns8:alias-name>PUNIT-3/15(COM-RX 1-15[4-7-RX])</ns8:alias-
name>
            <ns8:admin-state>ns5:admin-state-up</ns8:admin-state>
            <ns8:oper-state>ns5:oper-state-up</ns8:oper-state>
            <ns8:layer-rate xmlns:ns38="urn:cisco:params:xml:ns:yang:nrf-
optical-circuit-extension:v1">ns38:lr-optical-physical</ns8:layer-rate>
            <ns8:directionality>ns5:bi-direction</ns8:directionality>
            <ns8:is-edge-point>true</ns8:is-edge-point>
            <ns8:type>PTP</ns8:type>
            <ns8:is-promiscuous>false</ns8:is-promiscuous>
            <ns8:is-span-monitored>false</ns8:is-span-monitored>
            <ns8:is-trap-enabled>false</ns8:is-trap-enabled>
            <ns8:optical-attributes></ns8:optical-attributes>
        </ns8:termination-point>
        <ns8:termination-point>
            <ns8:fdn>MD=CISCO_EPNM!ND=tcc40!CTP=name=LINE-1-15-25-
TX;lr=lr-optical-section</ns8:fdn>
            <ns8:discovered-name>LINE-1-15-25-TX</ns8:discovered-name>
            <ns8:alias-name>1/15/50(CH1-8/UPG: 1-TX 4-5)</ns8:alias-name>
            <ns8:admin-state>ns5:admin-state-up</ns8:admin-state>
            <ns8:oper-state>ns5:oper-state-down</ns8:oper-state>
            <ns8:layer-rate xmlns:ns38="urn:cisco:params:xml:ns:yang:nrf-
optical-circuit-extension:v1">ns38:lr-optical-section</ns8:layer-rate>
            <ns8:directionality>ns5:bi-direction</ns8:directionality>
            <ns8:is-edge-point>true</ns8:is-edge-point>
            <ns8:type>CTP</ns8:type>
            <ns8:is-promiscuous>false</ns8:is-promiscuous>
            <ns8:is-span-monitored>false</ns8:is-span-monitored>
            <ns8:is-trap-enabled>false</ns8:is-trap-enabled>
            <ns8:optical-attributes></ns8:optical-attributes>
        </ns8:termination-point>
        <ns8:termination-point>
            <ns8:fdn>MD=CISCO_EPNM!ND=tcc40!PTP=name=LINE-1-15-31-
RX;lr=lr-optical-physical</ns8:fdn>
            <ns8:discovered-name>LINE-1-15-31-RX</ns8:discovered-name>
            <ns8:alias-name>1/15/61(CH9-16/UPG: 2-RX 5-11)</ns8:alias-
name>
            <ns8:admin-state>ns5:admin-state-up</ns8:admin-state>
            <ns8:oper-state>ns5:oper-state-down</ns8:oper-state>
            <ns8:layer-rate xmlns:ns38="urn:cisco:params:xml:ns:yang:nrf-
optical-circuit-extension:v1">ns38:lr-optical-physical</ns8:layer-rate>
            <ns8:directionality>ns5:bi-direction</ns8:directionality>
            <ns8:is-edge-point>true</ns8:is-edge-point>
            <ns8:type>PTP</ns8:type>
            <ns8:is-promiscuous>false</ns8:is-promiscuous>
            <ns8:is-span-monitored>false</ns8:is-span-monitored>
```

```
            <ns8:is-trap-enabled>false</ns8:is-trap-enabled>
            <ns8:optical-attributes></ns8:optical-attributes>
        </ns8:termination-point>
        <ns8:termination-point>
            <ns8:fdn>MD=CISCO_EPNM!ND=tcc40!PTP=name=PLINE-4-8-TX;lr=lr-
optical-physical</ns8:fdn>
            <ns8:discovered-name>PLINE-4-8-TX</ns8:discovered-name>
            <ns8:alias-name>PUNIT-4/16(DEG-TX 2-8)</ns8:alias-name>
            <ns8:admin-state>ns5:admin-state-up</ns8:admin-state>
            <ns8:oper-state>ns5:oper-state-up</ns8:oper-state>
            <ns8:layer-rate xmlns:ns38="urn:cisco:params:xml:ns:yang:nrf-
optical-circuit-extension:v1">ns38:lr-optical-physical</ns8:layer-rate>
            <ns8:directionality>ns5:bi-direction</ns8:directionality>
            <ns8:is-edge-point>true</ns8:is-edge-point>
            <ns8:type>PTP</ns8:type>
            <ns8:is-promiscuous>false</ns8:is-promiscuous>
            <ns8:is-span-monitored>false</ns8:is-span-monitored>
            <ns8:is-trap-enabled>false</ns8:is-trap-enabled>
            <ns8:optical-attributes></ns8:optical-attributes>
        </ns8:termination-point>
        <ns8:termination-point>
            <ns8:fdn>MD=CISCO_EPNM!ND=tcc40!CTP=name=LINE-1-15-18-
TX;lr=lr-optical-section</ns8:fdn>
            <ns8:discovered-name>LINE-1-15-18-TX</ns8:discovered-name>
            <ns8:alias-name>1/15/36(UPG: 2-TX 3-6)</ns8:alias-name>
            <ns8:admin-state>ns5:admin-state-up</ns8:admin-state>
            <ns8:oper-state>ns5:oper-state-down</ns8:oper-state>
            <ns8:layer-rate xmlns:ns38="urn:cisco:params:xml:ns:yang:nrf-
optical-circuit-extension:v1">ns38:lr-optical-section</ns8:layer-rate>
            <ns8:directionality>ns5:bi-direction</ns8:directionality>
            <ns8:is-edge-point>true</ns8:is-edge-point>
            <ns8:type>CTP</ns8:type>
            <ns8:is-promiscuous>false</ns8:is-promiscuous>
            <ns8:is-span-monitored>false</ns8:is-span-monitored>
            <ns8:is-trap-enabled>false</ns8:is-trap-enabled>
            <ns8:optical-attributes></ns8:optical-attributes>
        </ns8:termination-point>
        <ns8:termination-point>
            <ns8:fdn>MD=CISCO_EPNM!ND=tcc40!PTP=name=PLINE-8-11-RX;lr=lr-
optical-physical</ns8:fdn>
            <ns8:discovered-name>PLINE-8-11-RX</ns8:discovered-name>
            <ns8:alias-name>PUNIT-8/22(PORT-RX 3[4-11-RX])</ns8:alias-
name>
            <ns8:admin-state>ns5:admin-state-up</ns8:admin-state>
            <ns8:oper-state>ns5:oper-state-up</ns8:oper-state>
            <ns8:layer-rate xmlns:ns38="urn:cisco:params:xml:ns:yang:nrf-
optical-circuit-extension:v1">ns38:lr-optical-physical</ns8:layer-rate>
            <ns8:directionality>ns5:bi-direction</ns8:directionality>
            <ns8:is-edge-point>true</ns8:is-edge-point>
            <ns8:type>PTP</ns8:type>
            <ns8:is-promiscuous>false</ns8:is-promiscuous>
            <ns8:is-span-monitored>false</ns8:is-span-monitored>
            <ns8:is-trap-enabled>false</ns8:is-trap-enabled>
            <ns8:optical-attributes></ns8:optical-attributes>
        </ns8:termination-point>
        <ns8:termination-point>
```

```
            <ns8:fdn>MD=CISCO_EPNM!ND=tcc40!PTP=name=LINE-1-16-22-
TX;lr=lr-optical-physical</ns8:fdn>
            <ns8:discovered-name>LINE-1-16-22-TX</ns8:discovered-name>
            <ns8:alias-name>1/16/44(CH1-8/UPG: 1-TX 4-2)</ns8:alias-name>
            <ns8:admin-state>ns5:admin-state-up</ns8:admin-state>
            <ns8:oper-state>ns5:oper-state-down</ns8:oper-state>
            <ns8:layer-rate xmlns:ns38="urn:cisco:params:xml:ns:yang:nrf-
optical-circuit-extension:v1">ns38:lr-optical-physical</ns8:layer-rate>
            <ns8:directionality>ns5:bi-direction</ns8:directionality>
            <ns8:is-edge-point>true</ns8:is-edge-point>
            <ns8:type>PTP</ns8:type>
            <ns8:is-promiscuous>false</ns8:is-promiscuous>
            <ns8:is-span-monitored>false</ns8:is-span-monitored>
            <ns8:is-trap-enabled>false</ns8:is-trap-enabled>
            <ns8:optical-attributes></ns8:optical-attributes>
        </ns8:termination-point>
        <ns8:termination-point>
            <ns8:fdn>MD=CISCO_EPNM!ND=tcc40!CTP=name=LINE-1-3-1-RX;lr=lr-
optical-section</ns8:fdn>
            <ns8:discovered-name>LINE-1-3-1-RX</ns8:discovered-name>
            <ns8:alias-name>1/3/2(COM-RX)</ns8:alias-name>
            <ns8:admin-state>ns5:admin-state-up</ns8:admin-state>
            <ns8:oper-state>ns5:oper-state-down</ns8:oper-state>
            <ns8:layer-rate xmlns:ns38="urn:cisco:params:xml:ns:yang:nrf-
optical-circuit-extension:v1">ns38:lr-optical-section</ns8:layer-rate>
            <ns8:directionality>ns5:bi-direction</ns8:directionality>
            <ns8:is-edge-point>true</ns8:is-edge-point>
            <ns8:type>CTP</ns8:type>
            <ns8:is-promiscuous>false</ns8:is-promiscuous>
            <ns8:is-span-monitored>false</ns8:is-span-monitored>
            <ns8:is-trap-enabled>false</ns8:is-trap-enabled>
            <ns8:optical-auto-laser-shutdown>
                <ns8:mode>DISABLED</ns8:mode>
                <ns8:recovery-pulse-interval>100.0</ns8:recovery-pulse-
interval>
                <ns8:recovery-pulse-duration>9.0</ns8:recovery-pulse-
duration>
            </ns8:optical-auto-laser-shutdown>
            <ns8:optical-attributes></ns8:optical-attributes>
        </ns8:termination-point>
        <ns8:termination-point>
            <ns8:fdn>MD=CISCO_EPNM!ND=tcc40!PTP=name=PLINE-6-20-RX;lr=lr-
optical-physical</ns8:fdn>
            <ns8:discovered-name>PLINE-6-20-RX</ns8:discovered-name>
            <ns8:alias-name>PUNIT-6/44(COM-2-RX 4-12)</ns8:alias-name>
            <ns8:admin-state>ns5:admin-state-up</ns8:admin-state>
            <ns8:oper-state>ns5:oper-state-up</ns8:oper-state>
            <ns8:layer-rate xmlns:ns38="urn:cisco:params:xml:ns:yang:nrf-
optical-circuit-extension:v1">ns38:lr-optical-physical</ns8:layer-rate>
            <ns8:directionality>ns5:bi-direction</ns8:directionality>
            <ns8:is-edge-point>true</ns8:is-edge-point>
            <ns8:type>PTP</ns8:type>
            <ns8:is-promiscuous>false</ns8:is-promiscuous>
            <ns8:is-span-monitored>false</ns8:is-span-monitored>
            <ns8:is-trap-enabled>false</ns8:is-trap-enabled>
            <ns8:optical-attributes></ns8:optical-attributes>
```

```
        </ns8:termination-point>
        <ns8:termination-point>
            <ns8:fdn>MD=CISCO_EPNM!ND=tcc40!CTP=name=LINE-1-16-34-
TX;lr=lr-optical-section</ns8:fdn>
            <ns8:discovered-name>LINE-1-16-34-TX</ns8:discovered-name>
            <ns8:alias-name>1/16/68(CH9-16/UPG: 2-TX 5-6)</ns8:alias-name>
            <ns8:admin-state>ns5:admin-state-up</ns8:admin-state>
            <ns8:oper-state>ns5:oper-state-down</ns8:oper-state>
            <ns8:layer-rate xmlns:ns38="urn:cisco:params:xml:ns:yang:nrf-
optical-circuit-extension:v1">ns38:lr-optical-section</ns8:layer-rate>
            <ns8:directionality>ns5:bi-direction</ns8:directionality>
            <ns8:is-edge-point>true</ns8:is-edge-point>
            <ns8:type>CTP</ns8:type>
            <ns8:is-promiscuous>false</ns8:is-promiscuous>
            <ns8:is-span-monitored>false</ns8:is-span-monitored>
            <ns8:is-trap-enabled>false</ns8:is-trap-enabled>
            <ns8:optical-attributes></ns8:optical-attributes>
        </ns8:termination-point>
    </ns5:data>
</ns5:response-message>
```

7.9.11 Get FiberType and FiberLength For a Single TerminationPoint

7.9.11.1 *Request*

```
https://<server-ip>/restconf/data/v1/cisco-resource-ems:termination-
point?fdn=MD=CISCO_EPNM!ND=<device-name>!CTP=name=<CTP-name>;lr=<layer-
rate>
```

7.9.11.2 *Response*

```
<ns5:response-message
xmlns:ns37="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns36="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns34="urn:ietf:params:xml:ns:yang:ietf-restconf"
xmlns:ns33="urn:cisco:params:xml:ns:yang:service:activation:status:v1"
xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
xmlns:ns31="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns30="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns29="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns28="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns27="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns26="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns24="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:profile-protection:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
```

```
xmlns:ns11="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns4="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns5:header>
        <ns5:firstIndex>0</ns5:firstIndex>
        <ns5:lastIndex>0</ns5:lastIndex>
    </ns5:header>
    <ns5:data>
        <ns8:termination-point>
            <ns8:fdn>MD=CISCO_EPNM!ND=tcc40!CTP=name=LINE-1-3-3-
RX&amp;LINE-1-3-3-TX;lr=lr-optical-transmission-section</ns8:fdn>
            <ns8:discovered-name>LINE-1-3-3-RX&amp;LINE-1-3-3-
TX</ns8:discovered-name>
            <ns8:layer-rate xmlns:ns38="urn:cisco:params:xml:ns:yang:nrf-
optical-circuit-extension:v1">ns38:lr-optical-transmission-
section</ns8:layer-rate>
            <ns8:directionality>ns5:bi-direction</ns8:directionality>
            <ns8:is-edge-point>true</ns8:is-edge-point>
            <ns8:type>CTP</ns8:type>
            <ns8:optical-attributes>
                <ns8:fiber-attributes>
                    <ns8:fiber-type>G652-SMF-28E</ns8:fiber-type>
                    <ns8:length>1.0</ns8:length>
                </ns8:fiber-attributes>
            </ns8:optical-attributes>
        </ns8:termination-point>
    </ns5:data>
</ns5:response-message>
```

7.9.12 Get Termination Points for Patch Cord A END

7.9.12.1 *Request*

```
https://{ServerIP}/restconf/data/v1/cisco-resource-ems:termination-
point?fdn=MD=CISCO_EPNM!ND=tcc40!CTP=name=LINE-1-16-18-TX;lr=lr-optical-
section
```

7.9.12.2 *Response*

```
<ns5:response-message
xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns34="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns32="urn:ietf:params:xml:ns:yang:ietf-restconf"
xmlns:ns31="urn:cisco:params:xml:ns:yang:service:activation:status:v1"
xmlns:ns30="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
xmlns:ns29="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns28="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns27="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns26="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns25="urn:cisco:params:xml:ns:yang:yang-push:v1"
```

```
xmlns:ns24="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns4="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns5:header>
        <ns5:firstIndex>0</ns5:firstIndex>
        <ns5:lastIndex>0</ns5:lastIndex>
    </ns5:header>
    <ns5:data>
        <ns8:termination-point>
            <ns8:fdn>MD=CISCO_EPNM!ND=tcc40!CTP=name=LINE-1-16-18-
TX;lr=lr-optical-section</ns8:fdn>
            <ns8:discovered-name>LINE-1-16-18-TX</ns8:discovered-name>
            <ns8:alias-name>1/16/36(UPG: 2-TX 3-6)</ns8:alias-name>
            <ns8:admin-state>ns5:admin-state-up</ns8:admin-state>
            <ns8:oper-state>ns5:oper-state-down</ns8:oper-state>
            <ns8:layer-rate xmlns:ns36="urn:cisco:params:xml:ns:yang:nrf-
optical-circuit-extension:v1">ns36:lr-optical-section</ns8:layer-rate>
            <ns8:directionality>ns5:bi-direction</ns8:directionality>
            <ns8:is-edge-point>true</ns8:is-edge-point>
            <ns8:type>CTP</ns8:type>
            <ns8:is-promiscuous>false</ns8:is-promiscuous>
            <ns8:is-span-monitored>false</ns8:is-span-monitored>
            <ns8:is-trap-enabled>false</ns8:is-trap-enabled>
            <ns8:optical-attributes></ns8:optical-attributes>
        </ns8:termination-point>
    </ns5:data>
</ns5:response-message>
```

7.10 Get All Virtual Connections

7.10.1 Request

GET /restconf/data/v1/cisco-service-network:virtual-connection HTTP/1.1
Host: <epnm-host>
Accept: application/yang-data+xml

7.10.2 Response

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/yang-data+xml

```
<?xml version='1.0' encoding='utf-8'?>
<virtual-connection-list xmlns="urn:cisco:params:xml:ns:yang:nrf-
virtualconnection:v1">
  <firstIndex>0</firstIndex>
  <lastIndex>1</lastIndex>
  <data>
    <virtual-connection>
      <fdn>MD=CISCO_EPNM!VC=MyVC1</fdn>
      <discovered-name />
      <description />
      <admin-state />
      <oper-state />
      <user-label />
      <layer-rate />
      <vc-id />
      <vc-discovery-state />
      <type />
      <subtype />
      <direction />
      <network-routed />
      <termination-point-list>
        <termination-point-config>
          <fdn></fdn>
          <discovered-name />
          <description />
          <admin-state />
          <oper-state />
          <user-label />
          <layer-rate />
          <is-edge-point />
          <ingress-qos-profile-name />
          <egress-qos-profile-name />
          <mpls-te-tunnel-tp>
            <tunnel-id />
            <affinity-bits />
            <affinity-mask />
            <setup-priority />
            <hold-priority />
            <auto-bandwidth-enabled />
            <metric-type />
            <load-share-ratio />
            <optimization-lock-down-enabled />
            <auto-route-announce-enabled />
            <active-te-tunnel-lsp />
            <standby-te-tunnel-lsp />
            <global-id />
            <destination-address />
            <path-protection-enabled />
            <path-options>
              <mpls-te-tunnel-path-option>
                <path-preference />
```

```
                <path-type />
                <lock-down />
                <protected-by />
                <explicit-path-name />
              </mpls-te-tunnel-path-option>
            </path-options>
          </mpls-te-tunnel-tp>
        </termination-point-config>
      </termination-point-list>
      <routeref-list>
        <routeref />
      </routeref-list>
      <te-tunnel>
        <tunnel-id />
        <tunnel-source />
        <tunnel-destination />
        <association-id />
        <association-source-address />
        <global-id />
        <co-routed-enabled />
        <protection-type />
      </te-tunnel>
    </virtual-connection>
    <virtual-connection>
      <fdn>MD=CISCO_EPNM!VC=MyVC2</fdn>
      <discovered-name />
      <description />
      <admin-state />
      <oper-state />
      <user-label />
      <layer-rate />
      <vc-id />
      <vc-discovery-state />
      <type />
      <subtype />
      <direction />
      <network-routed />
      <termination-point-list>
        <termination-point-config>
          <fdn></fdn>
          <discovered-name />
          <description />
          <admin-state />
          <oper-state />
          <user-label />
          <layer-rate />
          <is-edge-point />
          <ingress-qos-profile-name />
          <egress-qos-profile-name />
          <tdm-cem-tp>
            <tdm-cem-group-flowpoint>
              <fdn></fdn>
              <discovered-name />
              <description />
              <admin-state />
              <oper-state />
```

```
      <user-label />
      <layer-rate />
      <cem-grp-number />
      <associated-interface />
      <ds0bundle-time-slots />
      <cem-type />
      <qos-profile />
      <te-tunnel />
      <is-protected />
      <payload-size />
      <dejitter-buffer-size />
      <idle-pattern-length />
      <idle-pattern />
      <dummy-mode />
      <rtp-hdr-enabled />
      <rtp-hdr-compression-enabled />
      <tdm-cem-path-ref />
    </tdm-cem-group-flowpoint>
    <tdm-cem-flowpoint-ho-path>
      <fdn></fdn>
      <discovered-name />
      <description />
      <admin-state />
      <oper-state />
      <user-label />
      <layer-rate />
      <path-mode />
      <payload-type />
      <is-protected />
      <protection-role />
      <protection-group-name />
      <framing />
      <clock-source />
      <loopback-mode />
      <recovered-clock-id />
      <recovered-mode />
      <id-code-type />
      <id-code />
      <transmit-enabled />
      <transmit-type />
      <overhead-byte />
      <overhead-byte-value-or-length />
      <transmit-string />
      <received-string />
      <expected-string />
      <trace-mode />
    </tdm-cem-flowpoint-ho-path>
    <tdm-cem-flowpoint-lo-path>
      <fdn></fdn>
      <discovered-name />
      <description />
      <admin-state />
      <oper-state />
      <user-label />
      <layer-rate />
      <path-mode />
```

```
            <payload-type />
            <is-protected />
            <protection-role />
            <protection-group-name />
            <framing />
            <clock-source />
            <loopback-mode />
            <recovered-clock-id />
            <recovered-mode />
            <id-code-type />
            <id-code />
            <transmit-enabled />
            <transmit-type />
            <overhead-byte />
            <overhead-byte-value-or-length />
            <transmit-string />
            <received-string />
            <expected-string />
            <trace-mode />
            <fdl-type />
            <vt15-number />
            <t1e1-number />
          </tdm-cem-flowpoint-lo-path>
          <tdm-cem-protection-group-flowpoint>
            <fdn></fdn>
            <discovered-name />
            <description />
            <admin-state />
            <oper-state />
            <user-label />
            <layer-rate />
            <protection-type />
            <working-member />
            <protecting-member />
          </tdm-cem-protection-group-flowpoint>
        </tdm-cem-tp>
      </termination-point-config>
    </termination-point-list>
    <routeref-list>
      <routeref />
    </routeref-list>
  </virtual-connection>
 </data>
</virtual-connection-list>
```

7.11 Get All Virtual Connections – L3VPN

7.11.1 Request

GET /restconf/data/v1/cisco-service-network:virtual-connection?vcType=mpls-l3-vpn&.summary=false
Host: <epnm-host>
Accept: application/yang-data+xml

7.11.2 Response

HTTP/1.1 200 OK

Server: <epnm-host>
Content-Type: application/yang-data+xml

```
<ns4:response-message xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-
topology:v1" xmlns:ns10="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>37</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns6:virtual-connection>
            <ns6:fdn>MD=CISCO_EPNM!VC=36B:8</ns6:fdn>
            <ns6:discovered-name>36B:8</ns6:discovered-name>
            <ns6:type>ns4:mpls-l3-vpn</ns6:type>
            <ns6:topology>ns4:point-to-point</ns6:topology>
            <ns6:direction>ns4:bi-direction</ns6:direction>
            <ns6:termination-point-list>
                <ns6: termination-point-config> termination-point-config>
                    <ns6:ip-tp>
                        <ns6:ip-address-
prefix>5.55.5.55/255.255.248.0</ns6:ip-address-prefix>
                        <ns6:cast-type>IPV4_PRIMARY</ns6:cast-type>
                        <ns6:is-routing-and-bridge>true</ns6:is-routing-and-
bridge>
                    </ns6:ip-tp>
                </ns6:termination-point-config>
                <ns6:termination-point-config>
                    <ns6:ip-tp>
                        <ns6:ip-address-
prefix>11.22.11.21/255.224.0.0</ns6:ip-address-prefix>
                        <ns6:cast-type>IPV4_PRIMARY</ns6:cast-type>
                        <ns6:is-routing-and-bridge>true</ns6:is-routing-and-
bridge>
                    </ns6:ip-tp>
                </ns6:termination-point-config>
                <ns6:termination-point-config>
                    <ns6:ip-tp>
                        <ns6:ip-address-
prefix>66.7.8.77/255.255.248.0</ns6:ip-address-prefix>
                        <ns6:cast-type>IPV4_PRIMARY</ns6:cast-type>
                        <ns6:is-routing-and-bridge>true</ns6:is-routing-and-
bridge>
                    </ns6:ip-tp>
                </ns6:termination-point-config>
            </ns6: termination-point-config>>
            <ns6:route-name-list></ns6:route-name-list>
        </ns6:virtual-connection>
        <ns6:virtual-connection>
            <ns6:fdn>MD=CISCO_EPNM!VC=AAAAAA:455654</ns6:fdn>
```

```
            <ns6:discovered-name>AAAAAA:455654</ns6:discovered-name>
            <ns6:type>ns4:mpls-l3-vpn</ns6:type>
            <ns6:topology>ns4:point-to-point</ns6:topology>
            <ns6:direction>ns4:bi-direction</ns6:direction>
            <ns6:termination-point-list>
                <ns6: termination-point-config>
                    <ns6:ip-tp>
                        <ns6:ip-address-prefix>11.2.3.4/255.252.0.0</ns6:ip-
address-prefix>
                        <ns6:cast-type>IPV4_PRIMARY</ns6:cast-type>
                        <ns6:is-routing-and-bridge>true</ns6:is-routing-and-
bridge>
                    </ns6:ip-tp>
                </ns6:termination-point-config>
                <ns6:termination-point-config>
                    <ns6:ip-tp>
                        <ns6:ip-address-prefix>4.33.4.5/255.254.0.0</ns6:ip-
address-prefix>
                        <ns6:cast-type>IPV4_PRIMARY</ns6:cast-type>
                        <ns6:is-routing-and-bridge>true</ns6:is-routing-and-
bridge>
                    </ns6:ip-tp>
                </ns6:termination-point-config>
            </ns6:termination-point-list>
            <ns6:route-name-list></ns6:route-name-list>
        </ns6:virtual-connection>
        <ns6:virtual-connection>
            <ns6:fdn>MD=CISCO_EPNM!VC=AAAAAA:11</ns6:fdn>
            <ns6:discovered-name>AAAAAA:11</ns6:discovered-name>
            <ns6:type>ns4:mpls-l3-vpn</ns6:type>
            <ns6:topology>ns4:point-to-point</ns6:topology>
            <ns6:direction>ns4:bi-direction</ns6:direction>
            <ns6:route-name-list></ns6:route-name-list>
        </ns6:virtual-connection>
        <ns6:virtual-connection>
            <ns6:fdn>MD=CISCO_EPNM!VC=AAAAAA:44</ns6:fdn>
            <ns6:discovered-name>AAAAAA:44</ns6:discovered-name>
            <ns6:type>ns4:mpls-l3-vpn</ns6:type>
            <ns6:topology>ns4:point-to-point</ns6:topology>
            <ns6:direction>ns4:bi-direction</ns6:direction>
            <ns6:termination-point-list>
                <ns6:termination-point-config>
                    <ns6:ip-tp>
                        <ns6:ip-address-
prefix>11.1.1.11/255.255.255.0</ns6:ip-address-prefix>
                        <ns6:cast-type>IPV4_PRIMARY</ns6:cast-type>
                        <ns6:is-routing-and-bridge>true</ns6:is-routing-and-
bridge>
                    </ns6:ip-tp>
                </ns6:termination-point-config>
            </ns6:termination-point-list>
            <ns6:route-name-list></ns6:route-name-list>
        </ns6:virtual-connection>
        <ns6:virtual-connection>
            <ns6:fdn>MD=CISCO_EPNM!VC=36B:3</ns6:fdn>
            <ns6:discovered-name>36B:3</ns6:discovered-name>
```

```
            <ns6:type>ns4:mpls-l3-vpn</ns6:type>
            <ns6:topology>ns4:point-to-point</ns6:topology>
            <ns6:direction>ns4:bi-direction</ns6:direction>
            <ns6:termination-point-list>
                <ns6:termination-point-config>
                    <ns6:ip-tp>
                        <ns6:ip-address-prefix>44.33.2.3/255.224.0.0</ns6:ip-
address-prefix>
                        <ns6:cast-type>IPV4_PRIMARY</ns6:cast-type>
                        <ns6:is-routing-and-bridge>true</ns6:is-routing-and-
bridge>
                    </ns6:ip-tp>
                </ns6:termination-point-config>
            </ns6:termination-point-list>
            <ns6:route-name-list></ns6:route-name-list>
        </ns6:virtual-connection>
    </ns4:data>
</ns4:response-message>
```

7.12 Get a Virtual Connection

7.12.1 Request

GET /restconf/data/v1/cisco-service-network:virtual-connection?fdn=MD=CISCO_EPNM!VC=foo HTTP/1.1
Host: <epnm-host>
Accept: application/yang-data+xml

7.12.2 Response

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/yang-data+xml

```
<?xml version='1.0' encoding='utf-8'?>
<virtual-connection-list xmlns="urn:cisco:params:xml:ns:yang:nrf-
virtualconnection:v1">
  <data>
    <virtual-connection>
     <!—vc data→
    </virtual-connection>
  </data>
</virtual-connection-list>
```

7.13 Get All Virtual Connections – CE

7.13.1 Request

GET /restconf/data/v1/cisco-service-network:virtual-connection?type=carrier-ethernet-vpn&.maxCount=3
Host: <epnm-host>
Accept: application/yang-data+xml

7.13.2 Response

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/yang-data+xml

```
<ns4:response-message
```

```
xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns18="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns17="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:terminationpoint:configuration:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>2</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns8:virtual-connection>
            <ns8:fdn>MD=CISCO_EPNM!VC=EVC_Link GigabitEthernet0/0/4 EFPID
1</ns8:fdn>
            <ns8:discovered-name>EVC_Link GigabitEthernet0/0/4 EFPID
1</ns8:discovered-name>
            <ns8:admin-state>ns4:admin-state-down</ns8:admin-state>
            <ns8:oper-state>ns4:oper-state-unavailable</ns8:oper-state>
            <ns8:type>ns4:carrier-ethernet-vpn</ns8:type>
            <ns8:subtype>ns4:ep-lan</ns8:subtype>
            <ns8:topology>ns4:multipoint-to-multipoint</ns8:topology>
            <ns8:direction>ns4:bi-direction</ns8:direction>
            <ns8:termination-point-list>
                <ns8:termination-point>
                    <ns8:fdn>MD=CISCO_EPNM!ND=ASR903-
120.24!FTP=name=GigabitEthernet0/0/2;lr=lr-gigabit-ethernet</ns8:fdn>
                    <ns8:admin-state>ns4:admin-state-up</ns8:admin-state>
                    <ns8:oper-state>ns4:oper-state-down</ns8:oper-state>
                    <ns8:directionality>ns4:bi-direction</ns8:directionality>
                    <ns8:is-edge-point>true</ns8:is-edge-point>
                    <ns8:ce-tp>
                        <ns8:outer-vlan-tp-id>DEFAULT</ns8:outer-vlan-tp-id>
                        <ns8:untagged-default>false</ns8:untagged-default>
                        <ns8:vid-rewrite-oper>ns5:none</ns8:vid-rewrite-oper>
                        <ns8:rewrite-is-symmetric>true</ns8:rewrite-is-
symmetric>
                        <ns8:mtu>1522</ns8:mtu>
                    </ns8:ce-tp>
                </ns8:termination-point>
                <ns8:termination-point>
                    <ns8:fdn>MD=CISCO_EPNM!ND=tmh2-chn-mvso-asr903-
2!FTP=name=GigabitEthernet0/0/4;lr=lr-gigabit-ethernet</ns8:fdn>
                    <ns8:admin-state>ns4:admin-state-down</ns8:admin-state>
```

```
                    <ns8:oper-state>ns4:oper-state-down</ns8:oper-state>
                    <ns8:directionality>ns4:bi-direction</ns8:directionality>
                    <ns8:is-edge-point>true</ns8:is-edge-point>
                    <ns8:ce-tp>
                        <ns8:outer-vlan-tp-id>DEFAULT</ns8:outer-vlan-tp-id>
                        <ns8:untagged-default>false</ns8:untagged-default>
                        <ns8:vid-rewrite-oper>ns5:none</ns8:vid-rewrite-oper>
                        <ns8:rewrite-is-symmetric>true</ns8:rewrite-is-
symmetric>
                        <ns8:mtu>1522</ns8:mtu>
                        <ns8:l2c-p-profile>EPMULTIPOINT</ns8:l2c-p-profile>
                    </ns8:ce-tp>
                </ns8:termination-point>
            </ns8:termination-point-list>
            <ns8:route-name-list>
                <ns8:route-name>PW 5.5.5.5_59_6.6.6.24</ns8:route-name>
                <ns8:route-name>PW 6.6.6.24_59_5.5.5.5</ns8:route-name>
            </ns8:route-name-list>
        </ns8:virtual-connection>
        <ns8:virtual-connection>
            <ns8:fdn>MD=CISCO_EPNM!VC=EvcLink_Bridge_10#10</ns8:fdn>
            <ns8:discovered-name>EvcLink_Bridge_10#10</ns8:discovered-name>
            <ns8:admin-state>ns4:admin-state-up</ns8:admin-state>
            <ns8:oper-state>ns4:oper-state-up</ns8:oper-state>
            <ns8:type>ns4:carrier-ethernet-vpn</ns8:type>
            <ns8:subtype>ns4:evc</ns8:subtype>
            <ns8:topology>ns4:point-to-point</ns8:topology>
            <ns8:direction>ns4:bi-direction</ns8:direction>
            <ns8:termination-point-list>
                <ns8:termination-point>
                    <ns8:fdn>MD=CISCO_EPNM!ND=EPNNCS4216-
120.41.cisco.com!FTP=name=GigabitEthernet0/1/5/10;lr=lr-gigabit-
ethernet</ns8:fdn>
                    <ns8:admin-state>ns4:admin-state-up</ns8:admin-state>
                    <ns8:oper-state>ns4:oper-state-up</ns8:oper-state>
                    <ns8:directionality>ns4:bi-direction</ns8:directionality>
                    <ns8:is-edge-point>true</ns8:is-edge-point>
                    <ns8:ce-tp>
                        <ns8:outer-vlan-tp-id>DOT1Q</ns8:outer-vlan-tp-id>
                        <ns8:untagged-default>false</ns8:untagged-default>
                        <ns8:sv-id-list>10</ns8:sv-id-list>
                        <ns8:vid-rewrite-oper>ns5:pop1</ns8:vid-rewrite-oper>
                        <ns8:rewrite-is-symmetric>true</ns8:rewrite-is-
symmetric>
                        <ns8:mtu>1500</ns8:mtu>
                    </ns8:ce-tp>
                </ns8:termination-point>
            </ns8:termination-point-list>
        </ns8:virtual-connection>
        <ns8:virtual-connection>
            <ns8:fdn>MD=CISCO_EPNM!VC=EvcLink_Bridge_1#1</ns8:fdn>
            <ns8:discovered-name>EvcLink_Bridge_1#1</ns8:discovered-name>
            <ns8:admin-state>ns4:admin-state-up</ns8:admin-state>
            <ns8:oper-state>ns4:oper-state-up</ns8:oper-state>
            <ns8:type>ns4:carrier-ethernet-vpn</ns8:type>
            <ns8:subtype>ns4:evc</ns8:subtype>
```

```
            <ns8:topology>ns4:point-to-point</ns8:topology>
            <ns8:direction>ns4:bi-direction</ns8:direction>
            <ns8:termination-point-list>
                <ns8:termination-point>
                    <ns8:fdn>MD=CISCO_EPNM!ND=EPNNCS4216-
120.41.cisco.com!FTP=name=GigabitEthernet0/1/3/1;lr=lr-gigabit-
ethernet</ns8:fdn>
                    <ns8:admin-state>ns4:admin-state-up</ns8:admin-state>
                    <ns8:oper-state>ns4:oper-state-up</ns8:oper-state>
                    <ns8:directionality>ns4:bi-direction</ns8:directionality>
                    <ns8:is-edge-point>true</ns8:is-edge-point>
                    <ns8:ce-tp>
                        <ns8:outer-vlan-tp-id>DOT1Q</ns8:outer-vlan-tp-id>
                        <ns8:untagged-default>false</ns8:untagged-default>
                        <ns8:sv-id-list>1324</ns8:sv-id-list>
                        <ns8:vid-rewrite-oper>ns5:pop1</ns8:vid-rewrite-oper>
                        <ns8:rewrite-is-symmetric>true</ns8:rewrite-is-
symmetric>
                        <ns8:mtu>1500</ns8:mtu>
                    </ns8:ce-tp>
                </ns8:termination-point>
            </ns8:termination-point-list>
        </ns8:virtual-connection>
    </ns4:data>
</ns4:response-message>
```

7.14 Get All Virtual Connections – CEM

7.14.1 Request

GET /restconf/data/v1/cisco-service-network:virtual-connection?type=tdm-cem&.maxCount=3
Host: <epnm-host>
Accept: application/yang-data+xml

7.14.2 Response

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/yang-data+xml

```
<ns4:response-message
xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns18="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns17="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:terminationpoint:configuration:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
```

```
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>2</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
      <ns8:virtual-connection>
            <ns8:fdn>MD=CISCO_EPNM!VC=CemLink#CESoP1</ns8:fdn>
            <ns8:discovered-name>CemLink#CESoP1</ns8:discovered-name>
            <ns8:admin-state>ns4:admin-state-up</ns8:admin-state>
            <ns8:oper-state>ns4:oper-state-up</ns8:oper-state>
            <ns8:discovery-state>ns4:discovery-complete</ns8:discovery-state>
            <ns8:type>ns4:tdm-cem</ns8:type>
            <ns8:subtype>ns4:ds0</ns8:subtype>
            <ns8:topology>ns4:point-to-point</ns8:topology>
            <ns8:direction>ns4:bi-direction</ns8:direction>
            <ns8:termination-point-list>
                <ns8:termination-point>
                    <ns8:directionality>ns4:bi-direction</ns8:directionality>
                    <ns8:is-edge-point>true</ns8:is-edge-point>
                    <ns8:tdm-cem-tp>
                        <ns8:tdm-cem-group-flowpoint>
                            <ns8:fdn>MD=CISCO_EPNM!ND=ASR903-PAN-
6.s!CTP=name=CEM0/3/11:20;lr=lr_CEM_GRP</ns8:fdn>
                            <ns8:admin-state>ns4:admin-state-up</ns8:admin-
state>
                            <ns8:oper-state>ns4:oper-state-up</ns8:oper-
state>
                            <ns8:cem-grp-number>20</ns8:cem-grp-number>
                            <ns8:associated-
interface>CEM0/3/11</ns8:associated-interface>
                            <ns8:ds0bundle-time-
slots>[ShortNumericRange[&lt;null&gt;,&lt;null&gt;,24,1]]</ns8:ds0bundle-
time-slots>
                            <ns8:cem-type>ns6:cesopsn</ns8:cem-type>
                            <ns8:payload-size>192</ns8:payload-size>
                            <ns8:idle-pattern>0xFF</ns8:idle-pattern>
                            <ns8:rtp-hdr-enabled>false</ns8:rtp-hdr-enabled>
                            <ns8:rtp-hdr-compression-enabled>false</ns8:rtp-
hdr-compression-enabled>
                        </ns8:tdm-cem-group-flowpoint>
                    </ns8:tdm-cem-tp>
                </ns8:termination-point>
                <ns8:termination-point>
                    <ns8:directionality>ns4:bi-direction</ns8:directionality>
                    <ns8:is-edge-point>true</ns8:is-edge-point>
                    <ns8:tdm-cem-tp>
                        <ns8:tdm-cem-group-flowpoint>
                            <ns8:fdn>MD=CISCO_EPNM!ND=ASR903-PAN-
6.s!CTP=name=CEM0/3/12:20;lr=lr_CEM_GRP</ns8:fdn>
                            <ns8:admin-state>ns4:admin-state-up</ns8:admin-
state>
                            <ns8:oper-state>ns4:oper-state-up</ns8:oper-
state>
```

```
                            <ns8:cem-grp-number>20</ns8:cem-grp-number>
                            <ns8:associated-
interface>CEM0/3/12</ns8:associated-interface>
                            <ns8:ds0bundle-time-
slots>[ShortNumericRange[&lt;null&gt;,&lt;null&gt;,24,1]]</ns8:ds0bundle-
time-slots>
                            <ns8:cem-type>ns6:cesopsn</ns8:cem-type>
                            <ns8:payload-size>192</ns8:payload-size>
                            <ns8:idle-pattern>0xFF</ns8:idle-pattern>
                            <ns8:rtp-hdr-enabled>false</ns8:rtp-hdr-enabled>
                            <ns8:rtp-hdr-compression-enabled>false</ns8:rtp-
hdr-compression-enabled>
                        </ns8:tdm-cem-group-flowpoint>
                    </ns8:tdm-cem-tp>
                </ns8:termination-point>
            </ns8:termination-point-list>
        </ns8:virtual-connection>
        <ns8:virtual-connection>

<ns8:fdn>MD=CISCO_EPNM!VC=CemLink#CemPwLink#CEMPW_15.15.15.15_11107_16.16.16.
16</ns8:fdn>
            <ns8:discovered-
name>CemLink#CemPwLink#CEMPW_15.15.15.15_11107_16.16.16.16</ns8:discovered-
name>
            <ns8:admin-state>ns4:admin-state-up</ns8:admin-state>
            <ns8:oper-state>ns4:oper-state-partial</ns8:oper-state>
            <ns8:discovery-state>ns4:discovery-partial</ns8:discovery-state>
            <ns8:type>ns4:tdm-cem</ns8:type>
            <ns8:subtype>ns4:ds0</ns8:subtype>
            <ns8:topology>ns4:point-to-point</ns8:topology>
            <ns8:direction>ns4:bi-direction</ns8:direction>
            <ns8:termination-point-list>
                <ns8:termination-point>
                    <ns8:directionality>ns4:bi-direction</ns8:directionality>
                    <ns8:is-edge-point>true</ns8:is-edge-point>
                    <ns8:tdm-cem-tp>
                        <ns8:tdm-cem-group-flowpoint>
                            <ns8:fdn>MD=CISCO_EPNM!ND=ASR903-PAN-
6.s!CTP=name=CEM0/3/0:7;lr=lr_CEM_GRP</ns8:fdn>
                            <ns8:admin-state>ns4:admin-state-up</ns8:admin-
state>
                            <ns8:oper-state>ns4:oper-state-up</ns8:oper-
state>
                            <ns8:cem-grp-number>7</ns8:cem-grp-number>
                            <ns8:associated-
interface>CEM0/3/0</ns8:associated-interface>
                            <ns8:ds0bundle-time-
slots>[ShortNumericRange[&lt;null&gt;,&lt;null&gt;,14,13]]</ns8:ds0bundle-
time-slots>
                            <ns8:cem-type>ns6:cesopsn</ns8:cem-type>
                            <ns8:payload-size>32</ns8:payload-size>
                            <ns8:idle-pattern>0xFF</ns8:idle-pattern>
                            <ns8:rtp-hdr-enabled>false</ns8:rtp-hdr-enabled>
                            <ns8:rtp-hdr-compression-enabled>false</ns8:rtp-
hdr-compression-enabled>
                        </ns8:tdm-cem-group-flowpoint>
```

```
                    </ns8:tdm-cem-tp>
                </ns8:termination-point>
            </ns8:termination-point-list>
            <ns8:route-name-list>
                <ns8:route-name>PW 16.16.16.16_11107_15.15.15.15</ns8:route-
name>
            </ns8:route-name-list>
        </ns8:virtual-connection>
        <ns8:virtual-connection>
            <ns8:fdn>MD=CISCO_EPNM!VC=CemLink#SONET-vt15</ns8:fdn>
            <ns8:discovered-name>CemLink#SONET-vt15</ns8:discovered-name>
            <ns8:admin-state>ns4:admin-state-up</ns8:admin-state>
            <ns8:oper-state>ns4:oper-state-up</ns8:oper-state>
            <ns8:discovery-state>ns4:discovery-complete</ns8:discovery-state>
            <ns8:type>ns4:tdm-cem</ns8:type>
            <ns8:subtype>ns4:t1</ns8:subtype>
            <ns8:topology>ns4:point-to-point</ns8:topology>
            <ns8:direction>ns4:bi-direction</ns8:direction>
            <ns8:termination-point-list>
                <ns8:termination-point>
                    <ns8:directionality>ns4:bi-direction</ns8:directionality>
                    <ns8:is-edge-point>true</ns8:is-edge-point>
                    <ns8:tdm-cem-tp>
                        <ns8:tdm-cem-group-flowpoint>
                            <ns8:fdn>MD=CISCO_EPNM!ND=ASR903-PAN-
6.s!CTP=name=CEM0/4/2:0;lr=lr_CEM_GRP</ns8:fdn>
                            <ns8:admin-state>ns4:admin-state-up</ns8:admin-
state>
                            <ns8:oper-state>ns4:oper-state-up</ns8:oper-
state>
                            <ns8:cem-grp-number>0</ns8:cem-grp-number>
                            <ns8:associated-
interface>CEM0/4/2</ns8:associated-interface>
                            <ns8:cem-type>ns6:satop</ns8:cem-type>
                            <ns8:payload-size>192</ns8:payload-size>
                            <ns8:idle-pattern>0xFF</ns8:idle-pattern>
                            <ns8:rtp-hdr-enabled>false</ns8:rtp-hdr-enabled>
                            <ns8:rtp-hdr-compression-enabled>false</ns8:rtp-
hdr-compression-enabled>
                        </ns8:tdm-cem-group-flowpoint>
                        <ns8:tdm-cem-flowpoint-ho-path>
                            <ns8:fdn>MD=CISCO_EPNM!ND=ASR903-PAN-
6.s!CTP=name=SONET 0/4/2.1;lr=lr_STS</ns8:fdn>
                            <ns8:admin-state>ns4:admin-state-up</ns8:admin-
state>
                            <ns8:oper-state>ns4:oper-state-down</ns8:oper-
state>
                            <ns8:path-mode>ns6:path-mode-vt15</ns8:path-mode>
                            <ns8:payload-type>ns6:payload-type-vt15-
vc11</ns8:payload-type>
                            <ns8:is-protected>false</ns8:is-protected>
                        </ns8:tdm-cem-flowpoint-ho-path>
                        <ns8:tdm-cem-flowpoint-lo-path>
                            <ns8:fdn>MD=CISCO_EPNM!ND=ASR903-PAN-
6.s!CTP=name=SONET 0/4/2.1/1/1;lr=lr_VT</ns8:fdn>
                            <ns8:admin-state>ns4:admin-state-up</ns8:admin-
```

```
state>
                            <ns8:oper-state>ns4:oper-state-down</ns8:oper-
state>
                            <ns8:path-mode>ns6:path-mode-t1</ns8:path-mode>
                            <ns8:payload-type>ns6:payload-type-
ds1</ns8:payload-type>
                            <ns8:is-protected>false</ns8:is-protected>
                            <ns8:framing>ns6:framing-unframed</ns8:framing>
                            <ns8:clock-source>ns6:clock-source-
internal</ns8:clock-source>
                            <ns8:t1e1-number>1</ns8:t1e1-number>
                        </ns8:tdm-cem-flowpoint-lo-path>
                    </ns8:tdm-cem-tp>
                </ns8:termination-point>
                <ns8:termination-point>
                    <ns8:directionality>ns4:bi-direction</ns8:directionality>
                    <ns8:is-edge-point>true</ns8:is-edge-point>
                    <ns8:tdm-cem-tp>
                        <ns8:tdm-cem-group-flowpoint>
                            <ns8:fdn>MD=CISCO_EPNM!ND=ASR903-PAN-
6.s!CTP=name=CEM0/4/3:1;lr=lr_CEM_GRP</ns8:fdn>
                            <ns8:admin-state>ns4:admin-state-up</ns8:admin-
state>
                            <ns8:oper-state>ns4:oper-state-up</ns8:oper-
state>
                            <ns8:cem-grp-number>1</ns8:cem-grp-number>
                            <ns8:associated-
interface>CEM0/4/3</ns8:associated-interface>
                            <ns8:cem-type>ns6:satop</ns8:cem-type>
                            <ns8:payload-size>192</ns8:payload-size>
                            <ns8:idle-pattern>0xFF</ns8:idle-pattern>
                            <ns8:rtp-hdr-enabled>false</ns8:rtp-hdr-enabled>
                            <ns8:rtp-hdr-compression-enabled>false</ns8:rtp-
hdr-compression-enabled>
                        </ns8:tdm-cem-group-flowpoint>
                        <ns8:tdm-cem-flowpoint-ho-path>
                            <ns8:fdn>MD=CISCO_EPNM!ND=ASR903-PAN-
6.s!CTP=name=SONET 0/4/3.1;lr=lr_STS</ns8:fdn>
                            <ns8:admin-state>ns4:admin-state-up</ns8:admin-
state>
                            <ns8:oper-state>ns4:oper-state-down</ns8:oper-
state>
                            <ns8:path-mode>ns6:path-mode-vt15</ns8:path-mode>
                            <ns8:payload-type>ns6:payload-type-vt15-
vc11</ns8:payload-type>
                            <ns8:is-protected>false</ns8:is-protected>
                        </ns8:tdm-cem-flowpoint-ho-path>
                        <ns8:tdm-cem-flowpoint-lo-path>
                            <ns8:fdn>MD=CISCO_EPNM!ND=ASR903-PAN-
6.s!CTP=name=SONET 0/4/3.1/2/2;lr=lr_VT</ns8:fdn>
                            <ns8:admin-state>ns4:admin-state-up</ns8:admin-
state>
                            <ns8:oper-state>ns4:oper-state-down</ns8:oper-
state>
                            <ns8:path-mode>ns6:path-mode-t1</ns8:path-mode>
                            <ns8:payload-type>ns6:payload-type-
```

```
ds1</ns8:payload-type>
                            <ns8:is-protected>false</ns8:is-protected>
                            <ns8:framing>ns6:framing-unframed</ns8:framing>
                            <ns8:clock-source>ns6:clock-source-
internal</ns8:clock-source>
                            <ns8:t1e1-number>2</ns8:t1e1-number>
                        </ns8:tdm-cem-flowpoint-lo-path>
                    </ns8:tdm-cem-tp>
                </ns8:termination-point>
            </ns8:termination-point-list>
        </ns8:virtual-connection>
    </ns4:data>
</ns4:response-message>
```

7.15 Get a Virtual Connection – L3VPN

7.15.1 Request

GET /restconf/data/v1/cisco-service-network:virtual-connection?
fdn=MD=CISCO_EPNM!VC=L3VPN_Provisioning_FW_NBI_Test
Host: <epnm-host>
Accept: application/yang-data+xml

7.15.2 Response

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/yang-data+xml

```
<ns4:response-message
xmlns:ns16="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns15="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns14="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns13="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>0</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns7:virtual-connection>

<ns7:fdn>MD=CISCO_EPNM!VC=L3VPN_Provisioning_FW_NBI_Test</ns7:fdn>
            <ns7:discovered-
name>L3VPN_Provisioning_FW_NBI_Test</ns7:discovered-name>
            <ns7:description>L3VPN_Provisioning_FW_NBI_Test</ns7:description>
            <ns7:admin-state>ns4:oper-state-unavailable</ns7:admin-state>
```

```
            <ns7:type>ns4:mpls-l3-vpn</ns7:type>
            <ns7:topology>ns4:multipoint-to-multipoint</ns7:topology>
            <ns7:direction>ns4:bi-direction</ns7:direction>
            <ns7:termination-point-list>
                <ns7:termination-point-config>
                    <ns7:ip-tp>
                        <ns7:ip-address-
prefix>10.3.10.24/255.192.0.0</ns7:ip-address-prefix>
                        <ns7:ip-address-prefix>1:2:3::5/ffe0::</ns7:ip-
address-prefix>
                        <ns7:cast-type>IPV4_PRIMARY,IPV6_UNICAST</ns7:cast-
type>
                        <ns7:is-routing-and-bridge>false</ns7:is-routing-and-
bridge>
                    </ns7:ip-tp>
                </ns7:termination-point-config>
            </ns7:termination-point-list>
            <ns7:route-name-list></ns7:route-name-list>
        </ns7:virtual-connection>
    </ns4:data>
</ns4:response-message>
```

7.16 Get a Virtual Connection – CE

7.16.1 Request

GET /restconf/data/v1/cisco-service-network:virtual-connection? fdn= MD=CISCO_EPNM!VC=EVPTree-NBI-03
Host: <epnm-host>
Accept: application/yang-data+xml

7.16.2 Response

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/yang-data+xml

```
<ns4:response-message
xmlns:ns40="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns39="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
xmlns:ns38="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns37="urn:ietf:params:xml:ns:yang:ietf-restconf"
xmlns:ns36="urn:cisco:params:xml:ns:yang:service:activation:status:v1"
xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns31="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns30="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
xmlns:ns29="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns28="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns26="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns24="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
```

```
xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>0</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns9:virtual-connection>
            <ns9:fdn>MD=CISCO_EPNM!VC=EVPTree-NBI-03</ns9:fdn>
            <ns9:discovered-name>EVPTree-NBI-03</ns9:discovered-name>
            <ns9:admin-state>ns4:admin-state-up</ns9:admin-state>
            <ns9:oper-state>ns4:oper-state-unavailable</ns9:oper-state>
            <ns9:discovery-state>ns4:discovery-partial</ns9:discovery-state>
            <ns9:type>ns4:carrier-ethernet-vpn</ns9:type>
            <ns9:subtype>ns4:evp-tree</ns9:subtype>
            <ns9:topology>ns4:point-to-multipoint</ns9:topology>
            <ns9:direction>ns4:bi-direction</ns9:direction>
            <ns9:termination-point-list>
                <ns9:termination-point>

<ns9:fdn>MD=CISCO_EPNM!ND=ASR9001.cisco.com!FTP=name=GigabitEthernet0/0/0/9.1
;lr=lr-ethernet</ns9:fdn>
                    <ns9:admin-state>ns4:admin-state-up</ns9:admin-state>
                    <ns9:oper-state>ns4:oper-state-not-applicable</ns9:oper-
state>
                    <ns9:directionality>ns4:tp-
bidirectional</ns9:directionality>
                    <ns9:is-edge-point>true</ns9:is-edge-point>
                    <ns9:ce-tp>
                        <ns9:outer-vlan-tp-id>DOT1Q</ns9:outer-vlan-tp-id>
                        <ns9:untagged-default>false</ns9:untagged-default>
                        <ns9:sv-id-list>1091</ns9:sv-id-list>
                        <ns9:vid-rewrite-oper>ns5:none</ns9:vid-rewrite-oper>
                        <ns9:rewrite-is-symmetric>true</ns9:rewrite-is-
symmetric>
                        <ns9:mtu>1533</ns9:mtu>
                    </ns9:ce-tp>
                </ns9:termination-point>
            </ns9:termination-point-list>
```

```
            <ns9:route-name-list>
                <ns9:route-name>PW 192.169.105.65_342_9.9.9.8</ns9:route-
name>
                <ns9:route-name>PW 172.16.38.38_342_9.9.9.8</ns9:route-name>
                <ns9:route-name>PW 9.9.9.8_342_172.16.38.38</ns9:route-name>
                <ns9:route-name>PW 9.9.9.8_342_192.169.105.65</ns9:route-
name>
            </ns9:route-name-list>
        </ns9:virtual-connection>
    </ns4:data>
</ns4:response-message>
```

7.17 Get a Virtual Connection – CEM

7.17.1 Request

GET /restconf/data/v1/cisco-service-network:virtual-connection?
fdn=MD=CISCO_EPNM!VC=CemLink%23CemPwLink%23CEMPW_6.6.6.22_25_6.6.6.41
Host: <epnm-host>
Accept: application/yang-data+xml

7.17.2 Response

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/yang-data+xml

```
<ns4:response-message
xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns18="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns17="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:terminationpoint:configuration:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>0</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns8:virtual-connection>

<ns8:fdn>MD=CISCO_EPNM!VC=CemLink#CemPwLink#CEMPW_6.6.6.22_25_6.6.6.41</ns8:f
dn>
            <ns8:discovered-
```

```
name>CemLink#CemPwLink#CEMPW_6.6.6.22_25_6.6.6.41</ns8:discovered-name>
            <ns8:admin-state>ns4:admin-state-partial</ns8:admin-state>
            <ns8:oper-state>ns4:oper-state-down</ns8:oper-state>
            <ns8:discovery-state>ns4:discovery-partial</ns8:discovery-state>
            <ns8:type>ns4:tdm-cem</ns8:type>
            <ns8:subtype>ns4:sts1</ns8:subtype>
            <ns8:topology>ns4:point-to-point</ns8:topology>
            <ns8:direction>ns4:bi-direction</ns8:direction>
            <ns8:termination-point-list>
                <ns8:termination-point>
                    <ns8:directionality>ns4:bi-direction</ns8:directionality>
                    <ns8:is-edge-point>true</ns8:is-edge-point>
                    <ns8:tdm-cem-tp>
                        <ns8:tdm-cem-group-flowpoint>
                            <ns8:fdn>MD=CISCO_EPNM!ND=EPNNCS4216-
120.41.cisco.com!CTP=name=CEM0/4/4:1;lr=lr_CEM_GRP</ns8:fdn>
                            <ns8:admin-state>ns4:admin-state-down</ns8:admin-
state>
                            <ns8:oper-state>ns4:oper-state-down</ns8:oper-
state>
                            <ns8:cem-grp-number>1</ns8:cem-grp-number>
                            <ns8:associated-
interface>CEM0/4/4</ns8:associated-interface>
                            <ns8:cem-frame-type>ns6:cep</ns8:cem-frame-type>
                            <ns8:payload-size>783</ns8:payload-size>
                            <ns8:idle-pattern>0xFF</ns8:idle-pattern>
                            <ns8:rtp-hdr-enabled>false</ns8:rtp-hdr-enabled>
                            <ns8:rtp-hdr-compression-enabled>false</ns8:rtp-
hdr-compression-enabled>
                        </ns8:tdm-cem-group-flowpoint>
                        <ns8:tdm-cem-flowpoint-ho-path>
                            <ns8:fdn>MD=CISCO_EPNM!ND=EPNNCS4216-
120.41.cisco.com!CTP=name=SONET 0/4/4.10;lr=lr_STS</ns8:fdn>
                            <ns8:admin-state>ns4:admin-state-up</ns8:admin-
state>
                            <ns8:oper-state>ns4:oper-state-down</ns8:oper-
state>
                            <ns8:path-mode>ns6:path-mode-sts1</ns8:path-mode>
                            <ns8:payload-type>ns6:payload-type-
unspecified</ns8:payload-type>
                            <ns8:is-protected>false</ns8:is-protected>
                            <ns8:clock-source>ns6:clock-source-
internal</ns8:clock-source>
                        </ns8:tdm-cem-flowpoint-ho-path>
                    </ns8:tdm-cem-tp>
                </ns8:termination-point>
            </ns8:termination-point-list>
            <ns8:route-name-list>
                <ns8:route-name>PW 6.6.6.41_25_6.6.6.22</ns8:route-name>
            </ns8:route-name-list>
        </ns8:virtual-connection>
    </ns4:data>
</ns4:response-message>
```

7.18 Get a Virtual Connection Multi-Layer Route – OCHTRAIL_UNI

7.18.1 Request

GET /restconf/data/v1/ cisco-resource-network:virtual-connection-multi-layer-route?vcFdn=MD=CISCO_EPNM!VC=TRAIL-smadama-OCHCC-00A
Host: <epnm-host>
Accept: application/yang-data+xml

7.18.2 Response

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/yang-data+xml

```
<ns4:response-message xmlns:ns27="urn:cisco:ns:yang:service:activation:v1"
xmlns:ns26="urn:cisco:params:xml:ns:yang:resource:opt"
xmlns:ns25="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns24="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns23="urn:cisco:params:xml:ns:yang:xmpim:location"
xmlns:ns22="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns21="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns20="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>2</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns16:virtual-connection-multi-layer-route>
            <ns16:topo-index>0</ns16:topo-index>
            <ns16:topology-layer>ns16:och-link-layer</ns16:topology-layer>
            <ns16:protection-role>ns4:working-path</ns16:protection-role>
            <ns16:protection-state>ns4:path-active</ns16:protection-state>
            <ns16:tl-list>
                <ns16:topological-link>
                    <ns16:tl-index>0</ns16:tl-index>
                    <ns16:fdn>MD=CISCO_EPNM!TL=OCHTRAILUNI_REST</ns16:fdn>
                    <ns16:is-cc>false</ns16:is-cc>
                    <ns16:direction>ns4:bi-direction</ns16:direction>
```

```
                    <ns16:endpoint-list>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=cvg-scapa-
90.cisco.com!CTP=name=Optics0/1/0/3;lr=lr-optical-channel</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=cvg-scapa-
93.cisco.com!CTP=name=Optics0/1/0/3;lr=lr-optical-channel</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                    </ns16:endpoint-list>
                </ns16:topological-link>
                <ns16:topological-link>
                    <ns16:tl-index>1</ns16:tl-index>
                    <ns16:fdn>MD=CISCO_EPNM!TL=FPCHAN-6-3-RX-
OchtrailuniExample&amp;FPCHAN-6-3-TX-OchtrailuniExample,LINEWL-1-2-3-RX-
OchtrailuniExample&amp;LINEWL-1-2-3-TX-OchtrailuniExample</ns16:fdn>
                    <ns16:is-cc>true</ns16:is-cc>
                    <ns16:direction>ns4:bi-direction</ns16:direction>
                    <ns16:endpoint-list>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=NCS2006-239-
20!CTP=name=FPCHAN-6-3-RX-OchtrailuniExample&amp;FPCHAN-6-3-TX-
OchtrailuniExample;lr=lr-optical-channel</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=NCS2006-239-
20!CTP=name=LINEWL-1-2-3-RX-OchtrailuniExample&amp;LINEWL-1-2-3-TX-
OchtrailuniExample;lr=lr-optical-channel</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                    </ns16:endpoint-list>
                </ns16:topological-link>
                <ns16:topological-link>
                    <ns16:tl-index>2</ns16:tl-index>
                    <ns16:fdn>MD=CISCO_EPNM!TL=FPCHAN-6-3-RX-
OchtrailuniExample&amp;FPCHAN-6-3-TX-OchtrailuniExample,LINEWL-1-7-3-RX-
OchtrailuniExample&amp;LINEWL-1-7-3-TX-OchtrailuniExample</ns16:fdn>
                    <ns16:is-cc>true</ns16:is-cc>
                    <ns16:direction>ns4:bi-direction</ns16:direction>
                    <ns16:endpoint-list>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=NCS2006A-234-
109!CTP=name=FPCHAN-6-3-RX-OchtrailuniExample&amp;FPCHAN-6-3-TX-
OchtrailuniExample;lr=lr-optical-channel</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=NCS2006A-234-
```

```
109!CTP=name=LINEWL-1-7-3-RX-OchtrailuniExample&amp;LINEWL-1-7-3-TX-
OchtrailuniExample;lr=lr-optical-channel</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                    </ns16:endpoint-list>
                </ns16:topological-link>
                <ns16:topological-link>
                    <ns16:tl-index>3</ns16:tl-index>
                    <ns16:is-cc>false</ns16:is-cc>
                    <ns16:direction>ns4:bi-direction</ns16:direction>
                    <ns16:endpoint-list>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=cvg-scapa-
90.cisco.com!CTP=name=Optics0/1/0/3;lr=lr-optical-channel</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=cvg-scapa-
90.cisco.com!CTP=name=Optics0/1/0/3;lr=lr-optical-section</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                    </ns16:endpoint-list>
                </ns16:topological-link>
                <ns16:topological-link>
                    <ns16:tl-index>4</ns16:tl-index>
                    <ns16:is-cc>false</ns16:is-cc>
                    <ns16:direction>ns4:bi-direction</ns16:direction>
                    <ns16:endpoint-list>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=cvg-scapa-
93.cisco.com!CTP=name=Optics0/1/0/3;lr=lr-optical-channel</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=cvg-scapa-
93.cisco.com!CTP=name=Optics0/1/0/3;lr=lr-optical-section</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                    </ns16:endpoint-list>
                </ns16:topological-link>
                <ns16:topological-link>
                    <ns16:tl-index>5</ns16:tl-index>
                    <ns16:is-cc>false</ns16:is-cc>
                    <ns16:direction>ns4:bi-direction</ns16:direction>
                    <ns16:endpoint-list>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=NCS2006-239-
20!CTP=name=FPCHAN-6-3-RX-OchtrailuniExample&amp;FPCHAN-6-3-TX-
OchtrailuniExample;lr=lr-optical-channel</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
```

```
                        </ns16:endpoint>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=NCS2006-239-
20!CTP=name=PCHAN-6-3-RX&amp;PCHAN-6-3-TX;lr=lr-optical-
section</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                    </ns16:endpoint-list>
                </ns16:topological-link>
                <ns16:topological-link>
                    <ns16:tl-index>6</ns16:tl-index>
                    <ns16:is-cc>false</ns16:is-cc>
                    <ns16:direction>ns4:bi-direction</ns16:direction>
                    <ns16:endpoint-list>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=NCS2006-239-
20!CTP=name=LINEWL-1-2-3-RX-OchtrailuniExample&amp;LINEWL-1-2-3-TX-
OchtrailuniExample;lr=lr-optical-channel</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=NCS2006-239-
20!CTP=name=LINE-1-2-3-RX&amp;LINE-1-2-3-TX;lr=lr-optical-transmission-
section</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                    </ns16:endpoint-list>
                </ns16:topological-link>
                <ns16:topological-link>
                    <ns16:tl-index>7</ns16:tl-index>
                    <ns16:is-cc>false</ns16:is-cc>
                    <ns16:direction>ns4:bi-direction</ns16:direction>
                    <ns16:endpoint-list>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=NCS2006A-234-
109!CTP=name=FPCHAN-6-3-RX-OchtrailuniExample&amp;FPCHAN-6-3-TX-
OchtrailuniExample;lr=lr-optical-channel</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=NCS2006A-234-
109!CTP=name=PCHAN-6-3-RX&amp;PCHAN-6-3-TX;lr=lr-optical-
section</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                    </ns16:endpoint-list>
                </ns16:topological-link>
                <ns16:topological-link>
                    <ns16:tl-index>8</ns16:tl-index>
                    <ns16:is-cc>false</ns16:is-cc>
                    <ns16:direction>ns4:bi-direction</ns16:direction>
```

```
                    <ns16:endpoint-list>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=NCS2006A-234-
109!CTP=name=LINEWL-1-7-3-RX-OchtrailuniExample&amp;LINEWL-1-7-3-TX-
OchtrailuniExample;lr=lr-optical-channel</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=NCS2006A-234-
109!CTP=name=LINE-1-7-3-RX&amp;LINE-1-7-3-TX;lr=lr-optical-transmission-
section</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                    </ns16:endpoint-list>
                </ns16:topological-link>
            </ns16:tl-list>
            <ns16:carrying-toporef>ops-link-layer</ns16:carrying-toporef>
        </ns16:virtual-connection-multi-layer-route>
        <ns16:virtual-connection-multi-layer-route>
            <ns16:topo-index>1</ns16:topo-index>
            <ns16:topology-layer>ns16:ops-link-layer</ns16:topology-layer>
            <ns16:protection-role>ns4:working-path</ns16:protection-role>
            <ns16:protection-state>ns4:path-active</ns16:protection-state>
            <ns16:tl-list>
                <ns16:topological-link>
                    <ns16:tl-index>0</ns16:tl-index>
                    <ns16:fdn>MD=CISCO_EPNM!TL=TRAIL-
OCHTRAILUNI_REST</ns16:fdn>
                    <ns16:is-cc>false</ns16:is-cc>
                    <ns16:direction>ns4:bi-direction</ns16:direction>
                    <ns16:endpoint-list>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=NCS2006-239-
20!CTP=name=PCHAN-6-3-RX&amp;PCHAN-6-3-TX;lr=lr-optical-
section</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=NCS2006A-234-
109!CTP=name=PCHAN-6-3-RX&amp;PCHAN-6-3-TX;lr=lr-optical-
section</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                    </ns16:endpoint-list>
                </ns16:topological-link>
                <ns16:topological-link>
                    <ns16:tl-index>1</ns16:tl-index>
                    <ns16:is-cc>false</ns16:is-cc>
                    <ns16:direction>ns4:bi-direction</ns16:direction>
                    <ns16:endpoint-list>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=cvg-scapa-
```

```
90.cisco.com!CTP=name=Optics0/1/0/3;lr=lr-optical-channel</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=cvg-scapa-
90.cisco.com!CTP=name=Optics0/1/0/3;lr=lr-optical-section</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                    </ns16:endpoint-list>
                </ns16:topological-link>
                <ns16:topological-link>
                    <ns16:tl-index>2</ns16:tl-index>
                    <ns16:is-cc>false</ns16:is-cc>
                    <ns16:direction>ns4:bi-direction</ns16:direction>
                    <ns16:endpoint-list>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=cvg-scapa-
93.cisco.com!CTP=name=Optics0/1/0/3;lr=lr-optical-channel</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=cvg-scapa-
93.cisco.com!CTP=name=Optics0/1/0/3;lr=lr-optical-section</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                    </ns16:endpoint-list>
                </ns16:topological-link>
                <ns16:topological-link>
                    <ns16:tl-index>3</ns16:tl-index>
                    <ns16:fdn>MD=CISCO_EPNM!TL=10.58.235.90:23--
10.58.239.20:2130708100</ns16:fdn>
                    <ns16:is-cc>false</ns16:is-cc>
                    <ns16:direction>ns4:bi-direction</ns16:direction>
                    <ns16:endpoint-list>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=cvg-scapa-
90.cisco.com!CTP=name=Optics0/1/0/3;lr=lr-optical-section</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=NCS2006-239-
20!CTP=name=PCHAN-6-3-RX&amp;PCHAN-6-3-TX;lr=lr-optical-
section</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                    </ns16:endpoint-list>
                </ns16:topological-link>
                <ns16:topological-link>
                    <ns16:tl-index>4</ns16:tl-index>
                    <ns16:fdn>MD=CISCO_EPNM!TL=10.58.234.109:2130708100--
```

```
10.58.235.93:23</ns16:fdn>
                    <ns16:is-cc>false</ns16:is-cc>
                    <ns16:direction>ns4:bi-direction</ns16:direction>
                    <ns16:endpoint-list>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=NCS2006A-234-
109!CTP=name=PCHAN-6-3-RX&amp;PCHAN-6-3-TX;lr=lr-optical-
section</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=cvg-scapa-
93.cisco.com!CTP=name=Optics0/1/0/3;lr=lr-optical-section</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                    </ns16:endpoint-list>
                </ns16:topological-link>
                <ns16:topological-link>
                    <ns16:tl-index>5</ns16:tl-index>
                    <ns16:is-cc>false</ns16:is-cc>
                    <ns16:direction>ns4:bi-direction</ns16:direction>
                    <ns16:endpoint-list>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=NCS2006-239-
20!CTP=name=FPCHAN-6-3-RX-OchtrailuniExample&amp;FPCHAN-6-3-TX-
OchtrailuniExample;lr=lr-optical-channel</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=NCS2006-239-
20!CTP=name=PCHAN-6-3-RX&amp;PCHAN-6-3-TX;lr=lr-optical-
section</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                    </ns16:endpoint-list>
                </ns16:topological-link>
                <ns16:topological-link>
                    <ns16:tl-index>6</ns16:tl-index>
                    <ns16:is-cc>false</ns16:is-cc>
                    <ns16:direction>ns4:bi-direction</ns16:direction>
                    <ns16:endpoint-list>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=NCS2006A-234-
109!CTP=name=FPCHAN-6-3-RX-OchtrailuniExample&amp;FPCHAN-6-3-TX-
OchtrailuniExample;lr=lr-optical-channel</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=NCS2006A-234-
109!CTP=name=PCHAN-6-3-RX&amp;PCHAN-6-3-TX;lr=lr-optical-
section</ns16:endpoint-ref>
```

```
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                    </ns16:endpoint-list>
                </ns16:topological-link>
            </ns16:tl-list>
            <ns16:carrying-toporef>ots-link-layer</ns16:carrying-toporef>
            <ns16:carried-by-toporef>och-link-layer</ns16:carried-by-toporef>
        </ns16:virtual-connection-multi-layer-route>
        <ns16:virtual-connection-multi-layer-route>
            <ns16:topo-index>2</ns16:topo-index>
            <ns16:topology-layer>ns16:ots-link-layer</ns16:topology-layer>
            <ns16:protection-role>ns4:working-path</ns16:protection-role>
            <ns16:protection-state>ns4:path-active</ns16:protection-state>
            <ns16:tl-list>
                <ns16:topological-link>
                    <ns16:tl-index>0</ns16:tl-index>
                    <ns16:is-cc>false</ns16:is-cc>
                    <ns16:direction>ns4:bi-direction</ns16:direction>
                    <ns16:endpoint-list>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=NCS2006-239-
20!CTP=name=LINEWL-1-2-3-RX-OchtrailuniExample&amp;LINEWL-1-2-3-TX-
OchtrailuniExample;lr=lr-optical-channel</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=NCS2006-239-
20!CTP=name=LINE-1-2-3-RX&amp;LINE-1-2-3-TX;lr=lr-optical-transmission-
section</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                    </ns16:endpoint-list>
                </ns16:topological-link>
                <ns16:topological-link>
                    <ns16:tl-index>1</ns16:tl-index>
                    <ns16:is-cc>false</ns16:is-cc>
                    <ns16:direction>ns4:bi-direction</ns16:direction>
                    <ns16:endpoint-list>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=NCS2006A-234-
109!CTP=name=LINEWL-1-7-3-RX-OchtrailuniExample&amp;LINEWL-1-7-3-TX-
OchtrailuniExample;lr=lr-optical-channel</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=NCS2006A-234-
109!CTP=name=LINE-1-7-3-RX&amp;LINE-1-7-3-TX;lr=lr-optical-transmission-
section</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                    </ns16:endpoint-list>
```

```
                </ns16:topological-link>
                <ns16:topological-link>
                    <ns16:tl-index>2</ns16:tl-index>
                    <ns16:fdn>MD=CISCO_EPNM!TL=10.58.234.109:[WDMSIDE-B]--
10.58.239.20:[WDMSIDE-A]</ns16:fdn>
                    <ns16:is-cc>false</ns16:is-cc>
                    <ns16:direction>ns4:bi-direction</ns16:direction>
                    <ns16:endpoint-list>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=NCS2006-239-
20!CTP=name=LINE-1-2-3-RX&amp;LINE-1-2-3-TX;lr=lr-optical-transmission-
section</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                        <ns16:endpoint>
                            <ns16:endpoint-ref>MD=CISCO_EPNM!ND=NCS2006A-234-
109!CTP=name=LINE-1-7-3-RX&amp;LINE-1-7-3-TX;lr=lr-optical-transmission-
section</ns16:endpoint-ref>
                            <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                        </ns16:endpoint>
                    </ns16:endpoint-list>
                </ns16:topological-link>
            </ns16:tl-list>
            <ns16:carried-by-toporef>ops-link-layer</ns16:carried-by-toporef>
        </ns16:virtual-connection-multi-layer-route>
    </ns4:data>
</ns4:response-message>
```

7.19 Get All Topology

7.19.1 Request

GET /restconf/data/v1/cisco-resource-network:topological-link HTTP/1.1
Host: <10.58.230.146 >
Accept: application/yang-data+xml

7.19.2 Response

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/yang-data+xml

```
<ns4:response-message xmlns:ns26="urn:cisco:params:xml:ns:yang:resource:opt"
xmlns:ns25="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns24="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns23="urn:cisco:params:xml:ns:yang:xmpim:location"
xmlns:ns22="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns21="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns20="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
```

```
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>99</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns16:topological-link>
            <ns16:fdn>MD=CISCO_EPNM!TL=10.58.230.83:[81]--
10.58.230.85:[25]</ns16:fdn>
            <ns16:discovered-name>10.58.230.83:[81]--
10.58.230.85:[25]</ns16:discovered-name>
            <ns16:type>OTU</ns16:type>
            <ns16:total-capacity>100</ns16:total-capacity>
            <ns16:used-capacity>0</ns16:used-capacity>
            <ns16:endpoint-list>
                <ns16:endpoint>
                    <ns16:endpoint-ref>MD=CISCO_EPNM!ND=dwdm06-
HUB2!CTP=name=OTU40/2/0/0;lr=lr-och-transport-unit-4</ns16:endpoint-ref>
                </ns16:endpoint>
                <ns16:endpoint>
                    <ns16:endpoint-ref>MD=CISCO_EPNM!ND=dwdm05-
VSO2!CTP=name=OTU40/6/0/0;lr=lr-och-transport-unit-4</ns16:endpoint-ref>
                </ns16:endpoint>
            </ns16:endpoint-list>
        </ns16:topological-link>
        <ns16:topological-link>
            <ns16:fdn>MD=CISCO_EPNM!TL=10.58.230.65:[61]--
10.58.230.85:[27]</ns16:fdn>
            <ns16:discovered-name>10.58.230.65:[61]--
10.58.230.85:[27]</ns16:discovered-name>
            <ns16:type>OTU</ns16:type>
            <ns16:total-capacity>100</ns16:total-capacity>
            <ns16:used-capacity>0</ns16:used-capacity>
            <ns16:endpoint-list>
                <ns16:endpoint>
                    <ns16:endpoint-ref>MD=CISCO_EPNM!ND=dwdm06-
HUB2!CTP=name=OTU40/2/0/1;lr=lr-och-transport-unit-4</ns16:endpoint-ref>
                </ns16:endpoint>
                <ns16:endpoint>
                    <ns16:endpoint-ref>MD=CISCO_EPNM!ND=le-
VSO1!CTP=name=OTU40/6/0/1;lr=lr-och-transport-unit-4</ns16:endpoint-ref>
                </ns16:endpoint>
            </ns16:endpoint-list>
        </ns16:topological-link>
        <ns16:topological-link>
```

```
            <ns16:fdn>MD=CISCO_EPNM!TL=10.10.1.109:2130707730--
10.58.230.85:35</ns16:fdn>
            <ns16:discovered-name>10.10.1.109:2130707730--
10.58.230.85:35</ns16:discovered-name>
            <ns16:type>OCH</ns16:type>
            <ns16:endpoint-list>
                <ns16:endpoint>
                    <ns16:endpoint-ref>MD=CISCO_EPNM!ND=dwdm06-
HUB2!CTP=name=Optics0/0/0/2;lr=lr-optical-section</ns16:endpoint-ref>
                </ns16:endpoint>
            </ns16:endpoint-list>
        </ns16:topological-link>
        <ns16:topological-link>
            <ns16:fdn>MD=CISCO_EPNM!TL=10.10.1.109:2130706962--
10.58.230.85:36</ns16:fdn>
            <ns16:discovered-name>10.10.1.109:2130706962--
10.58.230.85:36</ns16:discovered-name>
            <ns16:type>OCH</ns16:type>
            <ns16:endpoint-list>
                <ns16:endpoint>
                    <ns16:endpoint-ref>MD=CISCO_EPNM!ND=dwdm06-
HUB2!CTP=name=Optics0/0/0/3;lr=lr-optical-section</ns16:endpoint-ref>
                </ns16:endpoint>
            </ns16:endpoint-list>
        </ns16:topological-link>
        <ns16:topological-link>
            <ns16:fdn>MD=CISCO_EPNM!TL=10.10.1.119:2130706962--
10.58.230.83:77</ns16:fdn>
            <ns16:discovered-name>10.10.1.119:2130706962--
10.58.230.83:77</ns16:discovered-name>
            <ns16:type>OCH</ns16:type>
            <ns16:endpoint-list>
                <ns16:endpoint>
                    <ns16:endpoint-ref>MD=CISCO_EPNM!ND=dwdm05-
VSO2!CTP=name=Optics0/2/0/2;lr=lr-optical-section</ns16:endpoint-ref>
                </ns16:endpoint>
            </ns16:endpoint-list>
        </ns16:topological-link>
        <ns16:topological-link>
            <ns16:fdn>MD=CISCO_EPNM!TL=10.58.235.159:PLINE-1-7-TX--
10.58.235.159:CHAN-10-3-2</ns16:fdn>
            <ns16:discovered-name>10.58.235.159:PLINE-1-7-TX--
10.58.235.159:CHAN-10-3-2</ns16:discovered-name>
            <ns16:direction>ns4:uni-direction</ns16:direction>
            <ns16:type>PHYSICAL</ns16:type>
            <ns16:member-of-ref>N/A</ns16:member-of-ref>
            <ns16:optical-logo-attributes>
                <ns16:noise>-70</ns16:noise>
                <ns16:noise-sigma>0</ns16:noise-sigma>
                <ns16:pdl>0.14100000262260437011718750</ns16:pdl>
                <ns16:pmd>0.11200000345706939697265625</ns16:pmd>
                <ns16:fgdr-filter>6</ns16:fgdr-filter>
                <ns16:sf-filter>1010</ns16:sf-filter>
                <ns16:chromatic-dispersion>0</ns16:chromatic-dispersion>
                <ns16:chromatic-dispersion-slope>0</ns16:chromatic-
dispersion-slope>
```

```
            </ns16:optical-logo-attributes>
            <ns16:endpoint-list>
                <ns16:endpoint>
                    <ns16:endpoint-ref>MD=CISCO_EPNM!ND=NCS2KE-235-
159!PTP=name=PLINE-1-7-TX;lr=lr-optical-physical</ns16:endpoint-ref>
                </ns16:endpoint>
                <ns16:endpoint>
                    <ns16:endpoint-ref>MD=CISCO_EPNM!ND=NCS2KE-235-
159!PTP=name=CHAN-10-3-2;lr=lr-optical-physical</ns16:endpoint-ref>
                </ns16:endpoint>
            </ns16:endpoint-list>
        </ns16:topological-link>
       :
       :
    </ns4:data>
</ns4:response-message>
```

7.20 Get Topology

7.20.1 Request

GET /restconf/data/v1/cisco-resource-network:topological-link ?fdn=MD=CISCO_EPNM!TL=LINK PW 192.169.105.65_88_6.6.6.21
Host: <epnm-host>
Accept: application/yang-data+xml

7.20.2 Response

```
<ns4:response-message xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-
topology:v1" xmlns:ns10="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>0</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns11:topology>
            <ns11:fdn>MD=CISCO_EPNM!TL=LINK PW
192.169.105.65_88_6.6.6.21</ns11:fdn>
            <ns11:discovered-name>LINK PW
192.169.105.65_88_6.6.6.21</ns11:discovered-name>
            <ns11:direction>ns4:bi-direction</ns11:direction>
            <ns11:endpoint-list>
                <ns11:endpiont>
                    <ns11:endpointref>MD=CISCO_EPNM!ND=TEST907-
120.21!CTP=name=;lr=lr_PSEUDOWIRE; PWID=88;REMOTE_ADDRESS=192.169.105.
65</ns11:endpointref>
                    <ns11:directionality>ns4:bi-
direction</ns11:directionality>
```

```
                </ns11:endpiont>
            </ns11:endpoint-list>
        </ns11:topology>
    </ns4:data>
</ns4:response-message>
```

7.21 Get Topology Filter on Layer

7.21.1 Request

https://<epnm-host>/restconf/data/v1/cisco-resource-network:topological-link?topo-layer=manual-link-layer
Host: <epnm-host>
Accept: application/yang-data+xml

7.21.2 Response

```
<ns4:response-message
xmlns:ns40="urn:cisco:params:xml:ns:yang:restconf:party"
      xmlns:ns39="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns38="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns37="urn:ietf:params:xml:ns:yang:ietf-restconf"
      xmlns:ns36="urn:cisco:params:xml:ns:yang:service:activation:status:v
1"
      xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
      xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns31="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns30="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
      xmlns:ns29="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns28="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
      xmlns:ns27="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns26="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns24="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
      xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
      xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
```

```
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
      xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
      <ns4:header>
            <ns4:firstIndex>0</ns4:firstIndex>
            <ns4:lastIndex>0</ns4:lastIndex>
      </ns4:header>
      <ns4:data>
            <ns17:topological-link>
                  <ns17:fdn>MD=CISCO_EPNM!TL=cvg-rosco-
35.cisco.com:[Optics0/0/0/9]-cvg-rosco-43.cisco.com:[Optics0/0/0/21/4]
                  </ns17:fdn>
                  <ns17:discovered-name>cvg-rosco-
35.cisco.com:[Optics0/0/0/9]-cvg-rosco-43.cisco.com:[Optics0/0/0/21/4]
                  </ns17:discovered-name>
                  <ns17:direction>ns4:bi-direction</ns17:direction>
                  <ns17:type>OCH</ns17:type>
                  <ns17:endpoint-list>
                        <ns17:endpoint>
                              <ns17:endpoint-ref>MD=CISCO_EPNM!ND=cvg-
rosco-35.cisco.com!CTP=name=Optics0/0/0/9;lr=lr-optical-section
                              </ns17:endpoint-ref>
                              <ns17:performance-metrics>
                                    <ns17:power-tx>-40.0</ns17:power-tx>
                                    <ns17:power-rx>-40.0</ns17:power-rx>
                              </ns17:performance-metrics>
                        </ns17:endpoint>
                        <ns17:endpoint>
                              <ns17:endpoint-ref>MD=CISCO_EPNM!ND=cvg-
rosco-43.cisco.com!CTP=name=Optics0/0/0/21/4;lr=lr-optical-section
                              </ns17:endpoint-ref>
                        </ns17:endpoint>
                  </ns17:endpoint-list>
            </ns17:topological-link>
      </ns4:data>
</ns4:response-message>
```

7.22 Get All MPLS TE Explicit Paths

7.22.1 Request

GET /restconf/data/v1/cisco-resource-ems:mpls-te-explicit-path
Host: <epnm-host>
Accept: application/yang-data+xml

7.22.2 Response

```
<ns4:response-message xmlns:ns24="urn:cisco:ns:yang:service:activation:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns22="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns21="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns20="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
```

```
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>7</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns15:mpls-te-explicit-path-type>
            <ns15:path-ref>MD=CISCO_EPNM!ND=cvg-scapa-223.cisco.com!PATH=223-
225_OTU4</ns15:path-ref>
            <ns15:mpls-te-explicit-path-entries>
                <ns15:mpls-te-explicit-path-entry>
                    <ns15:path-id>1</ns15:path-id>
                    <ns15:hop-constraint-type>strict</ns15:hop-constraint-
type>
                    <ns15:entry-constraint-type>next_address</ns15:entry-
constraint-type>
                    <ns15:me-ref>MD=CISCO_EPNM!ND=cvg-scapa-
225.cisco.com</ns15:me-ref>
                    <ns15:tp-ref>MD=CISCO_EPNM!ND=cvg-scapa-
225.cisco.com!CTP=name=OTU40/2/0/0;lr=lr-och-transport-unit-4</ns15:tp-ref>
                </ns15:mpls-te-explicit-path-entry>
            </ns15:mpls-te-explicit-path-entries>
        </ns15:mpls-te-explicit-path-type>
        <ns15:mpls-te-explicit-path-type>
            <ns15:path-ref>MD=CISCO_EPNM!ND=cvg-scapa-225.cisco.com!PATH=225-
223_OTU4</ns15:path-ref>
            <ns15:mpls-te-explicit-path-entries></ns15:mpls-te-explicit-path-
entries>
        </ns15:mpls-te-explicit-path-type>
        <ns15:mpls-te-explicit-path-type>
            <ns15:path-ref>MD=CISCO_EPNM!ND=cvg-frodo-
85.cisco.com!PATH=expath_85_86_otu4</ns15:path-ref>
            <ns15:mpls-te-explicit-path-entries>
                <ns15:mpls-te-explicit-path-entry>
                    <ns15:path-id>1</ns15:path-id>
                    <ns15:hop-constraint-type>strict</ns15:hop-constraint-
type>
                    <ns15:entry-constraint-type>next_address</ns15:entry-
constraint-type>
                </ns15:mpls-te-explicit-path-entry>
            </ns15:mpls-te-explicit-path-entries>
        </ns15:mpls-te-explicit-path-type>
        <ns15:mpls-te-explicit-path-type>
```

```
            <ns15:path-ref>MD=CISCO_EPNM!ND=NCS4009-
Automation!PATH=ExplicitPath_test_28feb2017</ns15:path-ref>
            <ns15:mpls-te-explicit-path-entries></ns15:mpls-te-explicit-path-
entries>
        </ns15:mpls-te-explicit-path-type>
        <ns15:mpls-te-explicit-path-type>
            <ns15:path-ref>MD=CISCO_EPNM!ND=cvg-scapa-
221.cisco.com!PATH=ne200Gpath</ns15:path-ref>
            <ns15:mpls-te-explicit-path-entries>
                <ns15:mpls-te-explicit-path-entry>
                    <ns15:path-id>1</ns15:path-id>
                    <ns15:hop-constraint-type>strict</ns15:hop-constraint-
type>
                    <ns15:entry-constraint-type>next_address</ns15:entry-
constraint-type>
                    <ns15:me-ref>MD=CISCO_EPNM!ND=cvg-scapa-
229.cisco.com</ns15:me-ref>
                </ns15:mpls-te-explicit-path-entry>
            </ns15:mpls-te-explicit-path-entries>
        </ns15:mpls-te-explicit-path-type>
        <ns15:mpls-te-explicit-path-type>
            <ns15:path-ref>MD=CISCO_EPNM!ND=cvg-scapa-
221.cisco.com!PATH=link2_protected_200G</ns15:path-ref>
            <ns15:mpls-te-explicit-path-entries>
                <ns15:mpls-te-explicit-path-entry>
                    <ns15:path-id>1</ns15:path-id>
                    <ns15:hop-constraint-type>strict</ns15:hop-constraint-
type>
                    <ns15:entry-constraint-type>next_address</ns15:entry-
constraint-type>
                    <ns15:me-ref>MD=CISCO_EPNM!ND=cvg-scapa-
229.cisco.com</ns15:me-ref>
                    <ns15:tp-ref>MD=CISCO_EPNM!ND=cvg-scapa-
229.cisco.com!CTP=name=OTUC20/1/0/11;lr=lr-och-transport-unit-c2</ns15:tp-
ref>
                </ns15:mpls-te-explicit-path-entry>
            </ns15:mpls-te-explicit-path-entries>
        </ns15:mpls-te-explicit-path-type>

    </ns4:data>
</ns4:response-message>
```

7.23 Get A MPLS TE Explicit Path

7.23.1 Request

GET / restconf/data/v1/cisco-resource-ems:mpls-te-explicit-path?path-ref=MD=CISCO_EPNM!ND=cvg-scapa-223.cisco.com!PATH=223-225_OTU4
Host: <epnm-host>
Accept: application/yang-data+xml

7.23.2 Response

```
<ns4:response-message
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns32="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
```

```
xmlns:ns31="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns30="urn:cisco:ns:yang:service:activation:v1"
xmlns:ns29="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
xmlns:ns28="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns27="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns26="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns25="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns24="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:profile-protection:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>0</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns15:mpls-te-explicit-path-type>
            <ns15:path-ref>MD=CISCO_EPNM!ND=cvg-scapa-223.cisco.com!PATH=223-
225_OTU4</ns15:path-ref>
            <ns15:mpls-te-explicit-path-entries>
                <ns15:mpls-te-explicit-path-entry>
                    <ns15:path-id>1</ns15:path-id>
                    <ns15:hop-constraint-type>strict</ns15:hop-constraint-
type>
                    <ns15:entry-constraint-type>next_address</ns15:entry-
constraint-type>
                    <ns15:me-ref>MD=CISCO_EPNM!ND=cvg-scapa-
225.cisco.com</ns15:me-ref>
                    <ns15:tp-ref>MD=CISCO_EPNM!ND=cvg-scapa-
225.cisco.com!CTP=name=OTU40/2/0/0;lr=lr-och-transport-unit-4</ns15:tp-ref>
                </ns15:mpls-te-explicit-path-entry>
            </ns15:mpls-te-explicit-path-entries>
        </ns15:mpls-te-explicit-path-type>
    </ns4:data>
</ns4:response-message>
```

7.24 Get All Protection Profile

7.24.1 Request

GET /restconf/data/v1/cisco-resource-ems:protection-profile
Host: <epnm-host>
Accept: application/yang-data+xml

7.24.2 Response

```
<ns4:response-message
xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns31="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
xmlns:ns30="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns29="urn:cisco:ns:yang:service:activation:v1"
xmlns:ns28="urn:cisco:params:xml:ns:yang:resource:opt"
xmlns:ns27="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns26="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns25="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns24="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns23="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:profile-protection:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>20</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns19:protection-profile>
            <ns19:fdn>MD=CISCO_EPNM!ND=cvg-scapa-
229.cisco.com!PPF=pp90</ns19:fdn>
            <ns19:name>pp90</ns19:name>
            <ns19:protection-type>ns19:protection-one-plus-one-
unidirectional-aps</ns19:protection-type>
            <ns19:protection-mode>REVERTIVE</ns19:protection-mode>
            <ns19:vc-mode>VC_MODE_S</ns19:vc-mode>
            <ns19:hold-off-timer>0</ns19:hold-off-timer>
```

```
            <ns19:wait-to-restore-timer>300</ns19:wait-to-restore-timer>
            <ns19:tcm-id>TCM4</ns19:tcm-id>
        </ns19:protection-profile>
        <ns19:protection-profile>
            <ns19:fdn>MD=CISCO_EPNM!ND=cvg-scapa-
229.cisco.com!PPF=test</ns19:fdn>
            <ns19:name>test</ns19:name>
            <ns19:protection-type>ns19:protection-one-plus-one-
unidirectional-aps</ns19:protection-type>
            <ns19:protection-mode>NON_REVERTIVE</ns19:protection-mode>
            <ns19:vc-mode>VC_MODE_N</ns19:vc-mode>
            <ns19:hold-off-timer>0</ns19:hold-off-timer>
            <ns19:wait-to-restore-timer>0</ns19:wait-to-restore-timer>
            <ns19:tcm-id>NONE</ns19:tcm-id>
        </ns19:protection-profile>
        <ns19:protection-profile>
            <ns19:fdn>MD=CISCO_EPNM!ND=cvg-scapa-
229.cisco.com!PPF=123</ns19:fdn>
            <ns19:name>123</ns19:name>
            <ns19:protection-type>ns19:protection-one-plus-one-
bidirectional-aps</ns19:protection-type>
            <ns19:protection-mode>REVERTIVE</ns19:protection-mode>
            <ns19:vc-mode>VC_MODE_I</ns19:vc-mode>
            <ns19:hold-off-timer>500</ns19:hold-off-timer>
            <ns19:wait-to-restore-timer>300</ns19:wait-to-restore-timer>
            <ns19:tcm-id>NONE</ns19:tcm-id>
        </ns19:protection-profile>
        <ns19:protection-profile>
            <ns19:fdn>MD=CISCO_EPNM!ND=cvg-scapa-
229.cisco.com!PPF=MyProtectionProfile</ns19:fdn>
            <ns19:name>MyProtectionProfile</ns19:name>
            <ns19:protection-type>ns19:protection-one-plus-one-plus-
bidirectional-no-aps</ns19:protection-type>
            <ns19:protection-mode>REVERTIVE</ns19:protection-mode>
            <ns19:vc-mode>VC_MODE_I</ns19:vc-mode>
            <ns19:hold-off-timer>100</ns19:hold-off-timer>
            <ns19:wait-to-restore-timer>300</ns19:wait-to-restore-timer>
            <ns19:tcm-id>NONE</ns19:tcm-id>
        </ns19:protection-profile>
        <ns19:protection-profile>
            <ns19:fdn>MD=CISCO_EPNM!ND=cvg-scapa-
229.cisco.com!PPF=test1</ns19:fdn>
            <ns19:name>test1</ns19:name>
            <ns19:protection-type>ns19:protection-one-plus-one-
unidirectional-aps</ns19:protection-type>
            <ns19:protection-mode>NON_REVERTIVE</ns19:protection-mode>
            <ns19:vc-mode>VC_MODE_S</ns19:vc-mode>
            <ns19:hold-off-timer>0</ns19:hold-off-timer>
            <ns19:wait-to-restore-timer>0</ns19:wait-to-restore-timer>
            <ns19:tcm-id>TCM4</ns19:tcm-id>
        </ns19:protection-profile>
        <ns19:protection-profile>
            <ns19:fdn>MD=CISCO_EPNM!ND=cvg-scapa-
229.cisco.com!PPF=PP9</ns19:fdn>
            <ns19:name>PP9</ns19:name>
```

```
            <ns19:protection-type>ns19:protection-one-plus-one-
unidirectional-aps</ns19:protection-type>
            <ns19:protection-mode>REVERTIVE</ns19:protection-mode>
            <ns19:vc-mode>VC_MODE_N</ns19:vc-mode>
            <ns19:hold-off-timer>1000</ns19:hold-off-timer>
            <ns19:wait-to-restore-timer>300</ns19:wait-to-restore-timer>
            <ns19:tcm-id>NONE</ns19:tcm-id>
        </ns19:protection-profile>
        <ns19:protection-profile>
            <ns19:fdn>MD=CISCO_EPNM!ND=cvg-scapa-
229.cisco.com!PPF=PP1</ns19:fdn>
            <ns19:name>PP1</ns19:name>
            <ns19:protection-type>ns19:protection-one-plus-one-
unidirectional-aps</ns19:protection-type>
            <ns19:protection-mode>NON_REVERTIVE</ns19:protection-mode>
            <ns19:vc-mode>VC_MODE_N</ns19:vc-mode>
            <ns19:hold-off-timer>0</ns19:hold-off-timer>
            <ns19:wait-to-restore-timer>0</ns19:wait-to-restore-timer>
            <ns19:tcm-id>NONE</ns19:tcm-id>
        </ns19:protection-profile>
        <ns19:protection-profile>
            <ns19:fdn>MD=CISCO_EPNM!ND=cvg-scapa-
229.cisco.com!PPF=PP6</ns19:fdn>
            <ns19:name>PP6</ns19:name>
            <ns19:protection-type>ns19:protection-one-plus-one-
unidirectional-aps</ns19:protection-type>
            <ns19:protection-mode>NON_REVERTIVE</ns19:protection-mode>
            <ns19:vc-mode>VC_MODE_S</ns19:vc-mode>
            <ns19:hold-off-timer>0</ns19:hold-off-timer>
            <ns19:wait-to-restore-timer>0</ns19:wait-to-restore-timer>
            <ns19:tcm-id>TCM3</ns19:tcm-id>
        </ns19:protection-profile>
        <ns19:protection-profile>
            <ns19:fdn>MD=CISCO_EPNM!ND=cvg-scapa-
229.cisco.com!PPF=Test_PPF_profile_name</ns19:fdn>
            <ns19:name>Test_PPF_profile_name</ns19:name>
            <ns19:protection-type>ns19:protection-one-plus-one-
unidirectional-aps</ns19:protection-type>
            <ns19:protection-mode>NON_REVERTIVE</ns19:protection-mode>
            <ns19:vc-mode>VC_MODE_I</ns19:vc-mode>
            <ns19:hold-off-timer>101</ns19:hold-off-timer>
            <ns19:wait-to-restore-timer>360</ns19:wait-to-restore-timer>
           <ns19:tcm-id>NONE</ns19:tcm-id>
        </ns19:protection-profile>
        <ns19:protection-profile>
            <ns19:name>Test_PPF_profile_name1</ns19:name>
            <ns19:protection-type>ns19:protection-one-plus-one-
unidirectional-aps</ns19:protection-type>
            <ns19:protection-mode>NON_REVERTIVE</ns19:protection-mode>
            <ns19:vc-mode>VC_MODE_S</ns19:vc-mode>
            <ns19:hold-off-timer>101</ns19:hold-off-timer>
            <ns19:wait-to-restore-timer>360</ns19:wait-to-restore-timer>
            <ns19:tcm-id>TCM3</ns19:tcm-id>
        </ns19:protection-profile>
        <ns19:protection-profile>
```

```
            <ns19:fdn>MD=CISCO_EPNM!ND=cvg-scapa-
221.cisco.com!PPF=temp</ns19:fdn>
            <ns19:name>temp</ns19:name>
            <ns19:protection-type>ns19:protection-one-plus-one-
unidirectional-aps</ns19:protection-type>
            <ns19:protection-mode>NON_REVERTIVE</ns19:protection-mode>
            <ns19:vc-mode>VC_MODE_N</ns19:vc-mode>
            <ns19:hold-off-timer>0</ns19:hold-off-timer>
            <ns19:wait-to-restore-timer>0</ns19:wait-to-restore-timer>
            <ns19:tcm-id>NONE</ns19:tcm-id>
        </ns19:protection-profile>
        <ns19:protection-profile>
            <ns19:fdn>MD=CISCO_EPNM!ND=cvg-scapa-
221.cisco.com!PPF=test1304</ns19:fdn>
            <ns19:name>test1304</ns19:name>
            <ns19:protection-type>ns19:protection-one-plus-one-
unidirectional-aps</ns19:protection-type>
            <ns19:protection-mode>REVERTIVE</ns19:protection-mode>
            <ns19:vc-mode>VC_MODE_S</ns19:vc-mode>
            <ns19:hold-off-timer>0</ns19:hold-off-timer>
            <ns19:wait-to-restore-timer>300</ns19:wait-to-restore-timer>
            <ns19:tcm-id>TCM6</ns19:tcm-id>
        </ns19:protection-profile>
        <ns19:protection-profile>
            <ns19:fdn>MD=CISCO_EPNM!ND=cvg-scapa-
221.cisco.com!PPF=test123</ns19:fdn>
            <ns19:name>test123</ns19:name>
            <ns19:protection-type>ns19:protection-one-plus-one-
unidirectional-aps</ns19:protection-type>
            <ns19:protection-mode>NON_REVERTIVE</ns19:protection-mode>
            <ns19:vc-mode>VC_MODE_N</ns19:vc-mode>
            <ns19:hold-off-timer>0</ns19:hold-off-timer>
            <ns19:wait-to-restore-timer>0</ns19:wait-to-restore-timer>
            <ns19:tcm-id>NONE</ns19:tcm-id>
        </ns19:protection-profile>
        <ns19:protection-profile>
            <ns19:fdn>MD=CISCO_EPNM!ND=cvg-scapa-
221.cisco.com!PPF=test_new_afser</ns19:fdn>
            <ns19:name>test_new_afser</ns19:name>
            <ns19:protection-type>ns19:protection-one-plus-one-
unidirectional-aps</ns19:protection-type>
            <ns19:protection-mode>REVERTIVE</ns19:protection-mode>
            <ns19:vc-mode>VC_MODE_I</ns19:vc-mode>
            <ns19:hold-off-timer>200</ns19:hold-off-timer>
            <ns19:wait-to-restore-timer>360</ns19:wait-to-restore-timer>
            <ns19:tcm-id>NONE</ns19:tcm-id>
        </ns19:protection-profile>
        <ns19:protection-profile>
            <ns19:fdn>MD=CISCO_EPNM!ND=cvg-scapa-
221.cisco.com!PPF=123</ns19:fdn>
            <ns19:name>123</ns19:name>
            <ns19:protection-type>ns19:protection-one-plus-one-
unidirectional-aps</ns19:protection-type>
            <ns19:protection-mode>NON_REVERTIVE</ns19:protection-mode>
            <ns19:vc-mode>VC_MODE_N</ns19:vc-mode>
            <ns19:hold-off-timer>0</ns19:hold-off-timer>
```

```
            <ns19:wait-to-restore-timer>0</ns19:wait-to-restore-timer>
            <ns19:tcm-id>NONE</ns19:tcm-id>
        </ns19:protection-profile>
        <ns19:protection-profile>
            <ns19:fdn>MD=CISCO_EPNM!ND=cvg-scapa-
221.cisco.com!PPF=test3</ns19:fdn>
            <ns19:name>test3</ns19:name>
            <ns19:protection-type>ns19:protection-one-plus-one-
unidirectional-aps</ns19:protection-type>
            <ns19:protection-mode>REVERTIVE</ns19:protection-mode>
            <ns19:vc-mode>VC_MODE_S</ns19:vc-mode>
            <ns19:hold-off-timer>0</ns19:hold-off-timer>
            <ns19:wait-to-restore-timer>300</ns19:wait-to-restore-timer>
            <ns19:tcm-id>TCM4</ns19:tcm-id>
        </ns19:protection-profile>
        <ns19:protection-profile>
            <ns19:fdn>MD=CISCO_EPNM!ND=cvg-scapa-
221.cisco.com!PPF=test2</ns19:fdn>
            <ns19:name>test2</ns19:name>
            <ns19:protection-type>ns19:protection-one-plus-one-
unidirectional-aps</ns19:protection-type>
            <ns19:protection-mode>NON_REVERTIVE</ns19:protection-mode>
            <ns19:vc-mode>VC_MODE_S</ns19:vc-mode>
            <ns19:hold-off-timer>0</ns19:hold-off-timer>
            <ns19:wait-to-restore-timer>0</ns19:wait-to-restore-timer>
            <ns19:tcm-id>TCM4</ns19:tcm-id>
        </ns19:protection-profile>
        <ns19:protection-profile>
            <ns19:fdn>MD=CISCO_EPNM!ND=cvg-scapa-
221.cisco.com!PPF=test1</ns19:fdn>
            <ns19:name>test1</ns19:name>
            <ns19:protection-type>ns19:protection-one-plus-one-
unidirectional-aps</ns19:protection-type>
            <ns19:protection-mode>NON_REVERTIVE</ns19:protection-mode>
            <ns19:vc-mode>VC_MODE_N</ns19:vc-mode>
            <ns19:hold-off-timer>0</ns19:hold-off-timer>
            <ns19:wait-to-restore-timer>0</ns19:wait-to-restore-timer>
            <ns19:tcm-id>NONE</ns19:tcm-id>
        </ns19:protection-profile>
        <ns19:protection-profile>
            <ns19:fdn>MD=CISCO_EPNM!ND=cvg-scapa-
221.cisco.com!PPF=test_new</ns19:fdn>
            <ns19:name>test_new</ns19:name>
            <ns19:protection-type>ns19:protection-one-plus-one-
unidirectional-aps</ns19:protection-type>
            <ns19:protection-mode>REVERTIVE</ns19:protection-mode>
            <ns19:vc-mode>VC_MODE_S</ns19:vc-mode>
            <ns19:hold-off-timer>100</ns19:hold-off-timer>
            <ns19:wait-to-restore-timer>300</ns19:wait-to-restore-timer>
            <ns19:tcm-id>TCM4</ns19:tcm-id>
        </ns19:protection-profile>
        <ns19:protection-profile>
            <ns19:fdn>MD=CISCO_EPNM!ND=cvg-scapa-
221.cisco.com!PPF=test1234</ns19:fdn>
            <ns19:name>test1234</ns19:name>
```

```
            <ns19:protection-type>ns19:protection-one-plus-one-
unidirectional-aps</ns19:protection-type>
            <ns19:protection-mode>REVERTIVE</ns19:protection-mode>
            <ns19:vc-mode>VC_MODE_N</ns19:vc-mode>
            <ns19:hold-off-timer>200</ns19:hold-off-timer>
            <ns19:wait-to-restore-timer>360</ns19:wait-to-restore-timer>
            <ns19:tcm-id>NONE</ns19:tcm-id>
        </ns19:protection-profile>
        <ns19:protection-profile>
            <ns19:fdn>MD=CISCO_EPNM!ND=cvg-scapa-
221.cisco.com!PPF=tt6</ns19:fdn>
            <ns19:name>tt6</ns19:name>
            <ns19:protection-type>ns19:protection-one-plus-one-
unidirectional-aps</ns19:protection-type>
            <ns19:protection-mode>NON_REVERTIVE</ns19:protection-mode>
            <ns19:vc-mode>VC_MODE_N</ns19:vc-mode>
            <ns19:hold-off-timer>0</ns19:hold-off-timer>
            <ns19:wait-to-restore-timer>0</ns19:wait-to-restore-timer>
            <ns19:tcm-id>NONE</ns19:tcm-id>
        </ns19:protection-profile>
    </ns4:data>
</ns4:response-message>
```

7.25 Get A Protection Profile

7.25.1 Request

GET GET /restconf/data/v1/cisco-resource-ems:protection-profile?fdn=MD=CISCO_EPNM!ND=cvg-scapa-229.cisco.com!PPF=123
Host: <epnm-host>
Accept: application/yang-data+xml

7.25.2 Response

```
<ns4:response-message
xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns31="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
xmlns:ns30="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns29="urn:cisco:ns:yang:service:activation:v1"
xmlns:ns28="urn:cisco:params:xml:ns:yang:resource:opt"
xmlns:ns27="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns26="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns25="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns24="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns23="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:profile-protection:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
```

```
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>0</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns19:protection-profile>
            <ns19:fdn>MD=CISCO_EPNM!ND=cvg-scapa-
221.cisco.com!PPF=123</ns19:fdn>
            <ns19:name>123</ns19:name>
            <ns19:protection-type>ns19:protection-one-plus-one-
unidirectional-aps</ns19:protection-type>
            <ns19:protection-mode>NON_REVERTIVE</ns19:protection-mode>
            <ns19:vc-mode>VC_MODE_N</ns19:vc-mode>
            <ns19:hold-off-timer>0</ns19:hold-off-timer>
            <ns19:wait-to-restore-timer>0</ns19:wait-to-restore-timer>
            <ns19:tcm-id>NONE</ns19:tcm-id>
        </ns19:protection-profile>
    </ns4:data>
</ns4:response-message>
```

7.26 Set TerminationPoint – SONET LOP

7.26.1 Request

POST /restconf/operations/v1 cisco-resource-activation:set-termination-point
Host: <epnm-host>
Accept: application/yang-data+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:setTerminationPointRequest xmlns:p="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:ra:v1 restconf-mrp-
tpc.xsd ">
      <p:tpRef>MD=CISCO_EPNM!ND=EPNNCS4216-120.41.cisco.com!CTP=name=SONET
0/4/1.11/1;lr=LR_Not_Applicable</p:tpRef>
      <p:transmissionParametersList>
            <p:transmissionParameterType>
                  <p:portConfig>SONET_LOP_CONFIG</p:portConfig>
                  <p:nvList>
                        <p:nvType>
                              <p:name>adminStatus</p:name>
                              <p:value>DOWN</p:value>
                        </p:nvType>
                        <p:nvType>
                              <p:name>mode</p:name>
                              <p:value>CT3</p:value>
```

```
                        </p:nvType>
                        <p:nvType>
                              <p:name>framing</p:name>
                              <p:value>AUTO_DETECT</p:value>
                        </p:nvType>
                        <p:nvType>
                              <p:name>clockSource</p:name>
                              <p:value>LINE</p:value>
                        </p:nvType>
                  </p:nvList>
            </p:transmissionParameterType>
      </p:transmissionParametersList>
</p:setTerminationPointRequest>
```

Accept: application/yang-data+json
Json Payload:

```
{
   "ra.tpRef": "MD=CISCO_EPNM!ND=EPNNCS4216-120.41.cisco.com!CTP=name=SONET
0/4/1.11/1;lr=LR_Not_Applicable",
   "ra.transmissionParametersList": {
      "ra.transmissionParameterType": {
         "ra.portConfig": "SONET_LOP_CONFIG",
         "ra.nvList": {
            "ra.nvType": [
               {
                  "ra.name": "adminStatus",
                  "ra.value": "DOWN"
               },
               {
                  "ra.name": "mode",
                  "ra.value": "CT3"
               },
               {
                  "ra.name": "framing",
                  "ra.value": "AUTO_DETECT"
               },
               {
                  "ra.name": "clockSource",
                  "ra.value": "LINE"
               }
            ]
         }
      }
   }
}
```

7.26.2 Response

```
<ns4:response-message
xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns18="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns17="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
```

```
xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>1</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns7:termination-point>
            <ns7:fdn>MD=CISCO_EPNM!ND=EPNNCS4216-
120.41.cisco.com!CTP=name=SONET 0/4/1.11/1;lr=LR_Not_Applicable</ns7:fdn>
            <ns7:discovered-name>SONET 0/4/1.11/1</ns7:discovered-name>
            <ns7:admin-state>ns4:admin-state-down</ns7:admin-state>
            <ns7:oper-state>ns4:oper-state-down</ns7:oper-state>
            <ns7:directionality>ns4:bi-direction</ns7:directionality>
            <ns7:is-edge-point>true</ns7:is-edge-point>
            <ns7:type>CTP</ns7:type>
            <ns7:is-promiscuous>false</ns7:is-promiscuous>
            <ns7:is-span-monitored>false</ns7:is-span-monitored>
            <ns7:tdm-cem-tp>
                <ns7:tdm-cem-flowpoint-lo-path>
                    <ns7:framing>ns6:framing-auto-detect</ns7:framing>
                    <ns7:clock-source>ns6:clock-source-line</ns7:clock-
source>
                </ns7:tdm-cem-flowpoint-lo-path>
            </ns7:tdm-cem-tp>
        </ns7:termination-point>
        <ns7:set-termination-point-response>
            <ns7:model-config-result-list>
                <ns7:model-config-result>
                    <ns7:feature-name>feature_cem</ns7:feature-name>
                    <ns7:config-status>Success</ns7:config-status>
                </ns7:model-config-result>
            </ns7:model-config-result-list>
        </ns7:set-termination-point-response>
    </ns4:data>
</ns4:response-message>
```

7.27 Set TerminationPoint – SONET PORT CONFIG

7.27.1 Request

POST /restconf/operations/v1/cisco-resource-activation:set-termination-point
Host: <epnm-host>
Accept: application/yang-data+xml
XML payload:

```
<?xml version="1.0" encoding="UTF-8"?>
```

```
<p:setTerminationPointRequest xmlns:p="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:ra:v1 restconf-mrp-
tpc.xsd ">
      <p:tpRef>MD=CISCO_EPNM!ND=EPNCS4216-
120.42.SWIM.cisco.com!PTP=name=SONET 0/4/0;lr=LR_DSR_OC12_STM4</p:tpRef>
      <p:transmissionParametersList>
            <p:transmissionParameterType>
                  <p:portConfig>SONET_PORT_CONFIG</p:portConfig>
                  <p:nvList>
                      <p:nvType>
                              <p:name>adminStatus</p:name>
                              <p:value>DOWN</p:value>
                        </p:nvType>
                        <p:nvType>
                              <p:name>framing</p:name>
                              <p:value>UNFRAMED</p:value>
                        </p:nvType>
                        <p:nvType>
                              <p:name>clockSource</p:name>
                              <p:value>INTERNAL</p:value>
                        </p:nvType>
                        <p:nvType>
                              <p:name>rate</p:name>
                              <p:value>OC48</p:value>
                        </p:nvType>
                  </p:nvList>
            </p:transmissionParameterType>
      </p:transmissionParametersList>
</p:setTerminationPointRequest>
```

Accept: application/yang-data+json

Json Payload:

```
{
   "ra.tpRef": "MD=CISCO_EPNM!ND=EPNCS4216-
120.42.SWIM.cisco.com!PTP=name=SONET 0/4/0;lr=LR_DSR_OC12_STM4",
   "ra.transmissionParametersList": {
      "ra.transmissionParameterType": {
         "ra.portConfig": "SONET_PORT_CONFIG",
         "ra.nvList": {
            "ra.nvType": [
               {
                  "ra.name": "adminStatus",
                  "ra.value": "DOWN"
               },
               {
                  "ra.name": "framing",
                  "ra.value": "UNFRAMED"
               },
               {
                  "ra.name": "clockSource",
                  "ra.value": "INTERNAL"
               },
               {
                  "ra.name": "rate",
                  "ra.value": "OC48"
               }
```

```
            ]
        }
    }
}
```

7.27.2 Response

```
<ns4:response-message
xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns18="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns17="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>1</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns7:termination-point>
            <ns7:fdn>MD=CISCO_EPNM!ND=EPNNCS4216-
120.41.cisco.com!PTP=name=SONET 0/4/1;lr=LR_DSR_OC48_and_STM16</ns7:fdn>
            <ns7:discovered-name>SONET 0/4/1</ns7:discovered-name>
            <ns7:admin-state>ns4:admin-state-down</ns7:admin-state>
            <ns7:oper-state>ns4:oper-state-down</ns7:oper-state>
            <ns7:layer-rate xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-
layer-rates:v1">ns21:LR_DSR_OC48_and_STM16</ns7:layer-rate>
            <ns7:directionality>ns4:bi-direction</ns7:directionality>
            <ns7:is-edge-point>true</ns7:is-edge-point>
            <ns7:type>PTP</ns7:type>
            <ns7:is-promiscuous>false</ns7:is-promiscuous>
            <ns7:is-span-monitored>false</ns7:is-span-monitored>
            <ns7:tdm-port>
                <ns7:framing>UNFRAMED</ns7:framing>
                <ns7:clock-source>INTERNAL</ns7:clock-source>
            </ns7:tdm-port>
        </ns7:termination-point>
        <ns7:set-termination-point-response>
            <ns7:model-config-result-list>
                <ns7:model-config-result>
                    <ns7:feature-name>feature_cem</ns7:feature-name>
                    <ns7:config-status>Success</ns7:config-status>
```

```
                </ns7:model-config-result>
            </ns7:model-config-result-list>
        </ns7:set-termination-point-response>
    </ns4:data>
</ns4:response-message>
```

7.28 SetTerminationPoint – T1 PORT CONFIG

7.28.1 Request

POST /restconf/operations/v1/cisco-resource-activation:set-termination-point
Host: <epnm-host>
Accept: application/yang-data+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:setTerminationPointRequest xmlns:p="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:ra:v1 restconf-mrp-
tpc.xsd ">
      <p:tpRef>MD=CISCO_EPNM!ND=EPNNCS4216-120.41.cisco.com!PTP=name=T1
0/7/1;lr=T1</p:tpRef>
      <p:transmissionParametersList>
            <p:transmissionParameterType>
                  <p:portConfig>T1_PORT_CONFIG</p:portConfig>
                  <p:nvList>
                        <p:nvType>
                              <p:name>adminStatus</p:name>
                              <p:value>UP</p:value>
                        </p:nvType>
                        <p:nvType>
                              <p:name>framing</p:name>
                              <p:value>UNFRAMED</p:value>
                        </p:nvType>
                        <p:nvType>
                              <p:name>clockSource</p:name>
                              <p:value>INTERNAL</p:value>
                        </p:nvType>
                        <p:nvType>
                              <p:name>loopBack</p:name>
                              <p:value>LOCAL_PAYLOAD</p:value>
                        </p:nvType>
                  </p:nvList>
            </p:transmissionParameterType>
      </p:transmissionParametersList>
</p:setTerminationPointRequest>
```

Accept: application/yang-data+json
Json Payload:

```
{
   "ra.tpRef": "MD=CISCO_EPNM!ND=EPNNCS4216-120.41.cisco.com!PTP=name=T1
0/7/1;lr=T1",
   "ra.transmissionParametersList": {
      "ra.transmissionParameterType": {
         "ra.portConfig": "T1_PORT_CONFIG",
         "ra.nvList": {
            "ra.nvType": [
```

```
                {
                   "ra.ra.name": "adminStatus",
                   "ra.value": "UP"
                },
                {
                   "ra.name": "framing",
                   "ra.value": "UNFRAMED"
                },
                {
                   "ra.name": "clockSource",
                   "ra.value": "INTERNAL"
                },
                {
                   "ra.name": "loopBack",
                   "ra.value": "LOCAL_PAYLOAD"
                }
             ]
          }
       }
    }
```

7.28.2 Response

```
<ns4:response-message
xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns18="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns17="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>1</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns7:termination-point>
            <ns7:fdn>MD=CISCO_EPNM!ND=EPNNCS4216-120.41.cisco.com!PTP=name=T1
0/7/1;lr=T1</ns7:fdn>
            <ns7:discovered-name>T1 0/7/1</ns7:discovered-name>
            <ns7:admin-state>ns4:admin-state-up</ns7:admin-state>
            <ns7:oper-state>ns4:oper-state-up</ns7:oper-state>
            <ns7:layer-rate xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-
layer-rates:v1">ns21:T1</ns7:layer-rate>
```

```
            <ns7:directionality>ns4:bi-direction</ns7:directionality>
            <ns7:is-edge-point>true</ns7:is-edge-point>
            <ns7:type>PTP</ns7:type>
            <ns7:is-promiscuous>false</ns7:is-promiscuous>
            <ns7:is-span-monitored>false</ns7:is-span-monitored>
            <ns7:tdm-port>
                <ns7:framing>UNFRAMED</ns7:framing>
                <ns7:clock-source>INTERNAL</ns7:clock-source>
                <ns7:loopback-mode>LOCAL_PAYLOAD</ns7:loopback-mode>
            </ns7:tdm-port>
        </ns7:termination-point>
        <ns7:set-termination-point-response>
            <ns7:model-config-result-list>
                <ns7:model-config-result>
                    <ns7:feature-name>feature_cem</ns7:feature-name>
                    <ns7:config-status>Success</ns7:config-status>
                </ns7:model-config-result>
            </ns7:model-config-result-list>
        </ns7:set-termination-point-response>
    </ns4:data>
</ns4:response-message>
```

7.29 SetTerminationPoint – ETHERNET PORT CONFIG

7.29.1 Request

POST /restconf/operations/v1/cisco-resource-activation:set-termination-point
Host: <epnm-host>
Accept: application/yang-data+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:setTerminationPointRequest xmlns:p="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:ra:v1 restconf-mrp-
tpc.xsd ">
      <p:tpRef>MD=CISCO_EPNM!ND=ASR903-
Automation!FTP=name=GigabitEthernet0/5/0;lr=lr-gigabit-ethernet</p:tpRef>
      <p:transmissionParametersList>
            <p:transmissionParameterType>
                  <p:portConfig>ETHERNET_PORT_CONFIG</p:portConfig>
                  <p:layerRate>lr_ethernet</p:layerRate>
                  <p:nvList>
                      <p:nvType>
                              <p:name>adminStatus</p:name>
                              <p:value>UP</p:value>
                        </p:nvType>
                      <p:nvType>
                              <p:name>duplexMode</p:name>
                              <p:value>HALFDUPLEX</p:value>
                        </p:nvType>
                        <p:nvType>
                              <p:name>loopBack</p:name>
                              <p:value>INTERNAL</p:value>
                        </p:nvType>
                        <p:nvType>
                              <p:name>speed</p:name>
```

```
                                <p:value>AUTOSPEED</p:value>
                            </p:nvType>
                        </p:nvList>
                    </p:transmissionParameterType>
                </p:transmissionParametersList>
</p:setTerminationPointRequest>
```

Accept: application/yang-data+json

Json Payload:

```
{
   "ra.tpRef": "MD=CISCO_EPNM!ND=ASR903-
Automation!FTP=name=GigabitEthernet0/5/0;lr=lr-gigabit-ethernet",
   "ra.transmissionParametersList": {
      "ra.transmissionParameterType": {
         "ra.portConfig": "ETHERNET_PORT_CONFIG",
         "ra.layerRate": "lr_ethernet",
         "ra.nvList": {
            "ra.nvType": [
               {
                  "ra.name": "adminStatus",
                  "ra.value": "UP"
               },
               {
                  "ra.name": "duplexMode",
                  "ra.value": "HALFDUPLEX"
               },
               {
                  "ra.name": "loopBack",
                  "ra.value": "INTERNAL"
               },
               {
                  "ra.name": "speed",
                  "ra.value": "AUTOSPEED"
               }
            ]
         }
      }
   }
}
```

7.29.2 Response

```
<ns4:response-message
xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns18="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns17="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
```

```
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>1</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns7:termination-point>
            <ns7:fdn>MD=CISCO_EPNM!ND=ASR903-
Automation!FTP=name=GigabitEthernet0/5/0;lr=lr-gigabit-ethernet</ns7:fdn>
            <ns7:discovered-name>GigabitEthernet0/5/0</ns7:discovered-name>
            <ns7:admin-state>ns4:admin-state-up</ns7:admin-state>
            <ns7:oper-state>ns4:oper-state-down</ns7:oper-state>
            <ns7:layer-rate xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-
layer-rates:v1">ns21:lr_ethernet</ns7:layer-rate>
            <ns7:directionality>ns4:bi-direction</ns7:directionality>
            <ns7:is-edge-point>true</ns7:is-edge-point>
            <ns7:type>FTP</ns7:type>
            <ns7:is-promiscuous>false</ns7:is-promiscuous>
            <ns7:is-span-monitored>false</ns7:is-span-monitored>
            <ns7:ce-tp></ns7:ce-tp>
        </ns7:termination-point>
        <ns7:set-termination-point-response>
            <ns7:model-config-result-list>
                <ns7:model-config-result>
                    <ns7:feature-name>feature_config_interface</ns7:feature-
name>
                    <ns7:config-status>Success</ns7:config-status>
                </ns7:model-config-result>
            </ns7:model-config-result-list>
        </ns7:set-termination-point-response>
    </ns4:data>
</ns4:response-message>
```

7.30 SetTerminationPoint – ODU PORT CONFIG

7.30.1 Request

POST /restconf/operations/v1/cisco-resource-activation:set-termination-point
Host: <epnm-host>
Accept: application/yang-data+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:setTerminationPointRequest xmlns:p="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:ra:v1 restconf-mrp-
tpc.xsd ">
      <p:tpRef>MD=CISCO_EPNM!ND=cvg-frodo-
39.cisco.com!FTP=name=ODU40/6/0/1;lr=LR_OCH_Data_Unit_4</p:tpRef>
      <p:transmissionParametersList>
            <p:transmissionParameterType>
                  <p:portConfig>ODU_PORT_CONFIG</p:portConfig>
                  <p:layerRate>LR_OCH_Data_Unit_4</p:layerRate>
```

```
                    <p:nvList>
                        <p:nvType>
                                <p:name>gcc</p:name>
                                <p:value>true</p:value>
                          </p:nvType>
                    </p:nvList>
             </p:transmissionParameterType>
       </p:transmissionParametersList>
</p:setTerminationPointRequest>
```

Accept: application/yang-datajson

Json Payload:

```
{
   "ra.tpRef": "MD=CISCO_EPNM!ND=cvg-frodo-
39.cisco.com!FTP=name=ODU40/6/0/1;lr=LR_OCH_Data_Unit_4",
   "ra.transmissionParametersList": {
      "ra.transmissionParameterType": {
         "ra.portConfig": "ODU_PORT_CONFIG",
         "ra.layerRate": "LR_OCH_Data_Unit_4",
         "ra.nvList": {
            "ra.nvType": {
               "ra.name": "gcc",
               "ra.value": "true"
            }
         }
      }
   }
}
```

7.30.2 Response

```
<ns4:response-message
xmlns:ns21="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns19="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns18="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>1</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
```

```
        <ns7:termination-point>
            <ns7:fdn>MD=CISCO_EPNM!ND=cvg-frodo-
39.cisco.com!FTP=name=ODU40/6/0/1;lr=LR_OCH_Data_Unit_4</ns7:fdn>
            <ns7:discovered-name>ODU40/6/0/1</ns7:discovered-name>
            <ns7:directionality>ns4:bi-direction</ns7:directionality>
            <ns7:is-edge-point>true</ns7:is-edge-point>
            <ns7:type>FTP</ns7:type>
            <ns7:is-promiscuous>false</ns7:is-promiscuous>
            <ns7:is-span-monitored>false</ns7:is-span-monitored>
        </ns7:termination-point>
        <ns7:set-termination-point-response>
            <ns7:model-config-result-list>
                <ns7:model-config-result>
                    <ns7:feature-name>setODU</ns7:feature-name>
                    <ns7:config-status>Success</ns7:config-status>
                </ns7:model-config-result>
            </ns7:model-config-result-list>
        </ns7:set-termination-point-response>
    </ns4:data>
</ns4:response-message>
```

7.31 SetTerminationPoint – OPTICAL PAYLOAD PORT CONFIG

7.31.1 Request

POST /restconf/operations/v1/cisco-resource-activation:set-termination-point
Host: <epnm-host>
Accept: application/yang-data+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:setTerminationPointRequest xmlns:p="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:ra:v1 restconf-mrp-
tpc.xsd ">
      <p:tpRef>MD=CISCO_EPNM!ND=cvg-frodo-
39.cisco.com!FTP=name=Optics0/7/0/19;lr=LR_OPTICAL_SECTION</p:tpRef>
      <p:transmissionParametersList>
            <p:transmissionParameterType>
                  <p:portConfig>OPTICAL_PAYLOAD_PORT_CONFIG</p:portConfig>
                  <p:layerRate>LR_OPTICAL_SECTION</p:layerRate>
                  <p:nvList>
                        <p:nvType>
                              <p:name>portMode</p:name>
                              <p:value>BREAKOUT</p:value>
                        </p:nvType>
                        <p:nvType>
                              <p:name>framing</p:name>
                              <p:value>NONE</p:value>
                        </p:nvType>
                        <p:nvType>
                              <p:name>mapping</p:name>
                              <p:value>NONE</p:value>
                        </p:nvType>
                  </p:nvList>
            </p:transmissionParameterType>
      </p:transmissionParametersList>
```

```
</p:setTerminationPointRequest>
```

Accept: application/yang-data+json

Json Payload:

```
{
   "ra.tpRef": "MD=CISCO_EPNM!ND=cvg-frodo-
39.cisco.com!FTP=name=Optics0/7/0/19;lr=LR_OPTICAL_SECTION",
   "ra.transmissionParametersList": {
      "ra.transmissionParameterType": {
         "ra.portConfig": "OPTICAL_PAYLOAD_PORT_CONFIG",
         "ra.layerRate": "LR_OPTICAL_SECTION",
         "ra.nvList": {
            "ra.nvType": [
               {
                  "ra.name": "portMode",
                  "ra.value": "BREAKOUT"
               },
               {
                  "ra.name": "framing",
                  "ra.value": "NONE"
               },
               {
                  "ra.name": "mapping",
                  "ra.value": "NONE"
               }
            ]
         }
      }
   }
}
```

7.31.2 Response

```
<ns4:response-message
xmlns:ns21="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns19="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns18="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>1</ns4:lastIndex>
```

```
    </ns4:header>
    <ns4:data>
        <ns7:termination-point>
            <ns7:fdn>MD=CISCO_EPNM!ND=cvg-frodo-
39.cisco.com!FTP=name=Optics0/7/0/19;lr=LR_OPTICAL_SECTION</ns7:fdn>
            <ns7:discovered-name>Optics0/7/0/19</ns7:discovered-name>
            <ns7:directionality>ns4:bi-direction</ns7:directionality>
            <ns7:is-edge-point>true</ns7:is-edge-point>
            <ns7:type>FTP</ns7:type>
            <ns7:is-promiscuous>false</ns7:is-promiscuous>
            <ns7:is-span-monitored>false</ns7:is-span-monitored>
        </ns7:termination-point>
        <ns7:set-termination-point-response>
            <ns7:model-config-result-list>
                <ns7:model-config-result>
                    <ns7:feature-name>OpticsPayloadSettings</ns7:feature-
name>
                    <ns7:config-status>Success</ns7:config-status>
                </ns7:model-config-result>
            </ns7:model-config-result-list>
        </ns7:set-termination-point-response>
    </ns4:data>
</ns4:response-message>
```

7.32 SetTerminationPoint – OTN PORT CONFIG

7.32.1 Request

POST /restconf/operations/v1/cisco-resource-activation:set-termination-point
Host: <epnm-host>
Accept: application/yang-data+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:setTerminationPointRequest xmlns:p="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:ra:v1 restconf-mrp-
tpc.xsd ">
      <p:tpRef>MD=CISCO_EPNM!ND=cvg-frodo-
39.cisco.com!FTP=name=OTU40/6/0/1;lr=LR_OCH_Transport_Unit_4</p:tpRef>
      <p:transmissionParametersList>
            <p:transmissionParameterType>
                  <p:portConfig>OTN_PORT_CONFIG</p:portConfig>
                  <p:layerRate>LR_OCH_Transport_Unit_4</p:layerRate>
                  <p:nvList>
                      <p:nvType>
                              <p:name>fec</p:name>
                              <p:value>STANDARD</p:value>
                        </p:nvType>
                        <p:nvType>
                              <p:name>gcc0</p:name>
                              <p:value>false</p:value>
                        </p:nvType>
                        <p:nvType>
                              <p:name>payLoadMap</p:name>
                              <p:value>NOTAPPLICABLE</p:value>
                        </p:nvType>
```

```
                        <p:nvType>
                              <p:name>admssm</p:name>
                              <p:value>STU</p:value>
                        </p:nvType>
                  </p:nvList>
            </p:transmissionParameterType>
      </p:transmissionParametersList>
</p:setTerminationPointRequest>
```

Accept: application/yang-data+json

Json Payload:

```
{
   "ra.tpRef": "MD=CISCO_EPNM!ND=cvg-frodo-
39.cisco.com!FTP=name=OTU40/6/0/1;lr=LR_OCH_Transport_Unit_4",
   "ra.transmissionParametersList": {
      "ra.transmissionParameterType": {
         "ra.portConfig": "OTN_PORT_CONFIG",
         "ra.layerRate": "LR_OCH_Transport_Unit_4",
         "ra.nvList": {
            "ra.nvType": [
               {
                  "ra.name": "fec",
                  "ra.value": "STANDARD"
               },
               {
                  "ra.name": "gcc0",
                  "ra.value": "false"
               },
               {
                  "ra.name": "payLoadMap",
                  "ra.value": "NOTAPPLICABLE"
               },
               {
                  "ra.name": "admssm",
                  "ra.value": "STU"
               }
            ]
         }
      }
   }
}
```

7.32.2 Response

```
<ns4:response-message
xmlns:ns21="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns19="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns18="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
```

```
xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>1</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns7:termination-point>
            <ns7:fdn>MD=CISCO_EPNM!ND=cvg-frodo-
39.cisco.com!FTP=name=OTU40/6/0/1;lr=LR_OCH_Transport_Unit_4</ns7:fdn>
            <ns7:discovered-name>OTU40/6/0/1</ns7:discovered-name>
            <ns7:directionality>ns4:bi-direction</ns7:directionality>
            <ns7:is-edge-point>true</ns7:is-edge-point>
            <ns7:type>FTP</ns7:type>
            <ns7:is-promiscuous>false</ns7:is-promiscuous>
            <ns7:is-span-monitored>false</ns7:is-span-monitored>
        </ns7:termination-point>
        <ns7:set-termination-point-response>
            <ns7:model-config-result-list>
                <ns7:model-config-result>
                    <ns7:feature-name>OtnOtukPepSettings</ns7:feature-name>
                    <ns7:config-status>Success</ns7:config-status>
                </ns7:model-config-result>
            </ns7:model-config-result-list>
        </ns7:set-termination-point-response>
    </ns4:data>
</ns4:response-message>
```

7.33 SetTerminationPoint – ADMIN STATUS PORT CONFIG

7.33.1 Request

POST /restconf/operations/v1/cisco-resource-activation:set-termination-point
Host: <epnm-host>
Accept: application/yang-data+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:setTerminationPointRequest xmlns:p="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:ra:v1 restconf-mrp-
tpc.xsd ">
      <p:tpRef>MD=CISCO_EPNM!ND=M6-234-248!FTP=name=CHAN-1-6-3-
1;lr=lr_OCH_Data_Unit_2</p:tpRef>
      <p:transmissionParametersList>
            <p:transmissionParameterType>
                  <p:portConfig>ADMIN_STATE_PORT_CONFIG</p:portConfig>
                  <p:layerRate>LR_OCH_Data_Unit_2</p:layerRate>
                  <p:nvList>
                      <p:nvType>
                              <p:name>adminStatus</p:name>
```

```
                                <p:value>UP</p:value>
                            </p:nvType>
                        </p:nvList>
                    </p:transmissionParameterType>
                </p:transmissionParametersList>
</p:setTerminationPointRequest>
```

Accept: application/yang-data+json
Json Payload:

```
{
   "ra.tpRef": "MD=CISCO_EPNM!ND=M6-234-248!FTP=name=CHAN-1-6-3-
1;lr=lr_OCH_Data_Unit_2",
   "ra.transmissionParametersList": {
      "ra.transmissionParameterType": {
         "ra.portConfig": "ADMIN_STATE_PORT_CONFIG",
         "ra.layerRate": "LR_OCH_Data_Unit_2",
         "ra.nvList": {
            "ra.nvType": {
               "ra.name": "adminStatus",
               "ra.value": "UP"
            }
         }
      }
   }
}
```

7.33.2 Response

```
<ns4:response-message
xmlns:ns21="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns19="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns18="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>1</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns7:termination-point>
```

```
            <ns7:fdn>MD=CISCO_EPNM!ND=M6-234-248!FTP=name=CHAN-1-6-3-
1;lr=LR_OCH_Data_Unit_2</ns7:fdn>
            <ns7:discovered-name>CHAN-1-6-3-1</ns7:discovered-name>
            <ns7:directionality>ns4:bi-direction</ns7:directionality>
            <ns7:is-edge-point>true</ns7:is-edge-point>
            <ns7:type>FTP</ns7:type>
            <ns7:is-promiscuous>false</ns7:is-promiscuous>
            <ns7:is-span-monitored>false</ns7:is-span-monitored>
        </ns7:termination-point>
        <ns7:set-termination-point-response>
            <ns7:model-config-result-list>
                <ns7:model-config-result>
                    <ns7:feature-name>adminStatusValue</ns7:feature-name>
                    <ns7:config-status>Success</ns7:config-status>
                </ns7:model-config-result>
            </ns7:model-config-result-list>
        </ns7:set-termination-point-response>
    </ns4:data>
</ns4:response-message>
```

7.34 SetTerminationPoint – WAVELENGTH PORT CONFIG

7.34.1 Request

POST /restconf/operations/v1/cisco-resource-activation:set-termination-point
Host: <epnm-host>
Accept: application/yang-data+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:setTerminationPointRequest xmlns:p="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:ra:v1 restconf-mrp-
tpc.xsd ">
      <p:tpRef>MD=CISCO_EPNM!ND=cvg-frodo-
39.cisco.com!FTP=name=Optics0/2/0/0;lr=LR_OPTICAL_SECTION</p:tpRef>
      <p:transmissionParametersList>
            <p:transmissionParameterType>
                  <p:portConfig>WAVELENGTH_PORT_CONFIG</p:portConfig>
                  <p:layerRate>LR_OPTICAL_SECTION</p:layerRate>
                  <p:nvList>
                      <p:nvType>
                              <p:name>waveLength</p:name>
                              <p:value>-1</p:value>
                        </p:nvType>
                  </p:nvList>
            </p:transmissionParameterType>
      </p:transmissionParametersList>
</p:setTerminationPointRequest>
```

Accept: application/yang-data+xml
Json Payload:

```
{
   "ra.tpRef": "MD=CISCO_EPNM!ND=cvg-frodo-
39.cisco.com!FTP=name=Optics0/2/0/0;lr=LR_OPTICAL_SECTION",
   "ra.transmissionParametersList": {
      "ra.transmissionParameterType": {
```

```
         "ra.portConfig": "WAVELENGTH_PORT_CONFIG",
         "ra.layerRate": "LR_OPTICAL_SECTION",
         "ra.nvList": {
            "ra.nvType": {
               "ra.name": "waveLength",
               "ra.value": "-1"
            }
         }
      }
   }
}
```

7.34.2 Response

```
<ns4:response-message
xmlns:ns21="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns19="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns18="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>1</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns7:termination-point>
            <ns7:fdn>MD=CISCO_EPNM!ND=cvg-frodo-
39.cisco.com!FTP=name=Optics0/2/0/0;lr=LR_OPTICAL_SECTION</ns7:fdn>
            <ns7:discovered-name>Optics0/2/0/0</ns7:discovered-name>
            <ns7:directionality>ns4:bi-direction</ns7:directionality>
            <ns7:is-edge-point>true</ns7:is-edge-point>
            <ns7:type>FTP</ns7:type>
            <ns7:is-promiscuous>false</ns7:is-promiscuous>
            <ns7:is-span-monitored>false</ns7:is-span-monitored>
        </ns7:termination-point>
        <ns7:set-termination-point-response>
            <ns7:model-config-result-list>
                <ns7:model-config-result>
                    <ns7:feature-name>wavelength</ns7:feature-name>
                    <ns7:config-status>Success</ns7:config-status>
                </ns7:model-config-result>
```

```
            </ns7:model-config-result-list>
        </ns7:set-termination-point-response>
    </ns4:data>
</ns4:response-message>
```

7.35 Set TerminationPoint Enabling MPLS LockOut for BDI

7.35.1 Request

POST /restconf/operations/v1/cisco-resource-activation:set-termination-point
Host: <epnm-host>
Accept: application/yang-data+xml
XML payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:setTerminationPointRequest xmlns:p="urn:cisco:params:xml:ns:yang:ra:v1"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:ra:v1 restconf-mrp-
tpc.xsd ">
      <p:tpRef>MD=CISCO_EPNM!ND=NCS4206-146.4!FTP=name=BDI20;lr=lr-bridge
      </p:tpRef>
      <p:transmissionParametersList>
            <p:transmissionParameterType>

      <p:portConfig>MPLS_LOCKOUT_ENABLE_PORT_CONFIG</p:portConfig>
                  <p:nvList>
                        <p:nvType>
                              <p:name>enableLockOut</p:name>
                              <p:value>true</p:value>
                        </p:nvType>
                  </p:nvList>
            </p:transmissionParameterType>
      </p:transmissionParametersList>
</p:setTerminationPointRequest>
```

Json Payload:

```
{
   "ra.tpRef": "MD=CISCO_EPNM!ND=NCS4206-146.4!FTP=name=BDI20;lr=lr-
bridge",
   "ra.transmissionParametersList": {
      "ra.transmissionParameterType": {
         "ra.portConfig": "MPLS_LOCKOUT_ENABLE_PORT_CONFIG",
         "ra.nvList": {
            "ra.nvType": {
               "ra.name": "enableLockOut",
               "ra.value": "true"
            }
         }
      }
   }
}
```

7.35.2 Response

```
<ns5:response-message
xmlns:ns37="urn:cisco:params:xml:ns:yang:restconf:party"
      xmlns:ns36="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
```

```
      xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns34="urn:ietf:params:xml:ns:yang:ietf-restconf"
      xmlns:ns33="urn:cisco:params:xml:ns:yang:service:activation:status:v
1"
      xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
      xmlns:ns31="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns30="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns29="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns28="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns27="urn:cisco:params:xml:ns:yang:yang-push:v1"
      xmlns:ns26="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns24="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns22="urn:cisco:params:xml:ns:yang:profile-protection:v1"
      xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns19="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns14="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns12="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns4="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library"
xmlns:ns2="inet-uri">
      <ns5:header>
            <ns5:firstIndex>0</ns5:firstIndex>
            <ns5:lastIndex>1</ns5:lastIndex>
      </ns5:header>
      <ns5:data>
            <ns8:termination-point>
                  <ns8:fdn>MD=CISCO_EPNM!ND=NCS4206-
146.4!FTP=name=BDI20;lr=lr-bridge</ns8:fdn>
                  <ns8:discovered-name>BDI20</ns8:discovered-name>
                  <ns8:admin-state>ns5:admin-state-up</ns8:admin-state>
                  <ns8:oper-state>ns5:oper-state-up</ns8:oper-state>
                  <ns8:layer-rate
xmlns:ns38="urn:cisco:params:xml:ns:yang:nrf-layer-rates:v1">ns38:lr-
bridge</ns8:layer-rate>
                  <ns8:directionality>ns5:bi-
direction</ns8:directionality>
                  <ns8:is-edge-point>true</ns8:is-edge-point>
                  <ns8:type>FTP</ns8:type>
                  <ns8:is-promiscuous>false</ns8:is-promiscuous>
                  <ns8:is-span-monitored>false</ns8:is-span-monitored>
                  <ns8:optical-attributes></ns8:optical-attributes>
```

```
            </ns8:termination-point>
            <ns8:set-termination-point-response>
                  <ns8:model-config-result-list>
                        <ns8:model-config-result>
                              <ns8:feature-
name>MPLS_ENABLE_DISABLE_LOCKOUT</ns8:feature-name>
                              <ns8:config-status>Success</ns8:config-
status>
                              <ns8:deployed-
configuration>172.21.146.4:conf t, interface BDI20 ,
                                    mpls traffic-eng fault-oam lockout,
exit, exit response is -
                                    config t
                                    Enter configuration commands, one per
line. End with CNTL/Z.
                                    NCS4206-146.4(config)#interface BDI20
                                    NCS4206-146.4(config-if)#mpls traffic-
eng fault-oam lockout
                                    NCS4206-146.4(config-if)#exit
                                    NCS4206-146.4(config)#exit
                                    NCS4206-146.4#</ns8:deployed-
configuration>
                        </ns8:model-config-result>
                  </ns8:model-config-result-list>
            </ns8:set-termination-point-response>
      </ns5:data>
</ns5:response-message>
```

7.36 Set TerminationPoint Disabling MPLS Lockout BDI

7.36.1 Request

POST /restconf/operations/v1/cisco-resource-activation:set-termination-point
Host: <epnm-host>
Accept: application/yang-data+xml
XML payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:setTerminationPointRequest xmlns:p="urn:cisco:params:xml:ns:yang:ra:v1"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:ra:v1 restconf-mrp-
tpc.xsd ">
      <p:tpRef>MD=CISCO_EPNM!ND=NCS4206-146.4!FTP=name=BDI20;lr=lr-bridge
      </p:tpRef>
      <p:transmissionParametersList>
            <p:transmissionParameterType>

      <p:portConfig>MPLS_LOCKOUT_ENABLE_PORT_CONFIG</p:portConfig>
                  <p:nvList>
                        <p:nvType>
                              <p:name>enableLockOut</p:name>
                              <p:value>false</p:value>
                        </p:nvType>
                  </p:nvList>
            </p:transmissionParameterType>
      </p:transmissionParametersList>
```

```
</p:setTerminationPointRequest>
```

Json payload:

```
{
   "ra.tpRef": "MD=CISCO_EPNM!ND=NCS4206-146.4!FTP=name=BDI20;lr=lr-
bridge",
   "ra.transmissionParametersList": {
      "ra.transmissionParameterType": {
         "ra.portConfig": "MPLS_LOCKOUT_ENABLE_PORT_CONFIG",
         "ra.nvList": {
            "ra.nvType": {
               "ra.name": "enableLockOut",
               "ra.value": "false"
            }
         }
      }
   }
}
```

7.36.2 Response

```
<ns5:response-message
xmlns:ns37="urn:cisco:params:xml:ns:yang:restconf:party"
      xmlns:ns36="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns34="urn:ietf:params:xml:ns:yang:ietf-restconf"
      xmlns:ns33="urn:cisco:params:xml:ns:yang:service:activation:status:v
1"
      xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
      xmlns:ns31="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns30="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns29="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns28="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns27="urn:cisco:params:xml:ns:yang:yang-push:v1"
      xmlns:ns26="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns24="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns22="urn:cisco:params:xml:ns:yang:profile-protection:v1"
      xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns19="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns14="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns12="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns4="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library"
```

```
xmlns:ns2="inet-uri">
      <ns5:header>
            <ns5:firstIndex>0</ns5:firstIndex>
            <ns5:lastIndex>1</ns5:lastIndex>
      </ns5:header>
      <ns5:data>
            <ns8:termination-point>
                  <ns8:fdn>MD=CISCO_EPNM!ND=NCS4206-
146.4!FTP=name=BDI20;lr=lr-bridge</ns8:fdn>
                  <ns8:discovered-name>BDI20</ns8:discovered-name>
                  <ns8:admin-state>ns5:admin-state-up</ns8:admin-state>
                  <ns8:oper-state>ns5:oper-state-up</ns8:oper-state>
                  <ns8:layer-rate
xmlns:ns38="urn:cisco:params:xml:ns:yang:nrf-layer-rates:v1">ns38:lr-
bridge</ns8:layer-rate>
                  <ns8:directionality>ns5:bi-
direction</ns8:directionality>
                  <ns8:is-edge-point>true</ns8:is-edge-point>
                  <ns8:type>FTP</ns8:type>
                  <ns8:is-promiscuous>false</ns8:is-promiscuous>
                  <ns8:is-span-monitored>false</ns8:is-span-monitored>
                  <ns8:optical-attributes></ns8:optical-attributes>
            </ns8:termination-point>
            <ns8:set-termination-point-response>
                  <ns8:model-config-result-list>
                        <ns8:model-config-result>
                              <ns8:feature-
name>MPLS_ENABLE_DISABLE_LOCKOUT</ns8:feature-name>
                              <ns8:config-status>Success</ns8:config-
status>
                              <ns8:deployed-
configuration>172.21.146.4:conf t, interface BDI20,
                                    no mpls traffic-eng fault-oam lockout,
exit, exit response is -
                                    config t
                                    Enter configuration commands, one per
line. End with CNTL/Z.
                                    NCS4206-146.4(config)#interface BDI20
                                    NCS4206-146.4(config-if)#no mpls
traffic-eng fault-oam lockout
                                    NCS4206-146.4(config-if)#exit
                                    NCS4206-146.4(config)#exit
                                    NCS4206-146.4#</ns8:deployed-
configuration>
                        </ns8:model-config-result>
                  </ns8:model-config-result-list>
            </ns8:set-termination-point-response>
      </ns5:data>
</ns5:response-message>
```

7.37 Set Termination Point of VCOP

POST restconf/operations/v1/cisco-resource-activation:set-termination-point
Host: <epnm-host>
Content-Type: application/yang.operation+xml

7.37.1 Request

```
<?xml version="1.0" encoding="UTF-8"?>
<p:setTerminationPointRequest xmlns:p="urn:cisco:params:xml:ns:yang:ra:v1"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:ra:v1 restconf-mrp-
tpc.xsd ">
      <p:tpRef><![CDATA[MD=CISCO_EPNM!ND=EPNNCS4201-
120.165!FTP=name=GigabitEthernet0/0/13;lr=lr-gigabit-ethernet]]></p:tpRef>
      <p:transmissionParametersList>
            <p:transmissionParameterType>
                  <p:portConfig>VCOP_CONFIG</p:portConfig>
                  <p:nvList>
                        <p:nvType>
                              <p:name>interfaceName</p:name>
                              <p:value>GigabitEthernet0/0/13</p:value>
                        </p:nvType>
                        <p:nvType>
                              <p:name>configuredPluggableType</p:name>
                              <p:value>OC3</p:value><!--DS3 -->
                        </p:nvType>
                        <p:nvType>
                              <p:name>supportedPluggableType</p:name>
                              <p:value>OC12/OC3</p:value>
                        </p:nvType>
                  </p:nvList>
            </p:transmissionParameterType>
      </p:transmissionParametersList>
</p:setTerminationPointRequest>
```

7.37.2 Respone

```
      <ns4:response-message
xmlns:ns41="urn:cisco:params:xml:ns:yang:restconf:party"
      xmlns:ns40="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns39="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns38="urn:ietf:params:xml:ns:yang:ietf-restconf"
      xmlns:ns37="urn:cisco:params:xml:ns:yang:service:activation:status:v
1"
      xmlns:ns36="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
      xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns32="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns31="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
      xmlns:ns30="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns29="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
      xmlns:ns28="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns26="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns24="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
      xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical-ops:v1"
      xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
      xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
```

```
      xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
      xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
      <ns4:header>
            <ns4:firstIndex>0</ns4:firstIndex>
            <ns4:lastIndex>1</ns4:lastIndex>
      </ns4:header>
      <ns4:data>
            <ns7:termination-point>
                  <ns7:fdn>MD=CISCO_EPNM!ND=EPNNCS4201-
120.165!FTP=name=GigabitEthernet0/0/13;lr=lr-gigabit-ethernet
                  </ns7:fdn>
                  <ns7:discovered-
name>GigabitEthernet0/0/13</ns7:discovered-name>
                  <ns7:alias-name>GigabitEthernet 0/0/13</ns7:alias-name>
                  <ns7:admin-state>ns4:admin-state-up</ns7:admin-state>
                  <ns7:oper-state>ns4:oper-state-up</ns7:oper-state>
                  <ns7:layer-rate
xmlns:ns42="urn:cisco:params:xml:ns:yang:nrf-layer-rates:v1">ns42:lr-
gigabit-ethernet
                  </ns7:layer-rate>
                  <ns7:directionality>ns4:tp-
bidirectional</ns7:directionality>
                  <ns7:is-edge-point>true</ns7:is-edge-point>
                  <ns7:type>FTP</ns7:type>
                  <ns7:is-promiscuous>false</ns7:is-promiscuous>
                  <ns7:mac-address>84:b2:61:13:a8:0d</ns7:mac-address>
                  <ns7:mtu>1508</ns7:mtu>
                  <ns7:is-span-monitored>false</ns7:is-span-monitored>
                  <ns7:if-speed>1 Gbps</ns7:if-speed>
                  <ns7:duplex-mode>FULLDUPLEX</ns7:duplex-mode>
                  <ns7:configured-pluggable-type>OC3</ns7:configured-
pluggable-type>
                  <ns7:ce-tp>
                        <ns7:mtu>1508</ns7:mtu>
                  </ns7:ce-tp>
                  <ns7:optical-attributes></ns7:optical-attributes>
            </ns7:termination-point>
            <ns7:set-termination-point-response>
                  <ns7:model-config-result-list>
                        <ns7:model-config-result>
                              <ns7:feature-name>feature-vcop</ns7:feature-
```

```
name>
                                    <ns7:config-status>Success</ns7:config-
status>
                              </ns7:model-config-result>
                        </ns7:model-config-result-list>
                  </ns7:set-termination-point-response>
            </ns4:data>
</ns4:response-message>
```

7.38 Set Termination Point for Fiber Attributes

7.38.1 Request

POST /restconf/operations/v1/cisco-resource-activation:set-termination-point
Host: <epnm-host>
Accept: application/yang-data+xml
XML payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:setTerminationPointRequest xmlns:p="urn:cisco:params:xml:ns:yang:ra:v1"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:ra:v1 restconf-mrp-
tpc.xsd ">
      <p:tpRef><![CDATA[MD=CISCO_EPNM!ND=tcc20!CTP=name=LINE-1-16-3-
RX&LINE-1-16-3-TX;lr=LR_Optical_Transmission_Section]]></p:tpRef>
      <p:transmissionParametersList>
            <p:transmissionParameterType>
                  <p:portConfig>FIBER_ATTRIBUTES_CONFIG</p:portConfig>
                  <p:nvList>
                        <p:nvType>
                              <p:name>fiberLengthUnit</p:name>
                              <p:value>KM</p:value>
                        </p:nvType>
                        <p:nvType>
                              <p:name>fiberType</p:name>
                              <p:value>G652-SMF</p:value>
                        </p:nvType>
                        <p:nvType>
                              <p:name>fiberLength</p:name>
                              <p:value>998</p:value>
                        </p:nvType>
                  </p:nvList>
            </p:transmissionParameterType>
      </p:transmissionParametersList>
</p:setTerminationPointRequest>
```

7.38.2 Response

```
<ns4:response-message
xmlns:ns37="urn:cisco:params:xml:ns:yang:restconf:party"
      xmlns:ns36="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns34="urn:ietf:params:xml:ns:yang:ietf-restconf"
      xmlns:ns33="urn:cisco:params:xml:ns:yang:service:activation:status:v
1"
      xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
```

```
      xmlns:ns31="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns30="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns29="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns28="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns27="urn:cisco:params:xml:ns:yang:yang-push:v1"
      xmlns:ns26="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns24="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical-ops:v1"
      xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
      xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
      xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
      <ns4:header>
            <ns4:firstIndex>0</ns4:firstIndex>
            <ns4:lastIndex>1</ns4:lastIndex>
      </ns4:header>
      <ns4:data>
            <ns7:termination-point>
                  <ns7:fdn>MD=CISCO_EPNM!ND=tcc20!CTP=name=LINE-1-16-3-
RX&amp;amp;LINE-1-16-3-TX;lr=lr-optical-transmission-section
                  </ns7:fdn>
                  <ns7:discovered-name>LINE-1-16-3-RX&amp;amp;LINE-1-16-3-TX
                  </ns7:discovered-name>
                  <ns7:layer-rate
                        xmlns:ns38="urn:cisco:params:xml:ns:yang:nrf-
optical-circuit-extension:v1">ns38:lr-optical-transmission-
section</ns7:layer-rate>
                  <ns7:directionality>ns4:bi-
direction</ns7:directionality>
                  <ns7:is-edge-point>true</ns7:is-edge-point>
                  <ns7:type>CTP</ns7:type>
                  <ns7:optical-attributes>
                        <ns7:fiber-attributes>
                              <ns7:fiber-type>G652-SMF</ns7:fiber-type>
                              <ns7:length>998.0</ns7:length>
                        </ns7:fiber-attributes>
                  </ns7:optical-attributes>
            </ns7:termination-point>
```

```
            <ns7:set-termination-point-response>
                  <ns7:model-config-result-list>
                        <ns7:model-config-result>
                              <ns7:feature-
name>fiberAttribute</ns7:feature-name>
                              <ns7:config-status>Success</ns7:config-
status>
                              <ns7:deployed-configuration>ed-
fiberattr::WDMSIDE-A:1:::FIBERTYPE=G652-SMF,LENGTH=998.0;
                              </ns7:deployed-configuration>
                        </ns7:model-config-result>
                  </ns7:model-config-result-list>
            </ns7:set-termination-point-response>
      </ns4:data>
</ns4:response-message>
```

7.39 Provision CEM Service

7.39.1 Request

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<ns:provision-service-request
    xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns="urn:cisco:params:xml:ns:yang:service:activation:v1">
    <ns:service-order-data>
        <ns:service-name>cem-service-e1-demo1</ns:service-name>
        <ns:service-description>cem-service-e1-demo</ns:service-description>
        <ns:service-type>tdm-cem</ns:service-type>
        <ns:service-subtype>e1</ns:service-subtype>
        <ns:service-activate>true</ns:service-activate>
        <ns:customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</ns:customer-
ref>
        <ns:cem-data>
            <ns:transport-settings>
                <ns:frame-type>SATOP</ns:frame-type>
                <ns:payload-size>516</ns:payload-size>
            </ns:transport-settings>
        </ns:cem-data>
        <ns:termination-point-list>
            <ns:termination-point-config>
                <ns:tp-ref>MD=CISCO_EPNM!ND=NCS4206-TEST-
120.32!CTP=name=SONET 0/4/2;lr=lr_DSR_OC48_and_STM16</ns:tp-ref>
                <ns:cem-data>
                    <ns:working-path>
                        <ns:higher-order-path>
                            <ns:available-path-ref>MD=CISCO_EPNM!ND=NCS4206-
TEST-120.32!FTP=name=SONET
0/4/2.210;lr=SonetHopProtocolEndpoint</ns:available-path-ref>
                            <ns:path-mode>CT3_E1</ns:path-mode>
                        </ns:higher-order-path>
                        <ns:lower-order-path>
                            <ns:available-path-ref>E1 1</ns:available-path-
```

```
ref>
                        </ns:lower-order-path>
                        <ns:auto-allocate-path>false</ns:auto-allocate-path>
                    </ns:working-path>

                </ns:cem-data>
            </ns:termination-point-config>

            <ns:termination-point-config>
                <ns:tp-ref>MD=CISCO_EPNM!ND=NCS4206-TEST-
120.33!CTP=name=SONET 0/5/2;lr=lr_DSR_OC48_and_STM16</ns:tp-ref>
                <ns:cem-data>
                    <ns:working-path>
                        <ns:higher-order-path>
                            <ns:available-path-ref>MD=CISCO_EPNM!ND=NCS4206-
TEST-120.33!CTP=name=SONET
0/5/2.10;lr=SonetHopProtocolEndpoint</ns:available-path-ref>
                            <ns:path-mode>CT3_E1</ns:path-mode>
                        </ns:higher-order-path>
                        <ns:lower-order-path>
                            <ns:available-path-ref>E1 1</ns:available-path-
ref>
                        </ns:lower-order-path>
                        <ns:auto-allocate-path>false</ns:auto-allocate-path>
                    </ns:working-path>

                </ns:cem-data>
            </ns:termination-point-config>
        </ns:termination-point-list>

        <ns:forwarding-path>
            <ns:mpls-te-data>
               <ns:preferred-path-ref>MD=CISCO_EPNM!VC=TE Link
301_6.6.6.6_0</ns:preferred-path-ref>
            </ns:mpls-te-data>
              <ns:pseudowire-settings>
                    <ns:enable-control-word>true</ns:enable-control-word>
                    <ns:fallback-to-ldp>true</ns:fallback-to-ldp>
              </ns:pseudowire-settings>
        </ns:forwarding-path>
    </ns:service-order-data>
</ns:provision-service-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "sa.service-order-data": {
      "sa.service-name": "cem-service-e1-demo1",
      "sa.service-description": "cem-service-e1-demo",
      "sa.service-type": "tdm-cem",
      "sa.service-subtype": "e1",
      "sa.service-activate": "true",
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "sa.cem-data": {
         "sa.transport-settings": {
            "sa.frame-type": "SATOP",
            "sa.payload-size": "516"
```

```
         }
      },
      "sa.termination-point-list": {
         "sa.termination-point-config": [
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=NCS4206-TEST-
120.32!CTP=name=SONET 0/4/2;lr=lr_DSR_OC48_and_STM16",
               "sa.cem-data": {
                  "sa.working-path": {
                     "sa.higher-order-path": {
                        "sa.available-path-ref": "MD=CISCO_EPNM!ND=NCS4206-
TEST-120.32!CTP=name=SONET 0/4/2.210;lr=SonetHopProtocolEndpoint",
                        "sa.path-mode": "CT3_E1"
                     },
                     "sa.lower-order-path": {
                        "sa.available-path-ref": "E1 1"
                     },
                     "sa.auto-allocate-path": "false"
                  }
               }
            },
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=NCS4206-TEST-
120.33!FTP=name=SONET 0/5/2;lr=lr_DSR_OC48_and_STM16",
               "sa.cem-data": {
                  "sa.working-path": {
                     "sa.higher-order-path": {
                        "sa.available-path-ref": "MD=CISCO_EPNM!ND=NCS4206-
TEST-120.33!FTP=name=SONET 0/5/2.10;lr=SonetHopProtocolEndpoint",
                        "sa.path-mode": "CT3_E1"
                     },
                     "sa.lower-order-path": {
                        "sa.available-path-ref": "E1 1"
                     },
                     "sa.auto-allocate-path": "false"
                  }
               }
            }
         ]
      },
      "sa.forwarding-path": {
         "sa.mpls-te-data": {
            "sa.preferred-path-ref": "MD=CISCO_EPNM!VC=TE Link 301_6.6.6.6_0"
         },
         "sa.pseudowire-settings": {
            "sa.enable-control-word": "true",
            "sa.fallback-to-ldp": "true"
         }
      }
   }
}
```

7.39.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>

Content-Type: application/yang.operation+json

```
{
      "customer": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "service-id": "6e4f779d-e0f8-4c23-9d1e-cfab002ffdba",
      "service-name": "cem-service-e1-demo",
      "service-type": "tdm-cem",
      "circuit-type": "e1",
      "deploy-action": "Preview",
      "operation-type": "ProvideService",
      "request-time": "Thu May 12 11:43:48 PDT 2016",
      "completion-status": "SUBMITTED",
      "generic-notification-url": "http:\/\/epnm-dev-
lnx5.cisco.com\/restconf\/streams\/v1\/service-activation",
      "request-specific-notification-url": "http:\/\/epnm-dev-
lnx5.cisco.com\/restconf\/streams\/v1\/service-activation\/6e4f779d-e0f8-
4c23-9d1e-cfab002ffdba"
}
```

7.39.3 Notification

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<push-change-update xmlns="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns2="urn:cisco:params:xml:ns:yang:service:activation:v1">
    <subscription-id>5357904982654733453</subscription-id>
    <topic>/streams/v1/service-activation</topic>
    <time-of-update>Wed May 11 16:38:38 PDT 2016</time-of-update>
    <operation>configure</operation>
    <update-data>
        <ns2:provision-service-response>
            <ns2:service-id>0feb3ab5-0439-4837-945a-
f11f2fbb2412</ns2:service-id>
            <ns2:service-name>cem-service-e1-10</ns2:service-name>
            <ns2:service-type>tdm-cem</ns2:service-type>
            <ns2:circuit-type>e1</ns2:circuit-type>
            <ns2:deploy-action>Preview</ns2:deploy-action>
            <ns2:operation-type>ProvideService</ns2:operation-type>
            <ns2:completion-time>Wed May 11 16:38:38 PDT
2016</ns2:completion-time>
            <ns2:intent-status>COMPLETED</ns2:intent-status>
            <ns2:deploy-status>COMPLETED</ns2:deploy-status>
            <ns2:deploy-results>&lt;results&gt;
    &lt;result deviceId="1059058" deviceName="NCS4206-TEST-
120.32"&gt;&lt;![CDATA[controller SONET 0/4/2
  sts-1 21
    mode ct3-e1
    e1 1 cem-group 32 unframed
interface pseudowire21
  encapsulation mpls
  control-word include
  preferred-path interface Tunnel301 disable-fallback
  neighbor 6.6.6.33 81
  bandwidth 2048
interface CEM0/4/2
  cem 32
    payload-size 516
l2vpn xconnect context XConnect_81_6.6.6.33
```

```
  member pseudowire21
  member CEM0/4/2 32
  exit
]]&gt;&lt;/result&gt;
    &lt;result deviceId="760769" deviceName="NCS4206-TEST-
120.33"&gt;&lt;![CDATA[controller SONET 0/5/2
  sts-1 10
    mode ct3-e1
    e1 1 cem-group 25 unframed
interface pseudowire31
  encapsulation mpls
  control-word include
  preferred-path interface Tunnel301 disable-fallback
  neighbor 101.101.101.1 81
  bandwidth 2048
interface CEM0/5/2
  cem 25
    payload-size 516
l2vpn xconnect context XConnect_81_101.101.101.1
  member pseudowire31
  member CEM0/5/2 25
  exit
]]&gt;&lt;/result&gt;
&lt;/results&gt;
</ns2:deploy-results>
            <ns2:completion-status>SUCCESS</ns2:completion-status>
        </ns2:provision-service-response>
    </update-data>
</push-change-update>
```

7.40 Provision CEM service with uni-directional tunnel as preferred path

7.40.1 Request

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<ns:provision-service-request
      xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns="urn:cisco:params:xml:ns:yang:service:activation:v1">
      <ns:service-order-data>
            <ns:service-name>CEM-T1-UniDirTunnelAsPreferredPath</ns:service-
name>
            <ns:service-description>CEM-T1-UniDirTunnelAsPreferredPath descr
      </ns:service-description>
            <ns:service-type>tdm-cem</ns:service-type>
            <ns:service-subtype>t1</ns:service-subtype>
            <ns:service-activate>true</ns:service-activate>
            <ns:customer-
ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</ns:customer-ref>
            <ns:cem-data>
                  <ns:transport-settings>
                        <ns:frame-type>SAToP</ns:frame-type>
                  </ns:transport-settings>
```

```
            </ns:cem-data>

            <ns:termination-point-list>
                  <ns:termination-point-config>
                        <ns:tp-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.19!PTP=name=T1 0/1/11;lr=lr-t1</ns:tp-ref>
                  </ns:termination-point-config>
                  <ns:termination-point-config>
                        <ns:tp-ref>MD=CISCO_EPNM!ND=EPNNCS4216-
120.20.Cisco.com!PTP=name=T1 0/14/2;lr=lr-t1</ns:tp-ref>
                  </ns:termination-point-config>

            </ns:termination-point-list>
            <ns:forwarding-path>
                  <ns:mpls-te-data>
                        <ns:te-tunnel-type>uni-directional</ns:te-tunnel-
type>
                        <ns:src-dest-preferred-path-ref>MD=CISCO_EPNM!VC=TE
Link_6.6.6.19_0_6.6.6.20</ns:src-dest-preferred-path-ref>
                        <ns:dest-src-preferred-path-ref>MD=CISCO_EPNM!VC=TE
Link_6.6.6.20_1144_6.6.6.19</ns:dest-src-preferred-path-ref>
                  </ns:mpls-te-data>
                  <ns:pseudowire-settings>

                        <ns:enable-control-word>true</ns:enable-control-word>
                        <ns:fallback-to-ldp>true</ns:fallback-to-ldp>
                  </ns:pseudowire-settings>

            </ns:forwarding-path>

      </ns:service-order-data>
</ns:provision-service-request>
```

7.40.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+json

```
<ns36:provision-service-request>
      <request-id>373f3af1-6bbe-461c-a555-0699a0276e9d</request-id>
      <service-name>CEM-T1-UniDirTunnelAsPreferredPath</service-name>
      <service-type>tdm-cem</service-type>
      <service-subtype>t1</service-subtype>
      <preview>false</preview>
      <request-time>2017-10-25T09:12:30.944Z</request-time>
      <completion-time>2017-10-25T09:14:14.438Z</completion-time>
      <deploy-results>
            <result>
                  <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-120.19</node-ref>
                  <state>SUCCESSFUL</state>
                  <config>controller T1 0/1/11
                        no shutdown
                        cem-group 1 unframed
                        clock source line
                        interface pseudowire24
                        encapsulation mpls
```

```
                        control-word include
                        preferred-path interface Tunnel0
                        neighbor 6.6.6.20 337
                        bandwidth 1642 persistent
                        interface CEM0/1/11
                        cem 1
                        l2vpn xconnect context XCon_337_6.6.6.20
                        member pseudowire24
                        member CEM0/1/11 1
                        exit
                  </config>
            </result>
            <result>
                  <node-ref>MD=CISCO_EPNM!ND=EPNNCS4216-
120.20.Cisco.com</node-ref>
                  <state>SUCCESSFUL</state>
                  <config>controller T1 0/14/2
                        no shutdown
                        cem-group 1 unframed
                        clock source line
                        interface pseudowire117
                        encapsulation mpls
                        control-word include
                        preferred-path interface Tunnel1144
                        neighbor 6.6.6.19 337
                        bandwidth 1642 persistent
                        interface CEM0/14/2
                        cem 1
                        l2vpn xconnect context XCon_337_6.6.6.19
                        member pseudowire117
                        member CEM0/14/2 1
                        exit
                  </config>
            </result>
      </deploy-results>
      <completion-status>SUCCESS</completion-status>
</ns36:provision-service-request>
```

7.41 Modify CEM Service

7.41.1 Request

POST /restconf/operations/v1/cisco-service-activation:modify-service HTTP/1.1
Host: <epnm-host>

Content-Type: application/yang.operation+json
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<ns:modify-service-request
    xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns="urn:cisco:params:xml:ns:yang:service:activation:v1">
    <ns:cfs-ref>MD=CISCO_EPNM!CFS=cem-service-e1-demo</ns:cfs-ref>
    <ns:service-order-data>
        <ns:service-name>cem-service-demo-15</ns:service-name>
        <ns:service-description>cem-service-e1-demo modify</ns:service-
description>
```

```
        <ns:service-type>tdm-cem</ns:service-type>
        <ns:service-subtype>e1</ns:service-subtype>
        <ns:service-activate>true</ns:service-activate>
        <ns:customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</ns:customer-
ref>
        <ns:cem-data>
            <ns:transport-settings>
                <ns:frame-type>SATOP</ns:frame-type>
                <ns:payload-size>1024</ns:payload-size>
            </ns:transport-settings>
        </ns:cem-data>
        <ns:termination-point-list>
            <ns:termination-point-config>
                <ns:tp-ref>MD=CISCO_EPNM!ND=NCS4206-TEST-
120.32!CTP=name=SONET 0/4/2;l=lr_DSR_OC48_and_STM16</ns:tp-ref>
                <ns:cem-data>
                    <ns:working-path>
                        <ns:higher-order-path>
                            <ns:available-path-ref>MD=CISCO_EPNM!ND=NCS4206-
TEST-120.32!CTP=name=SONET
0/4/2.21;lr=SonetHopProtocolEndpoint</ns:available-path-ref>
                            <ns:path-mode>CT3_E1</ns:path-mode>
                        </ns:higher-order-path>
                        <ns:lower-order-path>
                            <ns:available-path-ref>E1 1</ns:available-path-
ref>
                        </ns:lower-order-path>
                        <ns:auto-allocate-path>false</ns:auto-allocate-path>
                    </ns:working-path>

                </ns:cem-data>
            </ns:termination-point-config>

            <ns:termination-point-config>
                <ns:tp-ref>MD=CISCO_EPNM!ND=NCS4206-TEST-
120.33!FTP=name=SONET 0/5/2;lr=lr_DSR_OC48_and_STM16</ns:tp-ref>
                <ns:cem-data>
                    <ns:working-path>
                        <ns:higher-order-path>
                            <ns:available-path-ref>MD=CISCO_EPNM!ND=NCS4206-
TEST-120.33!FTP=name=SONET0/5/2.10;lr=SonetHopProtocolEndpoint</ns:available-
path-ref>
                            <ns:path-mode>CT3_E1</ns:path-mode>
                        </ns:higher-order-path>
                        <ns:lower-order-path>
                            <ns:available-path-ref>E1 1</ns:available-path-
ref>
                        </ns:lower-order-path>
                        <ns:auto-allocate-path>false</ns:auto-allocate-path>
                    </ns:working-path>

                </ns:cem-data>
            </ns:termination-point-config>
        </ns:termination-point-list>

        <ns:forwarding-path>
```

```
            <ns:mpls-te-data>
               <ns:preferred-path-ref>MD=CISCO_EPNM!VC=TE Link
301_6.6.6.6_0</ns:preferred-path-ref>
            </ns:mpls-te-data>
              <ns:pseudowire-settings>
                    <ns:enable-control-word>true</ns:enable-control-word>
                    <ns:fallback-to-ldp>true</ns:fallback-to-ldp>
              </ns:pseudowire-settings>
        </ns:forwarding-path>
    </ns:service-order-data>
</ns:modify-service-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "sa.cfs-ref": "MD=CISCO_EPNM!CFS=cem-service-e1-demo",
   "sa.service-order-data": {
      "sa.service-name": "cem-service-demo-15",
      "sa.service-description": "cem-service-e1-demo modify",
      "sa.service-type": "tdm-cem",
      "sa.service-subtype": "e1",
      "sa.service-activate": "true",
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "sa.cem-data": {
         "sa.transport-settings": {
            "sa.frame-type": "SATOP",
            "sa.payload-size": "1024"
         }
      },
      "sa.termination-point-list": {
         "sa.termination-point-config": [
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=NCS4206-TEST-
120.32!CTP=name=SONET 0/4/2;lr=lr_DSR_OC48_and_STM16",
               "sa.cem-data": {
                  "sa.working-path": {
                     "sa.higher-order-path": {
                        "sa.available-path-ref": "MD=CISCO_EPNM!ND=NCS4206-
TEST-120.32!fTP=name=SONET 0/4/2.21;lr=SonetHopProtocolEndpoint",
                        "sa.path-mode": "CT3_E1"
                     },
                     "sa.lower-order-path": {
                        "sa.available-path-ref": "E1 1"
                     },
                     "sa.auto-allocate-path": "false"
                  }
               }
            },
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=NCS4206-TEST-
120.33!CTP=name=SONET 0/5/2;lr=lr_DSR_OC48_and_STM16",
               "sa.cem-data": {
                  "sa.working-path": {
                     "sa.higher-order-path": {
                        "sa.available-path-ref": "MD=CISCO_EPNM!ND=NCS4206-
TEST-120.33!FTP=name=SONET 0/5/2.10;lr=SonetHopProtocolEndpoint",
                        "sa.path-mode": "CT3_E1"
```

```
                    },
                    "sa.lower-order-path": {
                       "sa.available-path-ref": "E1 1"
                    },
                    "sa.auto-allocate-path": "false"
                 }
              }
           }
        ]
     },
     "sa.forwarding-path": {
        "sa.mpls-te-data": {
           "sa.preferred-path-ref": "MD=CISCO_EPNM!VC=TE Link 301_6.6.6.6_0"
        },
        "sa.pseudowire-settings": {
           "sa.enable-control-word": "true",
           "sa.fallback-to-ldp": "true"
        }
     }
  }
}
```

7.41.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
{
      "customer": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "service-id": "ff2424ae-f7f2-4b22-879a-0d1d8d844770",
      "service-name": "cem-service-demo-15",
      "service-type": "tdm-cem",
      "circuit-type": "e1",
      "deploy-action": "Preview",
      "operation-type": "AmendService",
      "request-time": "Thu May 12 11:38:57 PDT 2016",
      "completion-status": "SUBMITTED",
      "generic-notification-url": "http:\/\/epnm-dev-
lnx5.cisco.com\/restconf\/streams\/v1\/service-activation",
      "request-specific-notification-url": "http:\/\/epnm-dev-
lnx5.cisco.com\/restconf\/streams\/v1\/service-activation\/ff2424ae-f7f2-
4b22-879a-0d1d8d844770"
}
```

7.41.3 Notification

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<push-change-update xmlns="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns2="urn:cisco:params:xml:ns:yang:service:activation:v1">
    <subscription-id>-2281927226911319451</subscription-id>
    <topic>/streams/v1/service-activation</topic>
    <time-of-update>Wed May 11 16:41:06 PDT 2016</time-of-update>
    <operation>configure</operation>
    <update-data>
        <ns2:modify-service-response>
            <ns2:service-id>71abae03-bf46-490d-9675-
```

```
900863333abd</ns2:service-id>
            <ns2:service-name>cem-service-e1-10</ns2:service-name>
            <ns2:service-type>tdm-cem</ns2:service-type>
            <ns2:circuit-type>e1</ns2:circuit-type>
            <ns2:deploy-action>Preview</ns2:deploy-action>
            <ns2:operation-type>AmendService</ns2:operation-type>
            <ns2:completion-time>Wed May 11 16:41:05 PDT
2016</ns2:completion-time>
            <ns2:intent-status>COMPLETED</ns2:intent-status>
            <ns2:deploy-status>COMPLETED</ns2:deploy-status>
            <ns2:deploy-results>&lt;results&gt;
    &lt;result deviceId="1059058" deviceName="NCS4206-TEST-
120.32"&gt;&lt;![CDATA[controller SONET 0/4/2
  sts-1 21
    mode ct3-e1
    e1 1 cem-group 32 unframed
interface pseudowire21
  encapsulation mpls
  control-word include
  preferred-path interface Tunnel301 disable-fallback
  neighbor 6.6.6.33 81
  bandwidth 2048
interface CEM0/4/2
  cem 32
    payload-size 1024
l2vpn xconnect context XConnect_81_6.6.6.33
  member pseudowire21
  member CEM0/4/2 32
  exit
]]&gt;&lt;/result&gt;
    &lt;result deviceId="760769" deviceName="NCS4206-TEST-
120.33"&gt;&lt;![CDATA[controller SONET 0/5/2
  sts-1 10
    mode ct3-e1
    e1 1 cem-group 25 unframed
interface pseudowire31
  encapsulation mpls
  control-word include
  preferred-path interface Tunnel301 disable-fallback
  neighbor 101.101.101.1 81
  bandwidth 2048
interface CEM0/5/2
  cem 25
    payload-size 1024
l2vpn xconnect context XConnect_81_101.101.101.1
  member pseudowire31
  member CEM0/5/2 25
  exit
]]&gt;&lt;/result&gt;
&lt;/results&gt;
</ns2:deploy-results>
            <ns2:completion-status>SUCCESS</ns2:completion-status>
        </ns2:modify-service-response>
    </update-data>
</push-change-update>
```

7.42 Terminate CEM Service

7.42.1 Request

POST /restconf/operations/v1/cisco-service-activation:terminate-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<ns:terminate-service-request
    xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns="urn:cisco:params:xml:ns:yang:service:activation:v1">
   <ns:cfs-ref>MD=CISCO_EPNM!CFS=cem-service-e1-demo</ns:cfs-ref>
     <ns:service-order-data>
    <ns:service-name>cem-service-e1-demo</ns:service-name>
    <ns:service-description>cem-service-e1-demo terminate test</ns:service-
description>
    <ns:service-type>tdm-cem</ns:service-type>
    <ns:service-subtype>e1</ns:service-subtype>
  </ns:service-order-data>
</ns:terminate-service-request>
```

Content-Type: application/yang.operation+json
Json Payload:

```
{
   "sa.cfs-ref": "MD=CISCO_EPNM!CFS=cem-service-e1-demo",
   "sa.service-order-data": {
      "sa.service-name": "cem-service-e1-demo",
      "sa.service-description": "cem-service-e1-demo delete",
      "sa.service-type": "tdm-cem",
      "sa.service-subtype": "e1"

      }
   }
}
```

7.42.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
{
      "customer": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "service-id": "41939b38-f6cc-4761-a428-c8b2380ae0cf",
      "service-name": "cem-service-e1-10",
      "service-type": "tdm-cem",
      "circuit-type": "e1",
      "deploy-action": "Preview",
      "operation-type": "CeaseService",
      "request-time": "Wed May 11 16:46:22 PDT 2016",
      "completion-status": "SUBMITTED",
      "generic-notification-url": "http:\/\/epnm-dev-
lnx5.cisco.com\/restconf\/streams\/v1\/service-activation",
      "request-specific-notification-url": "http:\/\/epnm-dev-
lnx5.cisco.com\/restconf\/streams\/v1\/service-activation\/41939b38-f6cc-
4761-a428-c8b2380ae0cf"
```

```
}
```

7.42.3 Notification

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<push-change-update xmlns="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns2="urn:cisco:params:xml:ns:yang:service:activation:v1">
    <subscription-id>-8541153577055591198</subscription-id>
    <topic>/streams/v1/service-activation</topic>
    <time-of-update>Wed May 11 16:46:23 PDT 2016</time-of-update>
    <operation>configure</operation>
    <update-data>
        <ns2:terminate-service-response>
            <ns2:service-id>41939b38-f6cc-4761-a428-
c8b2380ae0cf</ns2:service-id>
            <ns2:service-name>cem-service-e1-10</ns2:service-name>
            <ns2:service-type>tdm-cem</ns2:service-type>
            <ns2:circuit-type>e1</ns2:circuit-type>
            <ns2:deploy-action>Preview</ns2:deploy-action>
            <ns2:operation-type>CeaseService</ns2:operation-type>
            <ns2:completion-time>Wed May 11 16:46:23 PDT
2016</ns2:completion-time>
            <ns2:completion-status>COMPLETED</ns2:completion-status>
        </ns2:terminate-service-response>
    </update-data>
</push-change-update>
```

7.43 Provision CEM Service Consolidated: CEM+MPLS TE+BERT

7.43.1 Request

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<ns:provision-service-request
    xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns="urn:cisco:params:xml:ns:yang:service:activation:v1"
    xmlns:ns1="urn:cisco:params:xml:ns:yang:service:oam:v1">
    <ns:service-order-data>
        <ns:service-name>cem-te-tunnel-bert-1</ns:service-name>
        <ns:service-description>cem-te-tunnel-bert-demo-1</ns:service-
description>
        <ns:service-type>tdm-cem</ns:service-type>
        <ns:service-subtype>t3</ns:service-subtype>
        <ns:service-activate>true</ns:service-activate>

        <ns:termination-point-list>
            <ns:termination-point-config>
                <ns:tp-ref>MD=CISCO_EPNM!ND=EPNNCS4216-
120.41.Cisco.com!PTP=name=T3 0/6/41;lr=lr-t3</ns:tp-ref>
                <ns:cem-data/>
            </ns:termination-point-config>

            <ns:termination-point-config>
```

```
                <ns:tp-ref>MD=CISCO_EPNM!ND=EPNNCS4216-
120.42.Cisco.com!PTP=name=T3 0/6/41;lr=lr-t3</ns:tp-ref>
                <ns:cem-data/>
            </ns:termination-point-config>
        </ns:termination-point-list>

        <!--  Consolidated with TE tunnel provision data -->
</ns:forwarding-path>
        <ns:mpls-te-data>
            <!-- te-tunnel-type is mandatory for all cases and is bi-
directional or uni-directional based on requirement -->
            <ns:te-tunnel-type>bi-directional</ns:te-tunnel-type>
            <!-- wrap-protection is optional and is true or false for create
operation -->
            <ns:wrap-protection>false</ns:wrap-protection>
            <!-- protection-type is mandatory for create operation -->
            <!-- Possible values for protection-type are: -->
            <!-- Working, Working+Protected, Working+Restore,
Working+Protected+Restore -->
            <ns:protection-type>Working</ns:protection-type>
            <!-- enable-fault-oam is optional and is true or false for create
operation
                 if wrap-protection is true then enable-fault-oam should be
true -->
            <ns:enable-fault-oam>false</ns:enable-fault-oam>
            <!-- enable-lockdown is optional and is true or false for create
operation -->
            <ns:enable-lockdown>false</ns:enable-lockdown>
            <!-- enable-autoroute is optional and is true or false for create
operation -->
            <ns:enable-autoroute>false</ns:enable-autoroute>
            <ns:tunnel-setting>
                <!-- affinity-bits is optional for create operation -->
                <!-- 4 byte value to match the link attributes -->
                <!-- 0 to FFFFFFFF)-->
                <ns:affinity-bits>32</ns:affinity-bits>
                <!-- affinity-mask is optional for create operation -->
                <!-- 4 byte mask for the above affinity bits -->
                <!-- 0 to FFFFFFFF)-->
                <ns:affinity-mask>ff</ns:affinity-mask>
                <!-- setup-priority is optional for create operation -->
                <!-- Tunnel setup priority, range from 0-7 -->
                <ns:setup-priority>6</ns:setup-priority>
                <!-- hold-priority is optional for create operation -->
                <!-- Tunnel hold priority, range from 0-7 -->
                <ns:hold-priority>4</ns:hold-priority>
            </ns:tunnel-setting>

            <ns:bfd-settings>
                <ns:enable>true</ns:enable>
                <!-- If EnableBfdSettings is true min-interval is mandatory -
->
                <!-- BFD rx and tx intervals, units in ms -->
                <ns:min-interval>88</ns:min-interval>
                <!-- If EnableBfdSettings is true multiplier is mandatory -->
                <!-- BFD multiplier used to compute hold down value, range 3
```

```
to 50 -->
                <ns:multiplier>5</ns:multiplier>
            </ns:bfd-settings>
        </ns:mpls-te-data>
</ns:forwarding-path>
        <!-- bert test service data -->
        <ns:service-oam-config>

            <ns1:bert-config>
                <!-- option cfs fdn -->
                <ns1:service-ref>MD=CISCO_EPNM!CFS=cem-te-tunnel-bert-
1</ns1:service-ref>
                <!-- option source ctp -->
                <ns1:source-tp-ref>MD=CISCO_EPNM!ND=EPNNCS4216-
120.41.Cisco.com!PTP=name=T3 0/6/41;lr=lr-t3</ns1:source-tp-ref>
                <!-- option destination ctp -->
                <ns1:destination-tp-ref>MD=CISCO_EPNM!ND=EPNNCS4216-
120.42.Cisco.com!PTP=name=T3 0/6/41;lr=lr-t3</ns1:destination-tp-ref>

                <ns1:unmanaged-destination>false</ns1:unmanaged-destination>

                <!-- BERT test direction: system, line -->
                <ns1:direction>system</ns1:direction>
                <!-- Inject Errors, value range 0 to 255 -->
                <ns1:errors>0</ns1:errors>
                <!-- Test duration time in minutes, value between 1 to 14400
-->
                <ns1:duration>1</ns1:duration>
                <!-- BERT pattern, valid value: 0s, 1s, 2^9, 2^11, 2^15,
2^23, 2^31, 2^20-O151, 2^20-O153 -->
                <ns1:pattern>2^11</ns1:pattern>
            </ns1:bert-config>

        </ns:service-oam-config>

    </ns:service-order-data>

</ns:provision-service-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "sa.service-order-data": {
      "sa.service-name": "cem-te-tunnel-bert-1",
      "sa.service-description": "cem-te-tunnel-bert-demo-1",
      "sa.service-type": "tdm-cem",
      "sa.service-subtype": "t3",
      "sa.service-activate": "true",
      "sa.termination-point-list": {
         "sa.termination-point-config": [
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=EPNNCS4216-
120.41.Cisco.com!PTP=name=T3 0/6/41;lr=lr-t3",
               "sa.cem-data": null
            },
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=EPNNCS4216-
```

```
120.42.Cisco.com!PTP=name=T3 0/6/41;lr=lr-t3",
                "sa.cem-data": null
            }
         ]
      },
      "sa.mpls-te-data": {
         "sa.te-tunnel-type": "bi-directional",
         "sa.wrap-protection": "false",
         "sa.protection-type": "Working",
         "sa.enable-fault-oam": "false",
         "sa.enable-lockdown": "false",
         "sa.enable-autoroute": "false",
         "sa.tunnel-setting": {
            "sa.affinity-bits": "32",
            "sa.affinity-mask": "ff",
            "sa.setup-priority": "6",
            "sa.hold-priority": "4"
         },
         "sa.bfd-settings": {
            "sa.enable": "true",
            "sa.min-interval": "88",
            "sa.multiplier": "5"
         }
      },
      "sa.service-oam-config": {
         "sa.bert-config": {
            "sa.service-ref": "MD=CISCO_EPNM!CFS=cem-te-tunnel-bert-1",
            "sa.source-tp-ref": "MD=CISCO_EPNM!ND=EPNNCS4216-
120.41.Cisco.com!PTP=name=T3 0/6/41;lr=lr-t3",
            "sa.destination-tp-ref": "MD=CISCO_EPNM!ND=EPNNCS4216-
120.42.Cisco.com!PTP=name=T3 0/6/41;lr=lr-t3",
            "sa.unmanaged-destination": "false",
            "sa.direction": "system",
            "sa.errors": "0",
            "sa.duration": "1",
            "sa.pattern": "2^11"
         }
      }
   }
}
```

7.43.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+json

```
{
      "customer": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "service-id": "6e4f779d-e0f8-4c23-9d1e-cfab002ffdba",
      "service-name": "cem-te-tunnel-bert-1",
      "service-type": "tdm-cem",
      "circuit-type": "t3",
      "deploy-action": "Deploy",
      "operation-type": "ProvideService",
      "request-time": "Thu May 12 11:43:48 PDT 2016",
      "completion-status": "SUBMITTED",
```

```
}
```

7.43.3 Notification

```
3362|{
  "notification-id": "2295657900142660645",
  "request-id": "f38e4668-685a-47b2-86c3-45d54959e72d",
  "topic": "service-activation",
  "time-of-update": "2016-09-22 09:27:06.771",
  "operation": "{urn:cisco:params:xml:ns:yang:yang-push:v1}create",
  "service-activation-response": {
    "service-name": "cem-te-tunnel-bert-1",
    "service-type": "tdm-cem",
    "service-subtype": "t3",
    "preview": "false",
    "request-time": "Thu Sep 22 09:23:25 IST 2016",
    "completion-time": "Thu Sep 22 09:27:05 IST 2016",
    "deploy-results": {
      "result": [ {
        "node-ref": "MD=CISCO_EPNM!ND=EPNNCS4216-120.41.Cisco.com",
        "state": "SUCCESSFUL",
        "config": "bfd-template single-hop bfd-tunnel1\n  interval min-tx 88
min-rx 88 multiplier 5\ninterface Tunnel1\
n  tunnel mode mpls traffic-eng\n  ip unnumbered loopback6\n  tunnel
destination 6.6.6.42\n  bandwidth 44736\n  tunnel m
pls traffic-eng bandwidth 44736\n  tunnel mpls traffic-eng name
tunnel_48495899_\n  tunnel mpls traffic-eng affinity 0x3
2 mask 0xFF\n  tunnel mpls traffic-eng priority 6  4\n  tunnel mpls traffic-
eng bidirectional association id 77 source-a
ddress 6.6.6.42\n  tunnel mpls traffic-eng bfd encap-mode gal bfd-tunnel1\n
tunnel mpls traffic-eng path-option 10 dyna
mic lockdown\n  tunnel mpls traffic-eng bidirectional association type co-
routed\n  exit\n",
        "error": ""
      }, {
        "node-ref": "MD=CISCO_EPNM!ND=EPNNCS4216-120.42.Cisco.com",
        "state": "SUCCESSFUL",
        "config": "bfd-template single-hop bfd-tunnel1\n  interval min-tx 88
min-rx 88 multiplier 5\ninterface Tunnel1\
n  tunnel mode mpls traffic-eng\n  ip unnumbered loopback6\n  tunnel
destination 6.6.6.41\n  bandwidth 44736\n  tunnel m
pls traffic-eng bandwidth 44736\n  tunnel mpls traffic-eng name
tunnel_48495899_\n  tunnel mpls traffic-eng affinity 0x3
2 mask 0xFF\n  tunnel mpls traffic-eng priority 6  4\n  tunnel mpls traffic-
eng bidirectional association id 77 source-a
ddress 6.6.6.42\n  tunnel mpls traffic-eng bfd encap-mode gal bfd-tunnel1\n
tunnel mpls traffic-eng path-option 10 dyna
mic lockdown\n  tunnel mpls traffic-eng bidirectional association type co-
routed\n  exit\n",
        "error": ""
      }, {
        "node-ref": "MD=CISCO_EPNM!ND=EPNNCS4216-120.41.Cisco.com",
        "state": "SUCCESSFUL",
        "config": "controller T3 0/6/41\n  cem-group 0 unframed\n  clock
source Line\ninterface pseudowire15\n  encapsu
lation mpls\n  preferred-path interface Tunnel1 disable-fallback\n  neighbor
6.6.6.42 67\n  bandwidth 44736 persistent\n
```

```
interface CEM0/6/41\n  cem 0\nl2vpn xconnect context XConnect_67_6.6.6.42\n
member pseudowire15\n  member CEM0/6/41 0\n
  exit\n",
        "error": ""
      }, {
        "node-ref": "MD=CISCO_EPNM!ND=EPNNCS4216-120.42.Cisco.com",
        "state": "SUCCESSFUL",
        "config": "controller T3 0/6/41\n  cem-group 0 unframed\n  clock
source internal\ninterface pseudowire30\n  enc
apsulation mpls\n  preferred-path interface Tunnel1 disable-fallback\n
neighbor 6.6.6.41 67\n  bandwidth 44736 persiste
nt\ninterface CEM0/6/41\n  cem 0\nl2vpn xconnect context
XConnect_67_6.6.6.41\n  member pseudowire30\n  member CEM0/6/41
 0\n  exit\n",
        "error": ""
      } ]
    },
    "completion-status": "SUCCESS",
    "test-ref": {
      "test-id": [ "5308303" ]
    }
  },
  "any": [ ]
}
2275|{
  "notification-id": "-8824848249882030553",
  "request-id": "[5308303]",
  "topic": "service-activation",
  "time-of-update": "2016-09-22 09:29:05.862",
  "operation": "{urn:cisco:params:xml:ns:yang:yang-push:v1}configure",
  "service-oam-results": {
    "any": [ {
      "name": "{urn:cisco:params:xml:ns:yang:service:activation:v1}service-
oam-results",
      "declaredType":
"cisco.params.xml.ns.yang.service.activation.v1.ServiceTestResultsType",
      "scope": "javax.xml.bind.JAXBElement$GlobalScope",
      "value": {
        "bert-result-list": {
          "bert-result": [ {
            "service-ref": "MD=CISCO_EPNM!CFS=cem-te-tunnel-bert-1",
            "source-tp-ref": "MD=CISCO_EPNM!ND=EPNNCS4216-
120.41.Cisco.com!PTP=name=T3 0/6/41;lr=lr-t3",
            "destination-tp-ref": "MD=CISCO_EPNM!ND=EPNNCS4216-
120.42.Cisco.com!PTP=name=T3 0/6/41;lr=lr-t3",
            "direction": "system",
            "sync-status": "Not Sync",
            "errors-last": "0 bits",
            "duration": "1",
            "received-bits-last-sync": "0 Kbits",
            "sync-count": "0",
            "test-pattern": "2^11",
            "total-errors": "0 bits",
            "received-bits": "0 Kbits",
            "last-clearing-counters": "N/A",
            "test-result-status": "done",
```

```
            "time-remaining": "0"
          }, {
            "service-ref": "MD=CISCO_EPNM!CFS=cem-te-tunnel-bert-1",
            "source-tp-ref": "MD=CISCO_EPNM!ND=EPNNCS4216-
120.41.Cisco.com!PTP=name=T3 0/6/41;lr=lr-t3",
            "destination-tp-ref": "MD=CISCO_EPNM!ND=EPNNCS4216-
120.42.Cisco.com!PTP=name=T3 0/6/41;lr=lr-t3",
            "direction": "system",
            "sync-status": "Not Sync",
            "errors-last": "0 bits",
            "duration": "1",
            "received-bits-last-sync": "0 Kbits",
            "sync-count": "0",
            "test-pattern": "2^11",
            "total-errors": "2639 Mbits",
            "received-bits": "2639 Mbits",
            "last-clearing-counters": "N/A",
            "test-result-status": "done",
            "time-remaining": "0"
          } ]
        }
      },
      "nil": false,
      "globalScope": true,
      "typeSubstituted": false
    } ]
  },
  "any": [ ]
}
```


7.44 Provision CEM service with service and tunnel profiles

7.44.1 Request

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:


```
<?xml version="1.0" encoding="UTF-8"?>
<p:provision-service-request
xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
    xmlns:y1="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xsi:schemaLocation="urn:cisco:params:xml:ns:yang:sa:v1 cisco-service-
activation.xsd urn:cisco:params:xml:ns:yang:service:activation:v1
restconf-provisioning-request-schema.xsd ">
    <p:service-order-data>
        <p:service-profile-ref>MD=CISCO_EPNM!PROFILE_SERVICE=CEM-
Profile1</p:service-profile-ref>
    <p:service-name>CEM-Profiletest1-sts3</p:service-name>
      <p:service-description>CEM-oc1-rest-test descr</p:service-
description>
      <p:service-type>tdm-cem</p:service-type>
      <p:service-subtype>sts1</p:service-subtype>
```

```
      <p:service-activate>true</p:service-activate>
        <p:forwarding-path>
            <p:mpls-te-data>
                <p:tunnel-service-profile-
ref>MD=CISCO_EPNM!PROFILE_SERVICE=TE-Bi</p:tunnel-service-profile-ref>
            </p:mpls-te-data>
        </p:forwarding-path>
    </p:service-order-data>
</p:provision-service-request>
```

7.44.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
<ns4:response-message
xmlns:ns40="urn:cisco:params:xml:ns:yang:restconf:party"
      xmlns:ns39="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns38="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns37="urn:ietf:params:xml:ns:yang:ietf-restconf"
      xmlns:ns36="urn:cisco:params:xml:ns:yang:service:activation:status:v
1"
      xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
      xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns31="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns30="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
      xmlns:ns29="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns28="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
      xmlns:ns27="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns26="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns24="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
      xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
      xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
      xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
```

```
      <ns4:header>
            <ns4:firstIndex>0</ns4:firstIndex>
            <ns4:lastIndex>0</ns4:lastIndex>
      </ns4:header>
      <ns4:data>
            <ns36:provision-service-request>
                  <request-id>29675ac4-1cd0-4efe-8e74-
60e879685a45</request-id>
                  <service-name>CEM-Profiletest1-sts3</service-name>
                  <service-type>tdm-cem</service-type>
                  <service-subtype>sts1</service-subtype>
                  <preview>false</preview>
                  <request-time>2017-10-25T11:26:23.856Z</request-time>
                  <completion-time>2017-10-25T11:28:44.954Z</completion-
time>
                  <deploy-results>
                        <work-flow-result>
                              <work-flow-index>0</work-flow-index>
                              <work-flow-name>Pre-Requisite Check</work-
flow-name>
                              <result>
                                    <config>MPLS and Routing Protocol
prerequisite configuration check
                                          success.</config>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-
ref>MD=CISCO_EPNM!CFS=21.21.21.21_12_23.23.23.23</cfs-ref>
                              <service-type>Bidirectional TE
Tunnel</service-type>
                              <work-flow-index>1</work-flow-index>
                              <work-flow-
name>FIND_MATCHING_TE_TUNNEL</work-flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>Tunnel match not found between A
and Z end, hence creating
                                          new tunnel</info>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-
ref>MD=CISCO_EPNM!CFS=21.21.21.21_12_23.23.23.23</cfs-ref>
                              <service-type>Bidirectional TE
Tunnel</service-type>
                              <work-flow-index>2</work-flow-index>
                              <work-flow-name>CREATE_TE_TUNNEL</work-flow-
name>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=SJ-NCS4206-
21</node-ref>
                                    <state>SUCCESSFUL</state>
                                    <config>bfd-template single-hop bfd-
tunnel12
                                          interval min-tx 100 min-rx 100
```

```
multiplier 3
                                        exit
                                        interface Tunnel12
                                        description Created via API
                                        tunnel mode mpls traffic-eng
                                        ip unnumbered Loopback0
                                        tunnel destination 23.23.23.23
                                        bandwidth 51136
                                        tunnel mpls traffic-eng
bandwidth 51136
                                        tunnel mpls traffic-eng name
21.21.21.21_12_23.23.23.23
                                        tunnel mpls traffic-eng affinity
0xAB mask 0xFF
                                        tunnel mpls traffic-eng priority
7 3
                                        tunnel mpls traffic-eng
bidirectional association id 83 source-address
                                        23.23.23.23
                                        tunnel mpls traffic-eng
bidirectional association type co-routed
                                        fault-oam
                                        tunnel mpls traffic-eng bfd
encap-mode gal bfd-tunnel12
                                        tunnel mpls traffic-eng path-
option 10 dynamic
                                        tunnel mpls traffic-eng record-
route
                                        exit
                                  </config>
                            </result>
                            <result>
                                  <node-ref>MD=CISCO_EPNM!ND=SJ-NCS4216-
23.cisco</node-ref>
                                  <state>SUCCESSFUL</state>
                                  <config>bfd-template single-hop bfd-
tunnel12
                                        interval min-tx 100 min-rx 100
multiplier 3
                                        exit
                                        interface Tunnel12
                                        description Created via API
                                        tunnel mode mpls traffic-eng
                                        ip unnumbered Loopback0
                                        tunnel destination 21.21.21.21
                                        bandwidth 51136
                                        tunnel mpls traffic-eng
bandwidth 51136
                                        tunnel mpls traffic-eng name
21.21.21.21_12_23.23.23.23
                                        tunnel mpls traffic-eng affinity
0xAB mask 0xFF
                                        tunnel mpls traffic-eng priority
7 3
                                        tunnel mpls traffic-eng
bidirectional association id 83 source-address
```

```
                                          23.23.23.23
                                          tunnel mpls traffic-eng
bidirectional association type co-routed
                                          fault-oam
                                          tunnel mpls traffic-eng bfd
encap-mode gal bfd-tunnel12
                                          tunnel mpls traffic-eng path-
option 10 dynamic
                                          tunnel mpls traffic-eng record-
route
                                          exit
                                    </config>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-
ref>MD=CISCO_EPNM!CFS=21.21.21.21_12_23.23.23.23</cfs-ref>
                              <service-type>Bidirectional TE
Tunnel</service-type>
                              <work-flow-index>3</work-flow-index>
                              <work-flow-
name>CHECK_TE_TUNNEL_STATUS_AND_SIGNALLING
                              </work-flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>Tunnel signalling with bandwidth
51136, status is Down
                                    </info>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=CEM-Profiletest1-
sts3</cfs-ref>
                              <service-type>CEM</service-type>
                              <work-flow-index>4</work-flow-index>
                              <work-flow-name>CEM Orchestration</work-
flow-name>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=SJ-NCS4206-
21</node-ref>
                                    <state>SUCCESSFUL</state>
                                    <config>controller SONET 0/5/1
                                          sts-1 11
                                          mode unframed
                                          cem-group 5 cep
                                          interface pseudowire64
                                          encapsulation mpls
                                          preferred-path interface
Tunnel12 disable-fallback
                                          neighbor 23.23.23.23 341
                                          bandwidth 51136 persistent
                                          interface CEM0/5/1
                                          cem 5
                                          no shutdown
                                          l2vpn xconnect context
XCon_341_23.23.23.23
```

```
                                          member pseudowire64
                                          member CEM0/5/1 5
                                          exit
                                    </config>
                              </result>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=SJ-NCS4216-
23.cisco</node-ref>
                                    <state>SUCCESSFUL</state>
                                    <config>controller SONET 0/7/4
                                          sts-1 10
                                          mode unframed
                                          cem-group 4 cep
                                          interface pseudowire67
                                          encapsulation mpls
                                          preferred-path interface
Tunnel12 disable-fallback
                                          neighbor 21.21.21.21 341
                                          bandwidth 51136 persistent
                                          interface CEM0/7/4
                                          cem 4
                                          no shutdown
                                          l2vpn xconnect context
XCon_341_21.21.21.21
                                          member pseudowire67
                                          member CEM0/7/4 4
                                          exit
                                    </config>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=CEM-Profiletest1-
sts3</cfs-ref>
                              <service-type>CEM</service-type>
                              <work-flow-index>5</work-flow-index>
                              <work-flow-name>CEM Orchestration</work-
flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>PW Interface status for A/Z ends
are 64:NOT_APPLICABLE/67:NOT_APPLICABLE</info>
                              </result>
                        </work-flow-result>
                  </deploy-results>
                  <completion-status>SUCCESS</completion-status>
            </ns36:provision-service-request>
      </ns4:data>
</ns4:response-message>
```

7.45 Provision CEM service with MPLS TE and LSP

7.45.1 Request

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml

XML Payload:

```
<?xml version="1.0" ?>
<ns:provision-service-request
      xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns1="urn:cisco:params:xml:ns:yang:service:oam:v1">
      <ns:service-order-data>
            <ns:cem-data>
                  <ns:transport-settings>
                        <ns:frame-type>SAToP</ns:frame-type>
                  </ns:transport-settings>
            </ns:cem-data>
            <ns:service-activate>true</ns:service-activate>
            <ns:service-type>tdm-cem</ns:service-type>
            <ns:service-subtype>t1</ns:service-subtype>
            <ns:service-name>C-T-MP3-Nov3-B</ns:service-name>

            <ns:service-description>I51A-patch</ns:service-description>
            <ns:termination-point-list>
                  <ns:termination-point-config>
                        <ns:tp-ref>MD=CISCO_EPNM!ND=EPNNCS4216-
120.20.Cisco.com!PTP=name=T1 0/14/35;lr=lr-t1</ns:tp-ref>
                  </ns:termination-point-config>
                  <ns:termination-point-config>
                        <ns:tp-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.19!PTP=name=SONET 0/3/2;lr=lr-dsr-oc48-and-stm16</ns:tp-ref>
                        <ns:cem-data>
                              <ns:working-path>
                                    <ns:higher-order-path>
                                          <ns:available-path-
ref>MD=CISCO_EPNM!ND=EPNNCS4206-120.19!CTP=name=SONET 0/3/2.25;lr=lr-sts1-
and-au3-high-order-vc3
                                          </ns:available-path-ref>
                                          <ns:path-mode>CT3</ns:path-mode>
                                    </ns:higher-order-path>
                                    <ns:lower-order-path>
                                          <ns:available-path-ref>T1
11</ns:available-path-ref>
                                    </ns:lower-order-path>
                                    <ns:auto-allocate-path>false</ns:auto-
allocate-path>
                              </ns:working-path>
                        </ns:cem-data>
                  </ns:termination-point-config>
            </ns:termination-point-list>

            <ns:forwarding-path>
                  <ns:mpls-te-data>
                        <!--preferred-path-ref>preferredPathRef</preferred-
path-ref -->
                        <!-- <te-tunnel-type>uni-directional</te-tunnel-type>
-->
                        <ns:wrap-protection>false</ns:wrap-protection>
                        <ns:enable-fault-oam>true</ns:enable-fault-oam>
                        <ns:enable-frr>false</ns:enable-frr>
                        <ns:enable-auto-bandwidth>false</ns:enable-auto-
```

```
bandwidth>
                        <ns:enable-autoroute>false</ns:enable-autoroute>
                        <ns:enable-lockdown>false</ns:enable-lockdown>
                        <ns:protection-type>Working+Protected</ns:protection-
type>
                        <ns:tunnel-setting>
                              <ns:global-id>1891</ns:global-id>
                              <!--ns:affinity-bits>0</ns:affinity-bits>
<ns:affinity-mask>F</ns:affinity-mask -->
                              <ns:setup-priority>7</ns:setup-priority>
                              <ns:hold-priority>2</ns:hold-priority>
                              <ns:bandwidth-pool-type>Global</ns:bandwidth-
pool-type>
                              <!--p:bandwidth-pool-type>Global</ns:bandwidth-
pool-type -->
                              <ns:bandwidth>10</ns:bandwidth>
                        </ns:tunnel-setting>
                        <ns:bfd-settings>
                              <ns:enable>true</ns:enable>
                              <ns:min-interval>100</ns:min-interval>
                              <ns:multiplier>3</ns:multiplier>
                        </ns:bfd-settings>
                  </ns:mpls-te-data>
                  <ns:mpls-te-path-options>
                        <ns:working-path>
                              <ns:path-type>dynamic</ns:path-type>
                              <ns:new-lsp-attribute-list>true</ns:new-lsp-
attribute-list>
                              <ns:lsp-attribute-list-
name>LSPpathnov3</ns:lsp-attribute-list-name>
                              <ns:lsp-attributes>
                                    <ns:affinity-bits>11</ns:affinity-bits>
                                    <ns:affinity-mask>0xff</ns:affinity-mask>
                                    <ns:setup-priority>3</ns:setup-priority>
                                    <ns:hold-priority>3</ns:hold-priority>
                                    <ns:enable-record-route>true</ns:enable-
record-route>
                              </ns:lsp-attributes>

                        </ns:working-path>
                        <ns:protection-path>
                              <ns:path-type>dynamic</ns:path-type>
                              <ns:new-lsp-attribute-list>true</ns:new-lsp-
attribute-list>
                              <ns:lsp-attribute-list-name>LSPpath1</ns:lsp-
attribute-list-name>
                              <ns:lsp-attributes>
                                    <ns:affinity-bits>15</ns:affinity-bits>
                                    <ns:affinity-mask>0xff</ns:affinity-mask>
                                    <ns:setup-priority>4</ns:setup-priority>
                                    <ns:hold-priority>3</ns:hold-priority>
                                    <ns:enable-record-route>true</ns:enable-
record-route>
                              </ns:lsp-attributes>

                        </ns:protection-path>
```

```
                </ns:mpls-te-path-options>
            </ns:forwarding-path>
                <!-- bert test service data -->
                <ns:service-oam-config>
                    <ns1:bert-config>
                        <ns1:service-ref>MD=CISCO_EPNM!CFS=C-T-MP3-
Nov3-B</ns1:service-ref>
                        <ns1:unmanaged-
destination>false</ns1:unmanaged-destination>
                        <ns1:direction>system</ns1:direction>
                        <ns1:errors>0</ns1:errors>
                        <ns1:duration>1</ns1:duration>
                        <ns1:pattern>2^11</ns1:pattern>
                    </ns1:bert-config>
        </ns:service-oam-config>
      </ns:service-order-data>
</ns:provision-service-request>
```

7.45.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
<ns36:provision-service-request>
      <request-id>3fa813ee-9e5f-45f2-81f5-6032fee44cc2</request-id>
      <service-name>C-T-MP3-Nov3-B</service-name>
      <service-type>tdm-cem</service-type>
      <service-subtype>t1</service-subtype>
      <preview>false</preview>
      <request-time>2017-11-03T12:35:25.672Z</request-time>
      <completion-time>2017-11-03T13:02:09.858Z</completion-time>
      <deploy-results>
            <work-flow-result>
                  <work-flow-index>0</work-flow-index>
                  <work-flow-name>Pre-Requisite Check</work-flow-name>
                  <result>
                        <config>MPLS and Routing Protocol prerequisite
configuration check
                              success.</config>
                  </result>
            </work-flow-result>
            <work-flow-result>
                  <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4216-
120.20.Cisco.com_28_EPNNCS4206-120.19
                  </cfs-ref>
                  <service-type>Bidirectional TE Tunnel</service-type>
                  <work-flow-index>1</work-flow-index>
                  <work-flow-name>FIND_MATCHING_TE_TUNNEL</work-flow-name>
                  <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel match not found between A and Z end,
hence creating new
                              tunnel</info>
                  </result>
            </work-flow-result>
            <work-flow-result>
```

```
                  <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4216-
120.20.Cisco.com_28_EPNNCS4206-120.19
                  </cfs-ref>
                  <service-type>Bidirectional TE Tunnel</service-type>
                  <work-flow-index>2</work-flow-index>
                  <work-flow-name>CREATE_TE_TUNNEL</work-flow-name>
                  <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4216-
120.20.Cisco.com</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>bfd-template single-hop bfd-tunnel28
                              interval min-tx 100 min-rx 100 multiplier 3
                              exit
                              mpls traffic-eng lsp attributes LSPpathnov3
                              affinity 0x11 mask 0xFF
                              priority 3 3
                              record-route
                              mpls traffic-eng lsp attributes LSPpath1
                              affinity 0x15 mask 0xFF
                              priority 4 3
                              record-route
                              interface Tunnel28
                              description Created via API
                              tunnel mode mpls traffic-eng
                              ip unnumbered Loopback6
                              tunnel destination 6.6.6.19
                              bandwidth 1642
                              tunnel mpls traffic-eng bandwidth 1642
                              tunnel mpls traffic-eng name
                              EPNNCS4216-120.20.Cisco.com_28_EPNNCS4206-
120.19
                              tunnel mpls traffic-eng priority 7 2
                              tunnel mpls traffic-eng bidirectional
association id 101 source-address
                              6.6.6.19 global-id 1891
                              tunnel mpls traffic-eng bidirectional
association type co-routed
                              fault-oam
                              tunnel mpls traffic-eng bfd encap-mode gal
bfd-tunnel28
                              tunnel mpls traffic-eng path-option 10
dynamic attributes LSPpathnov3
                              tunnel mpls traffic-eng record-route
                              tunnel mpls traffic-eng path-option protect
10 diverse lockdown
                              attributes LSPpath1
                              exit
                        </config>
                  </result>
                  <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.19</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>bfd-template single-hop bfd-tunnel28
                              interval min-tx 100 min-rx 100 multiplier 3
                              exit
```

```
                              mpls traffic-eng lsp attributes LSPpathnov3
                              affinity 0x11 mask 0xFF
                              priority 3 3
                              record-route
                              mpls traffic-eng lsp attributes LSPpath1
                              affinity 0x15 mask 0xFF
                              priority 4 3
                              record-route
                              interface Tunnel28
                              description Created via API
                              tunnel mode mpls traffic-eng
                              ip unnumbered Loopback6
                              tunnel destination 6.6.6.20
                              bandwidth 1642
                              tunnel mpls traffic-eng bandwidth 1642
                              tunnel mpls traffic-eng name
                              EPNNCS4216-120.20.Cisco.com_28_EPNNCS4206-
120.19
                              tunnel mpls traffic-eng priority 7 2
                              tunnel mpls traffic-eng bidirectional
association id 101 source-address
                              6.6.6.19 global-id 1891
                              tunnel mpls traffic-eng bidirectional
association type co-routed
                              fault-oam
                              tunnel mpls traffic-eng bfd encap-mode gal
bfd-tunnel28
                              tunnel mpls traffic-eng path-option 10
dynamic attributes LSPpathnov3
                              tunnel mpls traffic-eng record-route
                              tunnel mpls traffic-eng path-option protect
10 diverse lockdown
                              attributes LSPpath1
                              exit
                        </config>
                  </result>
            </work-flow-result>
            <work-flow-result>
                  <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4216-
120.20.Cisco.com_28_EPNNCS4206-120.19
                  </cfs-ref>
                  <service-type>Bidirectional TE Tunnel</service-type>
                  <work-flow-index>3</work-flow-index>
                  <work-flow-name>CHECK_TE_TUNNEL_STATUS_AND_SIGNALLING
                  </work-flow-name>
                  <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel signalling with bandwidth 1642,
status is Down</info>
                  </result>
            </work-flow-result>
            <work-flow-result>
                  <cfs-ref>MD=CISCO_EPNM!CFS=C-T-MP3-Nov3-B</cfs-ref>
                  <service-type>CEM</service-type>
                  <work-flow-index>4</work-flow-index>
                  <work-flow-name>CEM Orchestration</work-flow-name>
```

```
                  <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4216-
120.20.Cisco.com</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>controller T1 0/14/35
                              no shutdown
                              cem-group 1 unframed
                              clock source line
                              interface pseudowire96
                              encapsulation mpls
                              preferred-path interface Tunnel28
                              neighbor 6.6.6.19 350
                              bandwidth 1642 persistent
                              interface CEM0/14/35
                              cem 1
                              l2vpn xconnect context XCon_350_6.6.6.19
                              member pseudowire96
                              member CEM0/14/35 1
                              exit
                        </config>
                  </result>
                  <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.19</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>controller SONET 0/3/2
                              sts-1 25
                              t1 11 cem-group 8 unframed
                              t1 11 clock source internal
                              interface pseudowire35
                              encapsulation mpls
                              preferred-path interface Tunnel28
                              neighbor 6.6.6.20 350
                              bandwidth 1642 persistent
                              interface CEM0/3/2
                              cem 8
                              no shutdown
                              l2vpn xconnect context XCon_350_6.6.6.20
                              member pseudowire35
                              member CEM0/3/2 8
                              exit
                        </config>
                  </result>
            </work-flow-result>
            <work-flow-result>
                  <cfs-ref>MD=CISCO_EPNM!CFS=C-T-MP3-Nov3-B</cfs-ref>
                  <service-type>CEM</service-type>
                  <work-flow-index>5</work-flow-index>
                  <work-flow-name>CEM Orchestration</work-flow-name>
                  <result>
                        <state>SUCCESSFUL</state>
                        <info>PW Interface status for A/Z ends are
96:UP/35:UP</info>
                  </result>
            </work-flow-result>
      </deploy-results>
```

```
        <completion-status>SUCCESS</completion-status>
</ns36:provision-service-request>
```

7.46 Provision CEM service with MPLS TE – RO to RO devices

7.46.1 Request

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<ns:provision-service-request
      xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns="urn:cisco:params:xml:ns:yang:service:activation:v1">
      <ns:service-order-data>
            <ns:service-name>13110003_T1_Eomer_NgbrUpDown</ns:service-name>
            <ns:service-description>13110003_DESC</ns:service-description>
            <ns:service-type>tdm-cem</ns:service-type>
            <ns:service-subtype>t1</ns:service-subtype>
            <ns:service-activate>true</ns:service-activate>
            <ns:customer-
ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</ns:customer-ref>
            <ns:cem-data>
                  <ns:transport-settings>
                        <ns:frame-type>SAToP</ns:frame-type>
                        <ns:payload-size>160</ns:payload-size>
                        <ns:dejitter-buffer-size>6</ns:dejitter-buffer-size>
                        <ns:idle-pattern>0xAB</ns:idle-pattern>
                        <ns:dummy-mode>user-defined</ns:dummy-mode>
                        <ns:dummy-pattern>0xCD</ns:dummy-pattern>
                  </ns:transport-settings>
            </ns:cem-data>
            <ns:termination-point-list>
                  <ns:termination-point-config>
                        <ns:tp-ref>MD=CISCO_EPNM!ND=NCS4206-RSP2-120-
157!PTP=name=T1 0/2/8;lr=lr-t1</ns:tp-ref>
                        <ns:cem-data>
                              <ns:clock-source>internal</ns:clock-source>
                              <ns:working-path>
                                    <ns:auto-allocate-path>false</ns:auto-
allocate-path>
                              </ns:working-path>
                        </ns:cem-data>
                  </ns:termination-point-config>
                  <ns:termination-point-config>
                        <ns:tp-ref>MD=CISCO_EPNM!ND=EPNASR903-120-
201!PTP=name=T1 0/2/8;lr=lr-t1</ns:tp-ref>
                        <ns:cem-data>
                              <ns:clock-source>internal</ns:clock-source>
                              <ns:working-path>
                                    <ns:auto-allocate-path>false</ns:auto-
allocate-path>
                              </ns:working-path>
                        </ns:cem-data>
                  </ns:termination-point-config>
```

```
            </ns:termination-point-list>
            <ns:forwarding-path>
                  <ns:pseudowire-settings>
                        <ns:pw-bandwidth>200</ns:pw-bandwidth>
                        <ns:enable-control-word>true</ns:enable-control-word>
                        <ns:fallback-to-ldp>true</ns:fallback-to-ldp>
                        <ns:interworking-option></ns:interworking-option>
                        <ns:service-bandwidth>100</ns:service-bandwidth>
                  </ns:pseudowire-settings>
                  <!-- TE TUNNLEL -->
                  <ns:mpls-te-data>
                        <ns:te-tunnel-type>uni-directional</ns:te-tunnel-
type>
                        <!-- <ns:wrap-protection>false</ns:wrap-protection> -
->                <!-- FLEX -->
                        <ns:protection-type>Working</ns:protection-type>
                        <!-- <ns:enable-fault-oam>false</ns:enable-fault-oam>
-->               <!-- FLEX -->
                        <ns:enable-lockdown>false</ns:enable-lockdown>
                        <ns:enable-auto-bandwidth>true</ns:enable-auto-
bandwidth>              <!-- UNI -->
                        <ns:enable-autoroute>true</ns:enable-autoroute>
                        <ns:enable-frr>false</ns:enable-frr>
                  <!-- UNI -->
                        <ns:tunnel-setting>
                              <!-- <ns:global-id>2408002</ns:global-id> -->
                  <!-- FLEX -->
                              <ns:setup-priority>2</ns:setup-priority>
                              <ns:hold-priority>2</ns:hold-priority>
                              <ns:auto-bandwidth-frequency>5000</ns:auto-
bandwidth-frequency>    <!-- UNI Auto BW -->
                              <ns:max-auto-bandwidth>1191</ns:max-auto-
bandwidth>               <!-- UNI Auto BW -->
                              <ns:min-auto-bandwidth>591</ns:min-auto-
bandwidth>                    <!-- UNI Auto BW -->
                              <!-- <ns:bandwidth-pool-
type>Global</ns:bandwidth-pool-type> --> <!-- Manual BW -->
                              <!-- <ns:bandwidth>2000</ns:bandwidth> -->
            <!-- Manual BW -->
                        </ns:tunnel-setting>
                        <ns:bfd-settings>
                              <ns:enable>true</ns:enable>
                              <ns:min-interval>800</ns:min-interval>
                              <ns:multiplier>8</ns:multiplier>
                        </ns:bfd-settings>
                  </ns:mpls-te-data>
            </ns:forwarding-path>
      </ns:service-order-data>
</ns:provision-service-request>
```

7.46.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>

Content-Type: application/yang.operation+xml

```
<ns4:response-message
xmlns:ns40="urn:cisco:params:xml:ns:yang:restconf:party"
      xmlns:ns39="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns38="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns37="urn:ietf:params:xml:ns:yang:ietf-restconf"
      xmlns:ns36="urn:cisco:params:xml:ns:yang:service:activation:status:v
1"
      xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
      xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns31="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns30="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
      xmlns:ns29="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns28="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
      xmlns:ns27="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns26="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns24="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
      xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
      xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
      xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
      <ns4:header>
            <ns4:firstIndex>0</ns4:firstIndex>
            <ns4:lastIndex>0</ns4:lastIndex>
      </ns4:header>
      <ns4:data>
            <ns36:provision-service-request>
                  <request-id>4a366998-0c37-4ce8-be61-
6ea6b22fd466</request-id>
                  <service-name>13110003_T1_Eomer_NgbrUpDown</service-
name>
                  <service-type>tdm-cem</service-type>
                  <service-subtype>t1</service-subtype>
                  <preview>false</preview>
                  <request-time>2017-11-13T15:03:31.404+05:30</request-
```

```
time>
                  <completion-time>2017-11-
13T15:21:41.071+05:30</completion-time>
                  <deploy-results>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.86_42_EPNNCS4206-120.81
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>1</work-flow-index>
                              <work-flow-
name>FIND_MATCHING_TE_TUNNEL</work-flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>Tunnel match not found between A
and Z end, hence creating
                                          new tunnel</info>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.86_42_EPNNCS4206-120.81
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>2</work-flow-index>
                              <work-flow-name>CREATE_TE_TUNNEL</work-flow-
name>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.86</node-ref>
                                    <state>SUCCESSFUL</state>
                                    <config>bfd-template single-hop bfd-
tunnel42
                                          interval min-tx 800 min-rx 800
multiplier 8
                                          exit
                                          interface Tunnel42
                                          description Created via API
                                          tunnel mode mpls traffic-eng
                                          ip unnumbered Loopback192
                                          tunnel destination 192.168.0.81
                                          bandwidth 1191
                                          tunnel mpls traffic-eng auto-bw
frequency 5000 max-bw 1191 min-bw 591
                                          tunnel mpls traffic-eng name
                                          EPNNCS4206-120.86_42_EPNNCS4206-
120.81
                                          tunnel mpls traffic-eng
autoroute announce
                                          tunnel mpls traffic-eng priority
2 2
                                          tunnel mpls traffic-eng bfd
encap-mode gal bfd-tunnel42
                                          tunnel mpls traffic-eng path-
```

```
option 10 dynamic
                                          tunnel mpls traffic-eng record-
route
                                          tunnel mpls traffic-eng path-
selection metric te
                                          exit
                                    </config>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.86_42_EPNNCS4206-120.81
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>3</work-flow-index>
                              <work-flow-
name>CHECK_TE_TUNNEL_STATUS_AND_SIGNALLING
                              </work-flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>Tunnel signalling with auto
bandwidth, status is UP</info>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.81_101_EPNNCS4206-120.86
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>1</work-flow-index>
                              <work-flow-
name>FIND_MATCHING_TE_TUNNEL</work-flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>Tunnel match not found between A
and Z end, hence creating
                                          new tunnel</info>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.81_101_EPNNCS4206-120.86
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>2</work-flow-index>
                              <work-flow-name>CREATE_TE_TUNNEL</work-flow-
name>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.81</node-ref>
                                    <state>SUCCESSFUL</state>
                                    <config>bfd-template single-hop bfd-
tunnel101
```

```
                                          interval min-tx 800 min-rx 800
multiplier 8
                                          exit
                                          interface Tunnel101
                                          description Created via API
                                          tunnel mode mpls traffic-eng
                                          ip unnumbered Loopback192
                                          tunnel destination 192.168.0.86
                                          bandwidth 1191
                                          tunnel mpls traffic-eng auto-bw
frequency 5000 max-bw 1191 min-bw 591
                                          tunnel mpls traffic-eng name
                                          EPNNCS4206-
120.81_101_EPNNCS4206-120.86
                                          tunnel mpls traffic-eng
autoroute announce
                                          tunnel mpls traffic-eng priority
2 2
                                          tunnel mpls traffic-eng bfd
encap-mode gal bfd-tunnel101
                                          tunnel mpls traffic-eng path-
option 10 dynamic
                                          tunnel mpls traffic-eng record-
route
                                          tunnel mpls traffic-eng path-
selection metric te
                                          exit
                                    </config>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.81_101_EPNNCS4206-120.86
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>3</work-flow-index>
                              <work-flow-
name>CHECK_TE_TUNNEL_STATUS_AND_SIGNALLING
                              </work-flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>Tunnel signalling with auto
bandwidth, status is UP</info>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.86_64_EPNNCS4206-120.84
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>1</work-flow-index>
                              <work-flow-
name>FIND_MATCHING_TE_TUNNEL</work-flow-name>
                              <result>
```

```
                                    <state>SUCCESSFUL</state>
                                    <info>Tunnel match not found between A
and Z end, hence creating
                                          new tunnel</info>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.86_64_EPNNCS4206-120.84
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>2</work-flow-index>
                              <work-flow-name>CREATE_TE_TUNNEL</work-flow-
name>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.86</node-ref>
                                    <state>SUCCESSFUL</state>
                                    <config>bfd-template single-hop bfd-
tunnel64
                                          interval min-tx 800 min-rx 800
multiplier 8
                                          exit
                                          interface Tunnel64
                                          description Created via API
                                          tunnel mode mpls traffic-eng
                                          ip unnumbered Loopback192
                                          tunnel destination 192.168.0.84
                                          bandwidth 1191
                                          tunnel mpls traffic-eng auto-bw
frequency 5000 max-bw 1191 min-bw 591
                                          tunnel mpls traffic-eng name
                                          EPNNCS4206-120.86_64_EPNNCS4206-
120.84
                                          tunnel mpls traffic-eng
autoroute announce
                                          tunnel mpls traffic-eng priority
2 2
                                          tunnel mpls traffic-eng bfd
encap-mode gal bfd-tunnel64
                                          tunnel mpls traffic-eng path-
option 10 dynamic
                                          tunnel mpls traffic-eng record-
route
                                          tunnel mpls traffic-eng path-
selection metric te
                                          exit
                                    </config>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.86_64_EPNNCS4206-120.84
                              </cfs-ref>
                              <service-type>Unidirectional TE
```

```
Tunnel</service-type>
                              <work-flow-index>3</work-flow-index>
                              <work-flow-
name>CHECK_TE_TUNNEL_STATUS_AND_SIGNALLING
                              </work-flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>Tunnel signalling with auto
bandwidth, status is UP</info>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.84_20_EPNNCS4206-120.86
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>1</work-flow-index>
                              <work-flow-
name>FIND_MATCHING_TE_TUNNEL</work-flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>Tunnel match not found between A
and Z end, hence creating
                                          new tunnel</info>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.84_20_EPNNCS4206-120.86
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>2</work-flow-index>
                              <work-flow-name>CREATE_TE_TUNNEL</work-flow-
name>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.84</node-ref>
                                    <state>SUCCESSFUL</state>
                                    <config>bfd-template single-hop bfd-
tunnel20
                                          interval min-tx 800 min-rx 800
multiplier 8
                                          exit
                                          interface Tunnel20
                                          description Created via API
                                          tunnel mode mpls traffic-eng
                                          ip unnumbered Loopback192
                                          tunnel destination 192.168.0.86
                                          bandwidth 1191
                                          tunnel mpls traffic-eng auto-bw
frequency 5000 max-bw 1191 min-bw 591
                                          tunnel mpls traffic-eng name
                                          EPNNCS4206-120.84_20_EPNNCS4206-
120.86
```

```
                                          tunnel mpls traffic-eng
autoroute announce
                                          tunnel mpls traffic-eng priority
2 2
                                          tunnel mpls traffic-eng bfd
encap-mode gal bfd-tunnel20
                                          tunnel mpls traffic-eng path-
option 10 dynamic
                                          tunnel mpls traffic-eng record-
route
                                          tunnel mpls traffic-eng path-
selection metric te
                                          exit
                                    </config>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.84_20_EPNNCS4206-120.86
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>3</work-flow-index>
                              <work-flow-
name>CHECK_TE_TUNNEL_STATUS_AND_SIGNALLING
                              </work-flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>Tunnel signalling with auto
bandwidth, status is UP</info>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.81_102_EPNNCS4206-120.84
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>1</work-flow-index>
                              <work-flow-
name>FIND_MATCHING_TE_TUNNEL</work-flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>Tunnel match not found between A
and Z end, hence creating
                                          new tunnel</info>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.81_102_EPNNCS4206-120.84
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>2</work-flow-index>
                              <work-flow-name>CREATE_TE_TUNNEL</work-flow-
```

```
name>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.81</node-ref>
                                    <state>SUCCESSFUL</state>
                                    <config>bfd-template single-hop bfd-
tunnel102
                                          interval min-tx 800 min-rx 800
multiplier 8
                                          exit
                                          interface Tunnel102
                                          description Created via API
                                          tunnel mode mpls traffic-eng
                                          ip unnumbered Loopback192
                                          tunnel destination 192.168.0.84
                                          bandwidth 1191
                                          tunnel mpls traffic-eng auto-bw
frequency 5000 max-bw 1191 min-bw 591
                                          tunnel mpls traffic-eng name
                                          EPNNCS4206-
120.81_102_EPNNCS4206-120.84
                                          tunnel mpls traffic-eng
autoroute announce
                                          tunnel mpls traffic-eng priority
2 2
                                          tunnel mpls traffic-eng bfd
encap-mode gal bfd-tunnel102
                                          tunnel mpls traffic-eng path-
option 10 dynamic
                                          tunnel mpls traffic-eng record-
route
                                          tunnel mpls traffic-eng path-
selection metric te
                                          exit
                                    </config>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.81_102_EPNNCS4206-120.84
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>3</work-flow-index>
                              <work-flow-
name>CHECK_TE_TUNNEL_STATUS_AND_SIGNALLING
                              </work-flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>Tunnel signalling with auto
bandwidth, status is UP</info>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.84_117_EPNNCS4206-120.81
```

```
                                </cfs-ref>
                                <service-type>Unidirectional TE
Tunnel</service-type>
                                <work-flow-index>1</work-flow-index>
                                <work-flow-
name>FIND_MATCHING_TE_TUNNEL</work-flow-name>
                                <result>
                                      <state>SUCCESSFUL</state>
                                      <info>Tunnel match not found between A
and Z end, hence creating
                                            new tunnel</info>
                                </result>
                          </work-flow-result>
                          <work-flow-result>
                                <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.84_117_EPNNCS4206-120.81
                                </cfs-ref>
                                <service-type>Unidirectional TE
Tunnel</service-type>
                                <work-flow-index>2</work-flow-index>
                                <work-flow-name>CREATE_TE_TUNNEL</work-flow-
name>
                                <result>
                                      <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.84</node-ref>
                                      <state>SUCCESSFUL</state>
                                      <config>bfd-template single-hop bfd-
tunnel117
                                            interval min-tx 800 min-rx 800
multiplier 8
                                            exit
                                            interface Tunnel117
                                            description Created via API
                                            tunnel mode mpls traffic-eng
                                            ip unnumbered Loopback192
                                            tunnel destination 192.168.0.81
                                            bandwidth 1191
                                            tunnel mpls traffic-eng auto-bw
frequency 5000 max-bw 1191 min-bw 591
                                            tunnel mpls traffic-eng name
                                            EPNNCS4206-
120.84_117_EPNNCS4206-120.81
                                            tunnel mpls traffic-eng
autoroute announce
                                            tunnel mpls traffic-eng priority
2 2
                                            tunnel mpls traffic-eng bfd
encap-mode gal bfd-tunnel117
                                            tunnel mpls traffic-eng path-
option 10 dynamic
                                            tunnel mpls traffic-eng record-
route
                                            tunnel mpls traffic-eng path-
selection metric te
                                            exit
                                      </config>
```

```
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.84_117_EPNNCS4206-120.81
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>3</work-flow-index>
                              <work-flow-
name>CHECK_TE_TUNNEL_STATUS_AND_SIGNALLING
                              </work-flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>Tunnel signalling with auto
bandwidth, status is UP</info>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-
ref>MD=CISCO_EPNM!CFS=13110003_T1_Eomer_NgbrUpDown</cfs-ref>
                              <service-type>CEM</service-type>
                              <work-flow-index>4</work-flow-index>
                              <work-flow-name>CEM Orchestration</work-
flow-name>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=NCS4206-
RSP2-120-157</node-ref>
                                    <state>SUCCESSFUL</state>
                                    <config>controller T1 0/2/8
                                          no shutdown
                                          cem-group 0 unframed
                                          clock source internal
                                          interface pseudowire13
                                          encapsulation mpls
                                          control-word include
                                          neighbor 192.168.0.201 200
                                          interface CEM0/2/8
                                          cem 0
                                          payload-size 160 dejitter-buffer
6
                                          idle-pattern 0xAB
                                          dummy-mode user-defined
                                          dummy-pattern 0xCD
                                          l2vpn xconnect context
XCon_200_192.168.0.201
                                          member pseudowire13
                                          member CEM0/2/8 0
                                          exit
                                    </config>
                              </result>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=EPNASR903-
120-201</node-ref>
                                    <state>SUCCESSFUL</state>
                                    <config>controller T1 0/2/8
```

```
                                          no shutdown
                                          cem-group 0 unframed
                                          clock source internal
                                          interface pseudowire15
                                          encapsulation mpls
                                          control-word include
                                          neighbor 192.168.0.157 200
                                          interface CEM0/2/8
                                          cem 0
                                          payload-size 160 dejitter-buffer
6
                                          idle-pattern 0xAB
                                          dummy-mode user-defined
                                          dummy-pattern 0xCD
                                          l2vpn xconnect context
XCon_200_192.168.0.157
                                          member pseudowire15
                                          member CEM0/2/8 0
                                          exit
                                    </config>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-
ref>MD=CISCO_EPNM!CFS=13110003_T1_Eomer_NgbrUpDown</cfs-ref>
                              <service-type>CEM</service-type>
                              <work-flow-index>5</work-flow-index>
                              <work-flow-name>CEM Orchestration</work-
flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>PW Interface status for A/Z ends
are Up/Down</info>
                              </result>
                        </work-flow-result>
                  </deploy-results>
                  <completion-status>SUCCESS</completion-status>
            </ns36:provision-service-request>
      </ns4:data>
</ns4:response-message>
```

7.47 Modify CEM service with MPLS TE – RO to RO devices

7.47.1 Request

POST /restconf/operations/v1/cisco-service-activation:modify-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+json
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<ns:modify-service-request
      xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns1="urn:cisco:params:xml:ns:yang:service:oam:v1">
      <ns:cfs-ref>MD=CISCO_EPNM!CFS=13110003_T1_Eomer_NgbrUpDown</ns:cfs-
```

```
ref>
      <ns:service-order-data>
            <ns:service-name>13110003_T1_Eomer_NgbrUpDown</ns:service-
name>
            <ns:service-description>13110003_DESC</ns:service-description>
            <ns:service-type>tdm-cem</ns:service-type>
            <ns:service-subtype>t1</ns:service-subtype>
            <ns:service-activate>true</ns:service-activate>
            <ns:customer-
ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</ns:customer-ref>
            <ns:cem-data>
                  <ns:transport-settings>
                        <ns:frame-type>SAToP</ns:frame-type>

                  </ns:transport-settings>
            </ns:cem-data>
            <ns:termination-point-list>
                  <ns:termination-point-config>
                        <ns:tp-ref>MD=CISCO_EPNM!ND=NCS4206-RSP2-120-
157!PTP=name=T1 0/2/8;lr=lr-t1</ns:tp-ref>
                        <ns:cem-data>
                              <ns:clock-source>internal</ns:clock-source>
                              <ns:working-path>
                                    <ns:auto-allocate-path>false</ns:auto-
allocate-path>
                              </ns:working-path>
                        </ns:cem-data>
                  </ns:termination-point-config>
                  <ns:termination-point-config>
                        <ns:tp-ref>MD=CISCO_EPNM!ND=EPNASR903-120-
201!PTP=name=T1 0/2/8;lr=lr-t1</ns:tp-ref>
                        <ns:cem-data>
                              <ns:clock-source>internal</ns:clock-source>
                              <ns:working-path>
                                    <ns:auto-allocate-path>false</ns:auto-
allocate-path>
                              </ns:working-path>
                        </ns:cem-data>
                  </ns:termination-point-config>
            </ns:termination-point-list>
            <ns:forwarding-path>
                  <ns:pseudowire-settings>
                        <ns:pw-bandwidth>200</ns:pw-bandwidth>
                        <ns:enable-control-word>true</ns:enable-control-
word>
                        <ns:fallback-to-ldp>true</ns:fallback-to-ldp>
                        <ns:interworking-option></ns:interworking-option>
                        <ns:service-bandwidth>100</ns:service-bandwidth>
                  </ns:pseudowire-settings>
                  <!-- TE TUNNLEL -->
                  <ns:mpls-te-data>
                        <ns:te-tunnel-type>uni-directional</ns:te-tunnel-
type>
                        <!-- <ns:wrap-protection>false</ns:wrap-
protection> -->              <!-- FLEX -->
                        <ns:protection-type>Working</ns:protection-type>
```

```
                        <!-- <ns:enable-fault-oam>false</ns:enable-fault-
oam> -->          <!-- FLEX -->
                        <ns:enable-lockdown>false</ns:enable-lockdown>
                        <ns:enable-auto-bandwidth>true</ns:enable-auto-
bandwidth>              <!-- UNI -->
                        <ns:enable-autoroute>true</ns:enable-autoroute>
                        <ns:enable-frr>false</ns:enable-frr>
                        <!-- UNI -->
                        <ns:tunnel-setting>
                              <!-- <ns:global-id>2408002</ns:global-id> --
>                       <!-- FLEX -->
                              <ns:setup-priority>2</ns:setup-priority>
                              <ns:hold-priority>2</ns:hold-priority>
                              <ns:auto-bandwidth-frequency>5000</ns:auto-
bandwidth-frequency>    <!-- UNI Auto BW -->
                              <ns:max-auto-bandwidth>1191</ns:max-auto-
bandwidth>               <!-- UNI Auto BW -->
                              <ns:min-auto-bandwidth>591</ns:min-auto-
bandwidth>                    <!-- UNI Auto BW -->
                              <!-- <ns:bandwidth-pool-
type>Global</ns:bandwidth-pool-type> --> <!-- Manual BW -->
                              <!-- <ns:bandwidth>2000</ns:bandwidth> -->
            <!-- Manual BW -->
                        </ns:tunnel-setting>
                        <ns:bfd-settings>
                              <ns:enable>true</ns:enable>
                              <ns:min-interval>800</ns:min-interval>
                              <ns:multiplier>8</ns:multiplier>
                        </ns:bfd-settings>
                  </ns:mpls-te-data>
            </ns:forwarding-path>
      </ns:service-order-data>
</ns:modify-service-request>
```

7.47.2 Response

```
<ns4:response-message
xmlns:ns40="urn:cisco:params:xml:ns:yang:restconf:party"
      xmlns:ns39="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns38="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns37="urn:ietf:params:xml:ns:yang:ietf-restconf"
      xmlns:ns36="urn:cisco:params:xml:ns:yang:service:activation:status:v
1"
      xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
      xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns31="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns30="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
      xmlns:ns29="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns28="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
      xmlns:ns27="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns26="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:customer:v1"
```

```
xmlns:ns24="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
      xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
      xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
      xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
      <ns4:header>
            <ns4:firstIndex>0</ns4:firstIndex>
            <ns4:lastIndex>0</ns4:lastIndex>
      </ns4:header>
      <ns4:data>
            <ns36:modify-service-request>
                  <request-id>bb3a6cd7-7a25-4dfd-a465-
fc5aed599621</request-id>
                  <service-name>13110003_T1_Eomer_NgbrUpDown</service-
name>
                  <service-type>tdm-cem</service-type>
                  <service-subtype>t1</service-subtype>
                  <preview>false</preview>
                  <request-time>2017-11-13T15:41:16.354+05:30</request-
time>
                  <completion-time>2017-11-
13T15:42:43.099+05:30</completion-time>
                  <deploy-results>
                        <work-flow-result>
                              <cfs-
ref>MD=CISCO_EPNM!CFS=13110003_T1_Eomer_NgbrUpDown</cfs-ref>
                              <service-type>CEM</service-type>
                              <work-flow-index>5</work-flow-index>
                              <work-flow-name>CEM Orchestration</work-
flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>Amend Operation for Tunnel
Service 1473136</info>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-
```

```
ref>MD=CISCO_EPNM!CFS=13110003_T1_Eomer_NgbrUpDown</cfs-ref>
                                <service-type>CEM</service-type>
                                <work-flow-index>4</work-flow-index>
                                <work-flow-name>UPDATE_CEM_SERVICE</work-
flow-name>
                                <result>
                                      <node-ref>MD=CISCO_EPNM!ND=EPNASR903-
120-201</node-ref>
                                      <state>SUCCESSFUL</state>
                                      <config>interface CEM0/2/8
                                            cem 0
                                            no payload-size 160 dejitter-
buffer 6
                                            no idle-pattern 0xAB
                                            no dummy-mode user-defined
                                            no dummy-pattern 0xCD
                                            controller T1 0/2/8
                                            no shutdown
                                            exit
                                      </config>
                                </result>
                                <result>
                                      <node-ref>MD=CISCO_EPNM!ND=NCS4206-
RSP2-120-157</node-ref>
                                      <state>SUCCESSFUL</state>
                                      <config>interface CEM0/2/8
                                            cem 0
                                            no payload-size 160 dejitter-
buffer 6
                                            no idle-pattern 0xAB
                                            no dummy-mode user-defined
                                            no dummy-pattern 0xCD
                                            controller T1 0/2/8
                                            no shutdown
                                            exit
                                      </config>
                                </result>
                          </work-flow-result>
                          <work-flow-result>
                                <cfs-
ref>MD=CISCO_EPNM!CFS=13110003_T1_Eomer_NgbrUpDown</cfs-ref>
                                <service-type>CEM</service-type>
                                <work-flow-index>5</work-flow-index>
                                <work-flow-name>CEM Orchestration</work-
flow-name>
                                <result>
                                      <state>SUCCESSFUL</state>
                                      <info>PW Interface status for A/Z ends
are Up/Down</info>
                                </result>
                          </work-flow-result>
                    </deploy-results>
                    <completion-status>SUCCESS</completion-status>
              </ns36:modify-service-request>
        </ns4:data>
</ns4:response-message>
```

7.48 Provisioin CEM service with MPLS TE – RO to CO devices

7.48.1 Request

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<ns:provision-service-request
      xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns="urn:cisco:params:xml:ns:yang:service:activation:v1">
      <ns:service-order-data>
            <ns:service-name>13110010_T1_Eomer_RO-To-CO</ns:service-name>
            <ns:service-description>13110010_DESC</ns:service-description>
            <ns:service-type>tdm-cem</ns:service-type>
            <ns:service-subtype>t1</ns:service-subtype>
            <ns:service-activate>true</ns:service-activate>
            <ns:customer-
ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</ns:customer-ref>
            <ns:cem-data>
                  <ns:transport-settings>
                        <ns:frame-type>SAToP</ns:frame-type>
                  </ns:transport-settings>
            </ns:cem-data>
            <ns:termination-point-list>
                  <ns:termination-point-config>
                        <ns:tp-ref>MD=CISCO_EPNM!ND=EPNASR903-120-
201!PTP=name=T1 0/2/8;lr=lr-t1</ns:tp-ref>
                        <ns:cem-data>
                              <ns:clock-source>internal</ns:clock-source>
                              <ns:working-path>
                                    <ns:auto-allocate-path>false</ns:auto-
allocate-path>
                              </ns:working-path>
                        </ns:cem-data>
                  </ns:termination-point-config>
                  <ns:termination-point-config>
                        <ns:tp-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.86!PTP=name=T3 0/5/11;lr=lr-t3</ns:tp-ref>
                        <ns:cem-data>
                              <ns:working-path>
                                    <ns:lower-order-path>
                                          <ns:available-path-ref>T1
1</ns:available-path-ref>
                                    </ns:lower-order-path>
                                    <ns:auto-allocate-path>false</ns:auto-
allocate-path>
                              </ns:working-path>
                        </ns:cem-data>
                  </ns:termination-point-config>
            </ns:termination-point-list>
            <ns:forwarding-path>
                  <ns:pseudowire-settings>
```

```
                        <ns:pw-bandwidth>200</ns:pw-bandwidth>
                        <ns:enable-control-word>true</ns:enable-control-
word>
                        <ns:fallback-to-ldp>true</ns:fallback-to-ldp>
                        <ns:interworking-option></ns:interworking-option>
                        <ns:service-bandwidth>100</ns:service-bandwidth>
                  </ns:pseudowire-settings>
                  <!-- TE TUNNLEL -->
                  <ns:mpls-te-data>
                        <ns:te-tunnel-type>uni-directional</ns:te-tunnel-
type>
                        <!-- <ns:wrap-protection>false</ns:wrap-
protection> -->              <!-- FLEX -->
                        <ns:protection-type>Working</ns:protection-type>
                        <!-- <ns:enable-fault-oam>false</ns:enable-fault-
oam> -->          <!-- FLEX -->
                        <ns:enable-lockdown>true</ns:enable-lockdown>
                        <ns:enable-auto-bandwidth>true</ns:enable-auto-
bandwidth>               <!-- UNI -->
                        <ns:enable-autoroute>true</ns:enable-autoroute>
                        <ns:enable-frr>false</ns:enable-frr>
                        <!-- UNI -->
                        <ns:tunnel-setting>
                              <!-- <ns:global-id>2408002</ns:global-id> --
>                       <!-- FLEX -->
                              <ns:setup-priority>2</ns:setup-priority>
                              <ns:hold-priority>2</ns:hold-priority>
                              <ns:auto-bandwidth-frequency>5000</ns:auto-
bandwidth-frequency>    <!-- UNI Auto BW -->
                              <ns:max-auto-bandwidth>1191</ns:max-auto-
bandwidth>               <!-- UNI Auto BW -->
                              <ns:min-auto-bandwidth>591</ns:min-auto-
bandwidth>                    <!-- UNI Auto BW -->
                              <!-- <ns:bandwidth-pool-
type>Global</ns:bandwidth-pool-type> --> <!-- Manual BW -->
                              <!-- <ns:bandwidth>2000</ns:bandwidth> -->
            <!-- Manual BW -->
                        </ns:tunnel-setting>
                        <ns:bfd-settings>
                              <ns:enable>true</ns:enable>
                              <ns:min-interval>800</ns:min-interval>
                              <ns:multiplier>8</ns:multiplier>
                        </ns:bfd-settings>
                  </ns:mpls-te-data>
            </ns:forwarding-path>
      </ns:service-order-data>
</ns:provision-service-request>
```

7.48.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
<ns4:response-message
xmlns:ns40="urn:cisco:params:xml:ns:yang:restconf:party"
```

```
      xmlns:ns39="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns38="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns37="urn:ietf:params:xml:ns:yang:ietf-restconf"
      xmlns:ns36="urn:cisco:params:xml:ns:yang:service:activation:status:v
1"
      xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
      xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns31="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns30="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
      xmlns:ns29="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns28="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
      xmlns:ns27="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns26="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns24="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
      xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
      xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
      xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
      <ns4:header>
            <ns4:firstIndex>0</ns4:firstIndex>
            <ns4:lastIndex>0</ns4:lastIndex>
      </ns4:header>
      <ns4:data>
            <ns36:provision-service-request>
                  <request-id>754c78ab-72dc-40b9-ad8b-
8717addba965</request-id>
                  <service-name>13110010_T1_Eomer_RO-To-CO</service-name>
                  <service-type>tdm-cem</service-type>
                  <service-subtype>t1</service-subtype>
                  <preview>false</preview>
                  <request-time>2017-11-13T16:56:37.759+05:30</request-
time>
                  <completion-time>2017-11-
13T17:17:02.118+05:30</completion-time>
                  <deploy-results>
```

```
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.81_101_EPNNCS4206-120.86
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>1</work-flow-index>
                              <work-flow-
name>FIND_MATCHING_TE_TUNNEL</work-flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>Tunnel match not found between A
and Z end, hence creating
                                          new tunnel</info>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.81_101_EPNNCS4206-120.86
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>2</work-flow-index>
                              <work-flow-name>CREATE_TE_TUNNEL</work-flow-
name>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.81</node-ref>
                                    <state>SUCCESSFUL</state>
                                    <config>bfd-template single-hop bfd-
tunnel101
                                          interval min-tx 800 min-rx 800
multiplier 8
                                          exit
                                          interface Tunnel101
                                          description Created via API
                                          tunnel mode mpls traffic-eng
                                          ip unnumbered Loopback192
                                          tunnel destination 192.168.0.86
                                          bandwidth 1191
                                          tunnel mpls traffic-eng auto-bw
frequency 5000 max-bw 1191 min-bw 591
                                          tunnel mpls traffic-eng name
                                          EPNNCS4206-
120.81_101_EPNNCS4206-120.86
                                          tunnel mpls traffic-eng
autoroute announce
                                          tunnel mpls traffic-eng priority
2 2
                                          tunnel mpls traffic-eng bfd
encap-mode gal bfd-tunnel101
                                          tunnel mpls traffic-eng path-
option 10 dynamic
                                          tunnel mpls traffic-eng record-
route
                                          tunnel mpls traffic-eng path-
```

```
selection metric te
                                          exit
                                    </config>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.81_101_EPNNCS4206-120.86
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>3</work-flow-index>
                              <work-flow-
name>CHECK_TE_TUNNEL_STATUS_AND_SIGNALLING
                              </work-flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>Tunnel signalling with auto
bandwidth, status is UP</info>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.86_42_EPNNCS4206-120.81
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>1</work-flow-index>
                              <work-flow-
name>FIND_MATCHING_TE_TUNNEL</work-flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>Tunnel match not found between A
and Z end, hence creating
                                          new tunnel</info>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.86_42_EPNNCS4206-120.81
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>2</work-flow-index>
                              <work-flow-name>CREATE_TE_TUNNEL</work-flow-
name>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.86</node-ref>
                                    <state>SUCCESSFUL</state>
                                    <config>bfd-template single-hop bfd-
tunnel42
                                          interval min-tx 800 min-rx 800
multiplier 8
                                          exit
                                          interface Tunnel42
```

```
                                        description Created via API
                                        tunnel mode mpls traffic-eng
                                        ip unnumbered Loopback192
                                        tunnel destination 192.168.0.81
                                        bandwidth 1191
                                        tunnel mpls traffic-eng auto-bw
frequency 5000 max-bw 1191 min-bw 591
                                        tunnel mpls traffic-eng name
                                        EPNNCS4206-120.86_42_EPNNCS4206-
120.81
                                        tunnel mpls traffic-eng
autoroute announce
                                        tunnel mpls traffic-eng priority
2 2
                                        tunnel mpls traffic-eng bfd
encap-mode gal bfd-tunnel42
                                        tunnel mpls traffic-eng path-
option 10 dynamic
                                        tunnel mpls traffic-eng record-
route
                                        tunnel mpls traffic-eng path-
selection metric te
                                        exit
                                    </config>
                                </result>
                            </work-flow-result>
                            <work-flow-result>
                                <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.86_42_EPNNCS4206-120.81
                                </cfs-ref>
                                <service-type>Unidirectional TE
Tunnel</service-type>
                                <work-flow-index>3</work-flow-index>
                                <work-flow-
name>CHECK_TE_TUNNEL_STATUS_AND_SIGNALLING
                                </work-flow-name>
                                <result>
                                    <state>SUCCESSFUL</state>
                                    <info>Tunnel signalling with auto
bandwidth, status is UP</info>
                                </result>
                            </work-flow-result>
                            <work-flow-result>
                                <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.81_102_EPNNCS4206-120.84
                                </cfs-ref>
                                <service-type>Unidirectional TE
Tunnel</service-type>
                                <work-flow-index>1</work-flow-index>
                                <work-flow-
name>FIND_MATCHING_TE_TUNNEL</work-flow-name>
                                <result>
                                    <state>SUCCESSFUL</state>
                                    <info>Tunnel match not found between A
and Z end, hence creating
                                        new tunnel</info>
```

```
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.81_102_EPNNCS4206-120.84
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>2</work-flow-index>
                              <work-flow-name>CREATE_TE_TUNNEL</work-flow-
name>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.81</node-ref>
                                    <state>SUCCESSFUL</state>
                                    <config>bfd-template single-hop bfd-
tunnel102
                                          interval min-tx 800 min-rx 800
multiplier 8
                                          exit
                                          interface Tunnel102
                                          description Created via API
                                          tunnel mode mpls traffic-eng
                                          ip unnumbered Loopback192
                                          tunnel destination 192.168.0.84
                                          bandwidth 1191
                                          tunnel mpls traffic-eng auto-bw
frequency 5000 max-bw 1191 min-bw 591
                                          tunnel mpls traffic-eng name
                                          EPNNCS4206-
120.81_102_EPNNCS4206-120.84
                                          tunnel mpls traffic-eng
autoroute announce
                                          tunnel mpls traffic-eng priority
2 2
                                          tunnel mpls traffic-eng bfd
encap-mode gal bfd-tunnel102
                                          tunnel mpls traffic-eng path-
option 10 dynamic
                                          tunnel mpls traffic-eng record-
route
                                          tunnel mpls traffic-eng path-
selection metric te
                                          exit
                                    </config>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.81_102_EPNNCS4206-120.84
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>3</work-flow-index>
                              <work-flow-
name>CHECK_TE_TUNNEL_STATUS_AND_SIGNALLING
```

```
                              </work-flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>Tunnel signalling with auto
bandwidth, status is UP</info>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.84_20_EPNNCS4206-120.81
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>1</work-flow-index>
                              <work-flow-
name>FIND_MATCHING_TE_TUNNEL</work-flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>Tunnel match not found between A
and Z end, hence creating
                                          new tunnel</info>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.84_20_EPNNCS4206-120.81
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>2</work-flow-index>
                              <work-flow-name>CREATE_TE_TUNNEL</work-flow-
name>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.84</node-ref>
                                    <state>SUCCESSFUL</state>
                                    <config>bfd-template single-hop bfd-
tunnel20
                                          interval min-tx 800 min-rx 800
multiplier 8
                                          exit
                                          interface Tunnel20
                                          description Created via API
                                          tunnel mode mpls traffic-eng
                                          ip unnumbered Loopback192
                                          tunnel destination 192.168.0.81
                                          bandwidth 1191
                                          tunnel mpls traffic-eng auto-bw
frequency 5000 max-bw 1191 min-bw 591
                                          tunnel mpls traffic-eng name
                                          EPNNCS4206-120.84_20_EPNNCS4206-
120.81
                                          tunnel mpls traffic-eng
autoroute announce
                                          tunnel mpls traffic-eng priority
2 2
```

```
                                          tunnel mpls traffic-eng bfd
encap-mode gal bfd-tunnel120
                                          tunnel mpls traffic-eng path-
option 10 dynamic
                                          tunnel mpls traffic-eng record-
route
                                          tunnel mpls traffic-eng path-
selection metric te
                                          exit
                                    </config>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.84_20_EPNNCS4206-120.81
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>3</work-flow-index>
                              <work-flow-
name>CHECK_TE_TUNNEL_STATUS_AND_SIGNALLING
                              </work-flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>Tunnel signalling with auto
bandwidth, status is UP</info>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.84_117_EPNNCS4206-120.86
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>1</work-flow-index>
                              <work-flow-
name>FIND_MATCHING_TE_TUNNEL</work-flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>Tunnel match not found between A
and Z end, hence creating
                                          new tunnel</info>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.84_117_EPNNCS4206-120.86
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>2</work-flow-index>
                              <work-flow-name>CREATE_TE_TUNNEL</work-flow-
name>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.84</node-ref>
```

```
                                    <state>SUCCESSFUL</state>
                                    <config>bfd-template single-hop bfd-
tunnel117
                                          interval min-tx 800 min-rx 800
multiplier 8
                                          exit
                                          interface Tunnel117
                                          description Created via API
                                          tunnel mode mpls traffic-eng
                                          ip unnumbered Loopback192
                                          tunnel destination 192.168.0.86
                                          bandwidth 1191
                                          tunnel mpls traffic-eng auto-bw
frequency 5000 max-bw 1191 min-bw 591
                                          tunnel mpls traffic-eng name
                                          EPNNCS4206-
120.84_117_EPNNCS4206-120.86
                                          tunnel mpls traffic-eng
autoroute announce
                                          tunnel mpls traffic-eng priority
2 2
                                          tunnel mpls traffic-eng bfd
encap-mode gal bfd-tunnel117
                                          tunnel mpls traffic-eng path-
option 10 dynamic
                                          tunnel mpls traffic-eng record-
route
                                          tunnel mpls traffic-eng path-
selection metric te
                                          exit
                                    </config>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.84_117_EPNNCS4206-120.86
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>3</work-flow-index>
                              <work-flow-
name>CHECK_TE_TUNNEL_STATUS_AND_SIGNALLING
                              </work-flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>Tunnel signalling with auto
bandwidth, status is UP</info>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.86_64_EPNNCS4206-120.84
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>1</work-flow-index>
```

```
                              <work-flow-
name>FIND_MATCHING_TE_TUNNEL</work-flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>Tunnel match not found between A
and Z end, hence creating
                                          new tunnel</info>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.86_64_EPNNCS4206-120.84
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>2</work-flow-index>
                              <work-flow-name>CREATE_TE_TUNNEL</work-flow-
name>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.86</node-ref>
                                    <state>SUCCESSFUL</state>
                                    <config>bfd-template single-hop bfd-
tunnel64
                                          interval min-tx 800 min-rx 800
multiplier 8
                                          exit
                                          interface Tunnel64
                                          description Created via API
                                          tunnel mode mpls traffic-eng
                                          ip unnumbered Loopback192
                                          tunnel destination 192.168.0.84
                                          bandwidth 1191
                                          tunnel mpls traffic-eng auto-bw
frequency 5000 max-bw 1191 min-bw 591
                                          tunnel mpls traffic-eng name
                                          EPNNCS4206-120.86_64_EPNNCS4206-
120.84
                                          tunnel mpls traffic-eng
autoroute announce
                                          tunnel mpls traffic-eng priority
2 2
                                          tunnel mpls traffic-eng bfd
encap-mode gal bfd-tunnel64
                                          tunnel mpls traffic-eng path-
option 10 dynamic
                                          tunnel mpls traffic-eng record-
route
                                          tunnel mpls traffic-eng path-
selection metric te
                                          exit
                                    </config>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
```

```
120.86_64_EPNNCS4206-120.84
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>3</work-flow-index>
                              <work-flow-
name>CHECK_TE_TUNNEL_STATUS_AND_SIGNALLING
                              </work-flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>Tunnel signalling with auto
bandwidth, status is UP</info>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-
ref>MD=CISCO_EPNM!CFS=13110010_T1_Eomer_RO-To-CO</cfs-ref>
                              <service-type>CEM</service-type>
                              <work-flow-index>4</work-flow-index>
                              <work-flow-name>CEM Orchestration</work-
flow-name>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=EPNASR903-
120-201</node-ref>
                                    <state>SUCCESSFUL</state>
                                    <config>controller T1 0/2/8
                                          no shutdown
                                          cem-group 0 unframed
                                          clock source internal
                                          interface pseudowire15
                                          encapsulation mpls
                                          control-word include
                                          neighbor 192.168.0.86 200
                                          interface CEM0/2/8
                                          cem 0
                                          l2vpn xconnect context
XCon_200_192.168.0.86
                                          member pseudowire15
                                          member CEM0/2/8 0
                                          exit
                                    </config>
                              </result>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.86</node-ref>
                                    <state>SUCCESSFUL</state>
                                    <config>controller T3 0/5/11
                                          t1 1 cem-group 0 unframed
                                          interface pseudowire75
                                          encapsulation mpls
                                          control-word include
                                          neighbor 192.168.0.201 200
                                          interface CEM0/5/11
                                          cem 0
                                          no shutdown
                                          l2vpn xconnect context
```

```
XCon_200_192.168.0.201
                                                member pseudowire75
                                                member CEM0/5/11 0
                                                exit
                                          </config>
                                    </result>
                              </work-flow-result>
                              <work-flow-result>
                                    <cfs-
ref>MD=CISCO_EPNM!CFS=13110010_T1_Eomer_RO-To-CO</cfs-ref>
                                    <service-type>CEM</service-type>
                                    <work-flow-index>5</work-flow-index>
                                    <work-flow-name>CEM Orchestration</work-
flow-name>
                                    <result>
                                          <state>SUCCESSFUL</state>
                                          <info>PW Interface status for A/Z ends
are Up/Down</info>
                                    </result>
                              </work-flow-result>
                        </deploy-results>
                        <completion-status>SUCCESS</completion-status>
                  </ns36:provision-service-request>
      </ns4:data>
</ns4:response-message>
```

7.49 Modify CEM service with MPLS TE – RO to CO devices

7.49.1 Request

POST /restconf/operations/v1/cisco-service-activation:modify-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+json
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<ns:modify-service-request
      xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns1="urn:cisco:params:xml:ns:yang:service:oam:v1">
      <ns:cfs-ref>MD=CISCO_EPNM!CFS=13110010_T1_Eomer_RO-To-CO</ns:cfs-
ref>
      <ns:service-order-data>
            <ns:service-name>13110010_T1_Eomer_RO-To-CO</ns:service-name>
            <ns:service-description>13110010_DESC</ns:service-description>
            <ns:service-type>tdm-cem</ns:service-type>
            <ns:service-subtype>t1</ns:service-subtype>
            <ns:service-activate>true</ns:service-activate>
            <ns:customer-
ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</ns:customer-ref>
            <ns:cem-data>
                  <ns:transport-settings>
                        <ns:frame-type>SAToP</ns:frame-type>
                        <ns:payload-size>160</ns:payload-size>
                        <ns:dejitter-buffer-size>6</ns:dejitter-buffer-
```

```
size>
                        <ns:idle-pattern>0xAB</ns:idle-pattern>
                        <ns:dummy-mode>user-defined</ns:dummy-mode>
                        <ns:dummy-pattern>0xCD</ns:dummy-pattern>
                  </ns:transport-settings>
            </ns:cem-data>
            <ns:termination-point-list>
                  <ns:termination-point-config>
                        <ns:tp-ref>MD=CISCO_EPNM!ND=EPNASR903-120-
201!PTP=name=T1 0/2/8;lr=lr-t1</ns:tp-ref>
                        <ns:cem-data>
                              <ns:clock-source>internal</ns:clock-source>
                              <ns:working-path>
                                    <ns:auto-allocate-path>false</ns:auto-
allocate-path>
                              </ns:working-path>
                        </ns:cem-data>
                  </ns:termination-point-config>
                  <ns:termination-point-config>
                        <ns:tp-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.86!PTP=name=T3 0/5/11;lr=lr-t3</ns:tp-ref>
                        <ns:cem-data>
                              <ns:working-path>
                                    <ns:lower-order-path>
                                          <ns:available-path-ref>T1
1</ns:available-path-ref>
                                    </ns:lower-order-path>
                                    <ns:auto-allocate-path>false</ns:auto-
allocate-path>
                              </ns:working-path>
                        </ns:cem-data>
                  </ns:termination-point-config>
            </ns:termination-point-list>
            <ns:forwarding-path>
                  <ns:pseudowire-settings>
                        <ns:pw-bandwidth>200</ns:pw-bandwidth>
                        <ns:enable-control-word>true</ns:enable-control-
word>
                        <ns:fallback-to-ldp>true</ns:fallback-to-ldp>
                        <ns:interworking-option></ns:interworking-option>
                        <ns:service-bandwidth>100</ns:service-bandwidth>
                  </ns:pseudowire-settings>
                  <!-- TE TUNNLEL -->
                  <ns:mpls-te-data>
                        <ns:te-tunnel-type>uni-directional</ns:te-tunnel-
type>
                        <!-- <ns:wrap-protection>false</ns:wrap-
protection> -->               <!-- FLEX -->
                        <ns:protection-type>Working</ns:protection-type>
                        <!-- <ns:enable-fault-oam>false</ns:enable-fault-
oam> -->          <!-- FLEX -->
                        <ns:enable-lockdown>true</ns:enable-lockdown>
                        <ns:enable-auto-bandwidth>true</ns:enable-auto-
bandwidth>              <!-- UNI -->
                        <ns:enable-autoroute>true</ns:enable-autoroute>
                        <ns:enable-frr>false</ns:enable-frr>
```

```
                        <!-- UNI -->
                        <ns:tunnel-setting>
                              <!-- <ns:global-id>2408002</ns:global-id> --
>                       <!-- FLEX -->
                              <ns:setup-priority>2</ns:setup-priority>
                              <ns:hold-priority>2</ns:hold-priority>
                              <ns:auto-bandwidth-frequency>5000</ns:auto-
bandwidth-frequency>    <!-- UNI Auto BW -->
                              <ns:max-auto-bandwidth>1191</ns:max-auto-
bandwidth>               <!-- UNI Auto BW -->
                              <ns:min-auto-bandwidth>591</ns:min-auto-
bandwidth>                    <!-- UNI Auto BW -->
                              <!-- <ns:bandwidth-pool-
type>Global</ns:bandwidth-pool-type> --> <!-- Manual BW -->
                              <!-- <ns:bandwidth>2000</ns:bandwidth> -->
            <!-- Manual BW -->
                        </ns:tunnel-setting>
                        <ns:bfd-settings>
                              <ns:enable>true</ns:enable>
                              <ns:min-interval>800</ns:min-interval>
                              <ns:multiplier>8</ns:multiplier>
                        </ns:bfd-settings>
                  </ns:mpls-te-data>
            </ns:forwarding-path>
      </ns:service-order-data>
</ns:modify-service-request>
```

7.49.2 Response

```
<ns4:response-message
xmlns:ns40="urn:cisco:params:xml:ns:yang:restconf:party"
      xmlns:ns39="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns38="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns37="urn:ietf:params:xml:ns:yang:ietf-restconf"
      xmlns:ns36="urn:cisco:params:xml:ns:yang:service:activation:status:v
1"
      xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
      xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns31="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns30="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
      xmlns:ns29="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns28="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
      xmlns:ns27="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns26="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns24="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
      xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
      xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
```

```
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
      xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
      <ns4:header>
            <ns4:firstIndex>0</ns4:firstIndex>
            <ns4:lastIndex>0</ns4:lastIndex>
      </ns4:header>
      <ns4:data>
            <ns36:modify-service-request>
                  <request-id>da9ded52-4d27-4c0d-8f3f-
8b507ec722de</request-id>
                  <service-name>13110010_T1_Eomer_RO-To-CO</service-name>
                  <service-type>tdm-cem</service-type>
                  <service-subtype>t1</service-subtype>
                  <preview>false</preview>
                  <request-time>2017-11-13T17:18:53.811+05:30</request-
time>
                  <completion-time>2017-11-
13T17:22:29.673+05:30</completion-time>
                  <deploy-results>
                        <work-flow-result>
                              <cfs-
ref>MD=CISCO_EPNM!CFS=13110010_T1_Eomer_RO-To-CO</cfs-ref>
                              <service-type>CEM</service-type>
                              <work-flow-index>5</work-flow-index>
                              <work-flow-name>CEM Orchestration</work-
flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>Amend Operation for Tunnel
Service 1473184</info>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-
ref>MD=CISCO_EPNM!CFS=13110010_T1_Eomer_RO-To-CO</cfs-ref>
                              <service-type>CEM</service-type>
                              <work-flow-index>4</work-flow-index>
                              <work-flow-name>UPDATE_CEM_SERVICE</work-
flow-name>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.86</node-ref>
```

```
                                    <state>SUCCESSFUL</state>
                                    <config>interface CEM0/5/11
                                          cem 0
                                          no shutdown
                                          payload-size 160 dejitter-buffer
6
                                          idle-pattern 0xAB
                                          dummy-mode user-defined
                                          dummy-pattern 0xCD
                                          exit
                                          exit
                                    </config>
                              </result>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=EPNASR903-
120-201</node-ref>
                                    <state>SUCCESSFUL</state>
                                    <config>controller T1 0/2/8
                                          no shutdown
                                          interface CEM0/2/8
                                          cem 0
                                          payload-size 160 dejitter-buffer
6
                                          idle-pattern 0xAB
                                          dummy-mode user-defined
                                          dummy-pattern 0xCD
                                          exit
                                          exit
                                    </config>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-
ref>MD=CISCO_EPNM!CFS=13110010_T1_Eomer_RO-To-CO</cfs-ref>
                              <service-type>CEM</service-type>
                              <work-flow-index>5</work-flow-index>
                              <work-flow-name>CEM Orchestration</work-
flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>PW Interface status for A/Z ends
are Down/Down</info>
                              </result>
                        </work-flow-result>
                  </deploy-results>
                  <completion-status>SUCCESS</completion-status>
            </ns36:modify-service-request>
      </ns4:data>
</ns4:response-message>
```

7.50 Provision CEM service with MPLS TE – CO to RO devices

7.50.1 Request

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1

Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<ns:provision-service-request
      xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns="urn:cisco:params:xml:ns:yang:service:activation:v1">
      <ns:service-order-data>
            <ns:service-name>13110011_T1_Eomer_CO-To-RO</ns:service-name>
            <ns:service-description>13110011_DESC</ns:service-description>
            <ns:service-type>tdm-cem</ns:service-type>
            <ns:service-subtype>t1</ns:service-subtype>
            <ns:service-activate>true</ns:service-activate>
            <ns:customer-
ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</ns:customer-ref>
            <ns:cem-data>
                  <ns:transport-settings>
                        <ns:frame-type>SAToP</ns:frame-type>

                  </ns:transport-settings>
            </ns:cem-data>
            <ns:termination-point-list>
                  <ns:termination-point-config>
                        <ns:tp-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.86!PTP=name=T3 0/5/11;lr=lr-t3</ns:tp-ref>
                        <ns:cem-data>
                              <ns:working-path>
                                    <ns:lower-order-path>
                                          <ns:available-path-ref>T1
1</ns:available-path-ref>
                                    </ns:lower-order-path>
                                    <ns:auto-allocate-path>false</ns:auto-
allocate-path>
                              </ns:working-path>
                        </ns:cem-data>
                  </ns:termination-point-config>
                  <ns:termination-point-config>
                        <ns:tp-ref>MD=CISCO_EPNM!ND=EPNASR903-120-
201!PTP=name=T1 0/2/8;lr=lr-t1</ns:tp-ref>
                        <ns:cem-data>
                              <ns:clock-source>internal</ns:clock-source>
                              <ns:working-path>
                                    <ns:auto-allocate-path>false</ns:auto-
allocate-path>
                              </ns:working-path>
                        </ns:cem-data>
                  </ns:termination-point-config>
            </ns:termination-point-list>
            <ns:forwarding-path>
                  <ns:pseudowire-settings>
                        <ns:pw-bandwidth>200</ns:pw-bandwidth>
                        <ns:enable-control-word>true</ns:enable-control-
word>
                        <ns:fallback-to-ldp>true</ns:fallback-to-ldp>
                        <ns:interworking-option></ns:interworking-option>
                        <ns:service-bandwidth>100</ns:service-bandwidth>
```

```
                  </ns:pseudowire-settings>
                  <!-- TE TUNNLEL -->
                  <ns:mpls-te-data>
                        <ns:te-tunnel-type>uni-directional</ns:te-tunnel-
type>
                        <!-- <ns:wrap-protection>false</ns:wrap-
protection> -->              <!-- FLEX -->
                        <ns:protection-type>Working</ns:protection-type>
                        <!-- <ns:enable-fault-oam>false</ns:enable-fault-
oam> -->          <!-- FLEX -->
                        <ns:enable-lockdown>true</ns:enable-lockdown>
                        <ns:enable-auto-bandwidth>true</ns:enable-auto-
bandwidth>               <!-- UNI -->
                        <ns:enable-autoroute>true</ns:enable-autoroute>
                        <ns:enable-frr>false</ns:enable-frr>
                        <!-- UNI -->
                        <ns:tunnel-setting>
                              <!-- <ns:global-id>2408002</ns:global-id> --
>                       <!-- FLEX -->
                              <ns:setup-priority>2</ns:setup-priority>
                              <ns:hold-priority>2</ns:hold-priority>
                              <ns:auto-bandwidth-frequency>5000</ns:auto-
bandwidth-frequency>    <!-- UNI Auto BW -->
                              <ns:max-auto-bandwidth>1191</ns:max-auto-
bandwidth>               <!-- UNI Auto BW -->
                              <ns:min-auto-bandwidth>591</ns:min-auto-
bandwidth>                    <!-- UNI Auto BW -->
                              <!-- <ns:bandwidth-pool-
type>Global</ns:bandwidth-pool-type> --> <!-- Manual BW -->
                              <!-- <ns:bandwidth>2000</ns:bandwidth> -->
            <!-- Manual BW -->
                        </ns:tunnel-setting>
                        <ns:bfd-settings>
                              <ns:enable>true</ns:enable>
                              <ns:min-interval>800</ns:min-interval>
                              <ns:multiplier>8</ns:multiplier>
                        </ns:bfd-settings>
                  </ns:mpls-te-data>
            </ns:forwarding-path>
      </ns:service-order-data>
</ns:provision-service-request>
```

7.50.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
<ns4:response-message
xmlns:ns40="urn:cisco:params:xml:ns:yang:restconf:party"
      xmlns:ns39="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns38="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns37="urn:ietf:params:xml:ns:yang:ietf-restconf"
      xmlns:ns36="urn:cisco:params:xml:ns:yang:service:activation:status:v
1"
      xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
```

```
      xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns31="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns30="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
      xmlns:ns29="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns28="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
      xmlns:ns27="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns26="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns24="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
      xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
      xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
      xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
      <ns4:header>
            <ns4:firstIndex>0</ns4:firstIndex>
            <ns4:lastIndex>0</ns4:lastIndex>
      </ns4:header>
      <ns4:data>
            <ns36:provision-service-request>
                  <request-id>317b8599-ecdb-42bb-bb79-
16536000ccb8</request-id>
                  <service-name>13110011_T1_Eomer_CO-To-RO</service-name>
                  <service-type>tdm-cem</service-type>
                  <service-subtype>t1</service-subtype>
                  <preview>false</preview>
                  <request-time>2017-11-13T17:30:52.274+05:30</request-
time>
                  <completion-time>2017-11-
13T17:49:45.661+05:30</completion-time>
                  <deploy-results>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.86_42_EPNNCS4206-120.81
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
```

```
                              <work-flow-index>1</work-flow-index>
                              <work-flow-
name>FIND_MATCHING_TE_TUNNEL</work-flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>Tunnel match not found between A
and Z end, hence creating
                                          new tunnel</info>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.86_42_EPNNCS4206-120.81
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>2</work-flow-index>
                              <work-flow-name>CREATE_TE_TUNNEL</work-flow-
name>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.86</node-ref>
                                    <state>SUCCESSFUL</state>
                                    <config>bfd-template single-hop bfd-
tunnel42
                                          interval min-tx 800 min-rx 800
multiplier 8
                                          exit
                                          interface Tunnel42
                                          description Created via API
                                          tunnel mode mpls traffic-eng
                                          ip unnumbered Loopback192
                                          tunnel destination 192.168.0.81
                                          bandwidth 1191
                                          tunnel mpls traffic-eng auto-bw
frequency 5000 max-bw 1191 min-bw 591
                                          tunnel mpls traffic-eng name
                                          EPNNCS4206-120.86_42_EPNNCS4206-
120.81
                                          tunnel mpls traffic-eng
autoroute announce
                                          tunnel mpls traffic-eng priority
2 2
                                          tunnel mpls traffic-eng bfd
encap-mode gal bfd-tunnel42
                                          tunnel mpls traffic-eng path-
option 10 dynamic
                                          tunnel mpls traffic-eng record-
route
                                          tunnel mpls traffic-eng path-
selection metric te
                                          exit
                                    </config>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
```

```
                                <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.86_42_EPNNCS4206-120.81
                                </cfs-ref>
                                <service-type>Unidirectional TE
Tunnel</service-type>
                                <work-flow-index>3</work-flow-index>
                                <work-flow-
name>CHECK_TE_TUNNEL_STATUS_AND_SIGNALLING
                                </work-flow-name>
                                <result>
                                      <state>SUCCESSFUL</state>
                                      <info>Tunnel signalling with auto
bandwidth, status is UP</info>
                                </result>
                          </work-flow-result>
                          <work-flow-result>
                                <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.81_101_EPNNCS4206-120.86
                                </cfs-ref>
                                <service-type>Unidirectional TE
Tunnel</service-type>
                                <work-flow-index>1</work-flow-index>
                                <work-flow-
name>FIND_MATCHING_TE_TUNNEL</work-flow-name>
                                <result>
                                      <state>SUCCESSFUL</state>
                                      <info>Tunnel match not found between A
and Z end, hence creating
                                            new tunnel</info>
                                </result>
                          </work-flow-result>
                          <work-flow-result>
                                <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.81_101_EPNNCS4206-120.86
                                </cfs-ref>
                                <service-type>Unidirectional TE
Tunnel</service-type>
                                <work-flow-index>2</work-flow-index>
                                <work-flow-name>CREATE_TE_TUNNEL</work-flow-
name>
                                <result>
                                      <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.81</node-ref>
                                      <state>SUCCESSFUL</state>
                                      <config>bfd-template single-hop bfd-
tunnel101
                                            interval min-tx 800 min-rx 800
multiplier 8
                                            exit
                                            interface Tunnel101
                                            description Created via API
                                            tunnel mode mpls traffic-eng
                                            ip unnumbered Loopback192
                                            tunnel destination 192.168.0.86
                                            bandwidth 1191
                                            tunnel mpls traffic-eng auto-bw
```

```
frequency 5000 max-bw 1191 min-bw 591
                                        tunnel mpls traffic-eng name
                                        EPNNCS4206-
120.81_101_EPNNCS4206-120.86
                                        tunnel mpls traffic-eng
autoroute announce
                                        tunnel mpls traffic-eng priority
2 2
                                        tunnel mpls traffic-eng bfd
encap-mode gal bfd-tunnel101
                                        tunnel mpls traffic-eng path-
option 10 dynamic
                                        tunnel mpls traffic-eng record-
route
                                        tunnel mpls traffic-eng path-
selection metric te
                                        exit
                                  </config>
                            </result>
                      </work-flow-result>
                      <work-flow-result>
                            <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.81_101_EPNNCS4206-120.86
                            </cfs-ref>
                            <service-type>Unidirectional TE
Tunnel</service-type>
                            <work-flow-index>3</work-flow-index>
                            <work-flow-
name>CHECK_TE_TUNNEL_STATUS_AND_SIGNALLING
                            </work-flow-name>
                            <result>
                                  <state>SUCCESSFUL</state>
                                  <info>Tunnel signalling with auto
bandwidth, status is UP</info>
                            </result>
                      </work-flow-result>
                      <work-flow-result>
                            <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.86_64_EPNNCS4206-120.84
                            </cfs-ref>
                            <service-type>Unidirectional TE
Tunnel</service-type>
                            <work-flow-index>1</work-flow-index>
                            <work-flow-
name>FIND_MATCHING_TE_TUNNEL</work-flow-name>
                            <result>
                                  <state>SUCCESSFUL</state>
                                  <info>Tunnel match not found between A
and Z end, hence creating
                                        new tunnel</info>
                            </result>
                      </work-flow-result>
                      <work-flow-result>
                            <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.86_64_EPNNCS4206-120.84
                            </cfs-ref>
```

```
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>2</work-flow-index>
                              <work-flow-name>CREATE_TE_TUNNEL</work-flow-
name>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.86</node-ref>
                                    <state>SUCCESSFUL</state>
                                    <config>bfd-template single-hop bfd-
tunnel64
                                          interval min-tx 800 min-rx 800
multiplier 8
                                          exit
                                          interface Tunnel64
                                          description Created via API
                                          tunnel mode mpls traffic-eng
                                          ip unnumbered Loopback192
                                          tunnel destination 192.168.0.84
                                          bandwidth 1191
                                          tunnel mpls traffic-eng auto-bw
frequency 5000 max-bw 1191 min-bw 591
                                          tunnel mpls traffic-eng name
                                          EPNNCS4206-120.86_64_EPNNCS4206-
120.84
                                          tunnel mpls traffic-eng
autoroute announce
                                          tunnel mpls traffic-eng priority
2 2
                                          tunnel mpls traffic-eng bfd
encap-mode gal bfd-tunnel64
                                          tunnel mpls traffic-eng path-
option 10 dynamic
                                          tunnel mpls traffic-eng record-
route
                                          tunnel mpls traffic-eng path-
selection metric te
                                          exit
                                    </config>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.86_64_EPNNCS4206-120.84
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>3</work-flow-index>
                              <work-flow-
name>CHECK_TE_TUNNEL_STATUS_AND_SIGNALLING
                              </work-flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>Tunnel signalling with auto
bandwidth, status is UP</info>
                              </result>
```

```
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.84_20_EPNNCS4206-120.86
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>1</work-flow-index>
                              <work-flow-
name>FIND_MATCHING_TE_TUNNEL</work-flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>Tunnel match not found between A
and Z end, hence creating
                                          new tunnel</info>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.84_20_EPNNCS4206-120.86
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>2</work-flow-index>
                              <work-flow-name>CREATE_TE_TUNNEL</work-flow-
name>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.84</node-ref>
                                    <state>SUCCESSFUL</state>
                                    <config>bfd-template single-hop bfd-
tunnel20
                                          interval min-tx 800 min-rx 800
multiplier 8
                                          exit
                                          interface Tunnel20
                                          description Created via API
                                          tunnel mode mpls traffic-eng
                                          ip unnumbered Loopback192
                                          tunnel destination 192.168.0.86
                                          bandwidth 1191
                                          tunnel mpls traffic-eng auto-bw
frequency 5000 max-bw 1191 min-bw 591
                                          tunnel mpls traffic-eng name
                                          EPNNCS4206-120.84_20_EPNNCS4206-
120.86
                                          tunnel mpls traffic-eng
autoroute announce
                                          tunnel mpls traffic-eng priority
2 2
                                          tunnel mpls traffic-eng bfd
encap-mode gal bfd-tunnel20
                                          tunnel mpls traffic-eng path-
option 10 dynamic
                                          tunnel mpls traffic-eng record-
route
```

```
                                          tunnel mpls traffic-eng path-
selection metric te
                                          exit
                                    </config>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.84_20_EPNNCS4206-120.86
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>3</work-flow-index>
                              <work-flow-
name>CHECK_TE_TUNNEL_STATUS_AND_SIGNALLING
                              </work-flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>Tunnel signalling with auto
bandwidth, status is UP</info>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.81_102_EPNNCS4206-120.84
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>1</work-flow-index>
                              <work-flow-
name>FIND_MATCHING_TE_TUNNEL</work-flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>Tunnel match not found between A
and Z end, hence creating
                                          new tunnel</info>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.81_102_EPNNCS4206-120.84
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>2</work-flow-index>
                              <work-flow-name>CREATE_TE_TUNNEL</work-flow-
name>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.81</node-ref>
                                    <state>SUCCESSFUL</state>
                                    <config>bfd-template single-hop bfd-
tunnel102
                                          interval min-tx 800 min-rx 800
multiplier 8
                                          exit
```

```
                                        interface Tunnel102
                                        description Created via API
                                        tunnel mode mpls traffic-eng
                                        ip unnumbered Loopback192
                                        tunnel destination 192.168.0.84
                                        bandwidth 1191
                                        tunnel mpls traffic-eng auto-bw
frequency 5000 max-bw 1191 min-bw 591
                                        tunnel mpls traffic-eng name
                                        EPNNCS4206-
120.81_102_EPNNCS4206-120.84
                                        tunnel mpls traffic-eng
autoroute announce
                                        tunnel mpls traffic-eng priority
2 2
                                        tunnel mpls traffic-eng bfd
encap-mode gal bfd-tunnel102
                                        tunnel mpls traffic-eng path-
option 10 dynamic
                                        tunnel mpls traffic-eng record-
route
                                        tunnel mpls traffic-eng path-
selection metric te
                                        exit
                                    </config>
                                </result>
                            </work-flow-result>
                            <work-flow-result>
                                <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.81_102_EPNNCS4206-120.84
                                </cfs-ref>
                                <service-type>Unidirectional TE
Tunnel</service-type>
                                <work-flow-index>3</work-flow-index>
                                <work-flow-
name>CHECK_TE_TUNNEL_STATUS_AND_SIGNALLING
                                </work-flow-name>
                                <result>
                                    <state>SUCCESSFUL</state>
                                    <info>Tunnel signalling with auto
bandwidth, status is UP</info>
                                </result>
                            </work-flow-result>
                            <work-flow-result>
                                <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.84_117_EPNNCS4206-120.81
                                </cfs-ref>
                                <service-type>Unidirectional TE
Tunnel</service-type>
                                <work-flow-index>1</work-flow-index>
                                <work-flow-
name>FIND_MATCHING_TE_TUNNEL</work-flow-name>
                                <result>
                                    <state>SUCCESSFUL</state>
                                    <info>Tunnel match not found between A
and Z end, hence creating
```

```
                                        new tunnel</info>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.84_117_EPNNCS4206-120.81
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>2</work-flow-index>
                              <work-flow-name>CREATE_TE_TUNNEL</work-flow-
name>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.84</node-ref>
                                    <state>SUCCESSFUL</state>
                                    <config>bfd-template single-hop bfd-
tunnel117
                                        interval min-tx 800 min-rx 800
multiplier 8
                                        exit
                                        interface Tunnel117
                                        description Created via API
                                        tunnel mode mpls traffic-eng
                                        ip unnumbered Loopback192
                                        tunnel destination 192.168.0.81
                                        bandwidth 1191
                                        tunnel mpls traffic-eng auto-bw
frequency 5000 max-bw 1191 min-bw 591
                                        tunnel mpls traffic-eng name
                                        EPNNCS4206-
120.84_117_EPNNCS4206-120.81
                                        tunnel mpls traffic-eng
autoroute announce
                                        tunnel mpls traffic-eng priority
2 2
                                        tunnel mpls traffic-eng bfd
encap-mode gal bfd-tunnel117
                                        tunnel mpls traffic-eng path-
option 10 dynamic
                                        tunnel mpls traffic-eng record-
route
                                        tunnel mpls traffic-eng path-
selection metric te
                                        exit
                                    </config>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.84_117_EPNNCS4206-120.81
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>3</work-flow-index>
                              <work-flow-
```

```
name>CHECK_TE_TUNNEL_STATUS_AND_SIGNALLING
                                </work-flow-name>
                                <result>
                                      <state>SUCCESSFUL</state>
                                      <info>Tunnel signalling with auto
bandwidth, status is UP</info>
                                </result>
                          </work-flow-result>
                          <work-flow-result>
                                <cfs-
ref>MD=CISCO_EPNM!CFS=13110011_T1_Eomer_CO-To-RO</cfs-ref>
                                <service-type>CEM</service-type>
                                <work-flow-index>4</work-flow-index>
                                <work-flow-name>CEM Orchestration</work-
flow-name>
                                <result>
                                      <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.86</node-ref>
                                      <state>SUCCESSFUL</state>
                                      <config>controller T3 0/5/11
                                            t1 1 cem-group 0 unframed
                                            interface pseudowire75
                                            encapsulation mpls
                                            control-word include
                                            neighbor 192.168.0.201 200
                                            interface CEM0/5/11
                                            cem 0
                                            no shutdown
                                            l2vpn xconnect context
XCon_200_192.168.0.201
                                            member pseudowire75
                                            member CEM0/5/11 0
                                            exit
                                      </config>
                                </result>
                                <result>
                                      <node-ref>MD=CISCO_EPNM!ND=EPNASR903-
120-201</node-ref>
                                      <state>SUCCESSFUL</state>
                                      <config>controller T1 0/2/8
                                            no shutdown
                                            cem-group 0 unframed
                                            clock source internal
                                            interface pseudowire15
                                            encapsulation mpls
                                            control-word include
                                            neighbor 192.168.0.86 200
                                            interface CEM0/2/8
                                            cem 0
                                            l2vpn xconnect context
XCon_200_192.168.0.86
                                            member pseudowire15
                                            member CEM0/2/8 0
                                            exit
                                      </config>
                                </result>
```

```
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-
ref>MD=CISCO_EPNM!CFS=13110011_T1_Eomer_CO-To-RO</cfs-ref>
                              <service-type>CEM</service-type>
                              <work-flow-index>5</work-flow-index>
                              <work-flow-name>CEM Orchestration</work-
flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>PW Interface status for A/Z ends
are Up/Down</info>
                              </result>
                        </work-flow-result>
                  </deploy-results>
                  <completion-status>SUCCESS</completion-status>
            </ns36:provision-service-request>
      </ns4:data>
</ns4:response-message>
```

7.51 Modify CEM service with MPLS TE – RO to CO devices

7.51.1 Request

POST /restconf/operations/v1/cisco-service-activation:modify-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+json
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<ns:modify-service-request
      xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns1="urn:cisco:params:xml:ns:yang:service:oam:v1">
      <ns:cfs-ref>MD=CISCO_EPNM!CFS=13110011_T1_Eomer_CO-To-RO</ns:cfs-
ref>
      <ns:service-order-data>
            <ns:service-name>13110011_T1_Eomer_CO-To-RO</ns:service-name>
            <ns:service-description>13110011_DESC</ns:service-description>
            <ns:service-type>tdm-cem</ns:service-type>
            <ns:service-subtype>t1</ns:service-subtype>
            <ns:service-activate>true</ns:service-activate>
            <ns:customer-
ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</ns:customer-ref>
            <ns:cem-data>
                  <ns:transport-settings>
                        <ns:frame-type>SAToP</ns:frame-type>
                        <ns:payload-size>160</ns:payload-size>
                        <ns:dejitter-buffer-size>6</ns:dejitter-buffer-
size>
                        <ns:idle-pattern>0xAB</ns:idle-pattern>
                        <ns:dummy-mode>user-defined</ns:dummy-mode>
                        <ns:dummy-pattern>0xCD</ns:dummy-pattern>
                  </ns:transport-settings>
            </ns:cem-data>
            <ns:termination-point-list>
```

```
                  <ns:termination-point-config>
                        <ns:tp-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.86!PTP=name=T3 0/5/11;lr=lr-t3</ns:tp-ref>
                        <ns:cem-data>
                              <ns:working-path>
                                    <ns:lower-order-path>
                                          <ns:available-path-ref>T1
1</ns:available-path-ref>
                                    </ns:lower-order-path>
                                    <ns:auto-allocate-path>false</ns:auto-
allocate-path>
                              </ns:working-path>
                        </ns:cem-data>
                  </ns:termination-point-config>
                  <ns:termination-point-config>
                        <ns:tp-ref>MD=CISCO_EPNM!ND=EPNASR903-120-
201!PTP=name=T1 0/2/8;lr=lr-t1</ns:tp-ref>
                        <ns:cem-data>
                              <ns:clock-source>internal</ns:clock-source>
                              <ns:working-path>
                                    <ns:auto-allocate-path>false</ns:auto-
allocate-path>
                              </ns:working-path>
                        </ns:cem-data>
                  </ns:termination-point-config>
            </ns:termination-point-list>
            <ns:forwarding-path>
                  <ns:pseudowire-settings>
                        <ns:pw-bandwidth>200</ns:pw-bandwidth>
                        <ns:enable-control-word>true</ns:enable-control-
word>
                        <ns:fallback-to-ldp>true</ns:fallback-to-ldp>
                        <ns:interworking-option></ns:interworking-option>
                        <ns:service-bandwidth>100</ns:service-bandwidth>
                  </ns:pseudowire-settings>
                  <!-- TE TUNNLEL -->
                  <ns:mpls-te-data>
                        <ns:te-tunnel-type>uni-directional</ns:te-tunnel-
type>
                        <!-- <ns:wrap-protection>false</ns:wrap-
protection> -->              <!-- FLEX -->
                        <ns:protection-type>Working</ns:protection-type>
                        <!-- <ns:enable-fault-oam>false</ns:enable-fault-
oam> -->          <!-- FLEX -->
                        <ns:enable-lockdown>true</ns:enable-lockdown>
                        <ns:enable-auto-bandwidth>true</ns:enable-auto-
bandwidth>              <!-- UNI -->
                        <ns:enable-autoroute>true</ns:enable-autoroute>
                        <ns:enable-frr>false</ns:enable-frr>
                        <!-- UNI -->
                        <ns:tunnel-setting>
                              <!-- <ns:global-id>2408002</ns:global-id> --
>                     <!-- FLEX -->
                              <ns:setup-priority>2</ns:setup-priority>
                              <ns:hold-priority>2</ns:hold-priority>
                              <ns:auto-bandwidth-frequency>5000</ns:auto-
```

```
bandwidth-frequency>    <!-- UNI Auto BW -->
                              <ns:max-auto-bandwidth>1191</ns:max-auto-
bandwidth>              <!-- UNI Auto BW -->
                              <ns:min-auto-bandwidth>591</ns:min-auto-
bandwidth>                    <!-- UNI Auto BW -->
                              <!-- <ns:bandwidth-pool-
type>Global</ns:bandwidth-pool-type> --> <!-- Manual BW -->
                              <!-- <ns:bandwidth>2000</ns:bandwidth> -->
            <!-- Manual BW -->
                        </ns:tunnel-setting>
                        <ns:bfd-settings>
                              <ns:enable>true</ns:enable>
                              <ns:min-interval>800</ns:min-interval>
                              <ns:multiplier>8</ns:multiplier>
                        </ns:bfd-settings>
                  </ns:mpls-te-data>
            </ns:forwarding-path>
      </ns:service-order-data>
</ns:modify-service-request>
```

7.51.2 Response

```
<ns4:response-message
xmlns:ns40="urn:cisco:params:xml:ns:yang:restconf:party"
      xmlns:ns39="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns38="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns37="urn:ietf:params:xml:ns:yang:ietf-restconf"
      xmlns:ns36="urn:cisco:params:xml:ns:yang:service:activation:status:v
1"
      xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
      xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns31="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns30="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
      xmlns:ns29="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns28="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
      xmlns:ns27="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns26="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns24="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
      xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
      xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
```

```
      xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
      xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
      <ns4:header>
            <ns4:firstIndex>0</ns4:firstIndex>
            <ns4:lastIndex>0</ns4:lastIndex>
      </ns4:header>
      <ns4:data>
            <ns36:modify-service-request>
                  <request-id>c4a54855-1b7e-446e-97d5-
1c959af0a1aa</request-id>
                  <service-name>13110011_T1_Eomer_CO-To-RO</service-name>
                  <service-type>tdm-cem</service-type>
                  <service-subtype>t1</service-subtype>
                  <preview>false</preview>
                  <request-time>2017-11-13T18:43:48.981+05:30</request-
time>
                  <completion-time>2017-11-
13T18:46:23.716+05:30</completion-time>
                  <deploy-results>
                        <work-flow-result>
                              <cfs-
ref>MD=CISCO_EPNM!CFS=13110011_T1_Eomer_CO-To-RO</cfs-ref>
                              <service-type>CEM</service-type>
                              <work-flow-index>5</work-flow-index>
                              <work-flow-name>CEM Orchestration</work-
flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>Amend Operation for Tunnel
Service 1473207</info>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-
ref>MD=CISCO_EPNM!CFS=13110011_T1_Eomer_CO-To-RO</cfs-ref>
                              <service-type>CEM</service-type>
                              <work-flow-index>4</work-flow-index>
                              <work-flow-name>UPDATE_CEM_SERVICE</work-
flow-name>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=EPNASR903-
120-201</node-ref>
                                    <state>SUCCESSFUL</state>
                                    <config>controller T1 0/2/8
                                          no shutdown
                                          interface CEM0/2/8
                                          cem 0
                                          payload-size 160 dejitter-buffer
6
                                          idle-pattern 0xAB
```

```
                                          dummy-mode user-defined
                                          dummy-pattern 0xCD
                                          exit
                                          exit
                                    </config>
                              </result>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.86</node-ref>
                                    <state>SUCCESSFUL</state>
                                    <config>controller T3 0/5/11
                                          no t1 1 clock source internal
                                          interface CEM0/5/11
                                          cem 0
                                          no shutdown
                                          payload-size 160 dejitter-buffer
6
                                          idle-pattern 0xAB
                                          dummy-mode user-defined
                                          dummy-pattern 0xCD
                                          exit
                                          exit
                                    </config>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-
ref>MD=CISCO_EPNM!CFS=13110011_T1_Eomer_CO-To-RO</cfs-ref>
                              <service-type>CEM</service-type>
                              <work-flow-index>5</work-flow-index>
                              <work-flow-name>CEM Orchestration</work-
flow-name>
                              <result>
                                    <state>SUCCESSFUL</state>
                                    <info>PW Interface status for A/Z ends
are Down/Down</info>
                              </result>
                        </work-flow-result>
                  </deploy-results>
                  <completion-status>SUCCESS</completion-status>
            </ns36:modify-service-request>
      </ns4:data>
</ns4:response-message>
```

7.52 Terminate CEM service with MPLS TE

7.52.1 Request

POST /restconf/operations/v1/cisco-service-activation:terminate-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<ns:terminate-service-request
    xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns="urn:cisco:params:xml:ns:yang:service:activation:v1">
    <ns:cfs-ref>MD=CISCO_EPNM!CFS=13110011_T1_Eomer_CO-To-RO</ns:cfs-ref>
    <ns:service-order-data>
        <ns:service-name>13110011_T1_Eomer_CO-To-RO</ns:service-name>
        <ns:service-description>CEM-T1</ns:service-description>
        <ns:service-type>tdm-cem</ns:service-type>
        <ns:service-subtype>t1</ns:service-subtype>
        <ns:service-activate>true</ns:service-activate>
        <ns:forwarding-path>
            <ns:mpls-te-data>
                        <ns:te-tunnel-type>uni-directional</ns:te-tunnel-
type>
                </ns:mpls-te-data>
        </ns:forwarding-path>
    </ns:service-order-data>
</ns:terminate-service-request>
```

7.52.2 Response

```
<ns4:response-message
xmlns:ns40="urn:cisco:params:xml:ns:yang:restconf:party"
      xmlns:ns39="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns38="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns37="urn:ietf:params:xml:ns:yang:ietf-restconf"
      xmlns:ns36="urn:cisco:params:xml:ns:yang:service:activation:status:v
1"
      xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
      xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns31="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns30="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
      xmlns:ns29="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns28="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
      xmlns:ns27="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns26="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns24="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
      xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
      xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
```

```
      xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
      xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
      <ns4:header>
            <ns4:firstIndex>0</ns4:firstIndex>
            <ns4:lastIndex>0</ns4:lastIndex>
      </ns4:header>
      <ns4:data>
            <ns36:terminate-service-request>
                  <request-id>3bd09d03-7384-48d6-bd4b-
2a4fd0d9aa36</request-id>
                  <service-name>13110011_T1_Eomer_CO-To-RO</service-name>
                  <service-type>tdm-cem</service-type>
                  <service-subtype>t1</service-subtype>
                  <preview>false</preview>
                  <request-time>2017-11-13T18:50:30.427+05:30</request-
time>
                  <completion-time>2017-11-
13T18:55:33.493+05:30</completion-time>
                  <deploy-results>
                        <work-flow-result>
                              <cfs-
ref>MD=CISCO_EPNM!CFS=13110011_T1_Eomer_CO-To-RO</cfs-ref>
                              <service-type>CEM</service-type>
                              <work-flow-index>1</work-flow-index>
                              <work-flow-name>CEASE_CEM_SERVICE</work-
flow-name>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=EPNASR903-
120-201</node-ref>
                                    <state>SUCCESSFUL</state>
                                    <config>no l2vpn xconnect context
XCon_200_192.168.0.86
                                          no interface pseudowire15
                                          controller T1 0/2/8
                                          no clock source internal
                                          no cem-group 0
                                          exit
                                    </config>
                              </result>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.86</node-ref>
                                    <state>SUCCESSFUL</state>
                                    <config>no l2vpn xconnect context
XCon_200_192.168.0.201
                                          no interface pseudowire75
                                          controller T3 0/5/11
                                          no t1 1 cem-group 0
                                          exit
                                    </config>
```

```
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.84_117_EPNNCS4206-120.81
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>2</work-flow-index>
                              <work-flow-name>CEASE_TE_TUNNEL</work-flow-
name>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.84</node-ref>
                                    <state>SUCCESSFUL</state>
                                    <config>no interface Tunnel117
                                          no bfd-template single-hop bfd-
tunnel117
                                    </config>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.81_102_EPNNCS4206-120.84
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>3</work-flow-index>
                              <work-flow-name>CEASE_TE_TUNNEL</work-flow-
name>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.81</node-ref>
                                    <state>SUCCESSFUL</state>
                                    <config>no interface Tunnel102
                                          no bfd-template single-hop bfd-
tunnel102
                                    </config>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.86_64_EPNNCS4206-120.84
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>4</work-flow-index>
                              <work-flow-name>CEASE_TE_TUNNEL</work-flow-
name>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.86</node-ref>
                                    <state>SUCCESSFUL</state>
                                    <config>no interface Tunnel64
                                          no bfd-template single-hop bfd-
tunnel64
```

```
                                    </config>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.84_20_EPNNCS4206-120.86
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>5</work-flow-index>
                              <work-flow-name>CEASE_TE_TUNNEL</work-flow-
name>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.84</node-ref>
                                    <state>SUCCESSFUL</state>
                                    <config>no interface Tunnel20
                                          no bfd-template single-hop bfd-
tunnel20
                                    </config>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.86_42_EPNNCS4206-120.81
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>6</work-flow-index>
                              <work-flow-name>CEASE_TE_TUNNEL</work-flow-
name>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.86</node-ref>
                                    <state>SUCCESSFUL</state>
                                    <config>no interface Tunnel42
                                          no bfd-template single-hop bfd-
tunnel42
                                    </config>
                              </result>
                        </work-flow-result>
                        <work-flow-result>
                              <cfs-ref>MD=CISCO_EPNM!CFS=EPNNCS4206-
120.81_101_EPNNCS4206-120.86
                              </cfs-ref>
                              <service-type>Unidirectional TE
Tunnel</service-type>
                              <work-flow-index>7</work-flow-index>
                              <work-flow-name>CEASE_TE_TUNNEL</work-flow-
name>
                              <result>
                                    <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.81</node-ref>
                                    <state>NOT_STARTED</state>
                              </result>
                        </work-flow-result>
```

```
                    </deploy-results>
                    <completion-status>SUCCESS</completion-status>
                </ns36:terminate-service-request>
            </ns4:data>
</ns4:response-message>
```

7.1 Roll Service

7.1.1 Request

POST /restconf/operations/v1/cisco-service-activation:roll-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:roll-service-request
xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1">
       <p:roll-from-cfs-ref>MD=CISCO_EPNM!CFS=t1-l10</p:roll-from-cfs-ref>
       <p:roll-to-cfs-ref>MD=CISCO_EPNM!CFS=t1-x3</p:roll-to-cfs-ref>
</p:roll-service-request>
```

7.1.2 Response

HTTP/1.1 200 OK
Server: <epnm-host>
Accept: application/yang.operation+json

```
{
    "sa.roll-service-response": {
        "sa.request-id": "7e90f291-cb8d-457a-a675-4502a7e0a985",
        "sa.service-type": "tdm-cem",
        "sa.preview": false,
        "sa.request-time": "Tue Oct 31 20:56:30 PDT 2017",
        "sa.completion-status": "SUBMITTED"
    }
}
```

7.1.3 Notification

```
{
  "push.push-change-update":{
    "push.notification-id":-2786205906220858825,
    "push.request-id":"5862d72a-31d9-4ad7-ab65-f58317dcfcae",
    "push.topic":"service-activation",
    "push.time-of-update":"2017-10-11 04:36:57.347",
    "push.operation":"push:modify",
    "push.service-activation-response":{
      "push.preview":false,
      "push.completion-time":"Wed Oct 11 04:36:55 IST 2017",
      "push.deploy-results":{
        "push.work-flow-result":{
          "push.cfs-ref":"MD=CISCO_EPNM!CFS=t1-l10",
          "push.service-type":"CEM",
          "push.work-flow-index":4,
          "push.work-flow-name":"UPDATE_CEM_SERVICE",
```

```
          "push.result":[
            {
              "push.node-ref":"MD=CISCO_EPNM!ND=EPNNCS4216-120-42.cisco.com",
              "push.state":"SUCCESSFUL",
              "push.config":"no connect Con_1634946\ncontroller T1
0\/14\/10\n
no clock source\ncontroller T1 0\/14\/20\n  no clock source\ncontroller T1
0\/14
\/22\n  no clock source\ncontroller T1 0\/14\/10\n  no cem-group
0\ncontroller T
1 0\/14\/20\n  no shutdown\n  clock source line\ncontroller T1 0\/14\/22\n
no c
em-group 0\nl2vpn xconnect context XCon_34_4.4.4.4\n  member CEM0\/14\/20 0\n
e
xit\n"
            },
            {
              "push.node-ref":"MD=CISCO_EPNM!ND=EPNNCS4216-120-41",
              "push.state":"SUCCESSFUL",
              "push.config":"controller T1 0\/7\/10\n  no clock
source\ncontroll
er T1 0\/7\/10\n  no shutdown\n  clock source line\n  exit\n"
            }
          ]
        }

      }
    }
  }
}
```

7.2 Provision MPLS-TE Service

7.2.1 Request

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload

```
<?xml version="1.0" encoding="UTF-8"?>
<p:provision-service-request
xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1">
 <p:service-order-data>
        <!--p:service-template>p:service-template</p:service-template-->
  <p:customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</p:customer-ref>
  <p:service-name>Flexlsp-0829S1</p:service-name>
  <p:service-description>Flexlsp-0829S1 test description</p:service-
description>
  <p:service-type>mpls-te-tunnel</p:service-type>
  <p:service-subtype>bi-directional-te-tunnel</p:service-subtype>
  <p:service-activate>true</p:service-activate>
  <!--p:direction>p:direction</p:direction-->
  <p:termination-point-list>
    <p:termination-point-config>
      <p:nd-ref>MD=CISCO_EPNM!ND=EPNNCS4216-120.20.Cisco.com</p:nd-ref>
```

```
      <p:directionality>source</p:directionality>
      <!--p:qos-profile-ref>p:qos-profile-ref</p:qos-profile-ref>
      <p:bfd-parameters>p:bfd-parameters</p:bfd-parameters>
      <p:network-interface-name>p:network-interface-name</p:network-
interface-name-->
      <p:mpls-te-data>
        <p:routing-process>
          <p:router-address>6.6.6.20</p:router-address>
          <p:routing-process-id>6</p:routing-process-id>
          <p:loopback-address>Loopback0</p:loopback-address>
        </p:routing-process>
      </p:mpls-te-data>
    </p:termination-point-config>
    <p:termination-point-config>
      <p:nd-ref>MD=CISCO_EPNM!ND=EPNNCS4216-120-42.cisco.com</p:nd-ref>
      <p:directionality>sink</p:directionality>
      <!--p:qos-profile-ref>p:qos-profile-ref</p:qos-profile-ref>
      <p:bfd-parameters>p:bfd-parameters</p:bfd-parameters>
      <p:network-interface-name>p:network-interface-name</p:network-
interface-name-->
      <p:mpls-te-data>
        <p:routing-process>
          <p:router-address>6.6.6.42</p:router-address>
          <p:routing-process-id>6</p:routing-process-id>
          <p:loopback-address>Loopback404</p:loopback-address>
        </p:routing-process>
      </p:mpls-te-data>
    </p:termination-point-config>
  </p:termination-point-list>
  <p:forwarding-path>

    <p:mpls-te-data>
      <!--preferred-path-ref>preferredPathRef</preferred-path-ref-->
      <!-- <te-tunnel-type>uni-directional</te-tunnel-type> -->
      <p:wrap-protection>false</p:wrap-protection>
      <!--p:enable-fault-oam>false</p:enable-fault-oam>
      <p:enable-frr>false</p:enable-frr>
      <p:enable-auto-bandwidth>false</p:enable-auto-bandwidth>
      <p:enable-autoroute>false</p:enable-autoroute>
      <p:enable-lockdown>false</p:enable-lockdown-->
      <p:protection-type>Working</p:protection-type>
      <p:tunnel-setting>
        <p:global-id>100</p:global-id>
        <p:affinity-bits>0</p:affinity-bits>
        <p:affinity-mask>AB</p:affinity-mask>
        <p:setup-priority>5</p:setup-priority>
        <p:hold-priority>3</p:hold-priority>
        <!--p:pool-type>global</p:pool-type-->
         <p:bandwidth-pool-type>Global</p:bandwidth-pool-type>
        <p:bandwidth>10</p:bandwidth>
      </p:tunnel-setting>
      <p:bfd-settings>
        <p:enable>true</p:enable>
        <p:min-interval>100</p:min-interval>
        <p:multiplier>3</p:multiplier>
      </p:bfd-settings>
```

```
    </p:mpls-te-data>
    <p:mpls-te-path-options>
      <p:working-path>
        <p:new-lsp-attribute-list>true</p:new-lsp-attribute-list>
        <p:lsp-attribute-list-name>MyLspAttrList7</p:lsp-attribute-list-name>
        <p:lsp-attributes>
          <p:affinity-bits>0x0</p:affinity-bits>
          <p:affinity-mask>0xF</p:affinity-mask>
          <p:setup-priority>8</p:setup-priority>
          <p:hold-priority>8</p:hold-priority>
          <p:enable-record-route>true</p:enable-record-route>
        </p:lsp-attributes>
        <p:path-type>explicit</p:path-type>
        <p:is-existing-path>false</p:is-existing-path>
        <p:explicit-path-name>MyExplicitPath1</p:explicit-path-name>
        <p:explicit-path-hop>
          <p:node-ref>MD=CISCO_EPNM!ND=NCS4206-120.32.Cisco.com</p:node-ref>
          <p:interface-ip-address>20.90.10.1</p:interface-ip-address>
          <p:constraint-type>include</p:constraint-type>
        </p:explicit-path-hop>
      </p:working-path>
      <p:protection-path>
            <p:new-lsp-attribute-list>false</p:new-lsp-attribute-list>
        <p:lsp-attribute-list-name>MyLspAttrList8</p:lsp-attribute-list-name>
        <p:path-type>explicit</p:path-type>
        <p:is-existing-path>false</p:is-existing-path>
        <p:explicit-path-name>MyExplicitPath1</p:explicit-path-name>
        <p:explicit-path-hop>
          <p:node-ref>MD=CISCO_EPNM!ND=NCS4206-120.32.Cisco.com</p:node-ref>
          <p:interface-ip-address>20.90.10.1</p:interface-ip-address>
          <p:constraint-type>include</p:constraint-type>
        </p:explicit-path-hop>
      </p:protection-path>
    </p:mpls-te-path-options>  </p:forwarding-path>
</p:service-order-data>
</p:provision-service-request>
```

Content-Type: application/yang.operation+json
Json Payload:

```
{
   "sa.service-order-data": {
      "sa.service-template": "MyServiceTemplate",
      "sa.service-name": "MyDemoService1",
      "sa.service-description": "MyDemoService1",
      "sa.service-type": "mpls-te-tunnel",
      "sa.service-subtype": "bi-directional-te-tunnel",
      "sa.termination-point-list": {
         "sa.termination-point-config": [
            {
               "sa.nd-ref": "MD=CISCO_EPNM!ND=NCS4206-TEST-120.32",
               "sa.directionality": "source",
               "sa.mpls-te-data": {
                  "sa.source-address": "OSPF 60.60.50.50 [6]",
                  "sa.source-loopback": "Loopback60"
               }
            },
```

```
            {
               "sa.nd-ref": "MD=CISCO_EPNM!ND=EPNCS4216-120.42",
               "sa.directionality": "sink",
               "sa.mpls-te-data": {
                  "sa.destination-address": "OSPF 21.21.21.21 [2]",
                  "sa.destination-loopback": "Loopback0"
               }
            }
         ]
      },
      "sa.forwarding-path": {
         "sa.mpls-te-data": {
            "sa.wrap-protection": "true",
            "sa.enable-fault-oam": "false",
            "sa.protection-type": "Working",
            "sa.tunnel-setting": {
               "sa.global-id": "100",
               "sa.affinity-bits": "0BF",
               "sa.affinit-mask": "0BD",
               "sa.setup-priority": "4",
               "sa.hold-priority": "7",
               "sa.pool-type": "abc",
               "sa.bandwidth-pool-type": "Global",
               "sa.bandwidth": "0 Kbps",
               "sa.enable-autoroute": "0 Kbps"
            },
            "sa.bfd-settings": {
               "sa.enalbe": "false",
               "sa.min-interval": "0",
               "sa.multiplier": "0"
            }
         },
         "sa.mpls-te-path-options": {
            "sa.working-path": {
               "sa.path-type": "explicit",
               "sa.is-existing-path": "false",
               "sa.explicit-path-name": "MyExplicitPath1",
               "sa.explicit-path-hop": [
                  {
                     "sa.node-ref": "MD=CISCO_EPNM!ND=EPASR907-120.22.s",
                     "sa.interface-ip-address": "1.1.1.1",
                     "sa.constraint-type": "include"
                  },
                  {
                     "sa.node-ref": "MD=CISCO_EPNM!ND=EPASR907-120.22.s",
                     "sa.interface-ip-address": "2.2.2.2",
                     "sa.constraint-type": "include"
                  },
                  {
                     "sa.node-ref": "MD=CISCO_EPNM!ND=EPASR907-120.22.s",
                     "sa.interface-ip-address": "3.3.3.3",
                     "sa.constraint-type": "exclude"
                  }
               ]
            },
            "sa.protection-path": {
```

```
                "sa.path-type": "dynamic"
            },
            "sa.restore-path": {
                "sa.path-type": "explicit",
                "sa.is-existing-path": "false",
                "sa.explicit-path-name": "MyExplicitPath2",
                "sa.explicit-path-hop": [
                    {
                        "sa.node-ref": "MD=CISCO_EPNM!ND=EPASR907-120.22.s",
                        "sa.interface-ip-address": "4.4.4.4",
                        "sa.constraint-type": "include"
                    },
                    {
                        "sa.node-ref": "MD=CISCO_EPNM!ND=EPASR907-120.22.s",
                        "sa.interface-ip-address": "5.5.5.5",
                        "sa.constraint-type": "exclude"
                    }
                ]
            }
        }
    }
}
```

7.2.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
<ns4:response-message
xmlns:ns41="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns40="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
xmlns:ns39="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns38="urn:ietf:params:xml:ns:yang:ietf-restconf"
xmlns:ns37="urn:cisco:params:xml:ns:yang:service:activation:status:v1"
xmlns:ns36="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns32="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns31="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
xmlns:ns30="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns29="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
xmlns:ns28="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns26="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
xmlns:ns24="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical-ops:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
```

```
xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>0</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns37:provision-service-request>
            <request-id>9a1c6808-6700-4987-9866-f95e2fdf028a</request-id>
            <service-name>Flexlsp-0829S1</service-name>
            <service-type>mpls-te-tunnel</service-type>
            <service-subtype>bi-directional-te-tunnel</service-subtype>
            <preview>true</preview>
            <request-time>2000-09-10T22:53:19.101-07:00</request-time>
            <completion-time>2000-09-10T22:53:45.650-07:00</completion-time>
            <deploy-results>
                <result>
                    <node-ref>MD=CISCO_EPNM!ND=EPNNCS4216-
120.20.Cisco.com</node-ref>
                    <state>SUCCESSFUL</state>
                    <config>bfd-template single-hop bfd-tunnel70
  interval min-tx 100 min-rx 100 multiplier 3
  exit
ip explicit-path name sanTestEP enable
  index 1 next-address 144.4.4.4
  exit
interface Tunnel70
  tunnel mode mpls traffic-eng
  ip unnumbered Loopback0
  tunnel destination 6.6.6.42
  bandwidth 10
  tunnel mpls traffic-eng bandwidth 10
  tunnel mpls traffic-eng name Flexlsp-0829S1
  tunnel mpls traffic-eng affinity 0x0 mask 0xAB
  tunnel mpls traffic-eng priority 5  3
  tunnel mpls traffic-eng bidirectional association id 29 source-address
6.6.6.42 global-id 100
  tunnel mpls traffic-eng bfd encap-mode gal bfd-tunnel70
  tunnel mpls traffic-eng path-option 10 explicit name sanTestEP
  tunnel mpls traffic-eng record-route
  tunnel mpls traffic-eng bidirectional association type co-routed
  exit
</config>
                </result>
```

```
                <result>
                    <node-ref>MD=CISCO_EPNM!ND=EPNNCS4216-120-
42.cisco.com</node-ref>
                    <state>SUCCESSFUL</state>
                    <config>bfd-template single-hop bfd-tunnel26
  interval min-tx 100 min-rx 100 multiplier 3
  exit
ip explicit-path name sanTestEP enable
  index 1 next-address 144.4.4.4
  exit
interface Tunnel26
  tunnel mode mpls traffic-eng
  ip unnumbered Loopback404
  tunnel destination 6.6.6.20
  bandwidth 10
  tunnel mpls traffic-eng bandwidth 10
  tunnel mpls traffic-eng name Flexlsp-0829S1
  tunnel mpls traffic-eng affinity 0x0 mask 0xAB
  tunnel mpls traffic-eng priority 5  3
  tunnel mpls traffic-eng bidirectional association id 29 source-address
6.6.6.42 global-id 100
  tunnel mpls traffic-eng bfd encap-mode gal bfd-tunnel26
  tunnel mpls traffic-eng path-option 10 explicit name sanTestEP
  tunnel mpls traffic-eng record-route
  tunnel mpls traffic-eng bidirectional association type co-routed
  exit
</config>
                </result>
            </deploy-results>
            <completion-status>SUCCESS</completion-status>
        </ns37:provision-service-request>
    </ns4:data>
</ns4:response-message>
```

7.3 Provisioin MPLS-TE Bidirectional tunnel with LSP

7.3.1 Request

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload

```
<?xml version="1.0" encoding="UTF-8"?>
<p:provision-service-request
      xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1">
      <p:service-order-data>
            <p:customer-
ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</p:customer-ref>
            <p:service-name>Flexlsp-Bi-LSP-oct5-A</p:service-name>
            <p:service-description>Flex MP4</p:service-description>
            <p:service-type>mpls-te-tunnel</p:service-type>
            <p:service-subtype>bi-directional-te-tunnel</p:service-
subtype>
            <p:service-activate>true</p:service-activate>
            <p:termination-point-list>
```

```
                  <p:termination-point-config>
                        <p:nd-ref>MD=CISCO_EPNM!ND=SJ-NCS4206-21</p:nd-
ref>
                        <p:directionality>source</p:directionality>
                        <p:mpls-te-data>
                              <p:routing-process>
                                    <p:router-
address>21.21.21.21</p:router-address>
                                    <p:routing-process-id>EPNM</p:routing-
process-id>
                                    <p:loopback-
address>Loopback6</p:loopback-address>
                              </p:routing-process>
                        </p:mpls-te-data>
                  </p:termination-point-config>
                  <p:termination-point-config>
                        <p:nd-ref>MD=CISCO_EPNM!ND=SJ-NCS4216-
23.cisco</p:nd-ref>
                        <p:directionality>sink</p:directionality>
                        <p:mpls-te-data>
                              <p:routing-process>
                                    <p:router-
address>23.23.23.23</p:router-address>
                                    <p:routing-process-id>EPNM</p:routing-
process-id>
                                    <p:loopback-
address>Loopback6</p:loopback-address>
                              </p:routing-process>
                        </p:mpls-te-data>
                  </p:termination-point-config>
            </p:termination-point-list>
            <p:forwarding-path>
                  <p:mpls-te-data>
                        <!--preferred-path-
ref>preferredPathRef</preferred-path-ref -->
                        <!-- <te-tunnel-type>uni-directional</te-tunnel-
type> -->
                        <p:wrap-protection>false</p:wrap-protection>
                        <p:protection-type>Working</p:protection-type>
                        <p:tunnel-setting>
                              <p:global-id>98</p:global-id>
                              <p:affinity-bits>AD</p:affinity-bits>
                              <p:affinity-mask>FF</p:affinity-mask>
                              <p:setup-priority>7</p:setup-priority>
                              <p:hold-priority>3</p:hold-priority>
                              <!--p:pool-type>global</p:pool-type -->
                              <p:bandwidth-pool-type>Global</p:bandwidth-
pool-type>
                              <p:bandwidth>10</p:bandwidth>
                        </p:tunnel-setting>
                        <p:bfd-settings>
                              <p:enable>true</p:enable>
                              <p:min-interval>100</p:min-interval>
                              <p:multiplier>3</p:multiplier>
                        </p:bfd-settings>
                  </p:mpls-te-data>
```

```
                    <p:mpls-te-path-options>
                          <p:working-path>
                                <p:path-type>dynamic</p:path-type>
                                <p:new-lsp-attribute-list>true</p:new-lsp-
attribute-list>
                                <p:lsp-attribute-list-
name>NewLSPPath1</p:lsp-attribute-list-name>
                                <p:lsp-attributes>
                                      <p:affinity-bits>AC</p:affinity-bits>
                                      <p:affinity-mask>FF</p:affinity-mask>
                                      <p:setup-priority>5</p:setup-priority>
                                      <p:hold-priority>2</p:hold-priority>
                                      <p:enable-record-route>true</p:enable-
record-route>
                                </p:lsp-attributes>
                          </p:working-path>
                    </p:mpls-te-path-options>
              </p:forwarding-path>
        </p:service-order-data>
</p:provision-service-request>
```

7.3.2 Response

HTTP/1.1 200 OK
Server: <epnm-host>
Accept: application/yang.operation+json

```
{
    "sa.roll-service-response": {
        "sa.request-id": "7e90f291-cb8d-457a-a675-4502a7e0a985",
        "sa.service-type": "mpls-te-tunnel",
        "sa.service-subtype”: "bi-directional-te-tunnel ",
        "sa.preview": false,
        "sa.request-time": "Tue Oct 31 20:56:30 PDT 2017",
        "sa.completion-status": "SUBMITTED"
    }
}
```

7.4 Provisioin MPLS-TE unidirectional tunnel with auto bandwidth

7.4.1 Request

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload

```
<?xml version="1.0" encoding="UTF-8"?>
<p:provision-service-request
      xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1">
      <p:service-order-data>
            <!--p:service-profile-
ref>MD=CISCO_EPNM!PROFILE_SERVICE=FlexSP</p:service-profile-ref -->
            <p:customer-
ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</p:customer-ref>
            <p:service-name>Flex-UNI-Oct6-A</p:service-name>
            <p:service-description>Flex MP4</p:service-description>
```

```
            <p:service-type>mpls-te-tunnel</p:service-type>
            <p:service-subtype>uni-directional-te-tunnel</p:service-subtype>
            <p:service-activate>true</p:service-activate>

            <p:termination-point-list>
                  <p:termination-point-config>
                        <p:nd-ref>MD=CISCO_EPNM!ND=SJ-NCS4216-23.cisco</p:nd-
ref>
                        <p:directionality>source</p:directionality>
                        <p:mpls-te-data>
                              <p:routing-process>
                                    <p:router-address>23.23.23.23</p:router-
address>
                                    <p:routing-process-id>EPNM</p:routing-
process-id>
                                    <p:loopback-
address>Loopback6</p:loopback-address>
                              </p:routing-process>
                        </p:mpls-te-data>
                  </p:termination-point-config>
                  <p:termination-point-config>
                        <p:nd-ref>MD=CISCO_EPNM!ND=SJ-NCS4206-21</p:nd-ref>
                        <p:directionality>sink</p:directionality>
                        <p:mpls-te-data>
                              <p:routing-process>
                                    <p:router-address>21.21.21.21</p:router-
address>
                                    <p:routing-process-id>EPNM</p:routing-
process-id>
                                    <p:loopback-
address>Loopback6</p:loopback-address>
                              </p:routing-process>
                        </p:mpls-te-data>
                  </p:termination-point-config>
            </p:termination-point-list>
            <p:forwarding-path>
                  <p:mpls-te-data>
                        <!--preferred-path-ref>preferredPathRef</preferred-
path-ref -->
                        <te-tunnel-type>uni-directional</te-tunnel-type>
                        <!--p:wrap-protection>false</p:wrap-protection -->
                        <!--p:enable-fault-oam>false</p:enable-fault-oam -->
                        <p:enable-frr>false</p:enable-frr>
                        <p:enable-autoroute>false</p:enable-autoroute>
                        <p:enable-auto-bandwidth>true</p:enable-auto-
bandwidth>

                        <p:enable-lockdown>true</p:enable-lockdown>
                        <p:protection-type>Working</p:protection-type>
                        <p:tunnel-setting>
                              <!--p:global-id>100</p:global-id>
                              <p:affinity-bits>0</p:affinity-bits>
                              <p:affinity-mask>AB</p:affinity-mask -->
                              <p:setup-priority>4</p:setup-priority>
                              <p:hold-priority>2</p:hold-priority>
                              <p:max-auto-bandwidth>101</p:max-auto-
```

```
bandwidth>
                              <p:min-auto-bandwidth>21</p:min-auto-bandwidth>
                              <p:auto-bandwidth-frequency>351</p:auto-
bandwidth-frequency>
                              <p:enable-bw-collection>false</p:enable-bw-
collection>
                              <p:adjustment-threshold>99</p:adjustment-
threshold>
                              <p:overflow-threshold>10</p:overflow-threshold>
                              <p:overflow-limit>10</p:overflow-limit>
                        </p:tunnel-setting>
                        <p:bfd-settings>
                              <p:enable>true</p:enable>
                              <p:min-interval>100</p:min-interval>
                              <p:multiplier>3</p:multiplier>
                        </p:bfd-settings>
                  </p:mpls-te-data>
                  <p:mpls-te-path-options>
                        <p:working-path>
                              <p:path-type>dynamic</p:path-type>
                        </p:working-path>
                  </p:mpls-te-path-options>
            </p:forwarding-path>
      </p:service-order-data>

</p:provision-service-request>
```

7.4.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
<ns36:provision-service-request>
      <request-id>6c3a0461-fafa-4e28-991e-33b058441964</request-id>
      <service-name>Flex-UNI-Oct6-A</service-name>
      <service-type>mpls-te-tunnel</service-type>
      <service-subtype>uni-directional-te-tunnel</service-subtype>
      <preview>false</preview>
      <request-time>2017-10-06T04:55:17.184Z</request-time>
      <completion-time>2017-10-06T04:55:42.182Z</completion-time>
      <deploy-results>
            <result>
                  <node-ref>MD=CISCO_EPNM!ND=SJ-NCS4216-23.cisco</node-
ref>
                  <state>SUCCESSFUL</state>
                  <config>bfd-template single-hop bfd-tunnel39
                        interval min-tx 100 min-rx 100 multiplier 3
                        exit
                        interface Tunnel39
                        description Flex MP4
                        tunnel mode mpls traffic-eng
                        ip unnumbered Loopback6
                        tunnel destination 21.21.21.21
                        bandwidth 101
                        tunnel mpls traffic-eng auto-bw frequency 351
adjustment-threshold 99
```

```
                        overflow-limit 10 overflow-threshold 10 max-bw 101
min-bw 21
                        tunnel mpls traffic-eng name Flex-UNI-Oct6-A
                        tunnel mpls traffic-eng priority 4 2
                        tunnel mpls traffic-eng bfd encap-mode gal bfd-
tunnel39
                        tunnel mpls traffic-eng path-option 10 dynamic
                        tunnel mpls traffic-eng record-route
                        tunnel mpls traffic-eng path-selection metric te
                        exit
                    </config>
                </result>
            </deploy-results>
            <completion-status>SUCCESS</completion-status>
</ns36:provision-service-request>
```

7.5 Provisioning CE Service

Note : While provisioing ELINE/ACCESS (EPL/EVPL) service we can either create UNIs/ENNIs along with service create or we can make use of existing UNIs/ENNIs during service create/modify.
Below tag should be used when an NBI user want to create UNIs/ENNIs during service create

<p:termination-point-list> → <p:termination-point-config> → <p:network-interface-name>

<p:network-interface-list> → <p:network-interface> → <p:name>
<p:operation>**add**</p:operation>

Below tag should be used when an NBI user want to re-use existing UNIs/ENNIs during service create/modify.
<p:termination-point-list> → <p:termination-point-config> → <p:network-interface-ref>

<p:network-interface-list> → <p:network-interface> → <p:ref>
<p:operation>**update**</p:operation>

7.5.1 Provision EPL Service

7.5.1.1 Request

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<p:provision-service-request
xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:service:activation:v1
restconf-provisioning-request-schema.xsd ">
<p:service-order-data>
      <p:customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</p:customer-ref>
      <p:service-name>TestEPlService238</p:service-name>
      <p:service-description> TestEPlService238 description</p:service-
description>
      <p:service-type>carrier-ethernet-vpn</p:service-type>
      <p:service-subtype>EPL</p:service-subtype>
      <p:service-activate> true </p:service-activate>
      <p:ce-data>
```

```
            <p:bundling> true </p:bundling>
            <p:ccm-interval>1 sec</p:ccm-interval>
            <p:ce-vlan-id-preservation></p:ce-vlan-id-preservation>
            <p:ce-vlan-cos-preservation></p:ce-vlan-cos-preservation>
            <p:mtu-size>1522</p:mtu-size>
            <p:enable-cfm>true</p:enable-cfm>
            <p:fault-management-map>
                  <p:entry>
                        <p:from>UNI A</p:from>
                        <p:to>UNI Z</p:to>
                        <p:cos>Medium</p:cos>
                        <p:oam-profile>Performance Monitoring 1</p:oam-
profile>
                        <p:cchk>Yes</p:cchk>
                        <p:sedm>No</p:sedm>
                        <p:dedm>No</p:dedm>
                        <p:sylm>Yes</p:sylm>
                        <p:slm>No</p:slm>
                  </p:entry>
            </p:fault-management-map>
            <p:max-uni-endpoints>2</p:max-uni-endpoints>
      </p:ce-data>

      <p:termination-point-list>
            <p:termination-point-config>
                  <p:tp-ref>MD=CISCO_EPNM!ND=tmh-chn-mvso-asr9k-
3!CTP=name=GigabitEthernet0/0/0/0; lr=lr-gigabit-ethernet</p:tp-ref>
                  <p:directionality>source</p:directionality>
                  <p:ingress-qos-policy-ref>MD=CISCO_EPNM!ND= tmh-chn-mvso-
asr9k-3!POLICY_QOS=QoSProfileIngress_In_UM</p:ingress-qos-policy-ref>
<p:egress-qos-policy-ref>MD=CISCO_EPNM!ND= tmh-chn-mvso-asr9k-
3!POLICY_QOS=QOS_Medium_01_In_UM</p:egress-qos-policy-ref>
                  <p:network-interface-name>TestUNI238</p:network-interface-
name>
                  <p:ce-data>
                        <p:l2-cp-profile>MEF Option 1</p:l2-cp-profile>
                        <p:mep-group>Test</p:mep-group>
                        <p:untagged>false</p:untagged>
                  </p:ce-data>
            </p:termination-point-config>
            <p:termination-point-config>
                  <p:tp-ref>MD=CISCO_EPNM!ND=tmh-chn-mvso-asr9k-
3!CTP=name=GigabitEthernet0/0/0/1;lr=lr-gigabit-ethernet</p:tp-ref>
                  <p:directionality>sink</p:directionality>
                  <p:ingress-qos-policy-ref>MD=CISCO_EPNM!ND=ASR9K-
146.3!POLICY_QOS=QoSProfileIngress_In_UM</p:ingress-qos-policy-ref>
<p:egress-qos-policy-
ref>MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM</p:egress-qos-
policy-ref>
                  <p:network-interface-name>TestZUNI238</p:network-interface-
name>
                  <p:ce-data>
                        <p:l2-cp-profile>MEF Option 1</p:l2-cp-profile>
                        <p:mep-group>Test</p:mep-group>
                        <p:untagged>false</p:untagged>
                  </p:ce-data>
```

```
            </p:termination-point-config>
      </p:termination-point-list>
      <p:network-interface-list>
            <p:network-interface>
                  <p:name>TestUNI238</p:name>
                  <p:operation>add</p:operation>
                  <p:ce-data>
                        <p:description>TestUNI</p:description>
                  <p:ingress-qos-policy-ref>MD=CISCO_EPNM!ND=ASR9K-
146.3!POLICY_QOS=QoSProfileIngress_In_UM</p:ingress-qos-policy-ref>
<p:egress-qos-policy-
ref>MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM</p:egress-qos-
policy-ref>

                        <p:mtu>1522</p:mtu>
                        <p:speed>10 Mbps</p:speed>
                        <p:mode>FULL DUPLEX</p:mode>
                        <p:ce-vlanid>10</p:ce-vlanid>
                        <p:service-multiplexing>true</p:service-multiplexing>
                        <p:enable-oam>false</p:enable-oam>
                  </p:ce-data>
            </p:network-interface>
            <p:network-interface>
                  <p:name>TestZUNI238</p:name>
                  <p:operation>add</p:operation>
                  <p:ce-data>
                        <p:description>TestUNI</p:description>
                        <p:ingress-qos-policy-ref>MD=CISCO_EPNM!ND=ASR9K-
146.3!POLICY_QOS=QoSProfileIngress_In_UM</p:ingress-qos-policy-ref>
<p:egress-qos-policy-
ref>MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM</p:egress-qos-
policy-ref>
                        <p:mtu>1522</p:mtu>
                        <p:speed>5</p:speed>
                        <p:mode>FULL DUPLEX</p:mode>
                        <p:ce-vlanid>10</p:ce-vlanid>
                        <p:service-multiplexing>true</p:service-multiplexing>
                        <p:enable-oam>false</p:enable-oam>
                  </p:ce-data>
            </p:network-interface>
      </p:network-interface-list>
</p:service-order-data>
</p:provision-service-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "sa.service-order-data": {
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "sa.service-name": "TestEPlService238",
      "sa.service-description": "TestEPlService238 description",
      "sa.service-type": "carrier-ethernet-vpn",
      "sa.service-subtype": "EPL",
      "sa.service-activate": "true",
      "sa.ce-data": {
         "sa.bundling": "true",
         "sa.ccm-interval": "1 sec",
```

```
         "sa.ce-vlan-id-preservation": null,
         "sa.ce-vlan-cos-preservation": null,
         "sa.mtu-size": "1522",
         "sa.enable-cfm": "true",
         "sa.fault-management-map": {
            "sa.entry": {
               "sa.from": "UNI A",
               "sa.to": "UNI Z",
               "sa.cos": "Medium",
               "sa.oam-profile": "Performance Monitoring 1",
               "sa.cchk": "Yes",
               "sa.sedm": "No",
               "sa.dedm": "No",
               "sa.sylm": "Yes",
               "sa.slm": "No"
            }
         },
         "sa.max-uni-endpoints": "2"
      },
      "sa.termination-point-list": {
         "sa.termination-point-config": [
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=tmh-chn-mvso-asr9k-
3!CTP=name=GigabitEthernet0/0/0/0;lr=lr-gigabit-ethernet",
               "sa.directionality": "source",
               "qsa.os-profile-ref":
"MD=CISCO_EPNM!PROFILE_QOS=MyUniProfile1",
               "sa.network-interface-name": "TestUNI238",
               "sa.network-interface-ref": null,
               "sa.ce-data": {
                  "sa.l2-cp-profile": "MEF Option 1",
                  "sa.mep-group": "Test",
                  "sa.untagged": "false"
               }
            },
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=tmh-chn-mvso-asr9k-
3!CTP=name=GigabitEthernet0/0/0/1;lr=lr-gigabit-ethernet",
               "sa.directionality": "sink",
               "sa.ingress-qos-policy-ref": "
MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM",
               "sa.network-interface-name": "TestZUNI238",
               "sa.network-interface-ref": null,
               "sa.ce-data": {
                  "sa.l2-cp-profile": "MEF Option 1",
                  "sa.mep-group": "Test",
                  "sa.untagged": "false"
               }
            }
         ]
      },
      "sa.network-interface-list": {
         "sa.network-interface": [
            {
               "sa.name": "TestUNI238",
               "sa.operation": "add",
```

```
                "sa.ce-data": {
                   "sa.description": "TestUNI",
                   "sa.ingress-qos-policy-ref": "
MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM",
                   "sa.mtu": "1522",
                   "sa.speed": "10 Mbps",
                   "sa.mode": "FULL DUPLEX",
                   "sa.ce-vlanid": "10",
                   "sa.service-multiplexing": "true",
                   "sa.enable-oam": "false"
                }
             },
             {
                "sa.name": "TestZUNI238",
                "sa.operation": "add",
                "sa.ce-data": {
                   "sa.description": "TestUNI",
                   "sa.ingress-qos-policy-ref": "
MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM",
                   "sa.mtu": "1522",
                   "sa.speed": "5",
                   "sa.mode": "FULL DUPLEX",
                   "sa.ce-vlanid": "10",
                   "sa.service-multiplexing": "true",
                   "sa.enable-oam": "false"
                }
             }
          ]
       }
    }
}
```

7.5.1.2 *Response*

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
{
  "customer": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
  "service-id": "7f52d296-ad73-4d0e-891c-2aceab5e2687",
  "service-name": "TestEPlService123",
  "service-type": "carrier-ethernet-vpn",
  "circuit-type": "EPL",
  "deploy-action": "Deploy",
  "operation-type": "ProvideService",
  "request-time": "Tue May 17 16:29:50 PDT 2016",
  "completion-status": "SUBMITTED",
  }
```

7.5.1.3 *Notification*

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<push-change-update xmlns="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns2="urn:cisco:params:xml:ns:yang:service:activation:v1">
    <subscription-id>-437627140558950385</subscription-id>
    <topic>/streams/v1/service-activation</topic>
    <time-of-update>Tue May 17 16:30:27 PDT 2016</time-of-update>
    <operation>configure</operation>
```

```
    <update-data>
        <ns2:provision-service-response>
            <ns2:cfs-ref>MD=CISCO_EPNM!CFS=TestEPlService123</ns2:cfs-ref>

<ns2:customer>MD=CISCO_EPNM!CUSTOMER=Infrastructure</ns2:customer>
            <ns2:service-id>7f52d296-ad73-4d0e-891c-
2aceab5e2687</ns2:service-id>
            <ns2:service-name>TestEPlService123</ns2:service-name>
            <ns2:service-type>carrier-ethernet-vpn</ns2:service-type>
            <ns2:circuit-type>EPL</ns2:circuit-type>
            <ns2:deploy-action>Deploy</ns2:deploy-action>
            <ns2:operation-type>ProvideService</ns2:operation-type>
            <ns2:completion-time>Tue May 17 16:30:27 PDT
2016</ns2:completion-time>
            <ns2:intent-status>COMPLETED</ns2:intent-status>
<ns2:deploy-results>&lt;results&gt;
&lt;result deviceId="288290" deviceName="tmh-chn-mvso-asr9k-3">ethernet cfm

  domain EVC level 4

    service TestEPlService238 xconnect group Provisioned p2p
TestEPlService238

interface GigabitEthernet0/0/0/0

  mtu 1522

  speed 10

  exit

interface GigabitEthernet0/0/0/1

  mtu 1522

  exit

interface GigabitEthernet0/0/0/1.1 l2transport

  encapsulation default

  mtu 1522

  ethernet-services access-group L2CP_EPL_OPT1 ingress

  shutdown

interface GigabitEthernet0/0/0/0.1 l2transport

  encapsulation default

  mtu 1522

  ethernet-services access-group L2CP_EPL_OPT1 ingress

  shutdown
```

```
l2vpn

  xconnect group Provisioned

    p2p TestEPlService238

      interface GigabitEthernet0/0/0/1.1

      interface GigabitEthernet0/0/0/0.1

      exit

    exit

  exit
]]&gt;&lt;/result&gt;
&lt;/results&gt;
</ns2:deploy-results>
            <ns2:completion-status>SUCCESS</ns2:completion-status>
        </ns2:modify-service-response>
    </update-data>
</push-change-update>
```

7.5.2 Modify EPL Service

7.5.2.1 Request

POST /restconf/operations/v1/cisco-service-activation:modify-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<p:modify-service-request
xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:service:activation:v1
restconf-provisioning-request-schema.xsd ">
<p:cfs-ref>MD=CISCO_EPNM!CFS=TestEPlService238</p:cfs-ref>
<p:service-order-data>
      <p:service-template>CE</p:service-template>
      <p:customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</p:customer-ref>
      <p:service-name>TestEPlService238</p:service-name>
      <p:service-description>TestEPlService238 description</p:service-
description>
      <p:service-type>carrier-ethernet-vpn</p:service-type>
      <p:service-subtype>EPL</p:service-subtype>
      <p:ce-data>
            <p:ccm-interval>1 min</p:ccm-interval>
            <p:mtu-size>1522</p:mtu-size>
            <p:enable-cfm>true</p:enable-cfm>
            <p:max-uni-endpoints>2</p:max-uni-endpoints>
      </p:ce-data>
      <p:termination-point-list>
            <p:termination-point-config>
                  <p:tp-ref>MD=CISCO_EPNM!ND=tmh-chn-mvso-asr9k-
3!CTP=name=GigabitEthernet0/0/0/2; lr=lr-gigabit-ethernet</p:tp-ref>
                  <p:directionality>source</p:directionality>
```

```
                  <p:network-interface-
ref>MD=CISCO_EPNM!NI=TestUNI238</p:network-interface-ref>
                  <p:ce-data>
                        <p:l2-cp-profile>MEF Option 1</p:l2-cp-profile>
                  </p:ce-data>
            </p:termination-point-config>
            <p:termination-point-config>
                  <p:tp-ref>MD=CISCO_EPNM!ND=tmh-chn-mvso-asr9k-
3!CTP=name=GigabitEthernet0/0/0/3;lr=lr-gigabit-ethernet</p:tp-ref>
                  <p:directionality>sink</p:directionality>
                  <p:network-interface-
ref>MD=CISCO_EPNM!NI=TestZUNI238</p:network-interface-ref>
                  <p:ce-data>
                        <p:l2-cp-profile>MEF Option 2</p:l2-cp-profile>
                        <p:mep-group>Test</p:mep-group>
                        <p:untagged>false</p:untagged>
                  </p:ce-data>
            </p:termination-point-config>
      </p:termination-point-list>
      <p:network-interface-list>
            <p:network-interface>
                  <p:ref>MD=CISCO_EPNM!NI=TestUNI238</p:ref>
                  <p:operation>update</p:operation>
                  <p:ce-data>
                        <p:description>TestUNI</p:description>
                        <p:enable-oam>true</p:enable-oam>
                  </p:ce-data>
            </p:network-interface>
            <p:network-interface>
                  <p:ref>MD=CISCO_EPNM!NI=TestZUNI238</p:ref>
                  <p:operation>update</p:operation>
                  <p:ce-data>
                        <p:description>TestUNI</p:description>
                        <p:enable-oam>true</p:enable-oam>
                  </p:ce-data>
            </p:network-interface>
      </p:network-interface-list>
</p:service-order-data>
</p:modify-service-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "sa.cfs-ref": "MD=CISCO_EPNM!CFS=TestEPlService238",
   "sa.service-order-data": {
      "sa.service-template": "CE",
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "sa.service-name": "TestEPlService238",
      "sa.service-description": "TestEPlService238 description",
      "sa.service-type": "carrier-ethernet-vpn",
      "sa.service-subtype": "EPL",
      "sa.ce-data": {
         "sa.ccm-interval": "1 min",
         "sa.mtu-size": "1522",
         "sa.enable-cfm": "true",
         "sa.max-uni-endpoints": "2"
      },
```

```
      "sa.termination-point-list": {
         "sa.termination-point-config": [
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=tmh-chn-mvso-asr9k-
3!CTP=name=GigabitEthernet0/0/0/2;lr=lr-gigabit-ethernet",
               "sa.directionality": "source",
               "sa.network-interface-name": "TestUNI238",
               "sa.network-interface-ref": "MD=CISCO_EPNM!NI=TestUNI238",
               "sa.ce-data": {
                  "sa.l2-cp-profile": "MEF Option 1"
               }
            },
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=tmh-chn-mvso-asr9k-
3!CTP=name=GigabitEthernet0/0/0/3;lr=lr-gigabit-ethernet",
               "sa.directionality": "sink",
               "sa.network-interface-name": "TestZUNI238",
               "sa.network-interface-ref": "MD=CISCO_EPNM!NI=TestZUNI238",
               "sa.ce-data": {
                  "sa.l2-cp-profile": "MEF Option 2",
                  "sa.mep-group": "Test",
                  "sa.untagged": "false"
               }
            }
         ]
      },
      "sa.network-interface-list": {
         "sa.network-interface": [
            {
               "sa.name": "TestUNI238",
               "sa.ref": "MD=CISCO_EPNM!NI=TestUNI238",
               "sa.operation": "update",
               "sa.ce-data": {
                  "sa.description": "TestUNI",
                  "sa.enable-oam": "true"
               }
            },
            {
               "sa.name": "TestZUNI238",
               "sa.ref": "MD=CISCO_EPNM!NI=TestZUNI238",
               "sa.operation": "update",
               "sa.ce-data": {
                  "sa.description": "TestUNI",
                  "sa.enable-oam": "true"
               }
            }
         ]
      }
   }
}
```

7.5.2.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
{
```

```
  "customer": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
  "service-id": "7f52d296-ad73-4d0e-891c-2aceab5e2687",
  "service-name": "TestEPlService238",
  "service-type": "carrier-ethernet-vpn",
  "circuit-type": "EPL",
  "deploy-action": "Deploy",
  "operation-type": "AmendService",
  "request-time": "Tue May 17 16:29:50 PDT 2016",
  "completion-status": "SUBMITTED",
  }
```

7.5.3 Provision EPL Service - EPL over bi-directional Tunnel

7.5.3.1 Request

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:provision-service-request
      xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:y1="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:sa:v1 cisco-service-
activation.xsd urn:cisco:params:xml:ns:yang:service:activation:v1 restconf-
provisioning-request-schema.xsd ">
      <p:service-order-data>
            <p:customer-
ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</p:customer-ref>
            <p:service-name>EPLTunnel12</p:service-name>
            <p:service-description>EPLTunnel1</p:service-description>
            <p:service-type>carrier-ethernet-vpn</p:service-type>
            <p:service-subtype>EPL</p:service-subtype>
            <p:service-activate>true</p:service-activate>
            <p:ce-data>
                  <p:ccm-interval>1 sec</p:ccm-interval>
                  <p:mtu-size>1522</p:mtu-size>
                  <p:enable-cfm>true</p:enable-cfm>
                  <p:fault-management-map />
                  <p:max-uni-endpoints>2</p:max-uni-endpoints>
            </p:ce-data>
            <p:termination-point-list>
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=SJ-NCS4206-
21.cisco!FTP=name=GigabitEthernet0/0/7;lr=lr-gigabit-ethernet</p:tp-ref>
                        <p:directionality>source</p:directionality>
                        <p:network-interface-name>EPLTunnelUNIA12</p:network-
interface-name>
                        <p:ce-data>
                              <p:l2-cp-profile>MEF Option 1</p:l2-cp-profile>
                        </p:ce-data>
                  </p:termination-point-config>
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=SJ-NCS4216-
23.cisco!FTP=name=GigabitEthernet0/2/2;lr=lr-gigabit-ethernet</p:tp-ref>
                        <p:directionality>sink</p:directionality>
```

```
                        <p:network-interface-name>EPLTunnelUNIZ12</p:network-
interface-name>
                        <p:ce-data>
                              <p:l2-cp-profile>MEF Option 1</p:l2-cp-profile>
                        </p:ce-data>
                  </p:termination-point-config>
            </p:termination-point-list>
            <p:network-interface-list>
                  <p:network-interface>
                        <p:name>EPLTunnelUNIA12</p:name>
                        <p:operation>add</p:operation>
                        <p:ce-data>
                              <p:activate>true</p:activate>
                              <p:description>EPLTunnelUNIA1
Description</p:description>
                              <p:mtu>1522</p:mtu>
                              <p:speed>10</p:speed>
                              <p:mode>FULL DUPLEX</p:mode>
                              <p:enable-link-oam>true</p:enable-link-oam>
                              <p:enable-link-Management>true</p:enable-link-
Management>
                        </p:ce-data>
                  </p:network-interface>
                  <p:network-interface>
                        <p:name>EPLTunnelUNIZ12</p:name>
                        <p:operation>add</p:operation>
                        <p:ce-data>
                              <p:activate>true</p:activate>
                              <p:description>EPLTunnelUNIZ1</p:description>
                              <p:mtu>1522</p:mtu>
                              <p:speed>5</p:speed>
                              <p:mode>FULL DUPLEX</p:mode>
                              <p:enable-link-oam>true</p:enable-link-oam>
                              <p:enable-link-Management>true</p:enable-link-
Management>
                        </p:ce-data>
                  </p:network-interface>
            </p:network-interface-list>

            <p:forwarding-path>
                  <p:pseudowire-settings>
                        <p:pw-bandwidth>11</p:pw-bandwidth>
                  </p:pseudowire-settings>
                  <!-- TE TUNNLEL -->
                  <p:mpls-te-data>
                        <p:te-tunnel-type>bi-directional</p:te-tunnel-type>
                        <p:wrap-protection>true</p:wrap-protection>
                        <p:protection-type>Working</p:protection-type>
                        <p:enable-fault-oam>true</p:enable-fault-oam>
                        <p:enable-lockdown>true</p:enable-lockdown>
                        <p:enable-autoroute>true</p:enable-autoroute>
                        <p:enable-frr>true</p:enable-frr>
                        <p:tunnel-setting>
                              <p:global-id>882</p:global-id>
                              <!--<p:affinity-bits>58</p:affinity-bits>
                              <p:affinity-mask>fb</p:affinity-mask> -->
```

```
                              <p:setup-priority>6</p:setup-priority>
                              <p:hold-priority>5</p:hold-priority>
                        </p:tunnel-setting>
                        <p:bfd-settings>
                              <p:enable>true</p:enable>
                              <p:min-interval>100</p:min-interval>
                              <p:multiplier>3</p:multiplier>
                        </p:bfd-settings>
                  </p:mpls-te-data>
            </p:forwarding-path>
      </p:service-order-data>
</p:provision-service-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "sa.service-order-data": {
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "sa.service-name": "EPLTunnel12",
      "sa.service-description": "EPLTunnel1",
      "sa.service-type": "carrier-ethernet-vpn",
      "sa.service-subtype": "EPL",
      "sa.service-activate": "true",
      "sa.ce-data": {
         "sa.ccm-interval": "1 sec",
         "sa.mtu-size": "1522",
         "sa.enable-cfm": "true",
         "sa.fault-management-map": null,
         "sa.max-uni-endpoints": "2"
      },
      "sa.termination-point-list": {
         "sa.termination-point-config": [
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=SJ-NCS4206-
21.cisco!FTP=name=GigabitEthernet0/0/7;lr=lr-gigabit-ethernet",
               "sa.directionality": "source",
               "sa.network-interface-name": "EPLTunnelUNIA12",
               "sa.ce-data": {
                  "sa.l2-cp-profile": "MEF Option 1"
               }
            },
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=SJ-NCS4216-
23.cisco!FTP=name=GigabitEthernet0/2/2;lr=lr-gigabit-ethernet",
               "sa.directionality": "sink",
               "sa.network-interface-name": "EPLTunnelUNIZ12",
               "sa.ce-data": {
                  "sa.l2-cp-profile": "MEF Option 1"
               }
            }
         ]
      },
      "sa.network-interface-list": {
         "sa.network-interface": [
            {
               "sa.name": "EPLTunnelUNIA12",
               "sa.operation": "add",
```

```
                "sa.ce-data": {
                   "sa.activate": "true",
                   "sa.description": "EPLTunnelUNIA1 Description",
                   "sa.mtu": "1522",
                   "sa.speed": "10",
                   "sa.mode": "FULL DUPLEX",
                   "sa.enable-link-oam": "true",
                   "sa.enable-link-Management": "true"
                }
             },
             {
                "sa.name": "EPLTunnelUNIZ12",
                "sa.operation": "add",
                "sa.ce-data": {
                   "sa.activate": "true",
                   "sa.description": "EPLTunnelUNIZ1",
                   "sa.mtu": "1522",
                   "sa.speed": "5",
                   "sa.mode": "FULL DUPLEX",
                   "sa.enable-link-oam": "true",
                   "sa.enable-link-Management": "true"
                }
             }
          ]
       },
       "sa.forwarding-path": {
          "sa.pseudowire-settings": {
             "sa.pw-bandwidth": "11"
          },
          "sa.mpls-te-data": {
             "sa.wrap-protection": "true",
             "sa.te-tunnel-type ": "bi-directional",
             "sa.protection-type": "Working",
             "sa.enable-fault-oam": "true",
             "sa.enable-lockdown": "true",
             "sa.enable-autoroute": "true",
             "sa.enable-frr": "true",
             "sa.tunnel-setting": {
                "sa.global-id": "882",
                "sa.setup-priority": "6",
                "sa.hold-priority": "5"
             },
             "sa.bfd-settings": {
                "sa.enable": "true",
                "sa.min-interval": "100",
                "sa.multiplier": "3"
             }
          }
       }
    }
}
```


7.5.4 Provision EVPL Service - EVPL over Uni-directional Tunnel

7.5.4.1 Request

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1

Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:provision-service-request
xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:y1="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="urn:cisco:params:xml:ns:yang:sa:v1 cisco-service-
activation.xsd urn:cisco:params:xml:ns:yang:service:activation:v1 restc-
provisioning-request-schema.xsd ">

<p:service-order-data>
      <p:customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</p:customer-ref>
      <p:service-name>EVPL-UC4-JAN_i45_V51</p:service-name>
      <p:service-description>EVPL-UC4-JAN_i45_V51 desc</p:service-
description>
      <p:service-type>carrier-ethernet-vpn</p:service-type>
      <p:service-subtype>EVPL</p:service-subtype>
      <p:service-activate>true</p:service-activate>
      <p:ce-data>
            <p:bundling>false</p:bundling>
            <p:ccm-interval>1 sec</p:ccm-interval>
            <p:ce-vlan-id-preservation>false</p:ce-vlan-id-preservation>
            <p:ce-vlan-cos-preservation>false</p:ce-vlan-cos-preservation>
            <p:mtu-size>1522</p:mtu-size>
            <p:enable-cfm>true</p:enable-cfm>
            <p:max-uni-endpoints>2</p:max-uni-endpoints>
      </p:ce-data>
      <p:termination-point-list>
            <p:termination-point-config>
                  <p:tp-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.33!FTP=name=GigabitEthernet0/3/5;lr=lr-gigabit-ethernet</p:tp-ref>
                  <p:directionality>source</p:directionality>
                  <p:network-interface-
name>EVPLUNIAUC4JAN_i45_V51</p:network-interface-name>
                  <p:ce-data>
                        <p:l2-cp-profile>MEF Option 1</p:l2-cp-profile>
                        <p:mep-group>UNI A</p:mep-group>
                        <p:untagged>false</p:untagged>
                        <p:qinq-data>
                              <p:match-type>dot1q</p:match-type>
                              <p:vlan-id-list>1200</p:vlan-id-list>
                              <p:priority-tagged>false</p:priority-tagged>
                              <p:match-exact>false</p:match-exact>
                        </p:qinq-data>
                  </p:ce-data>
            </p:termination-point-config>
            <p:termination-point-config>
                  <p:tp-ref>MD=CISCO_EPNM!ND=EPNASR903-
120.131!FTP=name=GigabitEthernet0/2/6;lr=lr-gigabit-ethernet</p:tp-ref>
                  <p:directionality>sink</p:directionality>
               <p:network-interface-name>EVPLUNIZUC4JAN_i45_V51</p:network-
interface-name>
                  <p:ce-data>
                        <p:l2-cp-profile>MEF Option 1</p:l2-cp-profile>
```

```
                        <p:mep-group>UNI Z</p:mep-group>
                        <p:untagged>false</p:untagged>
                        <p:qinq-data>
                              <p:match-type>dot1q</p:match-type>
                              <p:vlan-id-list>1308</p:vlan-id-list>
                              <p:priority-tagged>false</p:priority-tagged>
                              <p:match-exact>false</p:match-exact>
                        </p:qinq-data>
                  </p:ce-data>
            </p:termination-point-config>
      </p:termination-point-list>
      <p:network-interface-list>
            <p:network-interface>
                  <p:name>EVPLUNIAUC4JAN_i45_V51</p:name>
                  <p:operation>add</p:operation>
                  <p:ce-data>
                      <p:activate>true</p:activate>
                        <p:description>EVPLUNIAUC4JAN_i45_V51
Description</p:description>
                        <p:mtu>1522</p:mtu>
                        <!--<p:speed>10</p:speed>-->
                        <p:mode>FULL DUPLEX</p:mode>
                        <p:service-multiplexing>true</p:service-multiplexing>
                        <p:enable-link-Management>true</p:enable-link-
Management>
                        <p:bundling>false</p:bundling>
                  </p:ce-data>
            </p:network-interface>
            <p:network-interface>
                  <p:name>EVPLUNIZUC4JAN_i45_V51</p:name>
                  <p:operation>add</p:operation>
                  <p:ce-data>
                      <p:activate>true</p:activate>
                        <p:description>EVPLUNIZUC4JAN_i45_V51
description</p:description>
                        <p:mtu>1522</p:mtu>
                        <p:mode>FULL DUPLEX</p:mode>
                        <p:service-multiplexing>true</p:service-multiplexing>
                        <p:enable-link-Management>true</p:enable-link-
Management>
                        <p:bundling>false</p:bundling>
                  </p:ce-data>
            </p:network-interface>
      </p:network-interface-list>
      <p:forwarding-path>
            <p:pseudowire-settings>
                  <p:pw-bandwidth>10</p:pw-bandwidth>
                  <p:enable-control-word>false</p:enable-control-word>
                  <p:fallback-to-ldp>false</p:fallback-to-ldp>
                  <p:interworking-option></p:interworking-option>
                  <p:service-bandwidth>0</p:service-bandwidth>
            </p:pseudowire-settings>
            <!-- TE TUNNLEL -->
            <p:mpls-te-data>
                  <p:wrap-protection>false</p:wrap-protection>
                  <p:protection-type>Working</p:protection-type>
```

```
                  <p:enable-lockdown>false</p:enable-lockdown>
                  <p:enable-auto-bandwidth>false</p:enable-auto-bandwidth>
                  <p:enable-autoroute>true</p:enable-autoroute>
                  <p:enable-frr>false</p:enable-frr>
                  <p:tunnel-setting>
                        <p:global-id>881</p:global-id>
                        <p:setup-priority>6</p:setup-priority>
                        <p:hold-priority>1</p:hold-priority>
                        <p:auto-bandwidth-frequency>600</p:auto-bandwidth-
frequency>
                        <p:max-auto-bandwidth>20</p:max-auto-bandwidth>
                        <p:min-auto-bandwidth>5</p:min-auto-bandwidth>
                  </p:tunnel-setting>

            </p:mpls-te-data>
      </p:forwarding-path>
</p:service-order-data>
</p:provision-service-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "sa.service-order-data": {
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "sa.service-name": "EVPL-UC4-JAN_i45_V51",
      "sa.service-description": "EVPL-UC4-JAN_i45_V51 desc",
      "sa.service-type": "carrier-ethernet-vpn",
      "sa.service-subtype": "EVPL",
      "sa.service-activate": "true",
      "sa.ce-data": {
         "sa.bundling": "false",
         "sa.ccm-interval": "1 sec",
         "sa.ce-vlan-id-preservation": "false",
         "sa.ce-vlan-cos-preservation": "false",
         "sa.mtu-size": "1522",
         "sa.enable-cfm": "true",
         "sa.max-uni-endpoints": "2"
      },
      "sa.termination-point-list": {
         "sa.termination-point-config": [
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=EPNNCS4206-
120.33!FTP=name=GigabitEthernet0/3/5;lr=lr-gigabit-ethernet",
               "sa.directionality": "source",
               "sa.network-interface-name": "EVPLUNIAUC4JAN_i45_V51",
               "sa.network-interface-ref":
"MD=CISCO_EPNM!NI=EVPLUNIAUC4JAN_i45_V51",
               "sa.ce-data": {
                  "sa.l2-cp-profile": "MEF Option 1",
                  "sa.mep-group": "UNI A",
                  "sa.untagged": "false",
                  "sa.qinq-data": {
                     "sa.match-type": "dot1q",
                     "sa.vlan-id-list": "1200",
                     "sa.priority-tagged": "false",
                     "sa.match-exact": "false"
                  }
```

```
                }
            },
            {
                "sa.tp-ref": "MD=CISCO_EPNM!ND=EPNASR903-
120.131!FTP=name=GigabitEthernet0/2/6;lr=lr-gigabit-ethernet",
                "sa.directionality": "sink",
                "sa.network-interface-name": "EVPLUNIZUC4JAN_i45_V51",
                "sa.network-interface-ref":
"MD=CISCO_EPNM!NI=EVPLUNIZUC4JAN_i45_V51",
                "sa.ce-data": {
                   "sa.l2-cp-profile": "MEF Option 1",
                   "sa.mep-group": "UNI Z",
                   "sa.untagged": "false",
                   "sa.qinq-data": {
                      "sa.match-type": "dot1q",
                      "sa.vlan-id-list": "1308",
                      "sa.priority-tagged": "false",
                      "sa.match-exact": "false"
                   }
                }
            }
         ]
      },
      "sa.network-interface-list": {
         "sa.network-interface": [
            {
               "sa.name": "EVPLUNIAUC4JAN_i45_V51",
               "sa.operation": "add",
               "sa.ce-data": {
                  "sa.activate": "true",
                  "sa.description": "EVPLUNIAUC4JAN_i45_V51 Description",
                  "sa.mtu": "1522",
                  "sa.mode": "FULL DUPLEX",
                  "sa.service-multiplexing": "true",
                  "sa.enable-link-Management": "true",
                  "sa.bundling": "false"
               }
            },
            {
               "sa.name": "EVPLUNIZUC4JAN_i45_V51",
               "sa.operation": "add",
               "sa.ce-data": {
                  "sa.activate": "true",
                  "sa.description": "EVPLUNIZUC4JAN_i45_V51 description",
                  "sa.mtu": "1522",
                  "sa.mode": "FULL DUPLEX",
                  "sa.service-multiplexing": "true",
                  "sa.enable-link-Management": "true",
                  "sa.bundling": "false"
               }
            }
         ]
      },
      "sa.forwarding-path": {
         "sa.pseudowire-settings": {
            "sa.pw-bandwidth": "10",
```

```
            "sa.enable-control-word": "false",
            "sa.fallback-to-ldp": "false",
            "sa.interworking-option": null,
            "sa.service-bandwidth": "0"
         },
         "sa.mpls-te-data": {
            "sa.wrap-protection": "false",
            "sa.protection-type": "Working",
            "sa.enable-lockdown": "false",
            "sa.enable-auto-bandwidth": "false",
            "sa.enable-autoroute": "true",
            "sa.enable-frr": "false",
            "sa.tunnel-setting": {
               "sa.global-id": "881",
               "sa.setup-priority": "6",
               "sa.hold-priority": "1",
               "sa.auto-bandwidth-frequency": "600",
               "sa.max-auto-bandwidth": "20",
               "sa.min-auto-bandwidth": "5"
            }
         }
      }
   }
}
```

7.5.5 Terminate EPL Service

7.5.5.1 Request

POST /restconf/operations/v1/cisco-service-activation:terminate-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<p:terminate-service-request
xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:service:activation:v1
restconf-provisioning-request-schema.xsd ">
<p:cfs-ref>MD=CISCO_EPNM!CFS=TestEPlService238</p:cfs-ref>
<p:service-order-data>
      <p:service-type>TestEPlService238</p:service-type>
      <p:service-type>carrier-ethernet-vpn</p:service-type>
      <p:service-subtype>EPL</p:service-subtype>
      <!-- network-interface-list is required only when an NBI user want to
remove UNIs along with service terminate otherwise it's optional -->
      <p:network-interface-list>
            <p:network-interface>
                  <p:ref>MD=CISCO_EPNM!NI=TestUNI238</p:ref>
                  <p:operation>remove</p:operation>
            </p:network-interface>
            <p:network-interface>
                  <p:ref>MD=CISCO_EPNM!NI=TestZUNI238</p:ref>
                   <p:operation>remove</p:operation>
            </p:network-interface>
      </p:network-interface-list>
</p:service-order-data>
</p:terminate-service-request>
```

Content-Type: application/yang.operation+json
Json Payload:

```
{
   "sa.cfs-ref": "MD=CISCO_EPNM!CFS=TestEPlService238",
   "sa.service-order-data": {
      "sa.service-name": "TestEPlService238",
      "sa.service-type": "carrier-ethernet-vpn",
      "sa.service-subtype": "EPL",
      "sa.network-interface-list": {
         "sa.network-interface": [
            {
               "sa.ref": "MD=CISCO_EPNM!NI=TestUNI238",
               "sa.operation": "remove"
            },
            {
               "sa.ref": "MD=CISCO_EPNM!NI=TestZUNI238",
               "sa.operation": "remove"
            }
         ]
      }
   }
}
```

7.5.5.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
{
   "sa.terminate-service-response": {
      "sa.request-id": "20900644-396a-42d3-8499-d497bb2ce33f",
      "sa.service-name": "TestEPlService238",
      "sa.service-type": "carrier-ethernet-vpn",
      "sa.service-subtype": "EPL",
      "sa.preview": false,
      "sa.request-time": "Thu Mar 09 12:23:47 IST 2017",
      "sa.completion-status": "SUBMITTED"
   }
}
```

7.5.6 EVPL Provide with existing Tunnel

7.5.6.1 Request

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<p:provision-service-request
xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:service:activation:v1
restconf-provisioning-request-schema.xsd ">
<p:service-order-data>
      <p:customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</p:customer-ref>
      <p:service-name>TestEVPLService505</p:service-name>
```

```
      <p:service-description>TestEVPLService505 description</p:service-
description>
      <p:service-type>carrier-ethernet-vpn</p:service-type>
      <p:service-subtype>EVPL</p:service-subtype>
      <p:service-activate>true</p:service-activate>
      <p:ce-data>
            <p:bundling>false</p:bundling>
            <p:ccm-interval>1 sec</p:ccm-interval>
            <p:ce-vlan-id-preservation>false</p:ce-vlan-id-preservation>
            <p:ce-vlan-cos-preservation>false</p:ce-vlan-cos-preservation>
            <p:mtu-size>1522</p:mtu-size>
            <p:enable-cfm>true</p:enable-cfm>
             <p:vlan-id>5326</p:vlan-id>
            <p:fault-management-map>
                  <p:entry>
                        <p:from>UNI A</p:from>
                        <p:to>UNI Z</p:to>
                        <p:cos>Medium</p:cos>
                        <p:oam-profile>Performance Monitoring 1</p:oam-
profile>
                        <p:cchk>Yes</p:cchk>
                        <p:sedm>No</p:sedm>
                        <p:dedm>No</p:dedm>
                        <p:sylm>Yes</p:sylm>
                        <p:slm>No</p:slm>
                  </p:entry>
            </p:fault-management-map>
            <p:max-uni-endpoints>2</p:max-uni-endpoints>
            <p:auto-allocate-vlan-id>true</p:auto-allocate-vlan-id>
      </p:ce-data>

      <p:termination-point-list>
            <p:termination-point-config>
                  <p:tp-ref>MD=CISCO_EPNM!ND=tmh-chn-mvso-asr9k-
3!CTP=name=GigabitEthernet0/0/0/0;lr=lr-gigabit-ethernet</p:tp-ref>
                  <p:directionality>source</p:directionality>
            <p:ingress-qos-policy-ref>MD=CISCO_EPNM!ND=ASR9K-
146.3!POLICY_QOS=QoSProfileIngress_In_UM</p:ingress-qos-policy-ref>
<p:egress-qos-policy-
ref>MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM</p:egress-qos-
policy-ref>
                  <p:network-interface-name>TestUNI505</p:network-interface-
name>
                  <p:ce-data>
                        <p:l2-cp-profile>MEF Option 1</p:l2-cp-profile>
                        <p:mep-group>Test</p:mep-group>
                        <p:untagged>false</p:untagged>
                        <p:qinq-data>
                              <p:match-type>dot1q</p:match-type>
                              <p:inner-vlan-id-list>10</p:inner-vlan-id-list>
                              <p:priority-tagged>true</p:priority-tagged>
                              <p:match-exact>true</p:match-exact>
                              <p:rewrite-definition>
                                    <p:push-operation>
                                          <p:tag-count>one</p:tag-count>
                                          <p:match-type>dot1q</p:match-type>
```

```
                                          <p:inner-vlan-id>10</p:inner-vlan-
id>
                                          <p:outer-vlan-id>10</p:outer-vlan-
id>
                                    </p:push-operation>
                              </p:rewrite-definition>
                        </p:qinq-data>
                  </p:ce-data>
            </p:termination-point-config>
            <p:termination-point-config>
                  <p:tp-ref>MD=CISCO_EPNM!ND=tmh-chn-mvso-asr9k-
3!CTP=name=GigabitEthernet0/0/0/1;lr=lr-gigabit-ethernet</p:tp-ref>
                  <p:directionality>sink</p:directionality>
                  <p:ingress-qos-policy-ref>MD=CISCO_EPNM!ND=ASR9K-
146.3!POLICY_QOS=QoSProfileIngress_In_UM</p:ingress-qos-policy-ref>
<p:egress-qos-policy-
ref>MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM</p:egress-qos-
policy-ref>
                  <p:bfd-parameters />
                  <p:network-interface-name>TestUNIZ505</p:network-interface-
name>
                  <p:ce-data>
                        <p:l2-cp-profile>MEF Option 1</p:l2-cp-profile>
                        <p:mep-group>Test</p:mep-group>
                        <p:untagged>false</p:untagged>
                        <p:qinq-data>
                              <p:match-type>dot1q</p:match-type>
                              <p:inner-vlan-id-list>10</p:inner-vlan-id-list>
                              <p:priority-tagged>true</p:priority-tagged>
                              <p:match-exact>true</p:match-exact>
                              <p:rewrite-definition>
                                    <p:pop-operation>
                                          <p:tag-count>one</p:tag-count>
                                    </p:pop-operation>
                              </p:rewrite-definition>
                        </p:qinq-data>
                  </p:ce-data>
            </p:termination-point-config>
      </p:termination-point-list>
      <p:network-interface-list>
            <p:network-interface>
                  <p:name>TestUNI505</p:name>
                  <p:operation>add</p:operation>
                  <p:ce-data>
                        <p:description>TestUNI505</p:description>
                  <p:ingress-qos-policy-ref>MD=CISCO_EPNM!ND=ASR9K-
146.3!POLICY_QOS=QoSProfileIngress_In_UM</p:ingress-qos-policy-ref>
<p:egress-qos-policy-
ref>MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM</p:egress-qos-
policy-ref>
                        <p:mtu>1522</p:mtu>
                        <p:speed>10 Mbps</p:speed>
                        <p:mode>FULL DUPLEX</p:mode>
                        <p:ce-vlanid>10</p:ce-vlanid>
                        <p:service-multiplexing>true</p:service-multiplexing>
                        <p:enable-link-oam>false</p:enable-link-oam>
```

```
                        <p:bundling>false</p:bundling>
                  </p:ce-data>
            </p:network-interface>
            <p:network-interface>
                  <p:name>TestUNIZ505</p:name>
                  <p:operation>add</p:operation>
                  <p:ce-data>
                        <p:description>TestUNIZ505</p:description>
                        <p:ingress-qos-policy-ref>MD=CISCO_EPNM!ND=ASR9K-
146.3!POLICY_QOS=QoSProfileIngress_In_UM</p:ingress-qos-policy-ref>
<p:egress-qos-policy-
ref>MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM</p:egress-qos-
policy-ref>
                        <p:mtu>1522</p:mtu>
                        <p:speed>5</p:speed>
                        <p:mode>FULL DUPLEX</p:mode>
                        <p:ce-vlanid>10</p:ce-vlanid>
                        <p:service-multiplexing>true</p:service-multiplexing>
                        <p: enable-link-oam >false</p: enable-link-oam>
                        <p:bundling>false</p:bundling>
                  </p:ce-data>
            </p:network-interface>
      </p:network-interface-list>
       <ns:forwarding-path>
            <ns:mpls-te-data>
               <ns:preferred-path-ref>MD=CISCO_EPNM!VC=TE Link
301_6.6.6.6_0</ns:preferred-path-ref>
            </ns:mpls-te-data>
              <ns:pseudowire-settings>
                    <ns:enable-control-word>true</ns:enable-control-word>
                    <ns:fallback-to-ldp>true</ns:fallback-to-ldp>
              </ns:pseudowire-settings>
        </ns:forwarding-path>
</p:service-order-data>
</p:provision-service-request>
```

7.5.6.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
{
  "customer": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
  "service-id": "7f52d296-ad73-4d0e-891c-2aceab5e2687",
  "service-name": "TestEVPLService505",
  "service-type": "carrier-ethernet-vpn",
  "circuit-type": "EVPL",
  "deploy-action": "Deploy",
  "operation-type": "ProvideService",
  "request-time": "Tue May 17 16:29:50 PDT 2016",
  "completion-status": "SUBMITTED",
  }
```

7.5.7 Terminate EVPL Service along with tunnels

7.5.7.1 Request

POST /restconf/operations/v1/cisco-service-activation:terminate-service HTTP/1.1

Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<p:terminate-service-request
  xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="urn:cisco:params:xml:ns:yang:service:activation:v1
restconf-provisioning-request-schema.xsd ">
  <p:cfs-ref>MD=CISCO_EPNM!CFS=EVPL-UC4-S1</p:cfs-ref>
  <p:service-order-data>
    <p:service-name>EVPL-UC4-S1</p:service-name>
    <p:service-type>carrier-ethernet-vpn</p:service-type>
    <p:service-subtype>EVPL</p:service-subtype>
    <p:forwarding-path>
     <p:mpls-te-data>
     </p:mpls-te-data>
    </p:forwarding-path>
  </p:service-order-data>
</p:terminate-service-request>
```

Content-Type: application/yang.operation+json
Json Payload:

```
{
   "sa.cfs-ref": "MD=CISCO_EPNM!CFS=EVPL-UC4-S1",
   "sa.service-order-data": {
      "sa.service-name": "EVPL-UC4-S1",
      "sa.service-type": "carrier-ethernet-vpn",
      "sa.service-subtype": "EVPL",
      "sa.forwarding-path": {
         "sa.mpls-te-data": null
      }
   }
}
```

7.5.7.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
{
   "sa.terminate-service-response": {
      "sa.request-id": "20900644-396a-42d3-8499-d497bb2ce33f",
      "sa.service-name": "EVPL-UC4-S1",
      "sa.service-type": "carrier-ethernet-vpn",
      "sa.service-subtype": "EVPL",
      "sa.preview": false,
      "sa.request-time": "Thu Mar 09 12:23:47 IST 2017",
      "sa.completion-status": "SUBMITTED"
   }
}
```

7.5.8 Provision EP-LAN Service

7.5.8.1 Request

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml

XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:provision-service-request
xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:y1="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="urn:cisco:params:xml:ns:yang:sa:v1 cisco-service-
activation.xsd urn:cisco:params:xml:ns:yang:service:activation:v1 restconf-
provisioning-request-schema.xsd ">
<p:service-order-data>
  <p:customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</p:customer-ref>
  <p:service-name>EPLAN_MyServive01</p:service-name>
  <p:service-description>EPLAN_MyServive01 description</p:service-
description>
  <p:service-type> carrier-ethernet-vpn </p:service-type>
  <p:service-subtype>EP-LAN</p:service-subtype>
  <p:service-activate>true</p:service-activate>
  <p:direction>BiDirectional</p:direction>
  <p:ce-data>
    <p:core-technology>VPLS</p:core-technology>
    <p:bundling>true</p:bundling>
    <p:ccm-interval>1 sec</p:ccm-interval>
    <p:ce-vlan-id-preservation>true</p:ce-vlan-id-preservation>
    <p:ce-vlan-cos-preservation>true</p:ce-vlan-cos-preservation>
    <p:mtu-size>1522</p:mtu-size>
    <p:enable-cfm>true</p:enable-cfm>
    <p:fault-management-map/>
    <p:max-uni-endpoints>2</p:max-uni-endpoints>
  </p:ce-data>
  <p:termination-point-list>
    <p:termination-point-config>
      <p:tp-ref>MD=CISCO_EPNM!ND=TEST901-CSG-1-
DOMAIN3.cisco.com!CTP=name=GigabitEthernet0/3;lr=lr-gigabit-
ethernet_INTERFACE</p:tp-ref>
      <p:directionality>BiDirectional</p:directionality>
      <p:ingress-qos-policy-ref>MD=CISCO_EPNM!ND=ASR9K-
146.3!POLICY_QOS=QoSProfileIngress_In_UM</p:ingress-qos-policy-ref>
<p:egress-qos-policy-
ref>MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM</p:egress-qos-
policy-ref>
      <p:network-interface-name>MyNetworkInterface</p:network-interface-name>
      <p:ce-data>
        <p:l2-cp-profile>MEF EP-LAN/EP-Tree</p:l2-cp-profile>
        <p:mep-group>test-mep</p:mep-group>
        <p:untagged>true</p:untagged>
      </p:ce-data>
    </p:termination-point-config>
  </p:termination-point-list>
  <p:network-interface-list>
    <p:network-interface>
      <p:name>MyNetworkInterface</p:name>
      <p:operation>add</p:operation>
      <p:ce-data>
        <p:description>MyNetworkInterface description</p:description>
        <p:ingress-qos-policy-ref>MD=CISCO_EPNM!ND=ASR9K-
146.3!POLICY_QOS=QoSProfileIngress_In_UM</p:ingress-qos-policy-ref>
```

```
<p:egress-qos-policy-
ref>MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM</p:egress-qos-
policy-ref>
        <p:mtu>1522</p:mtu>
        <p:speed>10 Mbps</p:speed>
        <p:mode>FULL DUPLEX</p:mode>
        <p:ce-vlanid>565</p:ce-vlanid>
        <p:service-multiplexing>true</p:service-multiplexing>
        <p:bundling>true</p:bundling>
        <p:enable-oam>true</p:enable-oam>
        <p:enable-link-Management>true</p:enable-link-Management>
      </p:ce-data>
    </p:network-interface>
  </p:network-interface-list>
</p:service-order-data>
</p:provision-service-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "sa.service-order-data": {
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "sa.service-name": "EPLAN_MyServive01",
      "sa.service-description": "EPLAN_MyServive01 description",
      "sa.service-type": "carrier-ethernet-vpn",
      "sa.service-subtype": "EP-LAN",
      "sa.service-activate": "true",
      "sa.direction": "BiDirectional",
      "sa.ce-data": {
         "sa.core-technology": "VPLS",
         "sa.bundling": "true",
         "sa.ccm-interval": "1 sec",
         "sa.ce-vlan-id-preservation": "true",
         "sa.ce-vlan-cos-preservation": "true",
         "sa.mtu-size": "1522",
         "sa.enable-cfm": "true",
         "sa.fault-management-map": null,
         "sa.max-uni-endpoints": "2"
      },
      "sa.termination-point-list": {
         "sa.termination-point-config": {
            "sa.tp-ref": "MD=CISCO_EPNM!ND=TEST901-CSG-1-
DOMAIN3.cisco.com!CTP=name=GigabitEthernet0/1;lr=lr-gigabit-
ethernet_INTERFACE",
            "sa.directionality": "BiDirectional",
            "sa.ingress-qos-policy-ref": "
MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM",
            "sa.network-interface-name": "MyNetworkInterface",
            "sa.ce-data": {
               "sa.l2-cp-profile": "MEF EP-LAN/EP-Tree",
               "sa.mep-group": "test-mep",
               "sa.untagged": "true"
            }
         }
      },
      "sa.network-interface-list": {
```

```
         "sa.network-interface": {
            "sa.name": "MyNetworkInterface",
            "sa.operation": "add",
            "sa.ce-data": {
               "sa.description": "MyNetworkInterface description",
               "sa.ingress-qos-policy-ref": "
MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM",
               "sa.mtu": "1522",
               "sa.speed": "10 Mbps",
               "sa.mode": "FULL DUPLEX",
               "sa.ce-vlanid": "565",
               "sa.service-multiplexing": "true",
               "sa.bundling": "true",
               "sa.enable-oam": "true",
               "sa.enable-link-Management": "true"
            }
         }
      }
   }
}
```

7.5.8.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
{
  "customer": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
  "service-id": "7f52d296-ad73-4d0e-891c-2aceab5e2687",
  "service-name": "EPLAN_MyServive01",
  "service-type": "carrier-ethernet-vpn",
  "circuit-type": "EP-LAN",
  "deploy-action": "Deploy",
  "operation-type": "ProvideService",
  "request-time": "Tue May 17 16:29:50 PDT 2016",
  "completion-status": "SUBMITTED"
}
```

7.5.9 Provide EVP-LAN with Hvpls service

7.5.9.1 *Request*

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:provision-service-request
      xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:y1="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:sa:v1 cisco-service-
activation.xsd urn:cisco:params:xml:ns:yang:service:activation:v1 restconf-
provisioning-request-schema.xsd ">
      <p:service-order-data>
            <p:customer-
ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</p:customer-ref>
```

```
            <p:service-name>EVPLanHvpls2</p:service-name>
            <p:service-description>EPLanHvpls description</p:service-
description>
            <p:service-type>carrier-ethernet-vpn</p:service-type>
            <p:service-subtype>EVP-LAN</p:service-subtype>
            <p:service-activate>true</p:service-activate>
            <p:ce-data>
                  <p:core-technology>H-VPLS</p:core-technology>
                  <p:ccm-interval>1 sec</p:ccm-interval>
                  <p:mtu-size>1522</p:mtu-size>
                  <p:bundling>true</p:bundling>
                  <p:ce-vlan-id-preservation>true</p:ce-vlan-id-preservation>
                  <p:ce-vlan-cos-preservation>false</p:ce-vlan-cos-
preservation>
                  <p:max-uni-endpoints>2</p:max-uni-endpoints>
            </p:ce-data>
            <p:termination-point-list>
                  <p:termination-point-config>
                        <p:tp-
ref>MD=CISCO_EPNM!ND=ASR9001.cisco.com!FTP=name=GigabitEthernet0/0/0/13;lr=lr
-gigabit-ethernet</p:tp-ref>
                        <p:directionality>BiDirectional</p:directionality>
                        <p:network-interface-name>EVPLanHUNIA2</p:network-
interface-name>
                        <p:ce-data>
                              <p:l2-cp-profile>MEF EPL/EP-LAN/EP-Tree</p:l2-
cp-profile>
                              <p:mep-group>UNIA</p:mep-group>
                              <p:primary-hub-ref>MD=CISCO_EPNM!ND=ASR9K-
146.3</p:primary-hub-ref>
                              <p:backup-hub-ref>MD=CISCO_EPNM!ND=isc-cl-test-
me3600x-1.cisco.com</p:backup-hub-ref>
                              <p:untagged>false</p:untagged>
                              <p:qinq-data>
                                    <p:match-type>dot1q</p:match-type>
                                    <p:vlan-id-list>210</p:vlan-id-list>
                                    <p:priority-tagged>false</p:priority-
tagged>
                                    <!-- <p:match-exact>true</p:match-exact>
-->
                                    <p:rewrite-definition>
                                          <p:translate-operation>
                                                <p:tag-translation>one-to-
one</p:tag-translation>
                                                <p:match-type>dot1q</p:match-
type>
                                                <p:inner-vlan-
id>201</p:inner-vlan-id>
                                                <p:outer-vlan-
id>202</p:outer-vlan-id>
                                          </p:translate-operation>
                                    </p:rewrite-definition>
                              </p:qinq-data>
                        </p:ce-data>
                  </p:termination-point-config>
                  <p:termination-point-config>
```

```
                        <p:unmanaged-termination-point>
                              <p:operation>add</p:operation>
                              <p:device-name>EPTreeUnmged</p:device-name>
                              <p:new-device>false</p:new-device>
                              <p:device-ip-address>1.1.5.203</p:device-ip-
address>
                              <p:device-ldp-address>2.2.5.203</p:device-ldp-
address>
                              <!--p:vc-id>19291</p:vc-id -->
                        </p:unmanaged-termination-point>
                  </p:termination-point-config>
            </p:termination-point-list>
            <p:network-interface-list>
                  <p:network-interface>
                        <p:name>EVPLanHUNIA2</p:name>
                        <p:operation>add</p:operation>
                        <p:ce-data>
                              <p:activate>true</p:activate>
                              <p:description>EVPLanHUNIA2
description</p:description>
                              <p:mtu>8000</p:mtu>
                              <p:speed>10 Mbps</p:speed>
                              <p:mode>FULL DUPLEX</p:mode>
                              <p:enable-link-oam>true</p:enable-link-oam>
                              <p:enable-link-Management>true</p:enable-link-
Management>
                              <p:service-multiplexing>true</p:service-
multiplexing>
                        </p:ce-data>
                  </p:network-interface>
            </p:network-interface-list>
            <p:forwarding-path>
                  <p:pseudowire-settings>
                        <p:enable-control-word>true</p:enable-control-word>
                  </p:pseudowire-settings>
            </p:forwarding-path>
      </p:service-order-data>
</p:provision-service-request>
```

7.5.9.2 *Response*

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
<ns4:response-message xmlns:ns41="urn:cisco:params:xml:ns:yang:restconf:party"
      xmlns:ns40="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns39="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns38="urn:ietf:params:xml:ns:yang:ietf-restconf"
      xmlns:ns37="urn:cisco:params:xml:ns:yang:service:activation:status:v1"
      xmlns:ns36="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
      xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns32="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns31="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
      xmlns:ns30="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns29="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
```

```
      xmlns:ns28="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns26="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns24="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
      xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical-ops:v1"
      xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
      xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
      xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
      <ns4:header>
            <ns4:firstIndex>0</ns4:firstIndex>
            <ns4:lastIndex>0</ns4:lastIndex>
      </ns4:header>
      <ns4:data>
            <ns37:provision-service-request>
                  <request-id>528d6a60-2939-4de1-b0c3-e7cf442782a3</request-
id>
                  <service-name>EVPLanHvpls2</service-name>
                  <service-type>carrier-ethernet-vpn</service-type>
                  <service-subtype>EVP-LAN</service-subtype>
                  <preview>false</preview>
                  <request-time>2017-09-15T10:59:41.730Z</request-time>
                  <completion-time>2017-09-15T11:00:17.152Z</completion-time>
                  <deploy-results>
                        <result>
                              <node-
ref>MD=CISCO_EPNM!ND=ASR9001.cisco.com</node-ref>
                              <state>SUCCESSFUL</state>
                              <config>ethernet cfm
                                    domain EVC level 4
                                    service EVPLanHvpls2 bridge group
Provisioned bridge-domain EVPLanHvpls2
                                    continuity-check interval 1s
                                    interface GigabitEthernet0/0/0/13
                                    ethernet oam profile EVPLanHvpls2
                                    ethernet uni id EVPLanHUNIA2
                                    ethernet lmi
                                    mtu 8000
```

```
                                    speed 10
                                    exit
                                    interface GigabitEthernet0/0/0/13.1
l2transport
                                    encapsulation dot1q 210
                                    rewrite ingress tag translate 1-to-1 dot1q
202 symmetric
                                    mtu 1522
                                    ethernet cfm
                                    mep domain EVC service EVPLanHvpls2 mep-id
1
                                    l2vpn
                                    pw-class PWClass_195_9-9-9-3
                                    encapsulation mpls
                                    control-word
                                    pw-class PWClass_195_192-168-12-29
                                    encapsulation mpls
                                    control-word
                                    xconnect group Provisioned
                                    p2p EVPLanHvpls2
                                    interface GigabitEthernet0/0/0/13.1
                                    neighbor ipv4 9.9.9.3 pw-id 195
                                    pw-class PWClass_195_9-9-9-3
                                    backup neighbor 192.168.12.29 pw-id 195
                                    pw-class PWClass_195_192-168-12-29
                                    exit
                                    exit
                                    exit
                                    exit
                                    exit
                              </config>
                        </result>
                        <result>
                              <node-ref>MD=CISCO_EPNM!ND=isc-cl-test-me3600x-
1.cisco.com</node-ref>
                              <state>SUCCESSFUL</state>
                              <config>pseudowire-class PWClass_195_9-9-9-8
                                    encapsulation mpls
                                    control-word
                                    pseudowire-class PWClass_28981_2-2-5-203
                                    encapsulation mpls
                                    control-word
                                    bridge-domain 75
                                    l2 vfi EVPLanHvpls2 manual
                                    vpn id 195
                                    bridge-domain 75
                                    neighbor 2.2.5.203 pw-class
PWClass_28981_2-2-5-203
                                    neighbor 9.9.9.8 pw-class PWClass_195_9-9-
9-8 no-split-horizon
                                    interface vlan 75
                                    no ip address
                                    xconnect vfi EVPLanHvpls2
                                    exit
                              </config>
                        </result>
```

```
                        <result>
                              <node-ref>MD=CISCO_EPNM!ND=ASR9K-146.3</node-
ref>
                              <state>SUCCESSFUL</state>
                              <config>l2vpn
                                    pw-class PWClass_195_9-9-9-8
                                    encapsulation mpls
                                    control-word
                                    pw-class PWClass_28981_2-2-5-203
                                    encapsulation mpls
                                    control-word
                                    bridge group Provisioned
                                    bridge-domain EVPLanHvpls2
                                    mtu 1508
                                    neighbor 9.9.9.8 pw-id 195
                                    pw-class PWClass_195_9-9-9-8
                                    vfi EVPLanHvpls2
                                    neighbor 2.2.5.203 pw-id 28981
                                    pw-class PWClass_28981_2-2-5-203
                                    exit
                                    exit
                                    exit
                                    exit
                                    exit
                              </config>
                        </result>
                  </deploy-results>
                  <completion-status>SUCCESS</completion-status>
            </ns37:provision-service-request>
      </ns4:data>
</ns4:response-message>
```

7.5.10 Provision EVP-LAN Service

7.5.10.1 Request

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:provision-service-request
      xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:y1="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:sa:v1 cisco-service-
activation.xsd urn:cisco:params:xml:ns:yang:service:activation:v1 restconf-
provisioning-request-schema.xsd ">
      <p:service-order-data>
            <p:customer-
ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</p:customer-ref>
            <p:service-name>EVPLAN_MyServive01</p:service-name>
            <p:service-description>EVPLAN_MyServive01 description</p:service-
description>
            <p:service-type> carrier-ethernet-vpn </p:service-type>
            <p:service-subtype>EVP-LAN</p:service-subtype>
            <p:service-activate>true</p:service-activate>
```

```
            <p:direction>BiDirectional</p:direction>
            <p:ce-data>
                  <p:core-technology>VPLS</p:core-technology>
                  <p:bundling>true</p:bundling>
                  <p:ccm-interval>1 sec</p:ccm-interval>
                  <p:ce-vlan-id-preservation>true</p:ce-vlan-id-preservation>
                  <p:ce-vlan-cos-preservation>true</p:ce-vlan-cos-
preservation>
                  <p:mtu-size>1522</p:mtu-size>
                  <p:enable-cfm>true</p:enable-cfm>
                  <p:vlan-id>5326</p:vlan-id>
                  <p:fault-management-map />
                  <p:max-uni-endpoints>2</p:max-uni-endpoints>
                  <p:auto-allocate-vlan-id>true</p:auto-allocate-vlan-id>
            </p:ce-data>
            <p:termination-point-list>
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=TEST901-CSG-1-
DOMAIN3.cisco.com!CTP=name=GigabitEthernet0/1;lr=lr-gigabit-
ethernet_INTERFACE</p:tp-ref>
                        <p:directionality>BiDirectional</p:directionality>
                        <p:ingress-qos-policy-ref>MD=CISCO_EPNM!ND=ASR9K-
146.3!POLICY_QOS=QoSProfileIngress_In_UM</p:ingress-qos-policy-ref>
<p:egress-qos-policy-
ref>MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM</p:egress-qos-
policy-ref>
                        <p:network-interface-
name>MyNetworkInterface</p:network-interface-name>
                        <p:ce-data>
                              <p:l2-cp-profile>MEF EP-LAN/EP-Tree</p:l2-cp-
profile>
                              <p:mep-group>test-mep</p:mep-group>
                              <p:untagged>true</p:untagged>
                              <p:qinq-data>
                                    <p:match-type>default</p:match-type>
                                    <p:inner-vlan-id-list>p:inner-vlan-id-
list</p:inner-vlan-id-list>
                                    <p:priority-tagged>true</p:priority-
tagged>
                                    <p:match-exact>true</p:match-exact>
                                    <p:vlan-cos>p:vlan-cos</p:vlan-cos>
                                    <p:inner-vlan-cos>p:inner-vlan-
cos</p:inner-vlan-cos>
                                    <p:ether-type>
                                          <p:ipv4>true</p:ipv4>
                                          <p:ipv6>true</p:ipv6>
                                          <p:pppoe-all>true</p:pppoe-all>
                                          <p:pppoe-discovery>true</p:pppoe-
discovery>
                                          <p:pppoe-session>true</p:pppoe-
session>
                                    </p:ether-type>
                                    <p:rewrite-definition>
                                          <p:pop-operation>
                                                <p:tag-count>one</p:tag-
count>
```

```
                                        </p:pop-operation>
                                    </p:rewrite-definition>
                              </p:qinq-data>
                        </p:ce-data>
                  </p:termination-point-config>
            </p:termination-point-list>
            <p:network-interface-list>
                  <p:network-interface>
                        <p:name>MyNetworkInterface</p:name>
                        <p:operation>add</p:operation>
                        <p:ce-data>
                              <p:description>MyNetworkInterface
description</p:description>
                              <p:ingress-qos-policy-
ref>MD=CISCO_EPNM!ND=ASR9K-
146.3!POLICY_QOS=QoSProfileIngress_In_UM</p:ingress-qos-policy-ref>
<p:egress-qos-policy-
ref>MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM</p:egress-qos-
policy-ref>
                              <p:mtu>1522</p:mtu>
                              <p:speed>10 Mbps</p:speed>
                              <p:mode>FULL DUPLEX</p:mode>
                              <p:ce-vlanid>565</p:ce-vlanid>
                              <p:service-multiplexing>true</p:service-
multiplexing>
                              <p:bundling>true</p:bundling>
                              <p:enable-oam>true</p:enable-oam>
                              <p:enable-link-Management>true</p:enable-link-
Management>
                        </p:ce-data>
                  </p:network-interface>
            </p:network-interface-list>
      </p:service-order-data>
</p:provision-service-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "sa.service-order-data": {
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "sa.service-name": "EVPLAN_MyServive01",
      "sa.service-description": "EVPLAN_MyServive01 description",
      "sa.service-type": "carrier-ethernet-vpn",
      "sa.service-subtype": "EVP-LAN",
      "sa.service-activate": "true",
      "sa.direction": "BiDirectional",
      "sa.ce-data": {
         "sa.core-technology": "VPLS",
         "sa.bundling": "true",
         "sa.ccm-interval": "1 sec",
         "sa.ce-vlan-id-preservation": "true",
         "sa.ce-vlan-cos-preservation": "true",
         "sa.mtu-size": "1522",
         "sa.enable-cfm": "true",
         "sa.fault-management-map": null,
         "sa.max-uni-endpoints": "2"
      },
```

```
      "sa.termination-point-list": {
         "sa.termination-point-config": {
            "sa.tp-ref": "MD=CISCO_EPNM!ND=TEST901-CSG-1-
DOMAIN3.cisco.com!CTP=name=GigabitEthernet0/1;lr=lr-gigabit-
ethernet_INTERFACE",
            "sa.directionality": "BiDirectional",
            "sa.ingress-qos-policy-ref": "
MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM",
            "sa.network-interface-name": "MyNetworkInterface",
            "sa.ce-data": {
               "sa.l2-cp-profile": "MEF EP-LAN/EP-Tree",
               "sa.mep-group": "test-mep",
               "sa.untagged": "true",
               "sa.qinq-data": {
                  "sa.match-type": "default",
                  "sa.inner-vlan-id-list": "p:inner-vlan-id-list",
                  "sa.priority-tagged": "true",
                  "sa.match-exact": "true",
                  "sa.vlan-cos": "p:vlan-cos",
                  "sa.inner-vlan-cos": "p:inner-vlan-cos",
                  "sa.ether-type": {
                     "sa.ipv4": "true",
                     "sa.ipv6": "true",
                     "sa.pppoe-all": "true",
                     "sa.pppoe-discovery": "true",
                     "sa.pppoe-session": "true"
                  },
                  "sa.rewrite-definition": {
                     "sa.pop-operation": {
                        "sa.tag-count": "one"
                     }
                  }
               }
            }
         }
      },
      "sa.network-interface-list": {
         "sa.network-interface": {
            "sa.name": "MyNetworkInterface",
            "sa.operation": "add",
            "sa.ce-data": {
               "sa.description": "MyNetworkInterface description",
               "sa.ingress-qos-policy-ref": "
MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM",
               "sa.mtu": "1522",
               "sa.speed": "10 Mbps",
               "sa.mode": "FULL DUPLEX",
               "sa.ce-vlanid": "565",
               "sa.service-multiplexing": "true",
               "sa.bundling": "true",
               "sa.enable-oam": "true",
               "sa.enable-link-Management": "true"
            }
         }
      }
   }
```

```
}
```

7.5.10.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
{
  "customer": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
  "service-id": "7f52d296-ad73-4d0e-891c-2aceab5e2687",
  "service-name": "EVPLAN_MyServive01",
  "service-type": "carrier-ethernet-vpn",
  "circuit-type": "EVP-LAN",
  "deploy-action": "Deploy",
  "operation-type": "ProvideService",
  "request-time": "Tue May 17 16:29:50 PDT 2016",
 }
```

7.5.11 Provision EP-Tree Service

7.5.11.1 Request

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:provision-service-request
xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:y1="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="urn:cisco:params:xml:ns:yang:sa:v1 cisco-service-
activation.xsd urn:cisco:params:xml:ns:yang:service:activation:v1 restconf-
provisioning-request-schema.xsd ">
<p:service-order-data>
      <p:customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</p:customer-ref>
      <p:service-name>EPTREE_MyServive01</p:service-name>
      <p:service-description>EPTREE_MyServive01 description</p:service-
description>
      <p:service-type> carrier-ethernet-vpn </p:service-type>
      <p:service-subtype>EP-Tree</p:service-subtype>
      <p:service-activate>true</p:service-activate>
      <p:direction>BiDirectional</p:direction>
      <p:ce-data>
            <p:core-technology>VPLS</p:core-technology>
            <p:bundling>true</p:bundling>
            <p:ccm-interval>1 sec</p:ccm-interval>
            <p:ce-vlan-id-preservation>true</p:ce-vlan-id-preservation>
            <p:ce-vlan-cos-preservation>true</p:ce-vlan-cos-preservation>
            <p:mtu-size>1522</p:mtu-size>
            <p:enable-cfm>true</p:enable-cfm>
            <p:fault-management-map/>
            <p:max-uni-endpoints>2</p:max-uni-endpoints>
      </p:ce-data>
      <p:termination-point-list>
            <p:termination-point-config>
                  <p:tp-ref>MD=CISCO_EPNM!ND=TEST901-CSG-1-
```

```
DOMAIN3.cisco.com!CTP=name=GigabitEthernet0/1/20; lr=lr-gigabit-
ethernet</p:tp-ref>
                  <p:directionality>BiDirectional</p:directionality>
                  <p:ingress-qos-policy-ref>MD=CISCO_EPNM!ND=ASR9K-
146.3!POLICY_QOS=QoSProfileIngress_In_UM</p:ingress-qos-policy-ref>
<p:egress-qos-policy-
ref>MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM</p:egress-qos-
policy-ref>
                  <p:network-interface-name>MyNetworkInterface1</p:network-
interface-name>
                  <p:ce-data>
                        <p:l2-cp-profile>MEF EP-LAN/EP-Tree</p:l2-cp-profile>

                        <p:untagged>true</p:untagged>
                  </p:ce-data>
            </p:termination-point-config>
            <p:termination-point-config>
                  <p:tp-ref>MD=CISCO_EPNM!ND=TEST901-CSG-1-
DOMAIN3.cisco.com!CTP=name=GigabitEthernet0/1/20;lr=lr=lr-gigabit-
ethernet</p:tp-ref>
                  <p:directionality>BiDirectional</p:directionality>
                  <p:ingress-qos-policy-ref>MD=CISCO_EPNM!ND=ASR9K-
146.3!POLICY_QOS=QoSProfileIngress_In_UM</p:ingress-qos-policy-ref>
<p:egress-qos-policy-
ref>MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM</p:egress-qos-
policy-ref>
                  <p:network-interface-
ref>MD=CISCO_EPNM!NI=MyNetworkInterface2</p:network-interface-ref>
                  <p:ce-data>
                        <p:l2-cp-profile>MEF EP-LAN/EP-Tree</p:l2-cp-profile>
                        <p:untagged>true</p:untagged>
                  </p:ce-data>
            </p:termination-point-config>
      </p:termination-point-list>
      <p:network-interface-list>
            <p:network-interface>
                  <p:name>MyNetworkInterface1</p:name>
                  <p:operation>add</p:operation>
                  <p:ce-data>
                        <p:description>MyNetworkInterface1
description</p:description>
                        <p:designation>Root</p:designation>
                        <p:mtu>1522</p:mtu>
                        <p:speed>10 Mbps</p:speed>
                        <p:mode>FULL DUPLEX</p:mode>
                        <p:ce-vlanid>565</p:ce-vlanid>
                        <p:service-multiplexing>true</p:service-multiplexing>
                        <p:bundling>true</p:bundling>
                        <p:enable-oam>true</p:enable-oam>
                        <p:enable-link-Management>true</p:enable-link-
Management>
                  </p:ce-data>
            </p:network-interface>
            <p:network-interface>
                  <p:ref>MD=CISCO_EPNM!NI=MyNetworkInterface2</p:ref>
```

```
                  <p:operation>update</p:operation>
                  <p:ce-data>
                        <p:description>MyNetworkInterface2
description</p:description>
                        <p:designation>Leaf</p:designation>
                        <p:mtu>1522</p:mtu>
                        <p:speed>10 Mbps</p:speed>
                        <p:mode>FULL DUPLEX</p:mode>
                        <p:ce-vlanid>565</p:ce-vlanid>
                        <p:service-multiplexing>true</p:service-multiplexing>
                        <p:bundling>true</p:bundling>
                        <p:enable-oam>true</p:enable-oam>
                        <p:enable-link-Management>true</p:enable-link-
Management>
                  </p:ce-data>
            </p:network-interface>
      </p:network-interface-list>
</p:service-order-data>
</p:provision-service-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "sa.service-order-data": {
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "sa.service-name": "EPTREE_MyServive01",
      "sa.service-description": "EPTREE_MyServive01 description",
      "sa.service-type": "carrier-ethernet-vpn",
      "sa.service-subtype": "EP-Tree",
      "sa.service-activate": "true",
      "sa.direction": "BiDirectional",
      "sa.ce-data": {
         "sa.core-technology": "VPLS",
         "sa.bundling": "true",
         "sa.ccm-interval": "1 sec",
         "sa.ce-vlan-id-preservation": "true",
         "sa.ce-vlan-cos-preservation": "true",
         "sa.mtu-size": "1522",
         "sa.enable-cfm": "true",
         "sa.fault-management-map": null,
         "sa.max-uni-endpoints": "2"
      },
      "sa.termination-point-list": {
         "sa.termination-point-config": [
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=TEST901-CSG-1-
DOMAIN3.cisco.com!CTP=name=GigabitEthernet0/1/20;lr=lr-gigabit-
ethernet_INTERFACE",
               "sa.directionality": "BiDirectional",
               "sa.ingress-qos-policy-ref": "
MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM",
               "sa.network-interface-name": "MyNetworkInterface1",
               "sa.ce-data": {
                  "sa.l2-cp-profile": "MEF EP-LAN/EP-Tree",
                  "sa.untagged": "true"
               }
            },
```

```
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=TEST901-CSG-1-
DOMAIN3.cisco.com!CTP=name=GigabitEthernet0/1/20;lr=lr-gigabit-
ethernet_INTERFACE",
               "sa.directionality": "BiDirectional",
               "sa.ingress-qos-policy-ref": "
MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM",
               "sa.network-interface-ref":
"MD=CISCO_EPNM!NI=MyNetworkInterface2",
               "sa.ce-data": {
                  "sa.l2-cp-profile": "MEF EP-LAN/EP-Tree",
                  "sa.untagged": "true"
               }
            }
         ]
      },
      "sa.network-interface-list": {
         "sa.network-interface": [
            {
               "sa.name": "MyNetworkInterface1",
               "sa.operation": "add",
               "sa.ce-data": {
                  "sa.description": "MyNetworkInterface1 description",
                  "sa.designation": "Root",
                  "sa.mtu": "1522",
                  "sa.speed": "10 Mbps",
                  "sa.mode": "FULL DUPLEX",
                  "sa.ce-vlanid": "565",
                  "sa.service-multiplexing": "true",
                  "sa.bundling": "true",
                  "sa.enable-oam": "true",
                  "sa.enable-link-Management": "true"
               }
            },
            {
               "sa.ref": "MD=CISCO_EPNM!NI=MyNetworkInterface2",
               "sa.operation": "add",
               "sa.ce-data": {
                  "sa.description": "MyNetworkInterface2 description",
                  "sa.designation": "Leaf",
                  "sa.mtu": "1522",
                  "sa.speed": "10 Mbps",
                  "sa.mode": "FULL DUPLEX",
                  "sa.ce-vlanid": "565",
                  "sa.service-multiplexing": "true",
                  "sa.bundling": "true",
                  "sa.enable-oam": "true",
                  "sa.enable-link-Management": "true"
               }
            }
         ]
      }
   }
}
```

7.5.11.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
{
  "customer": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
  "service-id": "7f52d296-ad73-4d0e-891c-2aceab5e2687",
  "service-name": "EPTREE_MyServive01",
  "service-type": "carrier-ethernet-vpn",
  "circuit-type": "EP-Tree",
  "deploy-action": "Deploy",
  "operation-type": "ProvideService",
  "request-time": "Tue May 17 16:29:50 PDT 2016",
  "completion-status": "SUBMITTED",
}
```

7.5.12 Provision EVP-Tree Service

7.5.12.1 Request

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:provision-service-request
xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:y1="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="urn:cisco:params:xml:ns:yang:sa:v1 cisco-service-
activation.xsd urn:cisco:params:xml:ns:yang:service:activation:v1 restconf-
provisioning-request-schema.xsd ">
<p:service-order-data>
      <p:customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</p:customer-ref>
      <p:service-name>EVPTREE_MyServive01</p:service-name>
      <p:service-description>EVPTREE_MyServive01 description</p:service-
description>
      <p:service-type> carrier-ethernet-vpn </p:service-type>
      <p:service-subtype>EVP-Tree</p:service-subtype>
      <p:service-activate>true</p:service-activate>
      <p:direction>BiDirectional</p:direction>
      <p:ce-data>
            <p:core-technology>VPLS</p:core-technology>
            <p:bundling>true</p:bundling>
            <p:ccm-interval>1 sec</p:ccm-interval>
            <p:ce-vlan-id-preservation>true</p:ce-vlan-id-preservation>
            <p:ce-vlan-cos-preservation>true</p:ce-vlan-cos-preservation>
            <p:mtu-size>1522</p:mtu-size>
            <p:enable-cfm>true</p:enable-cfm>
            <p:fault-management-map/>
            <p:max-uni-endpoints>2</p:max-uni-endpoints>
            <p:auto-allocate-vlan-id>true</p:auto-allocate-vlan-id>
      </p:ce-data>
      <p:termination-point-list>
            <p:termination-point-config>
                  <p:tp-ref>MD=CISCO_EPNM!ND=TEST901-CSG-1-
```

```
DOMAIN3.cisco.com!CTP=name=GigabitEthernet0/1/20; lr=lr-gigabit-
ethernet</p:tp-ref>
                  <p:directionality>BiDirectional</p:directionality>
            <p:ingress-qos-policy-ref>MD=CISCO_EPNM!ND=ASR9K-
146.3!POLICY_QOS=QoSProfileIngress_In_UM</p:ingress-qos-policy-ref>
<p:egress-qos-policy-
ref>MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM</p:egress-qos-
policy-ref>
                  <p:network-interface-name>MyNetworkInterface1</p:network-
interface-name>
                  <p:ce-data>
                        <p:l2-cp-profile>MEF EP-LAN/EP-Tree</p:l2-cp-profile>

                        <p:untagged>true</p:untagged>
                              <p:qinq-data>
                                    <p:match-type>dot1q</p:match-type>
                                    <p:vlan-id-list>10</p:vlan-id-list>
                                    <p:inner-vlan-id-list>10</p:inner-vlan-
id-list>
                                    <p:priority-tagged>false</p:priority-
tagged>
                                    <p:match-exact>false</p:match-exact>
                                    <p:vlan-cos>1</p:vlan-cos>
                                    <p:inner-vlan-cos>1</p:inner-vlan-cos>
                                    <p:rewrite-definition>
                                          <p:push-operation>
                                                <p:tag-count>one</p:tag-
count>
                                                <p:match-type>dot1q</p:match-
type>
                                                <p:inner-vlan-id>10</p:inner-
vlan-id>
                                                <p:outer-vlan-id>10</p:outer-
vlan-id>
                                          </p:push-operation>
                                    </p:rewrite-definition>
                                    <p:write-type>Pop</p:write-type>
                                    <p:pop-action>one</p:pop-action>
                                    <p:push-action>one</p:push-action>
                                    <p:translate-action>one-to-
one</p:translate-action>
                                    <p:rewrite-inner-vlan>false</p:rewrite-
inner-vlan>
                                    <p:rewrite-outer-vlan>false</p:rewrite-
outer-vlan>
                                    <p:translate-push-encapsulation>dot1q
                                    </p:translate-push-encapsulation>
                              </p:qinq-data>
                  </p:ce-data>
            </p:termination-point-config>
            <p:termination-point-config>
                  <p:tp-ref>MD=CISCO_EPNM!ND=TEST901-CSG-1-
DOMAIN3.cisco.com!CTP=name=GigabitEthernet0/1/20; lr=lr-gigabit-
ethernet</p:tp-ref>
                  <p:directionality>BiDirectional</p:directionality>
                  <p:ingress-qos-policy-ref>MD=CISCO_EPNM!ND=ASR9K-
```

```
146.3!POLICY_QOS=QoSProfileIngress_In_UM</p:ingress-qos-policy-ref>
<p:egress-qos-policy-
ref>MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM</p:egress-qos-
policy-ref>
                  <p:network-interface-
ref>MD=CISCO_EPNM!NI=MyNetworkInterface2</p:network-interface-ref>
                  <p:ce-data>
                        <p:l2-cp-profile>MEF EP-LAN/EP-Tree</p:l2-cp-profile>
                        <p:untagged>true</p:untagged>
                              <p:qinq-data>
                                    <p:match-type>dot1q</p:match-type>
                                    <p:vlan-id-list>10</p:vlan-id-list>
                                    <p:inner-vlan-id-list>10</p:inner-vlan-
id-list>
                                    <p:priority-tagged>false</p:priority-
tagged>
                                    <p:match-exact>false</p:match-exact>
                                    <p:vlan-cos>1</p:vlan-cos>
                                    <p:inner-vlan-cos>1</p:inner-vlan-cos>
                                    <p:rewrite-definition>
                                          <p:push-operation>
                                                <p:tag-count>one</p:tag-
count>
                                                <p:match-type>dot1q</p:match-
type>
                                                <p:inner-vlan-id>10</p:inner-
vlan-id>
                                                <p:outer-vlan-id>10</p:outer-
vlan-id>
                                          </p:push-operation>
                                    </p:rewrite-definition>
                                    <p:write-type>Pop</p:write-type>
                                    <p:po-action>one</p:po-action>
                                    <p:push-action>one</p:push-action>
                                    <p:translate-action>one-to-
one</p:translate-action>
                                    <p:rewrite-inner-vlan>false</p:rewrite-
inner-vlan>
                                    <p:rewrite-outer-vlan>false</p:rewrite-
outer-vlan>
                                    <p:translate-push-encapsulation>dot1q
                                    </p:translate-push-encapsulation>
                              </p:qinq-data>
                  </p:ce-data>
            </p:termination-point-config>
      </p:termination-point-list>
      <p:network-interface-list>
            <p:network-interface>
                  <p:name>MyNetworkInterface1</p:name>
                  <p:operation>add</p:operation>
                  <p:ce-data>
                        <p:description>MyNetworkInterface1
description</p:description>
                        <p:designation>Root</p:designation>
                        <p:mtu>1522</p:mtu>
                        <p:speed>10 Mbps</p:speed>
```

```
                        <p:mode>FULL DUPLEX</p:mode>
                        <p:ce-vlanid>565</p:ce-vlanid>
                        <p:service-multiplexing>true</p:service-multiplexing>
                        <p:bundling>true</p:bundling>
                        <p:enable-oam>true</p:enable-oam>
                        <p:enable-link-Management>true</p:enable-link-
Management>
                  </p:ce-data>
            </p:network-interface>
            <p:network-interface>
                  <p:ref>MD=CISCO_EPNM!NI=MyNetworkInterface2</p:ref>

                  <p:operation>update</p:operation>
                  <p:ce-data>
                        <p:description>MyNetworkInterface2
description</p:description>
                        <p:designation>Leaf</p:designation>
                        <p:mtu>1522</p:mtu>
                        <p:speed>10 Mbps</p:speed>
                        <p:mode>FULL DUPLEX</p:mode>
                        <p:ce-vlanid>565</p:ce-vlanid>
                        <p:service-multiplexing>true</p:service-multiplexing>
                        <p:bundling>true</p:bundling>
                        <p:enable-oam>true</p:enable-oam>
                        <p:enable-link-Management>true</p:enable-link-
Management>
                  </p:ce-data>
            </p:network-interface>
      </p:network-interface-list>
</p:service-order-data>
</p:provision-service-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "sa.service-order-data": {
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "sa.service-name": "EVPTREE_MyServive01",
      "sa.service-description": "EVPTREE_MyServive01 description",
      "sa.service-type": "carrier-ethernet-vpn",
      "sa.service-subtype": "EVP-Tree",
      "sa.service-activate": "true",
      "sa.direction": "BiDirectional",
      "sa.ce-data": {
         "sa.core-technology": "VPLS",
         "sa.bundling": "true",
         "sa.ccm-interval": "1 sec",
         "sa.ce-vlan-id-preservation": "true",
         "sa.ce-vlan-cos-preservation": "true",
         "sa.mtu-size": "1522",
         "sa.enable-cfm": "true",
         "sa.fault-management-map": null,
         "sa.max-uni-endpoints": "2"
      },
      "sa.termination-point-list": {
         "sa.termination-point-config": [
            {
```

```
                "sa.tp-ref": "MD=CISCO_EPNM!ND=TEST901-CSG-1-
DOMAIN3.cisco.com!CTP=name=GigabitEthernet0/1/20;lr=lr-gigabit-
ethernet_INTERFACE",
                "sa.directionality": "BiDirectional",
                "sa.ingress-qos-policy-ref": "
MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM",
                "sa.network-interface-name": "MyNetworkInterface1",
                "sa.ce-data": {
                   "sa.l2-cp-profile": "MEF EP-LAN/EP-Tree",
                   "sa.untagged": "true",
                   "sa.qinq-data": {
                      "sa.match-type": "dot1q",
                      "sa.vlan-id-list": "10",
                      "sa.inner-vlan-id-list": "10",
                      "sa.priority-tagged": "false",
                      "sa.match-exact": "false",
                      "sa.vlan-cos": "1",
                      "sa.inner-vlan-cos": "1",
                      "sa.rewrite-definition": {
                         "sa.push-operation": {
                            "sa.tag-count": "one",
                            "sa.match-type": "dot1q",
                            "sa.inner-vlan-id": "10",
                            "sa.outer-vlan-id": "10"
                         }
                      },
                      "sa.write-type": "Pop",
                      "sa.pop-action": "one",
                      "sa.push-action": "one",
                      "sa.translate-action": "one-to-one",
                      "sa.rewrite-inner-vlan": "false",
                      "sa.rewrite-outer-vlan": "false",
                      "sa.translate-push-encapsulation": "dot1q"
                   }
                }
             },
             {
                "sa.tp-ref": "MD=CISCO_EPNM!ND=TEST901-CSG-1-
DOMAIN3.cisco.com!CTP=name=GigabitEthernet0/1/20;lr=lr-gigabit-
ethernet_INTERFACE",
                "sa.directionality": "BiDirectional",
                "sa.ingress-qos-policy-ref": "
MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM",
                "sa.network-interface-ref":
"MD=CISCO_EPNM!NI=MyNetworkInterface2",
                "sa.ce-data": {
                   "sa.l2-cp-profile": "MEF EP-LAN/EP-Tree",
                   "sa.untagged": "true",
                   "sa.qinq-data": {
                      "sa.match-type": "dot1q",
                      "sa.vlan-id-list": "10",
                      "sa.inner-vlan-id-list": "10",
                      "sa.priority-tagged": "false",
                      "sa.match-exact": "false",
                      "sa.vlan-cos": "1",
                      "sa.inner-vlan-cos": "1",
```

```
                    "sa.rewrite-definition": {
                       "sa.push-operation": {
                          "sa.tag-count": "one",
                          "sa.match-type": "dot1q",
                          "sa.inner-vlan-id": "10",
                          "sa.outer-vlan-id": "10"
                       }
                    },
                    "sa.write-type": "Pop",
                    "sa.po-action": "one",
                    "sa.push-action": "one",
                    "sa.translate-action": "one-to-one",
                    "sa.rewrite-inner-vlan": "false",
                    "sa.rewrite-outer-vlan": "false",
                    "sa.translate-push-encapsulation": "dot1q"
                 }
              }
           }
        ]
     },
     "sa.network-interface-list": {
        "sa.network-interface": [
           {
              "sa.name": "MyNetworkInterface1",
              "sa.operation": "add",
              "sa.ce-data": {
                 "sa.description": "MyNetworkInterface1 description",
                 "sa.designation": "Root",
                 "sa.mtu": "1522",
                 "sa.speed": "10 Mbps",
                 "sa.mode": "FULL DUPLEX",
                 "sa.ce-vlanid": "565",
                 "sa.service-multiplexing": "true",
                 "sa.bundling": "true",
                 "sa.enable-oam": "true",
                 "sa.enable-link-Management": "true"
              }
           },
           {
              "sa.ref": "MD=CISCO_EPNM!NI=MyNetworkInterface2",
              "sa.operation": "add",
              "sa.ce-data": {
                 "sa.description": "MyNetworkInterface2 description",
                 "sa.designation": "Leaf",
                 "sa.mtu": "1522",
                 "sa.speed": "10 Mbps",
                 "sa.mode": "FULL DUPLEX",
                 "sa.ce-vlanid": "565",
                 "sa.service-multiplexing": "true",
                 "sa.bundling": "true",
                 "sa.enable-oam": "true",
                 "sa.enable-link-Management": "true"
              }
           }
        ]
     }
```

```
    }
}
```

7.5.12.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
{
  "customer": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
  "service-id": "7f52d296-ad73-4d0e-891c-2aceab5e2687",
  "service-name": "EVPTREE_MyServive01",
  "service-type": "carrier-ethernet-vpn",
  "circuit-type": "EVP-Tree",
  "deploy-action": "Deploy",
  "operation-type": "ProvideService",
  "request-time": "Tue May 17 16:29:50 PDT 2016",
    "completion-status": "SUBMITTED"
}
```

7.5.13 Provision Access EPL Service

7.5.13.1 Request

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:provision-service-request
      xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:y1="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:sa:v1 cisco-service-
activation.xsd urn:cisco:params:xml:ns:yang:service:activation:v1 restconf-
provisioning-request-schema.xsd ">
      <p:service-order-data>
            <p:customer-ref>MD=CISCO_EPNM!CUSTOMER=goldcustomer</p:customer-
ref>
            <p:service-name>ACCESSEPL_MyService1</p:service-name>
            <p:service-description>ACCESSEPL _MyService1 Description
            </p:service-description>
            <p:service-type> carrier-ethernet-vpn </p:service-type>
            <p:service-subtype>Access EPL</p:service-subtype>
            <p:service-activate>true</p:service-activate>
            <p:direction>BiDirectional</p:direction>
            <p:ce-data>
                  <p:bundling>true</p:bundling>
                  <p:mtu-size>1522</p:mtu-size>
                  <p:max-uni-endpoints>2</p:max-uni-endpoints>
            </p:ce-data>
            <p:termination-point-list>
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=TEST901-CSG-1-
DOMAIN3.cisco.com!CTP=name=GigabitEthernet0/1/20;lr=lr-gigabit-
ethernet_INTERFACE</p:tp-ref>
                        <p:directionality>source</p:directionality>
```

```
                        <p:ingress-qos-policy-ref>MD=CISCO_EPNM!ND=ASR9K-
146.3!POLICY_QOS=QoSProfileIngress_In_UM</p:ingress-qos-policy-ref>
                        <p:egress-qos-policy-
ref>MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM</p:egress-qos-
policy-ref>
                        <p:network-interface-name>TestUNI</p:network-
interface-name>
                        <p:ce-data>
                              <p:l2-cp-profile>MEF Option 1</p:l2-cp-profile>
                        </p:ce-data>
                  </p:termination-point-config>
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=TEST-9K-
MTG1!CTP=name=GigabitEthernet0/0/0/1;lr=lr-gigabit-ethernet</p:tp-ref>
                        <p:directionality>sink</p:directionality>
                        <p:ingress-qos-policy-ref>MD=CISCO_EPNM!ND=ASR9K-
146.3!POLICY_QOS=QoSProfileIngress_In_UM</p:ingress-qos-policy-ref>
                        <p:egress-qos-policy-
ref>MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM</p:egress-qos-
policy-ref>
                        <p:network-interface-name>testENNI</p:network-
interface-name>
                        <p:ce-data>
                              <p:l2-cp-profile>MEF Option 2</p:l2-cp-profile>
                              <p:service-vlan-list>565</p:service-vlan-list>
                              <p:untagged>true</p:untagged>
                        </p:ce-data>
                  </p:termination-point-config>
            </p:termination-point-list>
            <p:network-interface-list>
                  <p:network-interface>
                        <p:name>TestUNI</p:name>
                        <p:operation>add</p:operation>
                        <p:ce-data>
                              <p:description>TestUNI</p:description>
                              <p:ingress-qos-policy-
ref>MD=CISCO_EPNM!ND=ASR9K-
146.3!POLICY_QOS=QoSProfileIngress_In_UM</p:ingress-qos-policy-ref>
                              <p:egress-qos-policy-
ref>MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM</p:egress-qos-
policy-ref>
                              <p:mtu>1522</p:mtu>
                              <p:speed>10 Mbps</p:speed>
                              <p:mode>FULL DUPLEX</p:mode>
                              <p:ce-vlanid>10</p:ce-vlanid>
                              <p:service-multiplexing>true</p:service-
multiplexing>
                              <p:enable-oam>false</p:enable-oam>
                              <p:bundling>false</p:bundling>
                        </p:ce-data>
                  </p:network-interface>
                  <p:network-interface>
                        <p:name>testENNI</p:name>
                        <p:operation>add</p:operation>
                        <p:ce-data>
                              <p:description>testENNI</p:description>
```

```
                                <p:ingress-qos-policy-
ref>MD=CISCO_EPNM!ND=ASR9K-
146.3!POLICY_QOS=QoSProfileIngress_In_UM</p:ingress-qos-policy-ref>
                                <p:egress-qos-policy-
ref>MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM</p:egress-qos-
policy-ref>
                                <p:mtu>1522</p:mtu>
                                <p:speed>5</p:speed>
                                <p:mode>FULL DUPLEX</p:mode>
                                <p:ce-vlanid>10</p:ce-vlanid>
                                <p:service-multiplexing>true</p:service-
multiplexing>
                                <p:enable-oam>false</p:enable-oam>
                                <p:bundling>false</p:bundling>
                                <p:operator-
ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</p:operator-ref>
                            </p:ce-data>
                        </p:network-interface>
                </p:network-interface-list>
        </p:service-order-data>
```

Content-Type: application/yang.operation+json
Json Payload:

```
{
   "sa.service-order-data": {
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=goldcustomer",
      "sa.service-name": "ACCESSEPL_MyService1",
      "sa.service-description": "ACCESSEPL _MyService1 Description",
      "sa.service-type": "carrier-ethernet-vpn",
      "sa.service-subtype": "Access EPL",
      "sa.service-activate": "true",
      "sa.direction": "BiDirectional",
      "sa.ce-data": {
         "sa.bundling": "true",
         "sa.mtu-size": "1522",
         "sa.max-uni-endpoints": "2"
      },
      "sa.termination-point-list": {
         "sa.termination-point-config": [
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=TEST901-CSG-1-
DOMAIN3.cisco.com!CTP=name=GigabitEthernet0/1/20;lr=lr-gigabit-
ethernet_INTERFACE",
               "sa.directionality": "source",
               "sa.ingress-qos-policy-ref": "
MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM",
               "sa.network-interface-name": "TestUNI",
               "sa.ce-data": {
                  "sa.l2-cp-profile": "MEF Option 1"
               }
            },
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=TEST-9K-
MTG1!CTP=name=GigabitEthernet0/0/0/1;lr=lr-gigabit-ethernet",
               "sa.directionality": "sink",
               "sa.ingress-qos-policy-ref": "
```

```
MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM",
                "sa.network-interface-name": "testENNI",
                "sa.ce-data": {
                   "sa.l2-cp-profile": "MEF Option 2",
                   "sa.untagged": "true"
                }
             }
          ]
       },
       "sa.network-interface-list": {
          "sa.network-interface": [
             {
                "sa.name": "TestUNI",
                "sa.operation": "add",
                "sa.ce-data": {
                   "sa.description": "TestUNI",
                   "sa.ingress-qos-policy-ref": "
MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM",
                   "sa.mtu": "1522",
                   "sa.speed": "10 Mbps",
                   "sa.mode": "FULL DUPLEX",
                   "sa.ce-vlanid": "10",
                   "sa.service-multiplexing": "true",
                   "sa.enable-oam": "false",
"sa.operator-ref":" MD=CISCO_EPNM!CUSTOMER=Infrastructure",

                   "sa.bundling": "false"
                }
             },
             {
                "sa.name": "testENNI",
                "sa.operation": "add",
                "sa.ce-data": {
                   "sa.description": "testENNI",
                   "sa.ingress-qos-policy-ref": "
MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM",
                   "sa.mtu": "1522",
                   "sa.speed": "5",
                   "sa.mode": "FULL DUPLEX",
                   "sa.ce-vlanid": "10",
                   "sa.service-multiplexing": "true",
                   "sa.enable-oam": "false",
"sa.operator-ref":" MD=CISCO_EPNM!CUSTOMER=Infrastructure",

                   "sa.bundling": "false"
                }
             }
          ]
       }
    }
}
```

7.5.13.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
{
  "customer": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
  "service-id": "7f52d296-ad73-4d0e-891c-2aceab5e2687",
  "service-name": "ACCESSEPL_MyService1",
  "service-type": "carrier-ethernet-vpn",
  "circuit-type": "Access EPL",
  "deploy-action": "Deploy",
  "operation-type": "ProvideService",
  "request-time": "Tue May 17 16:29:50 PDT 2016",
  "completion-status": "SUBMITTED”
}
```

7.5.14 Provision Access EVPL Service

7.5.14.1 Request

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:provision-service-request
      xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:y1="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:sa:v1 cisco-service-
activation.xsd urn:cisco:params:xml:ns:yang:service:activation:v1 restconf-
provisioning-request-schema.xsd ">
      <p:service-order-data>
            <p:customer-ref>MD=CISCO_EPNM!CUSTOMER=goldcustomer</p:customer-
ref>
            <p:service-name>ACCESSEVPL_MyService1</p:service-name>
            <p:service-description>ACCESSEVPL _MyService1 Description
            </p:service-description>
            <p:service-type> carrier-ethernet-vpn </p:service-type>
            <p:service-subtype>Access EVPL</p:service-subtype>
            <p:service-activate>true</p:service-activate>
            <p:direction>BiDirectional</p:direction>
            <p:ce-data>
                  <p:bundling>true</p:bundling>
                  <p:mtu-size>1522</p:mtu-size>
                  <p:max-uni-endpoints>2</p:max-uni-endpoints>
                  <p:vlan-id>5326</p:vlan-id>
                  <p:auto-allocate-vlan-id>true</p:auto-allocate-vlan-id>
            </p:ce-data>
            <p:termination-point-list>
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=TEST901-CSG-1-
DOMAIN3.cisco.com!CTP=name=GigabitEthernet0/1/20;lr=lr-gigabit-
ethernet_INTERFACE</p:tp-ref>
                        <p:directionality>source</p:directionality>
            <!-- <p:ingress-qos-policy-ref>MD=CISCO_EPNM!ND= TEST901-CSG-1-
DOMAIN3.cisco.com!POLICY_QOS=Policysg1</p:ingress-qos-policy-ref>
                  <p:egress-qos-policy-ref>MD=CISCO_EPNM!ND= TEST901-CSG-1-
DOMAIN3.cisco.com!POLICY_QOS=Policysg2</p:egress-qos-policy-ref> -->

                        <p:network-interface-name>TestUNI</p:network-
```

```
interface-name>
                        <p:ce-data>
                              <p:l2-cp-profile>MEF Option 1</p:l2-cp-profile>
                              <p:qinq-data>
                                    <p:match-type>dot1q</p:match-type>
                                    <p:vlan-id-list>10</p:vlan-id-list>
                                    <p:inner-vlan-id-list>10</p:inner-vlan-
id-list>
                                    <p:priority-tagged>true</p:priority-
tagged>
                                    <p:match-exact>true</p:match-exact>
                                    <p:vlan-cos>1</p:vlan-cos>
                                    <p:inner-vlan-cos>1</p:inner-vlan-cos>
                                    <p:ether-type>
                                          <p:ipv4>false</p:ipv4>
                                          <p:ipv6>false</p:ipv6>
                                          <p:pppoe-all>false</p:pppoe-all>
                                          <p:pppoe-discovery>false</p:pppoe-
discovery>
                                          <p:pppoe-session>false</p:pppoe-
session>
                                    </p:ether-type>
                                    <p:rewrite-definition>
                                          <p:pop-operation>
                                          <p:tag-count>one</p:tag-count>
                              </p:pop-operation>
                                    </p:rewrite-definition>
                                    <p:write-type>Pop</p:write-type>
                                    <p:po-action>one</p:po-action>
                                    <p:push-action>one</p:push-action>
                                    <p:translate-action>one-to-
one</p:translate-action>
                                    <p:rewrite-inner-vlan>false</p:rewrite-
inner-vlan>
                                    <p:rewrite-outer-vlan>false</p:rewrite-
outer-vlan>
                                    <p:translate-push-encapsulation>dot1q
                                    </p:translate-push-encapsulation>
                              </p:qinq-data>
                        </p:ce-data>
                  </p:termination-point-config>
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=TEST-9K-
MTG1!CTP=name=GigabitEthernet0/0/0/1;lr=lr-gigabit-ethernet</p:tp-ref>
                        <p:directionality>sink</p:directionality>
                        <p:ingress-qos-policy-ref>MD=CISCO_EPNM!ND= TEST-9K-
MTG1!POLICY_QOS=Policysg1</p:ingress-qos-policy-ref>
      <p:egress-qos-policy-ref>MD=CISCO_EPNM!ND TEST-9K-
MTG1!POLICY_QOS=Policysg2</p:egress-qos-policy-ref>
      <p:network-interface-name>testENNI</p:network-interface-name>
                        <p:ce-data>
                              <p:l2-cp-profile>MEF Option 2</p:l2-cp-profile>
                              <p:untagged>true</p:untagged>
                              <p:qinq-data>
                                 <p:match-type>dot1q</p:match-type>
                                 <p:vlan-id-list>10</p:vlan-id-list>
```

```
                              <p:inner-vlan-id-list>10</p:inner-vlan-id-list>
                            <p:priority-tagged>true</p:priority-tagged>
                                  <p:match-exact>true</p:match-exact>
                                  <p:vlan-cos>1</p:vlan-cos>
                                  <p:inner-vlan-cos>1</p:inner-vlan-cos>
                                  <p:ether-type>
                                        <p:ipv4>false</p:ipv4>
                                        <p:ipv6>false</p:ipv6>
                                        <p:pppoe-all>false</p:pppoe-all>
                              <p:pppoe-discovery>false</p:pppoe-discovery>
                                        <p:pppoe-session>false</p:pppoe-session>
                                  </p:ether-type>
                                  <p:rewrite-definition>
                                        <p:pop-operation>
                                        <p:tag-count>one</p:tag-count>
                                        </p:pop-operation>
                                  </p:rewrite-definition>
                                  <p:write-type>Pop</p:write-type>
                                  <p:po-action>one</p:po-action>
                                  <p:push-action>one</p:push-action>
                        <p:translate-action>one-to-one</p:translate-action>
                        <p:rewrite-inner-vlan>false</p:rewrite-inner-vlan>
                        <p:rewrite-outer-vlan>false</p:rewrite-outer-vlan>
                        <p:translate-push-encapsulation>dot1q
                                  </p:translate-push-encapsulation>
                              </p:qinq-data>
                        </p:ce-data>
                  </p:termination-point-config>
            </p:termination-point-list>
            <p:network-interface-list>
                  <p:network-interface>
                        <p:name>TestUNI</p:name>
                        <p:operation>add</p:operation>
                        <p:ce-data>
                              <p:description>TestUNI</p:description>
                              <p:ingress-qos-policy-ref>
MD=CISCO_EPNM!ND=ASR9K-146.3!POLICY_QOS=QoSProfileIngress_In_UM</p:ingress-
qos-policy-ref>
<p:egress-qos-policy-ref>MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=
QOS_Medium_01_In_UM</p:egress-qos-policy-ref>
                              <p:mtu>1522</p:mtu>
                              <p:speed>10 Mbps</p:speed>
                              <p:mode>FULL DUPLEX</p:mode>
                              <p:ce-vlanid>10</p:ce-vlanid>
                              <p:service-multiplexing>true</p:service-
multiplexing>
                              <p:enable-oam>false</p:enable-oam>
                              <p:bundling>false</p:bundling>
<p:operator-ref>
MD=CISCO_EPNM!CUSTOMER=Infrastructure</p:operator-ref>
                        </p:ce-data>
                  </p:network-interface>
                  <p:network-interface>
                        <p:name>testENNI</p:name>
                        <p:operation>add</p:operation>
                        <p:ce-data>
```

```
                                <p:description>testENNI</p:description>
                                <p:ingress-qos-policy-
ref>MD=CISCO_EPNM!ND=ASR9K-
146.3!POLICY_QOS=QoSProfileIngress_In_UM</p:ingress-qos-policy-ref>
<p:egress-qos-policy-
ref>MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM</p:egress-qos-
policy-ref>                             <p:mtu>1522</p:mtu>
                                <p:speed>5</p:speed>
                                <p:mode>FULL DUPLEX</p:mode>
                                <p:ce-vlanid>10</p:ce-vlanid>
                                <p:service-multiplexing>true</p:service-
multiplexing>
                                <p:enable-oam>false</p:enable-oam>
                                <p:bundling>false</p:bundling>
<p:operator-ref>
MD=CISCO_EPNM!CUSTOMER=Infrastructure</p:operator-ref>
                            </p:ce-data>
                        </p:network-interface>
                </p:network-interface-list>
        </p:service-order-data>
</p:provision-service-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "sa.service-order-data": {
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=goldcustomer",
      "sa.service-name": "ACCESSEVPL_MyService1",
      "sa.service-description": "ACCESSEVPL _MyService1 Description",
      "sa.service-type": "carrier-ethernet-vpn",
      "sa.service-subtype": "Access EVPL",
      "sa.service-activate": "true",
      "sa.direction": "BiDirectional",
      "sa.ce-data": {
         "sa.bundling": "true",
         "sa.mtu-size": "1522",
         "sa.max-uni-endpoints": "2"
      },
      "sa.termination-point-list": {
         "sa.termination-point-config": [
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=TEST901-CSG-1-
DOMAIN3.cisco.com!CTP=name=GigabitEthernet0/1/20;lr=lr-gigabit-
ethernet_INTERFACE",
               "sa.directionality": "source",
               "sa.ingress-qos-policy-ref": "
MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM",
               "sa.network-interface-name": "TestUNI",
               "sa.ce-data": {
                  "sa.l2-cp-profile": "MEF Option 1",
                  "sa.qinq-data": {
                     "sa.match-type": "dot1q",
                     "sa.vlan-id-list": "10",
                     "sa.inner-vlan-id-list": "10",
                     "sa.priority-tagged": "true",
                     "sa.match-exact": "true",
                     "sa.vlan-cos": "1",
```

```
                        "sa.inner-vlan-cos": "1",
                        "sa.ether-type": {
                           "sa.ipv4": "false",
                           "sa.ipv6": "false",
                           "sa.pppoe-all": "false",
                           "sa.pppoe-discovery": "false",
                           "sa.pppoe-session": "false"
                        },
                        "sa.rewrite-definition": {
                           "sa.pop-operation": {
                              "sa.tag-count": "one"
                           }
                        },
                        "sa.write-type": "Pop",
                        "sa.po-action": "one",
                        "sa.push-action": "one",
                        "sa.translate-action": "one-to-one",
                        "sa.rewrite-inner-vlan": "false",
                        "sa.rewrite-outer-vlan": "false",
                        "sa.translate-push-encapsulation": "dot1q"
                     }
                  }
               },
               {
                  "sa.tp-ref": "MD=CISCO_EPNM!ND=TEST-9K-
MTG1!CTP=name=GigabitEthernet0/0/0/1;lr=lr-gigabit-ethernet",
                  "sa.directionality": "sink",
                  "sa.ingress-qos-policy-ref": "
MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM",
                  "sa.network-interface-name": "testENNI",
                  "sa.ce-data": {
                     "sa.l2-cp-profile": "MEF Option 2",
                     "sa.untagged": "true",
                     "sa.qinq-data": {
                        "sa.match-type": "dot1q",
                        "sa.vlan-id-list": "10",
                        "sa.inner-vlan-id-list": "10",
                        "sa.priority-tagged": "true",
                        "sa.match-exact": "true",
                        "sa.vlan-cos": "1",
                        "sa.inner-vlan-cos": "1",
                        "sa.ether-type": {
                           "sa.ipv4": "false",
                           "sa.ipv6": "false",
                           "sa.pppoe-all": "false",
                           "sa.pppoe-discovery": "false",
                           "sa.pppoe-session": "false"
                        },
                        "sa.rewrite-definition": {
                           "sa.pop-operation": {
                              "sa.tag-count": "one"
                           }
                        },
                        "sa.write-type": "Pop",
                        "sa.po-action": "one",
                        "sa.push-action": "one",
```

```
                        "sa.translate-action": "one-to-one",
                        "sa.rewrite-inner-vlan": "false",
                        "sa.rewrite-outer-vlan": "false",
                        "sa.translate-push-encapsulation": "dot1q"
                     }
                  }
               }
            ]
         },
         "sa.network-interface-list": {
            "sa.network-interface": [
               {
                  "sa.name": "TestUNI",
                  "sa.operation": "add",
                  "sa.ce-data": {
                     "sa.description": "TestUNI",
                     "sa.ingress-qos-policy-ref": "
MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM",
                     "sa.mtu": "1522",
                     "sa.speed": "10 Mbps",
                     "sa.mode": "FULL DUPLEX",
                     "sa.ce-vlanid": "10",
                     "sa.service-multiplexing": "true",
                     "sa.enable-oam": "false",
“sa.operator-ref”:” MD=CISCO_EPNM!CUSTOMER=Infrastructure”,

                     "sa.bundling": "false"
                  }
               },
               {
                  "sa.name": "testENNI",
                  "sa.operation": "add",
                  "sa.ce-data": {
                     "sa.description": "testENNI",
                     "sa.ingress-qos-policy-ref": "
MD=CISCO_EPNM!ND=ASR9912!POLICY_QOS=QOS_Medium_01_In_UM",
                     "sa.mtu": "1522",
                     "sa.speed": "5",
                     "sa.mode": "FULL DUPLEX",
                     "sa.ce-vlanid": "10",
                     "sa.service-multiplexing": "true",
                     "sa.enable-oam": "false",
“sa.operator-ref”:” MD=CISCO_EPNM!CUSTOMER=Infrastructure”,

                     "sa.bundling": "false"
                  }
               }
            ]
         }
      }
}
```

7.5.14.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
{
  "customer": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
  "service-id": "7f52d296-ad73-4d0e-891c-2aceab5e2687",
  "service-name": "ACCESSEVPL_MyService1",
  "service-type": "carrier-ethernet-vpn",
  "circuit-type": "Access EVPL",
  "deploy-action": "Deploy",
  "operation-type": "ProvideService",
  "request-time": "Tue May 17 16:29:50 PDT 2016",
  "completion-status": "SUBMITTED”
}
```

7.5.15 Provision QoS Profile Service

7.5.15.1 Request

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:provision-service-request
      xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:y1="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:sa:v1 cisco-service-
activation.xsd urn:cisco:params:xml:ns:yang:service:activation:v1 restconf-
provisioning-request-schema.xsd ">
      <p:service-order-data>
            <p:service-type>carrier-ethernet-vpn</p:service-type>
            <p:service-subtype>QoS_PROFILE</p:service-subtype>
            <p:ce-data>
                  <p:cisco-ce-qos-profile-order-data>
                        <p:qos-profile-name>MyUniQoSProfile22</p:qos-profile-
name>
                        <p:apply-to-interfaces>true</p:apply-to-interfaces>
                        <p:apply-to-virtual>true</p:apply-to-virtual>
                        <p:apply-to-private>true</p:apply-to-private>
                        <p:qos-classification>COS</p:qos-classification>
                        <p:qos-operation-type>add</p:qos-operation-type>
                        <p:qos-bw-profile-list>
                              <p:cisco-qos-bw-profile>
                                    <p:qos-bw-profile-
type>EX_HIGH_BW_PROFILE</p:qos-bw-profile-type>
                                    <p:qos-bw-profile-allowed>true</p:qos-bw-
profile-allowed>
                                    <p:qos-bw-profile-match-
criteria>6,7</p:qos-bw-profile-match-criteria>
                                    <p:qos-bw-profile>
                                          <p:class-name>EXTRA_HIGH</p:class-
name>
                                          <p:direction>Egress</p:direction>
                                          <p:cir>1 mbps</p:cir>
                                          <p:cbs>12678</p:cbs>
                                          <p:eir>1 mbps</p:eir>
                                          <p:ebs>33</p:ebs>
                                          <p:color-mode />
```

```
                                        <p:coupling />
                                    </p:qos-bw-profile>
                                </p:cisco-qos-bw-profile>
                                <p:cisco-qos-bw-profile>
                                    <p:qos-bw-profile-
type>HIGH_BW_PROFILE</p:qos-bw-profile-type>
                                    <p:qos-bw-profile-allowed>true</p:qos-bw-
profile-allowed>
                                    <p:qos-bw-profile-match-
criteria>4,5</p:qos-bw-profile-match-criteria>
                                    <p:qos-bw-profile>
                                        <p:class-name>HIGH</p:class-name>
                                        <p:direction>Ingress</p:direction>
                                        <p:cir>1 mbps</p:cir>
                                        <p:cbs>12678</p:cbs>
                                        <p:eir>1 mbps</p:eir>
                                        <p:ebs>33</p:ebs>
                                        <p:color-mode />
                                        <p:coupling />
                                    </p:qos-bw-profile>
                                </p:cisco-qos-bw-profile>
                                <p:cisco-qos-bw-profile>
                                    <p:qos-bw-profile-
type>MEDIUM_BW_PROFILE</p:qos-bw-profile-type>
                                    <p:qos-bw-profile-allowed>true</p:qos-bw-
profile-allowed>
                                    <p:qos-bw-profile-match-
criteria>2,3</p:qos-bw-profile-match-criteria>
                                    <p:qos-bw-profile>
                                        <p:class-name>Medium</p:class-name>
                                        <p:direction>Ingress</p:direction>
                                        <p:cir>1 mbps</p:cir>
                                        <p:cbs>12678</p:cbs>
                                        <p:eir>1 mbps</p:eir>
                                        <p:ebs>33</p:ebs>
                                        <p:color-mode />
                                        <p:coupling />
                                    </p:qos-bw-profile>
                                </p:cisco-qos-bw-profile>
                                <p:cisco-qos-bw-profile>
                                    <p:qos-bw-profile-
type>LOW_BW_PROFILE</p:qos-bw-profile-type>
                                    <p:qos-bw-profile-allowed>true</p:qos-bw-
profile-allowed>
                                    <p:qos-bw-profile-match-
criteria>1,2</p:qos-bw-profile-match-criteria>
                                    <p:qos-bw-profile>
                                        <p:class-name>abc</p:class-name>
                                        <p:direction>Ingress</p:direction>
                                        <p:cir>1 mbps</p:cir>
                                        <p:cbs>12678</p:cbs>
                                        <p:eir>1 mbps</p:eir>
                                        <p:ebs>33</p:ebs>
                                        <p:color-mode />
                                        <p:coupling />
                                    </p:qos-bw-profile>
```

```
                                </p:cisco-qos-bw-profile>
                            </p:qos-bw-profile-list>
                        </p:cisco-ce-qos-profile-order-data>
                    </p:ce-data>
                </p:service-order-data>
</p:provision-service-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "sa.service-order-data": {
      "sa.service-type": "carrier-ethernet-vpn",
      "sa.service-subtype": "QoS_PROFILE",
      "sa.ce-data": {
         "sa.cisco-ce-qos-profile-order-data": {
            "sa.qos-profile-name": "MyUniQoSProfile22",
            "sa.apply-to-interfaces": "true",
            "sa.apply-to-virtual": "true",
            "sa.apply-to-private": "true",
            "sa.qos-classification": "COS",
            "sa.qos-operation-type": "add",
            "sa.qos-bw-profile-list": {
               "sa.cisco-qos-bw-profile": [
                  {
                     "sa.qos-bw-profile-type": "EX_HIGH_BW_PROFILE",
                     "sa.qos-bw-profile-allowed": "true",
                     "sa.qos-bw-profile-match-criteria": "6,7",
                     "sa.qos-bw-profile": {
                        "sa.class-name": "EXTRA_HIGH",
                        "sa.direction": "Egress",
                        "sa.cir": "1 mbps",
                        "sa.cbs": "12678",
                        "sa.eir": "1 mbps",
                        "sa.ebs": "33",
                        "sa.color-mode": null,
                        "sa.coupling": null
                     }
                  },
                  {
                     "sa.qos-bw-profile-type": "HIGH_BW_PROFILE",
                     "sa.qos-bw-profile-allowed": "true",
                     "sa.qos-bw-profile-match-criteria": "4,5",
                     "sa.qos-bw-profile": {
                        "sa.class-name": "HIGH",
                        "sa.direction": "Ingress",
                        "sa.cir": "1 mbps",
                        "sa.cbs": "12678",
                        "sa.eir": "1 mbps",
                        "sa.ebs": "33",
                        "sa.color-mode": null,
                        "sa.coupling": null
                     }
                  },
                  {
                     "sa.qos-bw-profile-type": "MEDIUM_BW_PROFILE",
                     "sa.qos-bw-profile-allowed": "true",
                     "sa.qos-bw-profile-match-criteria": "2,3",
```

```
                        "sa.qos-bw-profile": {
                           "sa.class-name": "Medium",
                           "sa.direction": "Ingress",
                           "sa.cir": "1 mbps",
                           "sa.cbs": "12678",
                           "sa.eir": "1 mbps",
                           "sa.ebs": "33",
                           "sa.color-mode": null,
                           "sa.coupling": null
                        }
                     },
                     {
                        "sa.qos-bw-profile-type": "LOW_BW_PROFILE",
                        "sa.qos-bw-profile-allowed": "true",
                        "sa.qos-bw-profile-match-criteria": "1,2",
                        "sa.qos-bw-profile": {
                           "sa.class-name": "abc",
                           "sa.direction": "Ingress",
                           "sa.cir": "1 mbps",
                           "sa.cbs": "12678",
                           "sa.eir": "1 mbps",
                           "sa.ebs": "33",
                           "sa.color-mode": null,
                           "sa.coupling": null
                        }
                     }
                  ]
               }
            }
         }
      }
}
```


7.5.15.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml


```
{
  "sa.provision-service-response": {
    "sa.request-id": "a689f4e5-f235-4ef9-8ea6-7313baed15dc",
    "sa.service-type": "carrier-ethernet-vpn",
    "sa.service-subtype": "QoS_PROFILE",
    "sa.preview": false,
    "sa.request-time": "Thu Mar 09 14:03:05 IST 2017",
    "sa.completion-status": "SUBMITTED"
  }
}
```


7.5.16 Provision NI Service

7.5.16.1 Request

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:provision-service-request
      xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:y1="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:sa:v1 cisco-service-
activation.xsd urn:cisco:params:xml:ns:yang:service:activation:v1 restconf-
provisioning-request-schema.xsd ">
      <p:service-order-data>
            <p:customer-
ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</p:customer-ref>
            <p:service-type>carrier-ethernet-vpn</p:service-type>
            <p:service-subtype>UNI</p:service-subtype>
            <p:service-activate>true</p:service-activate>
            <p:termination-point-list>
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=isc-
asr903.cisco.com!FTP=name=GigabitEthernet0/0/7;lr=lr-gigabit-ethernet</p:tp-
ref>
                        <p:network-interface-name>MyUni0519S1</p:network-
interface-name>
                  </p:termination-point-config>
            </p:termination-point-list>
            <p:network-interface-list>
                  <p:network-interface>
                        <p:name>MyUni0519S1</p:name>
                        <p:ce-data>
                              <p:description>TestUNIZ</p:description>
                              <p:mtu>8000</p:mtu>
                              <p:speed>10 Mbps</p:speed>
                              <p:mode>FULL DUPLEX</p:mode>
                              <p:bundling>false</p:bundling>
                              <p:service-multiplexing>true</p:service-
multiplexing>
                              <p:enable-link-oam>true</p:enable-link-oam>
                        </p:ce-data>
                  </p:network-interface>
            </p:network-interface-list>
      </p:service-order-data>
</p:provision-service-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "sa.service-order-data": {
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "sa.service-type": "carrier-ethernet-vpn",
      "sa.service-subtype": "UNI",
      "sa.service-activate": "true",
      "sa.termination-point-list": {
         "sa.termination-point-config": {
            "sa.tp-ref": "MD=CISCO_EPNM!ND=isc-
asr903.cisco.com!FTP=name=GigabitEthernet0/0/7;lr=lr-gigabit-ethernet",
            "sa.network-interface-name": "MyUni0519S1"
         }
      },
```

```
      "sa.network-interface-list": {
         "sa.network-interface": {
            "sa.name": "MyUni0519S1",
            "sa.ce-data": {
               "sa.description": "TestUNIZ",
               "sa.mtu": "8000",
               "sa.speed": "10 Mbps",
               "sa.mode": "FULL DUPLEX",
               "sa.bundling": "false",
               "sa.service-multiplexing": "true",
               "sa.enable-link-oam": "true"
            }
         }
      }
   }
}
```

7.5.16.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
{
  "sa.provision-service-response": {
    "sa.request-id": "4e0660f9-c322-4ebf-9575-8f02c6483c24",
    "sa.service-type": "carrier-ethernet-vpn",
    "sa.service-subtype": "UNI",
    "sa.preview": false,
    "sa.request-time": "Thu Mar 09 09:20:50 UTC 2017",
    "sa.completion-status": "SUBMITTED"
  }
}
```

7.5.17 Provisioning CE Partial service

Partial Service are applicable for all the CE services, where one end will be managed element and other end unmanaged, please refer section: **4.23.36 Partial service support**
Below is the sample request and response for partial EVPL service

7.5.17.1 *Request*

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:provision-service-request
      xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:y1="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:sa:v1 cisco-
service-activation.xsd urn:cisco:params:xml:ns:yang:service:activation:v1
restconf-provisioning-request-schema.xsd ">
      <p:service-order-data>
            <p:customer-
ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</p:customer-ref>
            <p:service-name>EVPL0811PS1Without-vc-id</p:service-name>
            <p:service-description>EVPL0811PS1 desc</p:service-
```

```
description>
            <p:service-type>carrier-ethernet-vpn</p:service-type>
            <p:service-subtype>EVPL</p:service-subtype>
            <p:service-activate>true</p:service-activate>
            <p:ce-data>
                  <p:bundling>true</p:bundling>
                  <p:ccm-interval>1 sec</p:ccm-interval>
                  <p:ce-vlan-id-preservation>true</p:ce-vlan-id-
preservation>
                  <p:ce-vlan-cos-preservation>false</p:ce-vlan-cos-
preservation>
                  <p:mtu-size>1522</p:mtu-size>
                  <p:enable-cfm>false</p:enable-cfm>
                  <p:max-uni-endpoints>2</p:max-uni-endpoints>
            </p:ce-data>
            <p:termination-point-list>
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=ASR903-4206-
A!FTP=name=TenGigabitEthernet0/0/4;lr=lr-ten-gigabit-ethernet
                        </p:tp-ref>
                        <p:directionality>source</p:directionality>
                        <p:network-interface-
name>EVPLUniA0811U2</p:network-interface-name>
                        <p:ce-data>
                              <p:l2-cp-profile>MEF Option 1</p:l2-cp-
profile>
                              <p:mep-group>UNIA</p:mep-group>
                              <p:qinq-data>
                                    <p:match-type>dot1q</p:match-type>

                                    <p:vlan-id-list>341</p:vlan-id-list>
                                    <p:priority-tagged>false</p:priority-
tagged>
                                    <p:match-exact>false</p:match-exact>
                                    <p:rewrite-definition>
                                          <p:push-operation>
                                                <p:tag-count>one</p:tag-
count>
                                                <p:match-
type>dot1q</p:match-type>
                                                <p:inner-vlan-
id>910</p:inner-vlan-id>
                                                <p:outer-vlan-
id>920</p:outer-vlan-id>
                                          </p:push-operation>
                                    </p:rewrite-definition>
                              </p:qinq-data>
                        </p:ce-data>
                  </p:termination-point-config>
                  <p:termination-point-config>
                        <p:directionality>sink</p:directionality>
                        <p:unmanaged-termination-point>
                              <p:device-name>EVPLUniA0811U2</p:device-
name>
                              <p:new-device>true</p:new-device>
                              <p:device-ip-address>1.1.1.22</p:device-ip-
```

```
address>
                              <p:device-ldp-address>2.2.2.23</p:device-
ldp-address>
                              <!--<p:vc-id>12123</p:vc-id> -->
                        </p:unmanaged-termination-point>
                  </p:termination-point-config>
            </p:termination-point-list>
            <p:network-interface-list>
                  <p:network-interface>
                        <p:name>EVPLUniA0811U2</p:name>
                        <p:operation>add</p:operation>
                        <p:ce-data>
                              <p:activate>true</p:activate>
                              <p:description>EVPLUniA0811U1
desc</p:description>
                              <p:mtu>8000</p:mtu>
                              <p:speed>10 Mbps</p:speed>
                              <p:mode>FULL DUPLEX</p:mode>
                              <p:service-multiplexing>true</p:service-
multiplexing>
                              <p:enable-link-oam>true</p:enable-link-oam>
                              <p:bundling>true</p:bundling>
                              <p:enable-link-Management>true</p:enable-
link-Management>
                        </p:ce-data>
                  </p:network-interface>
            </p:network-interface-list>
      </p:service-order-data>
</p:provision-service-request>
```

7.5.17.2 *Response*

GET URL: *https://{server ip}/restconf/operations/v1/cisco-service-activation:provision-service?service-name=EVPL1108PS2*

```
<ns4:response-message
xmlns:ns40="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns39="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
xmlns:ns38="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns37="urn:ietf:params:xml:ns:yang:ietf-restconf"
xmlns:ns36="urn:cisco:params:xml:ns:yang:service:activation:status:v1"
xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns31="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns30="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
xmlns:ns29="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns28="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns26="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns24="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
```

```
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>0</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns36:provision-service-request>
            <request-id>9ece7e3c-742b-4dbe-b6b1-f2ee5fccb805</request-id>
            <service-name>EVPL1108PS2</service-name>
            <service-type>carrier-ethernet-vpn</service-type>
            <service-subtype>EVPL</service-subtype>
            <preview>false</preview>
            <request-time>2017-11-08T04:01:45.114Z</request-time>
            <completion-time>2017-11-08T04:03:00.631Z</completion-time>
            <deploy-results>
                <result>
                    <node-ref>MD=CISCO_EPNM!ND=EPNNCS4216-120-
41.cisco.com</node-ref>
                    <state>SUCCESSFUL</state>
                    <config>ethernet evc EVPL1108PS2
  oam protocol cfm domain EVC
interface pseudowire129
  encapsulation mpls
  neighbor 12.12.12.13 393
  mtu 1522
interface TenGigabitEthernet0/3/4
  mtu 1528
  ethernet uni id EVPLUniA1108U2
  ethernet oam
  service instance 2 ethernet EVPL1108PS2
    encapsulation dot1q 1
    rewrite ingress tag push dot1q 920 symmetric
    ethernet lmi ce-vlan map 1
  exit
l2vpn xconnect context 393_4_4_4_4
  member TenGigabitEthernet0/3/4 service-instance 2
  member pseudowire129
  exit
</config>
```

```
                </result>
            </deploy-results>
            <completion-status>SUCCESS</completion-status>
        </ns36:provision-service-request>
    </ns4:data>
</ns4:response-message>
```

7.5.18 Provision EVPL Service Over Uni Directional Tunnel Between Remote Office to Remote Office Devices with MPLS Enabled

7.5.18.1 *Request*

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:provision-service-request
      xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:y1="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:sa:v1 cisco-service-
activation.xsd urn:cisco:params:xml:ns:yang:service:activation:v1 restc-
provisioning-request-schema.xsd ">
      <p:service-order-data>
            <p:customer-
ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</p:customer-ref>
            <p:service-name>EVPL-UC4-Demo</p:service-name>
            <p:service-description>EVPL-UC4-Demo desc</p:service-description>
            <p:service-type>carrier-ethernet-vpn</p:service-type>
            <p:service-subtype>EVPL</p:service-subtype>
            <p:service-activate>true</p:service-activate>
            <p:ce-data>
                  <p:bundling>false</p:bundling>
                  <p:ccm-interval>1 sec</p:ccm-interval>
                  <p:ce-vlan-id-preservation>false</p:ce-vlan-id-
preservation>
                  <p:ce-vlan-cos-preservation>false</p:ce-vlan-cos-
preservation>
                  <p:mtu-size>1522</p:mtu-size>
                  <p:enable-cfm>true</p:enable-cfm>
                  <p:fault-management-map>
                        <p:entry>
                              <p:from>UNI A</p:from>
                              <p:to>UNI Z</p:to>
                              <p:cos>Medium</p:cos>
                              <p:oam-profile>Performance Monitoring 1</p:oam-
profile>
                              <p:cchk>2</p:cchk>
                              <p:sedm>2</p:sedm>
                              <p:dedm>2</p:dedm>
                              <p:sylm>2</p:sylm>
                              <p:slm>2</p:slm>
                        </p:entry>
                  </p:fault-management-map>
                  <p:max-uni-endpoints>2</p:max-uni-endpoints>
            </p:ce-data>
```

```
            <p:termination-point-list>
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.33!FTP=name=GigabitEthernet0/3/5;lr=lr-gigabit-ethernet</p:tp-ref>
                        <p:directionality>source</p:directionality>
                        <p:network-interface-name>EVPLUNIAUC4D1</p:network-
interface-name>
                        <p:ce-data>
                              <p:l2-cp-profile>MEF Option 1</p:l2-cp-profile>
                              <p:mep-group>UNI A</p:mep-group>
                              <p:untagged>false</p:untagged>
                              <p:qinq-data>
                                    <p:match-type>dot1q</p:match-type>
                                    <p:vlan-id-list>1009</p:vlan-id-list>
                                    <p:priority-tagged>false</p:priority-
tagged>
                                    <p:match-exact>false</p:match-exact>
                              </p:qinq-data>
                        </p:ce-data>
                  </p:termination-point-config>
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=EPNASR903-
120.131!FTP=name=TenGigabitEthernet0/1/1;lr=lr-ten-gigabit-ethernet</p:tp-
ref>
                        <p:directionality>sink</p:directionality>
                        <p:network-interface-name>EVPLUNIZUC4D1</p:network-
interface-name>
                        <p:ce-data>
                              <p:l2-cp-profile>MEF Option 1</p:l2-cp-profile>
                              <p:mep-group>UNI Z</p:mep-group>
                              <p:untagged>false</p:untagged>
                              <p:qinq-data>
                                    <p:match-type>dot1q</p:match-type>
                                    <p:vlan-id-list>1010</p:vlan-id-list>
                                    <p:priority-tagged>false</p:priority-
tagged>
                                    <p:match-exact>false</p:match-exact>
                              </p:qinq-data>
                        </p:ce-data>
                  </p:termination-point-config>
            </p:termination-point-list>
            <p:network-interface-list>
                  <p:network-interface>
                        <p:name>EVPLUNIAUC4D1</p:name>
                        <p:operation>add</p:operation>
                        <p:ce-data>
                              <p:activate>true</p:activate>
                              <p:description>EVPLUNIAUC4D1
Description</p:description>
                              <p:mtu>1522</p:mtu>
                              <!--<p:speed>10</p:speed> -->
                              <p:mode>FULL DUPLEX</p:mode>
                              <p:service-multiplexing>true</p:service-
multiplexing>
                              <p:enable-link-oam>true</p:enable-link-oam>
                              <p:enable-link-Management>true</p:enable-link-
```

```
Management>
                              <p:bundling>false</p:bundling>
                        </p:ce-data>
                  </p:network-interface>
                  <p:network-interface>
                        <p:name>EVPLUNIZUC4D1</p:name>
                        <p:operation>add</p:operation>
                        <p:ce-data>
                              <p:activate>true</p:activate>
                              <p:description>EVPLUNIZUC4D1
description</p:description>
                              <p:mtu>1522</p:mtu>
                              <!--<p:speed>5</p:speed> -->
                              <p:mode>FULL DUPLEX</p:mode>
                              <p:service-multiplexing>true</p:service-
multiplexing>
                              <p:enable-link-oam>true</p:enable-link-oam>
                              <p:enable-link-Management>true</p:enable-link-
Management>
                              <p:bundling>false</p:bundling>
                        </p:ce-data>
                  </p:network-interface>
            </p:network-interface-list>
            <p:forwarding-path>
                  <p:pseudowire-settings>
                        <p:pw-bandwidth>10</p:pw-bandwidth>
                        <p:enable-control-word>false</p:enable-control-word>
                        <p:fallback-to-ldp>false</p:fallback-to-ldp>
                        <p:interworking-option></p:interworking-option>
                        <p:service-bandwidth>0</p:service-bandwidth>
                  </p:pseudowire-settings>
                  <!-- TE TUNNLEL -->
                  <p:mpls-te-data>
                        <!--<p:te-tunnel-type>Unidirectional TE Tunnel</p:te-
tunnel-type> -->
                        <p:wrap-protection>false</p:wrap-protection>
                        <p:protection-type>Working</p:protection-type>
                        <p:enable-fault-oam>false</p:enable-fault-oam>
                        <p:enable-lockdown>false</p:enable-lockdown>
                        <p:enable-auto-bandwidth>false</p:enable-auto-
bandwidth>
                        <p:enable-autoroute>true</p:enable-autoroute>
                        <p:enable-frr>false</p:enable-frr>
                        <p:tunnel-setting>
                              <p:global-id>881</p:global-id>
                              <p:affinity-bits>2c1</p:affinity-bits>
                              <p:affinity-mask>fff</p:affinity-mask>
                              <p:setup-priority>6</p:setup-priority>
                              <p:hold-priority>3</p:hold-priority>
                              <p:auto-bandwidth-frequency>600</p:auto-
bandwidth-frequency>
                              <p:max-auto-bandwidth>20</p:max-auto-bandwidth>
                              <p:min-auto-bandwidth>5</p:min-auto-bandwidth>
                        </p:tunnel-setting>
                        <p:bfd-settings>
                              <p:enable>true</p:enable>
```

```
                                <p:min-interval>100</p:min-interval>
                                <p:multiplier>3</p:multiplier>
                            </p:bfd-settings>
                        </p:mpls-te-data>
                    </p:forwarding-path>
                </p:service-order-data>
</p:provision-service-request>
```

7.5.18.2 *Response*

```
<ns4:response-message
xmlns:ns40="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns39="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
xmlns:ns38="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns37="urn:ietf:params:xml:ns:yang:ietf-restconf"
xmlns:ns36="urn:cisco:params:xml:ns:yang:service:activation:status:v1"
xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns31="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns30="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
xmlns:ns29="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns28="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns26="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns24="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>5</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns36:provision-service-request>
            <request-id>131a0d8a-fdd2-4eb8-b20c-9c64264c48af</request-id>
```

```
            <service-name>EVPL-UC4-Demo</service-name>
            <service-type>carrier-ethernet-vpn</service-type>
            <service-subtype>EVPL</service-subtype>
            <preview>false</preview>
            <request-time>2017-08-21T12:30:07.642+05:30</request-time>
            <completion-time>2017-08-21T12:38:58.285+05:30</completion-time>
            <deploy-results>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_2741898_EVPL-EVPL-UC4-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Matching tunneltunnel_2741898_EVPL-EVPL-UC4-
Demo found between A &amp;amp; Z End with the given constraints</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_2741898_EVPL-EVPL-UC4-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel tunnel_2741898_EVPL-EVPL-UC4-Demo
signalling with bandwidth , status is Up</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_91222977_EVPL-EVPL-UC4-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Matching tunneltunnel_91222977_EVPL-EVPL-UC4-
Demo found between A &amp;amp; Z End with the given constraints</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_2741898_EVPL-EVPL-UC4-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel tunnel_91222977_EVPL-EVPL-UC4-Demo
signalling with bandwidth , status is Up</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_26072201_EVPL-EVPL-UC4-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Matching tunneltunnel_26072201_EVPL-EVPL-UC4-
Demo found between A &amp;amp; Z End with the given constraints</info>
                    </result>
```

```
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_26072201_EVPL-EVPL-UC4-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel tunnel_26072201_EVPL-EVPL-UC4-Demo
signalling with bandwidth , status is Up</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_93088453_EVPL-EVPL-UC4-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Matching tunneltunnel_93088453_EVPL-EVPL-UC4-
Demo found between A &amp;amp; Z End with the given constraints</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_26072201_EVPL-EVPL-UC4-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel tunnel_93088453_EVPL-EVPL-UC4-Demo
signalling with bandwidth , status is Up</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_34975565_EVPL-EVPL-UC4-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Matching tunneltunnel_34975565_EVPL-EVPL-UC4-
Demo found between A &amp;amp; Z End with the given constraints</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_34975565_EVPL-EVPL-UC4-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel tunnel_34975565_EVPL-EVPL-UC4-Demo
signalling with bandwidth , status is Up</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_89080457_EVPL-EVPL-UC4-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
```

```
                        <state>SUCCESSFUL</state>
                        <info>Matching tunneltunnel_89080457_EVPL-EVPL-UC4-
Demo found between A &amp; Z End with the given constraints</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_34975565_EVPL-EVPL-UC4-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel tunnel_89080457_EVPL-EVPL-UC4-Demo
signalling with bandwidth , status is Up</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_10016102_EVPL-EVPL-UC4-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Matching tunneltunnel_10016102_EVPL-EVPL-UC4-
Demo found between A &amp; Z End with the given constraints</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_10016102_EVPL-EVPL-UC4-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel tunnel_10016102_EVPL-EVPL-UC4-Demo
signalling with bandwidth , status is Up</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_29773152_EVPL-EVPL-UC4-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Matching tunneltunnel_29773152_EVPL-EVPL-UC4-
Demo found between A &amp; Z End with the given constraints</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_10016102_EVPL-EVPL-UC4-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel tunnel_29773152_EVPL-EVPL-UC4-Demo
signalling with bandwidth , status is Up</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
```

```
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_45807838_EVPL-EVPL-UC4-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Matching tunneltunnel_45807838_EVPL-EVPL-UC4-
Demo found between A &amp; Z End with the given constraints</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_45807838_EVPL-EVPL-UC4-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel tunnel_45807838_EVPL-EVPL-UC4-Demo
signalling with bandwidth , status is Up</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_9609835_EVPL-EVPL-UC4-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Matching tunneltunnel_9609835_EVPL-EVPL-UC4-
Demo found between A &amp; Z End with the given constraints</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_45807838_EVPL-EVPL-UC4-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel tunnel_9609835_EVPL-EVPL-UC4-Demo
signalling with bandwidth , status is Up</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_57955782_EVPL-EVPL-UC4-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Matching tunneltunnel_57955782_EVPL-EVPL-UC4-
Demo found between A &amp; Z End with the given constraints</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_57955782_EVPL-EVPL-UC4-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel tunnel_57955782_EVPL-EVPL-UC4-Demo
```

```
signalling with bandwidth , status is Up</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_56888711_EVPL-EVPL-UC4-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Matching tunneltunnel_56888711_EVPL-EVPL-UC4-
Demo found between A &amp;amp; Z End with the given constraints</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_57955782_EVPL-EVPL-UC4-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel tunnel_56888711_EVPL-EVPL-UC4-Demo
signalling with bandwidth , status is Up</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=EVPL-UC4-Demo</cfs-ref>
                    <service-type>ELINE</service-type>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-120.76</node-
ref>
                        <state>SUCCESSFUL</state>
                        <config>ethernet cfm domain EVC level 4
  service EVPL_UC4_21aug_Celeb1 evc EVPL-UC4-Demo
    continuity-check
    continuity-check interval 1s
ethernet evc EVPL-UC4-Demo
interface pseudowire170
  encapsulation mpls
  neighbor 192.168.0.75 373
  mtu 2077
  bandwidth 1002 persistent
interface GigabitEthernet0/0/2
  service instance 9 ethernet EVPL-UC4-Demo
    encapsulation dot1q 314
    cfm mep domain EVC mpid 2
l2vpn xconnect context 373_192_168_0_76
  member GigabitEthernet0/0/2 service-instance 9
  member pseudowire170
  exit
</config>
                    </result>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-120.75</node-
ref>
                        <state>SUCCESSFUL</state>
                        <config>ethernet cfm domain EVC level 4
  service EVPL_UC4_21aug_Celeb1 evc EVPL-UC4-Demo
```

```
    continuity-check
    continuity-check interval 1s
ethernet evc EVPL-UC4-Demo
interface pseudowire181
  encapsulation mpls
  neighbor 192.168.0.76 373
  mtu 2077
  bandwidth 1002 persistent
interface GigabitEthernet0/0/2
  service instance 15 ethernet EVPL-UC4-Demo
    encapsulation dot1q 314
    cfm mep domain EVC mpid 1
l2vpn xconnect context 373_192_168_0_75
  member GigabitEthernet0/0/2 service-instance 15
  member pseudowire181
ip sla 126
  ethernet y1731 delay DMM domain EVC evc EVPL-UC4-Demo mpid 2 cos 3 source
mpid 1
    history interval 5
    aggregate interval 60
ip sla 125
  ethernet y1731 loss SLM domain EVC evc EVPL-UC4-Demo mpid 2 cos 3 source
mpid 1
    history interval 5
    aggregate interval 60
ip sla schedule 126 life forever start-time after 00:02:00
ip sla schedule 125 life forever start-time after 00:02:00
</config>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=EVPL-UC4-Demo</cfs-ref>
                    <service-type></service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>PW Interface status for A/Z ends are /</info>
                    </result>
                </work-flow-result>
            </deploy-results>
            <completion-status>SUCCESS</completion-status>
        </ns36:provision-service-request>
```

7.5.19 Provision EVPL Service Over Uni Directional Tunnel Between Central Office to Remote Office Devices with MPLS Enabled

7.5.19.1 *Request*

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:provision-service-request
      xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:y1="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:sa:v1 cisco-service-
```

```
activation.xsd urn:cisco:params:xml:ns:yang:service:activation:v1 restc-
provisioning-request-schema.xsd ">
      <p:service-order-data>
            <p:customer-
ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</p:customer-ref>
            <p:service-name>EVPL-UC5-Demo</p:service-name>
            <p:service-description>EVPL-UC5-Demo desc</p:service-description>
            <p:service-type>carrier-ethernet-vpn</p:service-type>
            <p:service-subtype>EVPL</p:service-subtype>
            <p:service-activate>true</p:service-activate>
            <p:ce-data>
                  <p:bundling>false</p:bundling>
                  <p:ccm-interval>1 sec</p:ccm-interval>
                  <p:ce-vlan-id-preservation>false</p:ce-vlan-id-
preservation>
                  <p:ce-vlan-cos-preservation>false</p:ce-vlan-cos-
preservation>
                  <p:mtu-size>1522</p:mtu-size>
                  <p:enable-cfm>true</p:enable-cfm>
                  <p:fault-management-map>
                        <p:entry>
                              <p:from>UNI A</p:from>
                              <p:to>UNI Z</p:to>
                              <p:cos>Medium</p:cos>
                              <p:oam-profile>Performance Monitoring 1</p:oam-
profile>
                              <p:cchk>2</p:cchk>
                              <p:sedm>2</p:sedm>
                              <p:dedm>2</p:dedm>
                              <p:sylm>2</p:sylm>
                              <p:slm>2</p:slm>
                        </p:entry>
                  </p:fault-management-map>
                  <p:max-uni-endpoints>2</p:max-uni-endpoints>
            </p:ce-data>
            <p:termination-point-list>
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.33!FTP=name=GigabitEthernet0/3/7;lr=lr-gigabit-ethernet
                        </p:tp-ref>
                        <p:directionality>source</p:directionality>
                        <p:network-interface-name>EPLUNIAUC5D1</p:network-
interface-name>
                        <p:ce-data>
                              <p:l2-cp-profile>MEF Option 1</p:l2-cp-profile>
                              <p:mep-group>UNI A</p:mep-group>
                              <p:untagged>false</p:untagged>
                              <p:qinq-data>
                                    <p:match-type>dot1q</p:match-type>
                                    <p:vlan-id-list>1018</p:vlan-id-list>
                                    <p:priority-tagged>false</p:priority-
tagged>
                                    <p:match-exact>false</p:match-exact>
                              </p:qinq-data>
                        </p:ce-data>
                  </p:termination-point-config>
```

```
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=EPNNCS4216-120-
42.cisco.com!FTP=name=GigabitEthernet0/0/3;lr=lr-gigabit-ethernet
                        </p:tp-ref>
                        <p:directionality>sink</p:directionality>
                        <p:network-interface-name>EPLUNIZUC5D1</p:network-
interface-name>
                        <p:ce-data>
                              <p:l2-cp-profile>MEF Option 1</p:l2-cp-profile>
                              <p:mep-group>UNI Z</p:mep-group>
                              <p:untagged>false</p:untagged>
                              <p:qinq-data>
                                    <p:match-type>dot1q</p:match-type>
                                    <p:vlan-id-list>1019</p:vlan-id-list>
                                    <p:priority-tagged>false</p:priority-
tagged>
                                    <p:match-exact>false</p:match-exact>
                              </p:qinq-data>
                        </p:ce-data>
                  </p:termination-point-config>
            </p:termination-point-list>
            <p:network-interface-list>
                  <p:network-interface>
                        <p:name>EPLUNIAUC5D1</p:name>
                        <p:operation>add</p:operation>
                        <p:ce-data>
                              <p:activate>true</p:activate>
                              <p:description>EPLUNIAUC5D1
Description</p:description>
                              <p:mtu>1522</p:mtu>
                              <!--<p:speed>10</p:speed> -->
                              <p:mode>FULL DUPLEX</p:mode>
                              <p:service-multiplexing>true</p:service-
multiplexing>
                              <p:enable-link-oam>true</p:enable-link-oam>
                              <p:enable-link-Management>true</p:enable-link-
Management>
                              <p:bundling>false</p:bundling>
                        </p:ce-data>
                  </p:network-interface>
                  <p:network-interface>
                        <p:name>EPLUNIZUC5D1</p:name>
                        <p:operation>add</p:operation>
                        <p:ce-data>
                              <p:activate>true</p:activate>
                              <p:description>EPLUNIZUC5D1
description</p:description>
                              <p:mtu>1522</p:mtu>
                              <!--<p:speed>5</p:speed> -->
                              <p:mode>FULL DUPLEX</p:mode>
                              <p:service-multiplexing>true</p:service-
multiplexing>
                              <p:enable-link-oam>true</p:enable-link-oam>
                              <p:enable-link-Management>true</p:enable-link-
Management>
                              <p:bundling>false</p:bundling>
```

```
                        </p:ce-data>
                  </p:network-interface>
            </p:network-interface-list>
            <p:forwarding-path>
                  <p:pseudowire-settings>
                        <!--<p:pw-bandwidth>10</p:pw-bandwidth> -->
                        <p:enable-control-word>false</p:enable-control-word>
                        <p:fallback-to-ldp>false</p:fallback-to-ldp>
                        <p:interworking-option></p:interworking-option>
                        <p:service-bandwidth>0</p:service-bandwidth>
                  </p:pseudowire-settings>
                  <!-- TE TUNNLEL -->
                  <p:mpls-te-data>
                        <!--<p:te-tunnel-type>Unidirectional TE Tunnel</p:te-
tunnel-type> -->
                        <p:wrap-protection>false</p:wrap-protection>
                        <p:protection-type>Working</p:protection-type>
                        <p:enable-fault-oam>false</p:enable-fault-oam>
                        <p:enable-lockdown>false</p:enable-lockdown>
                        <p:enable-auto-bandwidth>false</p:enable-auto-
bandwidth>
                        <p:enable-autoroute>true</p:enable-autoroute>
                        <p:enable-frr>true</p:enable-frr>
                        <p:tunnel-setting>
                              <!--<p:global-id>889</p:global-id> -->
                              <p:affinity-bits>2c8</p:affinity-bits>
                              <p:affinity-mask>fff</p:affinity-mask>
                              <p:setup-priority>6</p:setup-priority>
                              <p:hold-priority>3</p:hold-priority>
                              <p:auto-bandwidth-frequency>600</p:auto-
bandwidth-frequency>
                              <p:max-auto-bandwidth>20</p:max-auto-bandwidth>
                              <p:min-auto-bandwidth>5</p:min-auto-bandwidth>
                        </p:tunnel-setting>
                        <p:bfd-settings>
                              <p:enable>true</p:enable>
                              <p:min-interval>100</p:min-interval>
                              <p:multiplier>3</p:multiplier>
                        </p:bfd-settings>
                  </p:mpls-te-data>
            </p:forwarding-path>
      </p:service-order-data>
</p:provision-service-request>
```

7.5.19.2 *Response*

```
<ns4:response-message
xmlns:ns40="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns39="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
xmlns:ns38="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns37="urn:ietf:params:xml:ns:yang:ietf-restconf"
xmlns:ns36="urn:cisco:params:xml:ns:yang:service:activation:status:v1"
xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns31="urn:cisco:params:xml:ns:yang:resource:device"
```

```
xmlns:ns30="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
xmlns:ns29="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns28="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns26="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns24="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>0</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns36:provision-service-request>
            <request-id>2ecfaa86-0bc2-4f0f-a947-f1a0fce2c330</request-id>
            <service-name>EVPL-UC5-Demo</service-name>
            <service-type>carrier-ethernet-vpn</service-type>
            <service-subtype>EVPL</service-subtype>
            <preview>false</preview>
            <request-time>2017-08-21T13:41:22.853+05:30</request-time>
            <completion-time>2017-08-21T13:55:14.093+05:30</completion-
time>
            <deploy-results>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_76590067_EVPL-UC5-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel match not found between A and Z end,
hence creating new tunnel</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_76590067_EVPL-UC5-
```

```
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.84</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>bfd-template single-hop bfd-tunnel16
  interval min-tx 105 min-rx 105 multiplier 6
  exit
interface Tunnel16
  tunnel mode mpls traffic-eng
  ip unnumbered Loopback192
  tunnel destination 192.168.0.89
  bandwidth 381
  tunnel mpls traffic-eng name tunnel_76590067_EVPL-UC5-Demo
  tunnel mpls traffic-eng autoroute announce
  tunnel mpls traffic-eng priority 4  2
  tunnel mpls traffic-eng fast-reroute
  tunnel mpls traffic-eng auto-bw frequency 3600 max-bw 381 min-bw 281
  tunnel mpls traffic-eng bfd encap-mode gal bfd-tunnel16
  tunnel mpls traffic-eng path-option 10 dynamic
  tunnel mpls traffic-eng record-route
  tunnel mpls traffic-eng path-selection metric te
  exit
</config>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_76590067_EVPL-UC5-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel tunnel_76590067_EVPL-UC5-Demo
signalling with bandwidth , status is Up</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_483970_EVPL-UC5-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel match not found between A and Z end,
hence creating new tunnel</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_483970_EVPL-UC5-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.89</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>bfd-template single-hop bfd-tunnel141
```

```
  interval min-tx 105 min-rx 105 multiplier 6
  exit
interface Tunnel141
  tunnel mode mpls traffic-eng
  ip unnumbered Loopback192
  tunnel destination 192.168.0.84
  bandwidth 381
  tunnel mpls traffic-eng name tunnel_483970_EVPL-UC5-Demo
  tunnel mpls traffic-eng autoroute announce
  tunnel mpls traffic-eng priority 4  2
  tunnel mpls traffic-eng fast-reroute
  tunnel mpls traffic-eng auto-bw frequency 3600 max-bw 381 min-bw 281
  tunnel mpls traffic-eng bfd encap-mode gal bfd-tunnel141
  tunnel mpls traffic-eng path-option 10 dynamic
  tunnel mpls traffic-eng record-route
  tunnel mpls traffic-eng path-selection metric te
  exit
</config>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_76590067_EVPL-UC5-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel tunnel_483970_EVPL-UC5-Demo
signalling with bandwidth , status is Up</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_41873879_EVPL-UC5-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel match not found between A and Z end,
hence creating new tunnel</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_41873879_EVPL-UC5-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.81</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>bfd-template single-hop bfd-tunnel16
  interval min-tx 105 min-rx 105 multiplier 6
  exit
interface Tunnel16
  tunnel mode mpls traffic-eng
  ip unnumbered Loopback192
  tunnel destination 192.168.0.89
  bandwidth 381
```

```
  tunnel mpls traffic-eng name tunnel_41873879_EVPL-UC5-Demo
  tunnel mpls traffic-eng autoroute announce
  tunnel mpls traffic-eng priority 4  2
  tunnel mpls traffic-eng fast-reroute
  tunnel mpls traffic-eng auto-bw frequency 3600 max-bw 381 min-bw 281
  tunnel mpls traffic-eng bfd encap-mode gal bfd-tunnel16
  tunnel mpls traffic-eng path-option 10 dynamic
  tunnel mpls traffic-eng record-route
  tunnel mpls traffic-eng path-selection metric te
  exit
</config>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_41873879_EVPL-UC5-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel tunnel_41873879_EVPL-UC5-Demo
signalling with bandwidth , status is Up</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_5910269_EVPL-UC5-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel match not found between A and Z end,
hence creating new tunnel</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_5910269_EVPL-UC5-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.89</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>bfd-template single-hop bfd-tunnel145
  interval min-tx 105 min-rx 105 multiplier 6
  exit
interface Tunnel145
  tunnel mode mpls traffic-eng
  ip unnumbered Loopback192
  tunnel destination 192.168.0.81
  bandwidth 381
  tunnel mpls traffic-eng name tunnel_5910269_EVPL-UC5-Demo
  tunnel mpls traffic-eng autoroute announce
  tunnel mpls traffic-eng priority 4  2
  tunnel mpls traffic-eng fast-reroute
  tunnel mpls traffic-eng auto-bw frequency 3600 max-bw 381 min-bw 281
  tunnel mpls traffic-eng bfd encap-mode gal bfd-tunnel145
  tunnel mpls traffic-eng path-option 10 dynamic
```

```
  tunnel mpls traffic-eng record-route
  tunnel mpls traffic-eng path-selection metric te
  exit
</config>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_41873879_EVPL-UC5-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel tunnel_5910269_EVPL-UC5-Demo
signalling with bandwidth , status is Up</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_26625886_EVPL-UC5-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel match not found between A and Z end,
hence creating new tunnel</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_26625886_EVPL-UC5-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.81</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>bfd-template single-hop bfd-tunnel21
  interval min-tx 105 min-rx 105 multiplier 6
  exit
interface Tunnel21
  tunnel mode mpls traffic-eng
  ip unnumbered Loopback192
  tunnel destination 192.168.0.84
  bandwidth 381
  tunnel mpls traffic-eng name tunnel_26625886_EVPL-UC5-Demo
  tunnel mpls traffic-eng autoroute announce
  tunnel mpls traffic-eng priority 4  2
  tunnel mpls traffic-eng fast-reroute
  tunnel mpls traffic-eng auto-bw frequency 3600 max-bw 381 min-bw 281
  tunnel mpls traffic-eng bfd encap-mode gal bfd-tunnel21
  tunnel mpls traffic-eng path-option 10 dynamic
  tunnel mpls traffic-eng record-route
  tunnel mpls traffic-eng path-selection metric te
  exit
</config>
                    </result>
                </work-flow-result>
                <work-flow-result>
```

```
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_26625886_EVPL-UC5-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel tunnel_26625886_EVPL-UC5-Demo
signalling with bandwidth , status is Up</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_65235717_EVPL-UC5-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel match not found between A and Z end,
hence creating new tunnel</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_65235717_EVPL-UC5-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.84</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>bfd-template single-hop bfd-tunnel21
  interval min-tx 105 min-rx 105 multiplier 6
  exit
interface Tunnel21
  tunnel mode mpls traffic-eng
  ip unnumbered Loopback192
  tunnel destination 192.168.0.81
  bandwidth 381
  tunnel mpls traffic-eng name tunnel_65235717_EVPL-UC5-Demo
  tunnel mpls traffic-eng autoroute announce
  tunnel mpls traffic-eng priority 4  2
  tunnel mpls traffic-eng fast-reroute
  tunnel mpls traffic-eng auto-bw frequency 3600 max-bw 381 min-bw 281
  tunnel mpls traffic-eng bfd encap-mode gal bfd-tunnel21
  tunnel mpls traffic-eng path-option 10 dynamic
  tunnel mpls traffic-eng record-route
  tunnel mpls traffic-eng path-selection metric te
  exit
</config>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=tunnel_26625886_EVPL-UC5-
Demo</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel tunnel_65235717_EVPL-UC5-Demo
signalling with bandwidth , status is Up</info>
```

```
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=EVPL-UC5-Demo</cfs-ref>
                    <service-type>ELINE</service-type>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.89</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>ethernet cfm domain EVC level 4
  service EVPL_UC5_21aug_Celeb1 evc EVPL-UC5-Demo
    continuity-check
    continuity-check interval 1s
ethernet evc EVPL-UC5-Demo
class-map match-any class_rev
  match cos 1
interface pseudowire24
  encapsulation mpls
  neighbor 192.168.0.75 384
  mtu 2077
  bandwidth 1000 persistent
interface GigabitEthernet0/0/4
  service instance 7 ethernet EVPL-UC5-Demo
    encapsulation dot1q 220
    cfm mep domain EVC mpid 2
    service-policy input QoS_verizon_today_I56F
    service-policy output QoS_verizon_today_I56F
l2vpn xconnect context 384_192_168_0_89
  member GigabitEthernet0/0/4 service-instance 7
  member pseudowire24
ip sla 18
  ethernet y1731 delay DMM domain EVC evc EVPL-UC5-Demo mpid 1 cos 3
source mpid 2
    history interval 5
    aggregate interval 60
ip sla 17
  ethernet y1731 loss SLM domain EVC evc EVPL-UC5-Demo mpid 1 cos 3 source
mpid 2
    history interval 5
    aggregate interval 60
ip sla schedule 18 life forever start-time after 00:02:00
ip sla schedule 17 life forever start-time after 00:02:00
</config>
                    </result>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.75</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>ethernet cfm domain EVC level 4
  service EVPL_UC5_21aug_Celeb1 evc EVPL-UC5-Demo
    continuity-check
    continuity-check interval 1s
ethernet evc EVPL-UC5-Demo
class-map match-any class_rev
  match cos 1
interface pseudowire187
```

```
  encapsulation mpls
  neighbor 192.168.0.89 384
  mtu 2077
  bandwidth 1000 persistent
interface GigabitEthernet0/0/2
  service instance 17 ethernet EVPL-UC5-Demo
    encapsulation dot1q 220
    cfm mep domain EVC mpid 1
    service-policy input QoS_verizon_today_I56F
    service-policy output QoS_verizon_today_I56F
l2vpn xconnect context 384_192_168_0_75
  member GigabitEthernet0/0/2 service-instance 17
  member pseudowire187
ip sla 130
  ethernet y1731 delay DMM domain EVC evc EVPL-UC5-Demo mpid 2 cos 3
source mpid 1
    history interval 5
    aggregate interval 60
ip sla 129
  ethernet y1731 loss SLM domain EVC evc EVPL-UC5-Demo mpid 2 cos 3 source
mpid 1
    history interval 5
    aggregate interval 60
ip sla schedule 130 life forever start-time after 00:02:00
ip sla schedule 129 life forever start-time after 00:02:00
</config>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=EVPL-UC5-Demo</cfs-ref>
                    <service-type></service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>PW Interface status for A/Z ends are
/</info>
                    </result>
                </work-flow-result>
            </deploy-results>
            <completion-status>SUCCESS</completion-status>
        </ns36:provision-service-request>
    </ns4:data>
</ns4:response-message>
```

7.5.20 Provision EVPL Service Over Uni Directional Tunnel – NID to NID

7.5.20.1 *Request*

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:provision-service-request
      xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:y1="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:sa:v1 cisco-service-
```

```
activation.xsd urn:cisco:params:xml:ns:yang:service:activation:v1 restc-
provisioning-request-schema.xsd ">
      <p:service-order-data>
            <p:customer-
ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</p:customer-ref>
            <p:service-name>UC10TestService</p:service-name>
            <p:service-description>UC10TestService</p:service-description>
            <p:service-type>carrier-ethernet-vpn</p:service-type>
            <p:service-subtype>EVPL</p:service-subtype>
            <p:service-activate>true</p:service-activate>
            <p:ce-data>
                  <p:bundling>false</p:bundling>
                  <p:ccm-interval>1 sec</p:ccm-interval>
                  <p:ce-vlan-id-preservation>false</p:ce-vlan-id-
preservation>
                  <p:ce-vlan-cos-preservation>false</p:ce-vlan-cos-
preservation>
                  <p:mtu-size>2091</p:mtu-size>
                  <p:enable-cfm>true</p:enable-cfm>
                  <p:fault-management-map>
                        <p:entry>
                              <p:from>UNI A</p:from>
                              <p:to>UNI Z</p:to>
                              <p:cos>Medium</p:cos>
                              <p:oam-profile>Performance Monitoring 2</p:oam-
profile>
                              <p:cchk>2</p:cchk>
                              <p:sedm>2</p:sedm>
                              <p:dedm>2</p:dedm>
                              <p:sylm>2</p:sylm>
                              <p:slm>2</p:slm>
                        </p:entry>
                        <p:entry>
                              <p:from>UNI Z</p:from>
                              <p:to>UNI A</p:to>
                              <p:cos>Medium</p:cos>
                              <p:oam-profile>Performance Monitoring 3</p:oam-
profile>
                              <p:cchk>2</p:cchk>
                              <p:sedm>1</p:sedm>
                              <p:dedm>2</p:dedm>
                              <p:sylm>2</p:sylm>
                              <p:slm>2</p:slm>
                        </p:entry>
                  </p:fault-management-map>
                  <p:max-uni-endpoints>2</p:max-uni-endpoints>
            </p:ce-data>
            <p:termination-point-list>
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=ME-1200-
31!FTP=name=GigabitEthernet 1/3;lr=lr-gigabit-ethernet</p:tp-ref>
                        <p:directionality>source</p:directionality>
                        <p:network-interface-name>UNI_31_Port_3</p:network-
interface-name>
                        <p:network-interface-
ref>MD=CISCO_EPNM!NI=UNI_31_Port_3</p:network-interface-ref>
```

```
                        <p:ce-data>
                              <p:l2-cp-profile>MEF Option 1</p:l2-cp-profile>
                              <p:mep-group>UNI A</p:mep-group>
                              <p:untagged>false</p:untagged>
                              <p:qinq-data>
                                    <p:match-type>dot1q</p:match-type>
                                    <p:vlan-id-list>2337</p:vlan-id-list>
                                    <p:priority-tagged>false</p:priority-
tagged>
                                    <p:match-exact>false</p:match-exact>
                              </p:qinq-data>
                        </p:ce-data>
                  </p:termination-point-config>
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=ME-1200-
34!FTP=name=GigabitEthernet 1/3;lr=lr-gigabit-ethernet</p:tp-ref>
                        <p:directionality>sink</p:directionality>
                        <p:network-interface-name>UNI_34_Port_3</p:network-
interface-name>
                        <p:network-interface-
ref>MD=CISCO_EPNM!NI=UNI_34_Port_3</p:network-interface-ref>
                        <p:ce-data>
                              <p:l2-cp-profile>MEF Option 1</p:l2-cp-profile>
                              <p:mep-group>UNI Z</p:mep-group>
                              <p:untagged>false</p:untagged>
                              <p:qinq-data>
                                    <p:match-type>dot1q</p:match-type>
                                    <p:vlan-id-list>2337</p:vlan-id-list>
                                    <p:priority-tagged>false</p:priority-
tagged>
                                    <p:match-exact>false</p:match-exact>
                              </p:qinq-data>
                        </p:ce-data>
                  </p:termination-point-config>
            </p:termination-point-list>
            <p:network-interface-list>
                  <p:network-interface>
                        <p:name>UNI_31_Port_3</p:name>
                        <p:operation>update</p:operation>
                        <p:ref>MD=CISCO_EPNM!NI=UNI_31_Port_3</p:ref>
                        <p:ce-data>
                              <p:activate>true</p:activate>
                              <p:description>Description</p:description>
                              <p:mtu>3000</p:mtu>
                              <!--<p:speed>10</p:speed> -->
                              <p:mode>FULL DUPLEX</p:mode>
                              <p:service-multiplexing>true</p:service-
multiplexing>
                              <p:enable-link-oam>true</p:enable-link-oam>
                              <p:enable-link-Management>true</p:enable-link-
Management>
                              <p:bundling>false</p:bundling>
                        </p:ce-data>
                  </p:network-interface>
                  <p:network-interface>
                        <p:name>UNI_34_Port_3</p:name>
```

```
                        <p:operation>update</p:operation>
                        <p:ref>MD=CISCO_EPNM!NI=UNI_34_Port_3</p:ref>
                        <p:ce-data>
                              <p:activate>true</p:activate>
                              <p:description>Description</p:description>
                              <p:mtu>3000</p:mtu>
                              <!--<p:speed>5</p:speed> -->
                              <p:mode>FULL DUPLEX</p:mode>
                              <p:service-multiplexing>true</p:service-
multiplexing>
                              <p:enable-link-oam>true</p:enable-link-oam>
                              <p:enable-link-Management>true</p:enable-link-
Management>
                              <p:bundling>false</p:bundling>
                        </p:ce-data>
                  </p:network-interface>
            </p:network-interface-list>
            <p:forwarding-path>
                  <p:pseudowire-settings>
                        <p:pw-bandwidth>430</p:pw-bandwidth>
                        <p:enable-control-word>false</p:enable-control-word>
                        <p:fallback-to-ldp>false</p:fallback-to-ldp>
                        <p:interworking-option></p:interworking-option>
                        <p:service-bandwidth>0</p:service-bandwidth>
                  </p:pseudowire-settings>
                  <!-- TE TUNNLEL -->
                  <p:mpls-te-data>
                        <!-- <p:te-tunnel-type>uni-directional</p:te-tunnel-
type> -->
                        <!--<p:wrap-protection>false</p:wrap-protection> -->
                        <p:protection-type>Working</p:protection-type>
                        <p:enable-fault-oam>true</p:enable-fault-oam>
                        <p:enable-lockdown>false</p:enable-lockdown>
                        <p:enable-auto-bandwidth>true</p:enable-auto-
bandwidth>
                        <p:enable-autoroute>true</p:enable-autoroute>
                        <p:enable-frr>true</p:enable-frr>
                        <p:tunnel-setting>
                              <!--<p:global-id>453</p:global-id> -->
                              <p:setup-priority>1</p:setup-priority>
                              <p:hold-priority>1</p:hold-priority>
                              <!--<p:auto-bandwidth-frequency>377</p:auto-
bandwidth-frequency> -->
                              <!--<p:max-auto-bandwidth>106</p:max-auto-
bandwidth> -->
                              <!--<p:min-auto-bandwidth>80</p:min-auto-
bandwidth> -->
                        </p:tunnel-setting>
                        <p:bfd-settings>
                              <p:enable>true</p:enable>
                              <p:min-interval>106</p:min-interval>
                              <p:multiplier>7</p:multiplier>
                        </p:bfd-settings>
                  </p:mpls-te-data>
            </p:forwarding-path>
      </p:service-order-data>
```

```
</p:provision-service-request>
```

7.5.20.2 *Response*

```
<ns4:response-message
xmlns:ns40="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns39="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
xmlns:ns38="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns37="urn:ietf:params:xml:ns:yang:ietf-restconf"
xmlns:ns36="urn:cisco:params:xml:ns:yang:service:activation:status:v1"
xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns31="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns30="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
xmlns:ns29="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns28="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns26="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns24="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>0</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns36:provision-service-request>
            <request-id>3693b5c0-d6f7-430f-9ad9-ab1e4dfcd16e</request-id>
            <service-name>UC10TestService</service-name>
            <service-type>carrier-ethernet-vpn</service-type>
            <service-subtype>EVPL</service-subtype>
            <preview>false</preview>
            <request-time>2017-08-29T11:43:22.693+05:30</request-time>
```

```
            <completion-time>2017-08-29T11:50:00.744+05:30</completion-
time>
            <deploy-results>
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_12741182_UC10TestService</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel match not found between A and Z end,
hence creating new tunnel</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_12741182_UC10TestService</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.81</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>bfd-template single-hop bfd-tunnel7
  interval min-tx 106 min-rx 106 multiplier 7
  exit
interface Tunnel7
  tunnel mode mpls traffic-eng
  ip unnumbered Loopback192
  tunnel destination 192.168.0.84
  bandwidth 1000000
  tunnel mpls traffic-eng name tunnel_12741182_UC10TestService
  tunnel mpls traffic-eng autoroute announce
  tunnel mpls traffic-eng priority 1  1
  tunnel mpls traffic-eng fast-reroute
  tunnel mpls traffic-eng auto-bw frequency 300 max-bw 1000000
  tunnel mpls traffic-eng bfd encap-mode gal bfd-tunnel7
  tunnel mpls traffic-eng path-option 10 dynamic
  tunnel mpls traffic-eng record-route
  tunnel mpls traffic-eng path-selection metric te
  exit
</config>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_12741182_UC10TestService</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel tunnel_12741182_UC10TestService
signalling with bandwidth , status is Up</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_83439649_UC10TestService</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
```

```
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel match not found between A and Z end,
hence creating new tunnel</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_83439649_UC10TestService</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.84</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>bfd-template single-hop bfd-tunnel6
  interval min-tx 106 min-rx 106 multiplier 7
  exit
interface Tunnel6
  tunnel mode mpls traffic-eng
  ip unnumbered Loopback192
  tunnel destination 192.168.0.81
  bandwidth 1000000
  tunnel mpls traffic-eng name tunnel_83439649_UC10TestService
  tunnel mpls traffic-eng autoroute announce
  tunnel mpls traffic-eng priority 1  1
  tunnel mpls traffic-eng fast-reroute
  tunnel mpls traffic-eng auto-bw frequency 300 max-bw 1000000
  tunnel mpls traffic-eng bfd encap-mode gal bfd-tunnel6
  tunnel mpls traffic-eng path-option 10 dynamic
  tunnel mpls traffic-eng record-route
  tunnel mpls traffic-eng path-selection metric te
  exit
</config>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_12741182_UC10TestService</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel tunnel_83439649_UC10TestService
signalling with bandwidth , status is Up</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=UC10TestService</cfs-ref>
                    <service-type>ELINE</service-type>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.81</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>ethernet evc UC10TestService
interface pseudowire32
  encapsulation mpls
  preferred-path interface Tunnel7 disable-fallback
```

```
  neighbor 192.168.0.84 24
  mtu 2073
  bandwidth 430 persistent
interface GigabitEthernet0/0/6
  service instance 29 ethernet UC10TestService
    encapsulation dot1q 24
    rewrite ingress tag pop 1 symmetric
l2vpn xconnect context 24_192_168_0_81
  member GigabitEthernet0/0/6 service-instance 29
  member pseudowire32
  exit
</config>
                    </result>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.84</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>ethernet evc UC10TestService
interface pseudowire30
  encapsulation mpls
  preferred-path interface Tunnel6 disable-fallback
  neighbor 192.168.0.81 24
  mtu 2073
  bandwidth 430 persistent
interface GigabitEthernet0/0/6
  service instance 23 ethernet UC10TestService
    encapsulation dot1q 17
    rewrite ingress tag pop 1 symmetric
l2vpn xconnect context 24_192_168_0_84
  member GigabitEthernet0/0/6 service-instance 23
  member pseudowire30
  exit
</config>
                    </result>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=ME-1200-31</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>evc 960 vid 24 ivid 24 interface
GigabitEthernet 1/4
evc ece 59 interface GigabitEthernet 1/3 outer-tag match type c-tagged vid
2337 evc 960
evc ece update 59 cos 3
mep 6 up domain evc flow 960 level 4 interface GigabitEthernet 1/3
mep 6 meg-id UC10TestService ieee name EVC
mep 6 mep-id 1
mep 6 voe
mep 6 performance-monitoring
mep 6 vid 2337
mep 6 peer-mep-id 2 mac FF-FF-FF-FF-FF-FF
mep 6 cc 3
mep 6 dm 3 uni mep-id 2 interval 60000 last-n 10
mep 6 lm 3 synthetic uni flr 60
</config>
                    </result>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=ME-1200-34</node-ref>
```

```
                        <state>SUCCESSFUL</state>
                        <config>evc 787 vid 17 ivid 17 interface
GigabitEthernet 1/4
evc ece 14 interface GigabitEthernet 1/3 outer-tag match type c-tagged vid
2337 evc 787
evc ece update 14 cos 3
mep 4 up domain evc flow 787 level 4 interface GigabitEthernet 1/3
mep 4 meg-id UC10TestService ieee name EVC
mep 4 mep-id 2
mep 4 voe
mep 4 performance-monitoring
mep 4 vid 2337
mep 4 peer-mep-id 1 mac FF-FF-FF-FF-FF-FF
mep 4 cc 3
mep 4 dm 3 uni mep-id 1 dual interval 60000 last-n 10
mep 4 lm 3 synthetic uni flr 60
</config>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=UC10TestService</cfs-ref>
                    <service-type></service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>PW Interface status for A/Z ends are
/</info>
                    </result>
                </work-flow-result>
            </deploy-results>
            <completion-status>SUCCESS</completion-status>
        </ns36:provision-service-request>
    </ns4:data>
</ns4:response-message>
```

7.5.21 EVPL Service Over Uni Directional Tunnel – NID to Remote Building

7.5.21.1 *Request*

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:provision-service-request
      xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:y1="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:sa:v1 cisco-service-
activation.xsd urn:cisco:params:xml:ns:yang:service:activation:v1 restc-
provisioning-request-schema.xsd ">
      <!--<p:cfs-ref>MD=CISCO_EPNM!CFS=UC11_5</p:cfs-ref> -->
      <p:service-order-data>
            <p:customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</p:customer-
ref>
            <p:service-name>UC11TestService</p:service-name>
            <p:service-description>UC11TestService</p:service-description>
            <p:service-type>carrier-ethernet-vpn</p:service-type>
```

```
            <p:service-subtype>EVPL</p:service-subtype>
            <p:service-activate>true</p:service-activate>
            <p:ce-data>
                  <p:bundling>false</p:bundling>
                  <p:ccm-interval>1 sec</p:ccm-interval>
                  <p:ce-vlan-id-preservation>false</p:ce-vlan-id-preservation>
                  <p:ce-vlan-cos-preservation>false</p:ce-vlan-cos-
preservation>
                  <p:mtu-size>2091</p:mtu-size>
                  <p:enable-cfm>true</p:enable-cfm>
                  <p:fault-management-map>
                        <p:entry>
                              <p:from>UNI A</p:from>
                              <p:to>UNI Z</p:to>
                              <p:cos>Medium</p:cos>
                              <p:oam-profile>Performance Monitoring 2</p:oam-
profile>
                              <p:cchk>2</p:cchk>
                              <p:sedm>2</p:sedm>
                              <p:dedm>2</p:dedm>
                              <p:sylm>2</p:sylm>
                              <p:slm>2</p:slm>
                        </p:entry>
                        <p:entry>
                              <p:from>UNI Z</p:from>
                              <p:to>UNI A</p:to>
                              <p:cos>Medium</p:cos>
                              <p:oam-profile>Performance Monitoring 3</p:oam-
profile>
                              <p:cchk>2</p:cchk>
                              <p:sedm>1</p:sedm>
                              <p:dedm>2</p:dedm>
                              <p:sylm>2</p:sylm>
                              <p:slm>2</p:slm>
                        </p:entry>
                  </p:fault-management-map>
                  <p:max-uni-endpoints>2</p:max-uni-endpoints>
            </p:ce-data>
            <p:termination-point-list>
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=ME-1200-
31!FTP=name=GigabitEthernet 1/3;lr=lr-gigabit-ethernet</p:tp-ref>
                        <p:directionality>source</p:directionality>
                        <p:network-interface-name>UNI_31_Port_3</p:network-
interface-name>
                        <p:network-interface-
ref>MD=CISCO_EPNM!NI=UNI_31_Port_3</p:network-interface-ref>
                        <p:ce-data>
                              <p:l2-cp-profile>MEF Option 1</p:l2-cp-profile>
                              <p:mep-group>UNI A</p:mep-group>
                              <p:untagged>false</p:untagged>
                              <p:qinq-data>
                                    <p:match-type>dot1q</p:match-type>
                                    <p:vlan-id-list>2343</p:vlan-id-list>
                                    <p:priority-tagged>false</p:priority-
tagged>
```

```
                                    <p:match-exact>false</p:match-exact>
                              </p:qinq-data>
                        </p:ce-data>
                  </p:termination-point-config>
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=EPNNCS4201-
120.165!FTP=name=GigabitEthernet 0/0/11;lr=lr-gigabit-ethernet</p:tp-ref>
                        <p:directionality>sink</p:directionality>
                        <p:network-interface-name>UNI_165</p:network-
interface-name>
                        <p:network-interface-
ref>MD=CISCO_EPNM!NI=UNI_165</p:network-interface-ref>
                        <p:ce-data>
                              <p:l2-cp-profile>MEF Option 1</p:l2-cp-profile>
                              <p:mep-group>UNI Z</p:mep-group>
                              <p:untagged>false</p:untagged>
                              <p:qinq-data>
                                    <p:match-type>dot1q</p:match-type>
                                    <p:vlan-id-list>2343</p:vlan-id-list>
                                    <p:priority-tagged>false</p:priority-
tagged>
                                    <p:match-exact>false</p:match-exact>
                              </p:qinq-data>
                        </p:ce-data>
                  </p:termination-point-config>
            </p:termination-point-list>
            <p:network-interface-list>
                  <p:network-interface>
                        <p:name>UNI_31_Port_3</p:name>
                        <p:operation>update</p:operation>
                        <p:ref>MD=CISCO_EPNM!NI=UNI_31_Port_3</p:ref>
                        <p:ce-data>
                              <p:activate>true</p:activate>
                              <p:description>Description</p:description>
                              <p:mtu>3000</p:mtu>
                              <!--<p:speed>10</p:speed> -->
                              <p:mode>FULL DUPLEX</p:mode>
                              <p:service-multiplexing>true</p:service-
multiplexing>
                              <p:enable-link-oam>true</p:enable-link-oam>
                              <p:enable-link-Management>true</p:enable-link-
Management>
                              <p:bundling>false</p:bundling>
                        </p:ce-data>
                  </p:network-interface>
                  <p:network-interface>
                        <p:name>UNI_165</p:name>
                        <p:operation>update</p:operation>
                        <p:ref>MD=CISCO_EPNM!NI=UNI_165</p:ref>
                        <p:ce-data>
                              <p:activate>true</p:activate>
                              <p:description>Description</p:description>
                              <p:mtu>3000</p:mtu>
                              <!--<p:speed>5</p:speed> -->
                              <p:mode>FULL DUPLEX</p:mode>
                              <p:service-multiplexing>true</p:service-
```

```
multiplexing>
                              <p:enable-link-oam>true</p:enable-link-oam>
                              <p:enable-link-Management>true</p:enable-link-
Management>
                              <p:bundling>false</p:bundling>
                        </p:ce-data>
                  </p:network-interface>
            </p:network-interface-list>
            <p:forwarding-path>
                  <p:pseudowire-settings>
                        <p:pw-bandwidth>430</p:pw-bandwidth>
                        <p:enable-control-word>false</p:enable-control-word>
                        <p:fallback-to-ldp>false</p:fallback-to-ldp>
                        <p:interworking-option></p:interworking-option>
                        <p:service-bandwidth>0</p:service-bandwidth>
                  </p:pseudowire-settings>
                  <!-- TE TUNNLEL -->
                  <p:mpls-te-data>
                        <!-- <p:te-tunnel-type>uni-directional</p:te-tunnel-
type> -->
                        <!--<p:wrap-protection>false</p:wrap-protection> -->
                        <p:protection-type>Working</p:protection-type>
                        <p:enable-fault-oam>true</p:enable-fault-oam>
                        <p:enable-lockdown>false</p:enable-lockdown>
                        <p:enable-auto-bandwidth>true</p:enable-auto-
bandwidth>
                        <p:enable-autoroute>true</p:enable-autoroute>
                        <p:enable-frr>true</p:enable-frr>
                        <p:tunnel-setting>
                              <!--<p:global-id>453</p:global-id> -->
                              <p:setup-priority>2</p:setup-priority>
                              <p:hold-priority>2</p:hold-priority>
                              <!--<p:auto-bandwidth-frequency>377</p:auto-
bandwidth-frequency> -->
                              <!--<p:max-auto-bandwidth>106</p:max-auto-
bandwidth> -->
                              <!--<p:min-auto-bandwidth>80</p:min-auto-
bandwidth> -->
                        </p:tunnel-setting>
                        <p:bfd-settings>
                              <p:enable>true</p:enable>
                              <p:min-interval>106</p:min-interval>
                              <p:multiplier>7</p:multiplier>
                        </p:bfd-settings>
                  </p:mpls-te-data>
            </p:forwarding-path>
      </p:service-order-data>
</p:provision-service-request>
```

7.5.21.2 *Response*

```
<ns4:response-message
xmlns:ns40="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns39="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
xmlns:ns38="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns37="urn:ietf:params:xml:ns:yang:ietf-restconf"
xmlns:ns36="urn:cisco:params:xml:ns:yang:service:activation:status:v1"
```

```
xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns31="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns30="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
xmlns:ns29="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns28="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns26="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns24="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>1</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns36:provision-service-request>
            <request-id>63a6cc4a-5886-43d2-adf1-06b472894430</request-id>
            <service-name>UC11TestService</service-name>
            <service-type>carrier-ethernet-vpn</service-type>
            <service-subtype>EVPL</service-subtype>
            <preview>false</preview>
            <request-time>2017-08-29T14:07:34.850+05:30</request-time>
            <completion-time>2017-08-29T14:14:06.568+05:30</completion-
time>
            <deploy-results>
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_85619380_UC11TestService</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel match not found between A and Z end,
```

```
hence creating new tunnel</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_85619380_UC11TestService</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.81</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>bfd-template single-hop bfd-tunnel20
  interval min-tx 106 min-rx 106 multiplier 7
  exit
interface Tunnel20
  tunnel mode mpls traffic-eng
  ip unnumbered Loopback192
  tunnel destination 192.168.0.84
  bandwidth 1000000
  tunnel mpls traffic-eng name tunnel_85619380_UC11TestService
  tunnel mpls traffic-eng autoroute announce
  tunnel mpls traffic-eng priority 2  2
  tunnel mpls traffic-eng fast-reroute
  tunnel mpls traffic-eng auto-bw frequency 300 max-bw 1000000
  tunnel mpls traffic-eng bfd encap-mode gal bfd-tunnel20
  tunnel mpls traffic-eng path-option 10 dynamic
  tunnel mpls traffic-eng record-route
  tunnel mpls traffic-eng path-selection metric te
  exit
</config>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_85619380_UC11TestService</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel tunnel_85619380_UC11TestService
signalling with bandwidth , status is Up</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_60287504_UC11TestService</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel match not found between A and Z end,
hence creating new tunnel</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_60287504_UC11TestService</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
```

```
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.84</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>bfd-template single-hop bfd-tunnel19
  interval min-tx 106 min-rx 106 multiplier 7
  exit
interface Tunnel19
  tunnel mode mpls traffic-eng
  ip unnumbered Loopback192
  tunnel destination 192.168.0.81
  bandwidth 1000000
  tunnel mpls traffic-eng name tunnel_60287504_UC11TestService
  tunnel mpls traffic-eng autoroute announce
  tunnel mpls traffic-eng priority 2  2
  tunnel mpls traffic-eng fast-reroute
  tunnel mpls traffic-eng auto-bw frequency 300 max-bw 1000000
  tunnel mpls traffic-eng bfd encap-mode gal bfd-tunnel19
  tunnel mpls traffic-eng path-option 10 dynamic
  tunnel mpls traffic-eng record-route
  tunnel mpls traffic-eng path-selection metric te
  exit
</config>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_85619380_UC11TestService</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel tunnel_60287504_UC11TestService
signalling with bandwidth , status is Up</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=UC11TestService</cfs-ref>
                    <service-type>ELINE</service-type>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.81</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>ethernet evc UC11TestService
interface pseudowire35
  encapsulation mpls
  preferred-path interface Tunnel20 disable-fallback
  neighbor 192.168.0.165 25
  mtu 2073
  bandwidth 430 persistent
interface GigabitEthernet0/0/6
  service instance 31 ethernet UC11TestService
    encapsulation dot1q 26
    rewrite ingress tag pop 1 symmetric
l2vpn xconnect context 25_192_168_0_81
  member GigabitEthernet0/0/6 service-instance 31
  member pseudowire35
```

```
  exit
</config>
                    </result>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4201-
120.165</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>ethernet cfm domain EVC level 4
  service UC11TestService evc UC11TestService
    continuity-check
    continuity-check interval 1s
ethernet evc UC11TestService
interface pseudowire10
  encapsulation mpls
  neighbor 192.168.0.81 25
  mtu 2073
  bandwidth 430 persistent
interface GigabitEthernet0/0/11
  service instance 3 ethernet UC11TestService
    encapsulation dot1q 2343
    cfm mep domain EVC mpid 2
l2vpn xconnect context 25_192_168_0_165
  member GigabitEthernet0/0/11 service-instance 3
  member pseudowire10
ip sla 13
  ethernet y1731 delay DMM domain EVC evc UC11TestService mpid 1 cos 3
source mpid 2
    history interval 5
    aggregate interval 60
ip sla 11
  ethernet y1731 loss SLM domain EVC evc UC11TestService mpid 1 cos 3
source mpid 2
    history interval 5
    aggregate interval 60
ip sla schedule 13 life forever start-time after 00:02:00
ip sla schedule 11 life forever start-time after 00:02:00
</config>
                    </result>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=ME-1200-31</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>evc 961 vid 26 ivid 26 interface
GigabitEthernet 1/4
evc ece 52 interface GigabitEthernet 1/3 outer-tag match type c-tagged vid
2343 evc 961
evc ece update 52 cos 3
mep 7 up domain evc flow 961 level 4 interface GigabitEthernet 1/3
mep 7 meg-id UC11TestService ieee name EVC
mep 7 mep-id 1
mep 7 voe
mep 7 performance-monitoring
mep 7 vid 2343
mep 7 peer-mep-id 2 mac FF-FF-FF-FF-FF-FF
mep 7 cc 3
mep 7 dm 3 uni mep-id 2 interval 60000 last-n 10
mep 7 lm 3 synthetic uni flr 60
```

```
</config>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=UC11TestService</cfs-ref>
                    <service-type></service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>PW Interface status for A/Z ends are
/</info>
                    </result>
                </work-flow-result>
            </deploy-results>
            <completion-status>SUCCESS</completion-status>
        </ns36:provision-service-request>
        <ns36:provision-service-request>
            <request-id>3693b5c0-d6f7-430f-9ad9-ab1e4dfcd16e</request-id>
            <service-name>UC10TestService</service-name>
            <service-type>carrier-ethernet-vpn</service-type>
            <service-subtype>EVPL</service-subtype>
            <preview>false</preview>
            <request-time>2017-08-29T11:43:22.693+05:30</request-time>
            <completion-time>2017-08-29T11:50:00.744+05:30</completion-
time>
            <deploy-results>
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_12741182_UC10TestService</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel match not found between A and Z end,
hence creating new tunnel</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_12741182_UC10TestService</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.81</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>bfd-template single-hop bfd-tunnel7
  interval min-tx 106 min-rx 106 multiplier 7
  exit
interface Tunnel7
  tunnel mode mpls traffic-eng
  ip unnumbered Loopback192
  tunnel destination 192.168.0.84
  bandwidth 1000000
  tunnel mpls traffic-eng name tunnel_12741182_UC10TestService
  tunnel mpls traffic-eng autoroute announce
  tunnel mpls traffic-eng priority 1  1
  tunnel mpls traffic-eng fast-reroute
  tunnel mpls traffic-eng auto-bw frequency 300 max-bw 1000000
```

```
  tunnel mpls traffic-eng bfd encap-mode gal bfd-tunnel7
  tunnel mpls traffic-eng path-option 10 dynamic
  tunnel mpls traffic-eng record-route
  tunnel mpls traffic-eng path-selection metric te
  exit
</config>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_12741182_UC10TestService</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel tunnel_12741182_UC10TestService
signalling with bandwidth , status is Up</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_83439649_UC10TestService</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel match not found between A and Z end,
hence creating new tunnel</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_83439649_UC10TestService</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.84</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>bfd-template single-hop bfd-tunnel6
  interval min-tx 106 min-rx 106 multiplier 7
  exit
interface Tunnel6
  tunnel mode mpls traffic-eng
  ip unnumbered Loopback192
  tunnel destination 192.168.0.81
  bandwidth 1000000
  tunnel mpls traffic-eng name tunnel_83439649_UC10TestService
  tunnel mpls traffic-eng autoroute announce
  tunnel mpls traffic-eng priority 1  1
  tunnel mpls traffic-eng fast-reroute
  tunnel mpls traffic-eng auto-bw frequency 300 max-bw 1000000
  tunnel mpls traffic-eng bfd encap-mode gal bfd-tunnel6
  tunnel mpls traffic-eng path-option 10 dynamic
  tunnel mpls traffic-eng record-route
  tunnel mpls traffic-eng path-selection metric te
  exit
</config>
                    </result>
```

```
                </work-flow-result>
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_12741182_UC10TestService</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel tunnel_83439649_UC10TestService
signalling with bandwidth , status is Up</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=UC10TestService</cfs-ref>
                    <service-type>ELINE</service-type>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.81</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>ethernet evc UC10TestService
interface pseudowire32
  encapsulation mpls
  preferred-path interface Tunnel7 disable-fallback
  neighbor 192.168.0.84 24
  mtu 2073
  bandwidth 430 persistent
interface GigabitEthernet0/0/6
  service instance 29 ethernet UC10TestService
    encapsulation dot1q 24
    rewrite ingress tag pop 1 symmetric
l2vpn xconnect context 24_192_168_0_81
  member GigabitEthernet0/0/6 service-instance 29
  member pseudowire32
  exit
</config>
                    </result>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.84</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>ethernet evc UC10TestService
interface pseudowire30
  encapsulation mpls
  preferred-path interface Tunnel6 disable-fallback
  neighbor 192.168.0.81 24
  mtu 2073
  bandwidth 430 persistent
interface GigabitEthernet0/0/6
  service instance 23 ethernet UC10TestService
    encapsulation dot1q 17
    rewrite ingress tag pop 1 symmetric
l2vpn xconnect context 24_192_168_0_84
  member GigabitEthernet0/0/6 service-instance 23
  member pseudowire30
  exit
</config>
                    </result>
```

```
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=ME-1200-31</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>evc 960 vid 24 ivid 24 interface
GigabitEthernet 1/4
evc ece 59 interface GigabitEthernet 1/3 outer-tag match type c-tagged vid
2337 evc 960
evc ece update 59 cos 3
mep 6 up domain evc flow 960 level 4 interface GigabitEthernet 1/3
mep 6 meg-id UC10TestService ieee name EVC
mep 6 mep-id 1
mep 6 voe
mep 6 performance-monitoring
mep 6 vid 2337
mep 6 peer-mep-id 2 mac FF-FF-FF-FF-FF-FF
mep 6 cc 3
mep 6 dm 3 uni mep-id 2 interval 60000 last-n 10
mep 6 lm 3 synthetic uni flr 60
</config>
                    </result>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=ME-1200-34</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>evc 787 vid 17 ivid 17 interface
GigabitEthernet 1/4
evc ece 14 interface GigabitEthernet 1/3 outer-tag match type c-tagged vid
2337 evc 787
evc ece update 14 cos 3
mep 4 up domain evc flow 787 level 4 interface GigabitEthernet 1/3
mep 4 meg-id UC10TestService ieee name EVC
mep 4 mep-id 2
mep 4 voe
mep 4 performance-monitoring
mep 4 vid 2337
mep 4 peer-mep-id 1 mac FF-FF-FF-FF-FF-FF
mep 4 cc 3
mep 4 dm 3 uni mep-id 1 dual interval 60000 last-n 10
mep 4 lm 3 synthetic uni flr 60
</config>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=UC10TestService</cfs-ref>
                    <service-type></service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>PW Interface status for A/Z ends are
/</info>
                    </result>
                </work-flow-result>
            </deploy-results>
            <completion-status>SUCCESS</completion-status>
        </ns36:provision-service-request>
    </ns4:data>
</ns4:response-message>
```

7.5.22 Provision EVPL Service Over Uni Directional Tunnel- NID to Service Edge

7.5.22.1 *Request*

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:provision-service-request
      xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:y1="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:sa:v1 cisco-service-
activation.xsd urn:cisco:params:xml:ns:yang:service:activation:v1 restc-
provisioning-request-schema.xsd ">
      <p:service-order-data>
            <p:customer-
ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</p:customer-ref>
            <p:service-name>UC12TestService</p:service-name>
            <p:service-description>UC12TestService</p:service-description>
            <p:service-type>carrier-ethernet-vpn</p:service-type>
            <p:service-subtype>EVPL</p:service-subtype>
            <p:service-activate>true</p:service-activate>
            <p:ce-data>
                  <p:bundling>false</p:bundling>
                  <p:ccm-interval>1 sec</p:ccm-interval>
                  <p:ce-vlan-id-preservation>false</p:ce-vlan-id-
preservation>
                  <p:ce-vlan-cos-preservation>false</p:ce-vlan-cos-
preservation>
                  <p:mtu-size>2091</p:mtu-size>
                  <p:enable-cfm>true</p:enable-cfm>
                  <p:fault-management-map>
                        <p:entry>
                              <p:from>UNI A</p:from>
                              <p:to>UNI Z</p:to>
                              <p:cos>Medium</p:cos>
                              <p:oam-profile>Performance Monitoring 2</p:oam-
profile>
                              <p:cchk>2</p:cchk>
                              <p:sedm>2</p:sedm>
                              <p:dedm>2</p:dedm>
                              <p:sylm>2</p:sylm>
                              <p:slm>2</p:slm>
                        </p:entry>
                        <p:entry>
                              <p:from>UNI Z</p:from>
                              <p:to>UNI A</p:to>
                              <p:cos>Medium</p:cos>
                              <p:oam-profile>Performance Monitoring 3</p:oam-
profile>
                              <p:cchk>2</p:cchk>
                              <p:sedm>1</p:sedm>
                              <p:dedm>2</p:dedm>
                              <p:sylm>2</p:sylm>
                              <p:slm>2</p:slm>
```

```
                        </p:entry>
                  </p:fault-management-map>
                  <p:max-uni-endpoints>2</p:max-uni-endpoints>
            </p:ce-data>
            <p:termination-point-list>
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=ME-1200-
31!FTP=name=GigabitEthernet 1/3;lr=lr-gigabit-ethernet</p:tp-ref>
                        <p:directionality>source</p:directionality>
                        <p:network-interface-name>UNI_31_Port_3</p:network-
interface-name>
                        <p:network-interface-
ref>MD=CISCO_EPNM!NI=UNI_31_Port_3</p:network-interface-ref>
                        <p:ce-data>
                              <p:l2-cp-profile>MEF Option 1</p:l2-cp-profile>
                              <p:mep-group>UNI A</p:mep-group>
                              <p:untagged>false</p:untagged>
                              <p:qinq-data>
                                    <p:match-type>dot1q</p:match-type>
                                    <p:vlan-id-list>2363</p:vlan-id-list>
                                    <p:priority-tagged>false</p:priority-
tagged>
                                    <p:match-exact>false</p:match-exact>
                              </p:qinq-data>
                        </p:ce-data>
                  </p:termination-point-config>
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.84!FTP=name=GigabitEthernet0/0/5;lr=lr-gigabit-ethernet</p:tp-ref>
                        <p:directionality>sink</p:directionality>
                        <p:network-interface-name>UNI_84</p:network-
interface-name>
                        <p:network-interface-
ref>MD=CISCO_EPNM!NI=UNI_84</p:network-interface-ref>
                        <p:ce-data>
                              <p:l2-cp-profile>MEF Option 1</p:l2-cp-profile>
                              <p:mep-group>UNI Z</p:mep-group>
                              <p:untagged>false</p:untagged>
                              <p:qinq-data>
                                    <p:match-type>dot1q</p:match-type>
                                    <p:vlan-id-list>2363</p:vlan-id-list>
                                    <p:priority-tagged>false</p:priority-
tagged>
                                    <p:match-exact>false</p:match-exact>
                              </p:qinq-data>
                        </p:ce-data>
                  </p:termination-point-config>
            </p:termination-point-list>
            <p:network-interface-list>
                  <p:network-interface>
                        <p:name>UNI_31_Port_3</p:name>
                        <p:operation>update</p:operation>
                        <p:ref>MD=CISCO_EPNM!NI=UNI_31_Port_3</p:ref>
                        <p:ce-data>
                              <p:activate>true</p:activate>
                              <p:description>Description</p:description>
```

```
                              <p:mtu>3000</p:mtu>
                              <!--<p:speed>10</p:speed> -->
                              <p:mode>FULL DUPLEX</p:mode>
                              <p:service-multiplexing>true</p:service-
multiplexing>
                              <p:enable-link-oam>true</p:enable-link-oam>
                              <p:enable-link-Management>true</p:enable-link-
Management>
                              <p:bundling>false</p:bundling>
                        </p:ce-data>
                  </p:network-interface>
                  <p:network-interface>
                        <p:name>UNI_84</p:name>
                        <p:operation>update</p:operation>
                        <p:ref>MD=CISCO_EPNM!NI=UNI_84</p:ref>
                        <p:ce-data>
                              <p:activate>true</p:activate>
                              <p:description>Description</p:description>
                              <p:mtu>3000</p:mtu>
                              <!--<p:speed>5</p:speed> -->
                              <p:mode>FULL DUPLEX</p:mode>
                              <p:service-multiplexing>true</p:service-
multiplexing>
                              <p:enable-link-oam>true</p:enable-link-oam>
                              <p:enable-link-Management>true</p:enable-link-
Management>
                              <p:bundling>false</p:bundling>
                        </p:ce-data>
                  </p:network-interface>
            </p:network-interface-list>
            <p:forwarding-path>
                  <p:pseudowire-settings>
                        <p:pw-bandwidth>430</p:pw-bandwidth>
                        <p:enable-control-word>false</p:enable-control-word>
                        <p:fallback-to-ldp>false</p:fallback-to-ldp>
                        <p:interworking-option></p:interworking-option>
                        <p:service-bandwidth>0</p:service-bandwidth>
                  </p:pseudowire-settings>
                  <!-- TE TUNNLEL -->
                  <p:mpls-te-data>
                        <!--<p:te-tunnel-type>uni-directional</p:te-tunnel-
type> -->
                        <!--<p:wrap-protection>false</p:wrap-protection> -->
                        <p:protection-type>Working</p:protection-type>
                        <p:enable-fault-oam>true</p:enable-fault-oam>
                        <p:enable-lockdown>false</p:enable-lockdown>
                        <p:enable-auto-bandwidth>true</p:enable-auto-
bandwidth>
                        <p:enable-autoroute>true</p:enable-autoroute>
                        <p:enable-frr>true</p:enable-frr>
                        <p:tunnel-setting>
                              <!--<p:global-id>453</p:global-id> -->
                              <p:setup-priority>3</p:setup-priority>
                              <p:hold-priority>3</p:hold-priority>
                              <!--<p:auto-bandwidth-frequency>377</p:auto-
bandwidth-frequency> -->
```

```
                              <!--<p:max-auto-bandwidth>106</p:max-auto-
bandwidth> -->
                              <!--<p:min-auto-bandwidth>80</p:min-auto-
bandwidth> -->
                        </p:tunnel-setting>
                        <p:bfd-settings>
                              <p:enable>true</p:enable>
                              <p:min-interval>106</p:min-interval>
                              <p:multiplier>7</p:multiplier>
                        </p:bfd-settings>
                  </p:mpls-te-data>
            </p:forwarding-path>
      </p:service-order-data>
</p:provision-service-request>
```

7.5.22.2 *Response*

```
<ns4:response-message
xmlns:ns40="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns39="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
xmlns:ns38="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns37="urn:ietf:params:xml:ns:yang:ietf-restconf"
xmlns:ns36="urn:cisco:params:xml:ns:yang:service:activation:status:v1"
xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns31="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns30="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
xmlns:ns29="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns28="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns26="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns24="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
```

```
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>2</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns36:provision-service-request>
            <request-id>73a9b792-d2bb-476f-a972-cad0f44b5686</request-id>
            <service-name>UC12TestService</service-name>
            <service-type>carrier-ethernet-vpn</service-type>
            <service-subtype>EVPL</service-subtype>
            <preview>false</preview>
            <request-time>2017-08-29T14:21:58.029+05:30</request-time>
            <completion-time>2017-08-29T14:29:30.799+05:30</completion-
time>
            <deploy-results>
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_94742807_UC12TestService</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel match not found between A and Z end,
hence creating new tunnel</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_94742807_UC12TestService</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.81</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>bfd-template single-hop bfd-tunnel22
  interval min-tx 106 min-rx 106 multiplier 7
  exit
interface Tunnel22
  tunnel mode mpls traffic-eng
  ip unnumbered Loopback192
  tunnel destination 192.168.0.84
  bandwidth 1000000
  tunnel mpls traffic-eng name tunnel_94742807_UC12TestService
  tunnel mpls traffic-eng autoroute announce
  tunnel mpls traffic-eng priority 3  3
  tunnel mpls traffic-eng fast-reroute
  tunnel mpls traffic-eng auto-bw frequency 300 max-bw 1000000
  tunnel mpls traffic-eng bfd encap-mode gal bfd-tunnel22
  tunnel mpls traffic-eng path-option 10 dynamic
  tunnel mpls traffic-eng record-route
  tunnel mpls traffic-eng path-selection metric te
  exit
</config>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-
```

```
ref>MD=CISCO_EPNM!CFS=tunnel_94742807_UC12TestService</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel tunnel_94742807_UC12TestService
signalling with bandwidth , status is Up</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_39828677_UC12TestService</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel match not found between A and Z end,
hence creating new tunnel</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_39828677_UC12TestService</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.84</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>bfd-template single-hop bfd-tunnel20
  interval min-tx 106 min-rx 106 multiplier 7
  exit
interface Tunnel20
  tunnel mode mpls traffic-eng
  ip unnumbered Loopback192
  tunnel destination 192.168.0.81
  bandwidth 1000000
  tunnel mpls traffic-eng name tunnel_39828677_UC12TestService
  tunnel mpls traffic-eng autoroute announce
  tunnel mpls traffic-eng priority 3  3
  tunnel mpls traffic-eng fast-reroute
  tunnel mpls traffic-eng auto-bw frequency 300 max-bw 1000000
  tunnel mpls traffic-eng bfd encap-mode gal bfd-tunnel20
  tunnel mpls traffic-eng path-option 10 dynamic
  tunnel mpls traffic-eng record-route
  tunnel mpls traffic-eng path-selection metric te
  exit
</config>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_94742807_UC12TestService</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel tunnel_39828677_UC12TestService
signalling with bandwidth , status is Up</info>
                    </result>
```

```
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=UC12TestService</cfs-ref>
                    <service-type>ELINE</service-type>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.81</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>ethernet evc UC12TestService
interface pseudowire36
  encapsulation mpls
  preferred-path interface Tunnel22 disable-fallback
  neighbor 192.168.0.84 30
  mtu 2073
  bandwidth 430 persistent
interface GigabitEthernet0/0/6
  service instance 32 ethernet UC12TestService
    encapsulation dot1q 27
    rewrite ingress tag pop 1 symmetric
l2vpn xconnect context 30_192_168_0_81
  member GigabitEthernet0/0/6 service-instance 32
  member pseudowire36
  exit
</config>
                    </result>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.84</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>ethernet cfm domain EVC level 4
  service UC12TestService evc UC12TestService
    continuity-check
    continuity-check interval 1s
ethernet evc UC12TestService
interface pseudowire34
  encapsulation mpls
  preferred-path interface Tunnel20 disable-fallback
  neighbor 192.168.0.81 30
  mtu 2073
  bandwidth 430 persistent
interface GigabitEthernet0/0/6
  service instance 25 ethernet UC12TestService
    encapsulation dot1q 2363
    cfm mep domain EVC mpid 2
l2vpn xconnect context 30_192_168_0_84
  member GigabitEthernet0/0/6 service-instance 25
  member pseudowire34
ip sla 6
  ethernet y1731 delay DMM domain EVC evc UC12TestService mpid 1 cos 3
source mpid 2
    history interval 5
    aggregate interval 60
ip sla 5
  ethernet y1731 loss SLM domain EVC evc UC12TestService mpid 1 cos 3
source mpid 2
    history interval 5
```

```
    aggregate interval 60
ip sla schedule 6 life forever start-time after 00:02:00
ip sla schedule 5 life forever start-time after 00:02:00
</config>
                    </result>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=ME-1200-31</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>evc 32 vid 27 ivid 27 interface
GigabitEthernet 1/4
evc ece 60 interface GigabitEthernet 1/3 outer-tag match type c-tagged vid
2363 evc 32
evc ece update 60 cos 3
mep 9 up domain evc flow 32 level 4 interface GigabitEthernet 1/3
mep 9 meg-id UC12TestService ieee name EVC
mep 9 mep-id 1
mep 9 voe
mep 9 performance-monitoring
mep 9 vid 2363
mep 9 peer-mep-id 2 mac FF-FF-FF-FF-FF-FF
mep 9 cc 3
mep 9 dm 3 uni mep-id 2 interval 60000 last-n 10
mep 9 lm 3 synthetic uni flr 60
</config>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=UC12TestService</cfs-ref>
                    <service-type></service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>PW Interface status for A/Z ends are
/</info>
                    </result>
                </work-flow-result>
            </deploy-results>
            <completion-status>SUCCESS</completion-status>
        </ns36:provision-service-request>
        <ns36:provision-service-request>
            <request-id>63a6cc4a-5886-43d2-adf1-06b472894430</request-id>
            <service-name>UC11_d1</service-name>
            <service-type>carrier-ethernet-vpn</service-type>
            <service-subtype>EVPL</service-subtype>
            <preview>false</preview>
            <request-time>2017-08-29T14:07:34.850+05:30</request-time>
            <completion-time>2017-08-29T14:14:06.568+05:30</completion-
time>
            <deploy-results>
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_85619380_UC11_d1</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel match not found between A and Z end,
hence creating new tunnel</info>
```

```
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_85619380_UC11_d1</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.81</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>bfd-template single-hop bfd-tunnel20
  interval min-tx 106 min-rx 106 multiplier 7
  exit
interface Tunnel20
  tunnel mode mpls traffic-eng
  ip unnumbered Loopback192
  tunnel destination 192.168.0.84
  bandwidth 1000000
  tunnel mpls traffic-eng name tunnel_85619380_UC11_d1
  tunnel mpls traffic-eng autoroute announce
  tunnel mpls traffic-eng priority 2  2
  tunnel mpls traffic-eng fast-reroute
  tunnel mpls traffic-eng auto-bw frequency 300 max-bw 1000000
  tunnel mpls traffic-eng bfd encap-mode gal bfd-tunnel20
  tunnel mpls traffic-eng path-option 10 dynamic
  tunnel mpls traffic-eng record-route
  tunnel mpls traffic-eng path-selection metric te
  exit
</config>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_85619380_UC11_d1</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel tunnel_85619380_UC11_d1 signalling
with bandwidth , status is Up</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_60287504_UC11_d1</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel match not found between A and Z end,
hence creating new tunnel</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_60287504_UC11_d1</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
```

```
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.84</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>bfd-template single-hop bfd-tunnel19
  interval min-tx 106 min-rx 106 multiplier 7
  exit
interface Tunnel19
  tunnel mode mpls traffic-eng
  ip unnumbered Loopback192
  tunnel destination 192.168.0.81
  bandwidth 1000000
  tunnel mpls traffic-eng name tunnel_60287504_UC11_d1
  tunnel mpls traffic-eng autoroute announce
  tunnel mpls traffic-eng priority 2  2
  tunnel mpls traffic-eng fast-reroute
  tunnel mpls traffic-eng auto-bw frequency 300 max-bw 1000000
  tunnel mpls traffic-eng bfd encap-mode gal bfd-tunnel19
  tunnel mpls traffic-eng path-option 10 dynamic
  tunnel mpls traffic-eng record-route
  tunnel mpls traffic-eng path-selection metric te
  exit
</config>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_85619380_UC11_d1</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel tunnel_60287504_UC11_d1 signalling
with bandwidth , status is Up</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=UC11_d1</cfs-ref>
                    <service-type>ELINE</service-type>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.81</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>ethernet evc UC11_d1
interface pseudowire35
  encapsulation mpls
  preferred-path interface Tunnel20 disable-fallback
  neighbor 192.168.0.165 25
  mtu 2073
  bandwidth 430 persistent
interface GigabitEthernet0/0/6
  service instance 31 ethernet UC11_d1
    encapsulation dot1q 26
    rewrite ingress tag pop 1 symmetric
l2vpn xconnect context 25_192_168_0_81
  member GigabitEthernet0/0/6 service-instance 31
  member pseudowire35
  exit
```

```
</config>
                    </result>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4201-
120.165</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>ethernet cfm domain EVC level 4
  service UC11_d1 evc UC11_d1
    continuity-check
    continuity-check interval 1s
ethernet evc UC11_d1
interface pseudowire10
  encapsulation mpls
  neighbor 192.168.0.81 25
  mtu 2073
  bandwidth 430 persistent
interface GigabitEthernet0/0/11
  service instance 3 ethernet UC11_d1
    encapsulation dot1q 2343
    cfm mep domain EVC mpid 2
l2vpn xconnect context 25_192_168_0_165
  member GigabitEthernet0/0/11 service-instance 3
  member pseudowire10
ip sla 13
  ethernet y1731 delay DMM domain EVC evc UC11_d1 mpid 1 cos 3 source mpid
2
    history interval 5
    aggregate interval 60
ip sla 11
  ethernet y1731 loss SLM domain EVC evc UC11_d1 mpid 1 cos 3 source mpid
2
    history interval 5
    aggregate interval 60
ip sla schedule 13 life forever start-time after 00:02:00
ip sla schedule 11 life forever start-time after 00:02:00
</config>
                    </result>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=ME-1200-31</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>evc 961 vid 26 ivid 26 interface
GigabitEthernet 1/4
evc ece 52 interface GigabitEthernet 1/3 outer-tag match type c-tagged vid
2343 evc 961
evc ece update 52 cos 3
mep 7 up domain evc flow 961 level 4 interface GigabitEthernet 1/3
mep 7 meg-id UC11_d1 ieee name EVC
mep 7 mep-id 1
mep 7 voe
mep 7 performance-monitoring
mep 7 vid 2343
mep 7 peer-mep-id 2 mac FF-FF-FF-FF-FF-FF
mep 7 cc 3
mep 7 dm 3 uni mep-id 2 interval 60000 last-n 10
mep 7 lm 3 synthetic uni flr 60
</config>
```

```
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=UC11_d1</cfs-ref>
                    <service-type></service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>PW Interface status for A/Z ends are
/</info>
                    </result>
                </work-flow-result>
            </deploy-results>
            <completion-status>SUCCESS</completion-status>
        </ns36:provision-service-request>
        <ns36:provision-service-request>
            <request-id>3693b5c0-d6f7-430f-9ad9-ab1e4dfcd16e</request-id>
            <service-name>UC10TestService</service-name>
            <service-type>carrier-ethernet-vpn</service-type>
            <service-subtype>EVPL</service-subtype>
            <preview>false</preview>
            <request-time>2017-08-29T11:43:22.693+05:30</request-time>
            <completion-time>2017-08-29T11:50:00.744+05:30</completion-
time>
            <deploy-results>
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_12741182_UC10TestService</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel match not found between A and Z end,
hence creating new tunnel</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_12741182_UC10TestService</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.81</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>bfd-template single-hop bfd-tunnel7
  interval min-tx 106 min-rx 106 multiplier 7
  exit
interface Tunnel7
  tunnel mode mpls traffic-eng
  ip unnumbered Loopback192
  tunnel destination 192.168.0.84
  bandwidth 1000000
  tunnel mpls traffic-eng name tunnel_12741182_UC10TestService
  tunnel mpls traffic-eng autoroute announce
  tunnel mpls traffic-eng priority 1  1
  tunnel mpls traffic-eng fast-reroute
  tunnel mpls traffic-eng auto-bw frequency 300 max-bw 1000000
  tunnel mpls traffic-eng bfd encap-mode gal bfd-tunnel7
```

```
  tunnel mpls traffic-eng path-option 10 dynamic
  tunnel mpls traffic-eng record-route
  tunnel mpls traffic-eng path-selection metric te
  exit
</config>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_12741182_UC10TestService</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel tunnel_12741182_UC10TestService
signalling with bandwidth , status is Up</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_83439649_UC10TestService</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel match not found between A and Z end,
hence creating new tunnel</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_83439649_UC10TestService</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.84</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>bfd-template single-hop bfd-tunnel6
  interval min-tx 106 min-rx 106 multiplier 7
  exit
interface Tunnel6
  tunnel mode mpls traffic-eng
  ip unnumbered Loopback192
  tunnel destination 192.168.0.81
  bandwidth 1000000
  tunnel mpls traffic-eng name tunnel_83439649_UC10TestService
  tunnel mpls traffic-eng autoroute announce
  tunnel mpls traffic-eng priority 1  1
  tunnel mpls traffic-eng fast-reroute
  tunnel mpls traffic-eng auto-bw frequency 300 max-bw 1000000
  tunnel mpls traffic-eng bfd encap-mode gal bfd-tunnel6
  tunnel mpls traffic-eng path-option 10 dynamic
  tunnel mpls traffic-eng record-route
  tunnel mpls traffic-eng path-selection metric te
  exit
</config>
                    </result>
                </work-flow-result>
```

```
                <work-flow-result>
                    <cfs-
ref>MD=CISCO_EPNM!CFS=tunnel_12741182_UC10TestService</cfs-ref>
                    <service-type>Unidirectional TE Tunnel</service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>Tunnel tunnel_83439649_UC10TestService
signalling with bandwidth , status is Up</info>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=UC10TestService</cfs-ref>
                    <service-type>ELINE</service-type>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.81</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>ethernet evc UC10TestService
interface pseudowire32
  encapsulation mpls
  preferred-path interface Tunnel7 disable-fallback
  neighbor 192.168.0.84 24
  mtu 2073
  bandwidth 430 persistent
interface GigabitEthernet0/0/6
  service instance 29 ethernet UC10TestService
    encapsulation dot1q 24
    rewrite ingress tag pop 1 symmetric
l2vpn xconnect context 24_192_168_0_81
  member GigabitEthernet0/0/6 service-instance 29
  member pseudowire32
  exit
</config>
                    </result>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.84</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>ethernet evc UC10TestService
interface pseudowire30
  encapsulation mpls
  preferred-path interface Tunnel6 disable-fallback
  neighbor 192.168.0.81 24
  mtu 2073
  bandwidth 430 persistent
interface GigabitEthernet0/0/6
  service instance 23 ethernet UC10TestService
    encapsulation dot1q 17
    rewrite ingress tag pop 1 symmetric
l2vpn xconnect context 24_192_168_0_84
  member GigabitEthernet0/0/6 service-instance 23
  member pseudowire30
  exit
</config>
                    </result>
                    <result>
```

```
                        <node-ref>MD=CISCO_EPNM!ND=ME-1200-31</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>evc 960 vid 24 ivid 24 interface
GigabitEthernet 1/4
evc ece 59 interface GigabitEthernet 1/3 outer-tag match type c-tagged vid
2337 evc 960
evc ece update 59 cos 3
mep 6 up domain evc flow 960 level 4 interface GigabitEthernet 1/3
mep 6 meg-id UC10TestService ieee name EVC
mep 6 mep-id 1
mep 6 voe
mep 6 performance-monitoring
mep 6 vid 2337
mep 6 peer-mep-id 2 mac FF-FF-FF-FF-FF-FF
mep 6 cc 3
mep 6 dm 3 uni mep-id 2 interval 60000 last-n 10
mep 6 lm 3 synthetic uni flr 60
</config>
                    </result>
                    <result>
                        <node-ref>MD=CISCO_EPNM!ND=ME-1200-34</node-ref>
                        <state>SUCCESSFUL</state>
                        <config>evc 787 vid 17 ivid 17 interface
GigabitEthernet 1/4
evc ece 14 interface GigabitEthernet 1/3 outer-tag match type c-tagged vid
2337 evc 787
evc ece update 14 cos 3
mep 4 up domain evc flow 787 level 4 interface GigabitEthernet 1/3
mep 4 meg-id UC10TestService ieee name EVC
mep 4 mep-id 2
mep 4 voe
mep 4 performance-monitoring
mep 4 vid 2337
mep 4 peer-mep-id 1 mac FF-FF-FF-FF-FF-FF
mep 4 cc 3
mep 4 dm 3 uni mep-id 1 dual interval 60000 last-n 10
mep 4 lm 3 synthetic uni flr 60
</config>
                    </result>
                </work-flow-result>
                <work-flow-result>
                    <cfs-ref>MD=CISCO_EPNM!CFS=UC10TestService</cfs-ref>
                    <service-type></service-type>
                    <result>
                        <state>SUCCESSFUL</state>
                        <info>PW Interface status for A/Z ends are
/</info>
                    </result>
                </work-flow-result>
            </deploy-results>
            <completion-status>SUCCESS</completion-status>
        </ns36:provision-service-request>
    </ns4:data>
</ns4:response-message>
```

7.5.23 Provision EVPL Service with Autoroute Enabled

7.5.23.1 *Request*

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:provision-service-request
      xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:p1="urn:cisco:params:xml:ns:yang:service:oam:v1"
      xmlns:y1="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:sa:v1 cisco-
service-activation.xsd urn:cisco:params:xml:ns:yang:service:activation:v1
restc-provisioning-request-schema.xsd ">
      <p:service-order-data>
            <p:customer-
ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</p:customer-ref>
            <p:service-name>EvplPrefPathWithUniTunnel</p:service-name>
            <p:service-description>EvplPrefPathWithUniTunnel with
preferred patch as uni tunnel</p:service-description>
            <p:service-type>carrier-ethernet-vpn</p:service-type>
            <p:service-subtype>EVPL</p:service-subtype>
            <p:service-activate>true</p:service-activate>
            <p:direction></p:direction>
            <p:ce-data>
                  <p:bundling>true</p:bundling>
                  <p:ccm-interval>1 sec</p:ccm-interval>
                  <p:ce-vlan-id-preservation>true</p:ce-vlan-id-
preservation>
                  <p:ce-vlan-cos-preservation>false</p:ce-vlan-cos-
preservation>
                  <p:mtu-size>1722</p:mtu-size>
                  <p:enable-cfm>true</p:enable-cfm>
                  <p:fault-management-map>
                    <p:entry>
                      <p:from>UNI A</p:from>
                      <p:to>UNI Z</p:to>
                      <p:cos>Medium</p:cos>
                      <p:oam-profile>Performance Monitoring 1</p:oam-
profile>
                      <p:cchk>2</p:cchk>
                      <p:sedm>2</p:sedm>
                      <p:dedm>2</p:dedm>
                      <p:sylm>2</p:sylm>
                      <p:slm>2</p:slm>
                    </p:entry>
                    <p:entry>
                      <p:from>UNI Z</p:from>
                      <p:to>UNI A</p:to>
                      <p:cos>Medium</p:cos>
                      <p:oam-profile>Performance Monitoring 3</p:oam-
profile>
                      <p:cchk>2</p:cchk>
                      <p:sedm>1</p:sedm>
```

```
                        <p:dedm>2</p:dedm>
                        <p:sylm>2</p:sylm>
                        <p:slm>2</p:slm>
                      </p:entry>
                  </p:fault-management-map>
                  <p:max-uni-endpoints>2</p:max-uni-endpoints>
            </p:ce-data>
            <p:termination-point-list>
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.81!FTP=name=GigabitEthernet0/0/6;lr=lr-gigabit-ethernet</p:tp-ref>
                        <p:directionality>source</p:directionality>
                        <p:network-interface-
name>UNI_81_Port_6</p:network-interface-name>
                        <!--<p:network-interface-
ref>MD=CISCO_EPNM!NI=UNI_81_Port_6</p:network-interface-ref>-->
                        <p:ce-data>
                              <p:l2-cp-profile>MEF Option 1</p:l2-cp-
profile>
                        <p:mep-group>UNI A</p:mep-group>
                              <p:untagged>false</p:untagged>
                              <p:qinq-data>
                                    <p:match-type>dot1q</p:match-type>
                                    <p:vlan-id-list>380</p:vlan-id-list>
                                    <!--<p:inner-vlan-id-
list>381</p:inner-vlan-id-list>-->
                                    <p:priority-tagged>false</p:priority-
tagged>
                                    <p:match-exact>false</p:match-exact>
                                    <!--<p:rewrite-definition> <p:pop-
operation> <p:tag-count>one</p:tag-count>
                                          </p:pop-operation> </p:rewrite-
definition> -->
                              </p:qinq-data>
                        </p:ce-data>
                  </p:termination-point-config>
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.84!FTP=name=GigabitEthernet0/0/6;lr=lr-gigabit-ethernet</p:tp-ref>
                        <p:directionality>sink</p:directionality>
                        <!--<p:network-interface-
ref>MD=CISCO_EPNM!NI=UNI_84_Port_6</p:network-interface-ref>-->
                        <p:network-interface-
name>UNI_84_Port_6</p:network-interface-name>
                        <!--<p:ingress-qos-policy-
ref>MD=CISCO_EPNM!PROFILE_QOS=Qq2</p:ingress-qos-policy-ref> -->
                        <!--<p:egress-qos-policy-
ref>MD=CISCO_EPNM!PROFILE_QOS=QAP1</p:egress-qos-policy-ref> -->
                        <p:ce-data>
                              <p:l2-cp-profile>MEF Option 1</p:l2-cp-
profile>
                        <p:mep-group>UNI Z</p:mep-group>
                              <p:untagged>false</p:untagged>
                              <p:service-vlan-list></p:service-vlan-list>
                              <p:qinq-data>
                                    <p:match-type>dot1q</p:match-type>
```

```
                                    <p:vlan-id-list>380</p:vlan-id-list>
                                    <!--<p:inner-vlan-id-
list>122</p:inner-vlan-id-list> -->
                                    <p:priority-tagged>false</p:priority-
tagged>
                                    <p:match-exact>false</p:match-exact>
                                    <!--<p:rewrite-definition> <p:push-
operation> <p:tag-count>one</p:tag-count>
                                          <p:match-type>dot1q</p:match-
type> <p:outer-vlan-id>140</p:outer-vlan-id>
                                          <p:inner-vlan-id>130</p:inner-
vlan-id> </p:push-operation> </p:rewrite-definition> -->
                              </p:qinq-data>
                        </p:ce-data>
                  </p:termination-point-config>
            </p:termination-point-list>
            <p:network-interface-list>
                  <p:network-interface>
                        <!--<p:ref>MD=CISCO_EPNM!NI=UNI_81_Port_6</p:ref>
                        <p:operation>update</p:operation>-->
                        <p:name>UNI_81_Port_6</p:name>
                        <p:operation>add</p:operation>
                        <p:ce-data>
                              <p:activate>true</p:activate>
                              <p:description>UNI_81_Port_6</p:description>
                              <!--<p:ingress-qos-policy-
ref>MD=CISCO_EPNM!PROFILE_QOS=QosDEI</p:ingress-qos-policy-ref>
                              <p:egress-qos-policy-
ref>MD=CISCO_EPNM!PROFILE_QOS=unipolicer</p:egress-qos-policy-ref>-->
                              <p:mtu>8000</p:mtu>
                              <p:speed>10 Mbps</p:speed>
                              <p:mode>FULL DUPLEX</p:mode>
                              <p:service-multiplexing>true</p:service-
multiplexing>
                              <p:enable-link-oam>false</p:enable-link-oam>
                              <p:enable-link-Management>false</p:enable-
link-Management>
                              <p:bundling>true</p:bundling>
                        </p:ce-data>
                  </p:network-interface>
                  <p:network-interface>
                        <!--<p:ref>MD=CISCO_EPNM!NI=UNI_84_Port_6</p:ref>
                        <p:operation>update</p:operation>-->
                        <p:name>UNI_84_Port_6</p:name>
                        <p:operation>add</p:operation>
                        <p:ce-data>
                              <p:activate>true</p:activate>
                              <p:description>UNI_84_Port_6
desc</p:description>
                              <!--<p:ingress-qos-policy-
ref>MD=CISCO_EPNM!PROFILE_QOS=QosDEI</p:ingress-qos-policy-ref>
                              <p:egress-qos-policy-
ref>MD=CISCO_EPNM!PROFILE_QOS=unipolicer</p:egress-qos-policy-ref>-->
                              <p:mtu>8000</p:mtu>
                              <p:speed>10 Mbps</p:speed>
                              <p:mode>FULL DUPLEX</p:mode>
```

```
                              <p:service-multiplexing>true</p:service-
multiplexing>
                              <p:enable-link-oam>false</p:enable-link-oam>
                              <p:enable-link-Management>false</p:enable-
link-Management>
                              <p:bundling>true</p:bundling>
                        </p:ce-data>
                  </p:network-interface>
            </p:network-interface-list>

            <p:forwarding-path>
                  <p:pseudowire-settings>
                        <p:pw-bandwidth>250</p:pw-bandwidth>
                        <p:enable-control-word>false</p:enable-control-
word>
                        <!--<p:fallback-to-ldp>false</p:fallback-to-ldp>--
>
                        <!--<p:interworking-option></p:interworking-
option>-->
                        <p:service-bandwidth>0</p:service-bandwidth>
                        <p:enable-static-preferred-path>true</p:enable-
static-preferred-path>
                  </p:pseudowire-settings>
                  <!-- TE TUNNLEL -->
                  <p:mpls-te-data>
                        <p:te-tunnel-type>uni-directional</p:te-tunnel-
type>
                        <p:src-dest-preferred-path-ref>MD=CISCO_EPNM!VC=TE
Link _192.168.0.81_11_192.168.0.84</p:src-dest-preferred-path-ref>
                        <p:dest-src-preferred-path-ref>MD=CISCO_EPNM!VC=TE
Link _192.168.0.84_13_192.168.0.81</p:dest-src-preferred-path-ref>
                  </p:mpls-te-data>
            </p:forwarding-path>
      </p:service-order-data>
</p:provision-service-request>
```

7.5.23.2 *Response*

```
<ns4:response-message
xmlns:ns40="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns39="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
xmlns:ns38="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns37="urn:ietf:params:xml:ns:yang:ietf-restconf"
xmlns:ns36="urn:cisco:params:xml:ns:yang:service:activation:status:v1"
xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns31="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns30="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
xmlns:ns29="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns28="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns26="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns24="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
```

```
xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>0</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns36:provision-service-request>
            <request-id>278d8070-20ad-4383-b60e-081f46683173</request-
id>
            <service-name>EvplPrefPathWithUniTunnel</service-name>
            <service-type>carrier-ethernet-vpn</service-type>
            <service-subtype>EVPL</service-subtype>
            <preview>true</preview>
            <request-time>2017-09-28T11:03:34.024Z</request-time>
            <completion-time>2017-09-28T11:05:40.664Z</completion-
time>
            <deploy-results>
                <result>
                    <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.81</node-ref>
                    <state>SUCCESSFUL</state>
                    <config>ethernet cfm domain EVC level 4
  service EvplPrefPathWithUniTunnel evc EvplPrefPathWithUniTunnel
    continuity-check
    continuity-check interval 1s
ethernet evc EvplPrefPathWithUniTunnel
interface pseudowire115
  preferred-path interface Tunnel11
  neighbor 192.168.0.84 198
  mtu 1708
  bandwidth 250 persistent
interface GigabitEthernet0/0/6
  service instance 115 ethernet EvplPrefPathWithUniTunnel
    encapsulation dot1q 380
    cfm mep domain EVC mpid 1
  exit
```

```
l2vpn xconnect context 198_192_168_0_81
  member GigabitEthernet0/0/6 service-instance 115
  member pseudowire115
ip sla 4
  ethernet y1731 loss SLM domain EVC evc EvplPrefPathWithUniTunnel
mpid 2 cos 3 source mpid 1
    history interval 5
    aggregate interval 60
ip sla schedule 4 life forever start-time after 00:02:00
</config>
                </result>
                <result>
                    <node-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.84</node-ref>
                    <state>SUCCESSFUL</state>
                    <config>ethernet cfm domain EVC level 4
  service EvplPrefPathWithUniTunnel evc EvplPrefPathWithUniTunnel
    continuity-check
    continuity-check interval 1s
ethernet evc EvplPrefPathWithUniTunnel
interface pseudowire112
  preferred-path interface Tunnel13
  neighbor 192.168.0.81 198
  mtu 1708
  bandwidth 250 persistent
interface GigabitEthernet0/0/6
  mtu 8000
  service instance 104 ethernet EvplPrefPathWithUniTunnel
    encapsulation dot1q 380
    cfm mep domain EVC mpid 2
  exit
l2vpn xconnect context 198_192_168_0_84
  member GigabitEthernet0/0/6 service-instance 104
  member pseudowire112
ip sla 24
  ethernet y1731 delay DMM domain EVC evc EvplPrefPathWithUniTunnel
mpid 1 cos 3 source mpid 2
    history interval 5
    aggregate interval 60
ip sla 23
  ethernet y1731 loss SLM domain EVC evc EvplPrefPathWithUniTunnel
mpid 1 cos 3 source mpid 2
    history interval 5
    aggregate interval 60
ip sla schedule 24 life forever start-time after 00:02:00
ip sla schedule 23 life forever start-time after 00:02:00
</config>
                </result>
            </deploy-results>
            <completion-status>SUCCESS</completion-status>
        </ns36:provision-service-request>
    </ns4:data>
</ns4:response-message>
```

7.6 Provisioning L3 Link

7.6.1 Provision L3 Link with OSPF routing protocol

7.6.1.1 Request

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<provision-service-request
      xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1">
      <p:service-order-data>
            <p:service-name>OspfL3Link-0413S1</p:service-name>
            <p:service-description>OspfL3Link-0413S1 desc</p:service-
description>
            <p:service-type>mpls-te-tunnel</p:service-type>
            <p:service-subtype>layer3-link</p:service-subtype>
<!—service template related tags -- >
<p:service-templates>
                  <p:service-template>
                        <p:type>postconfig</p:type>
                        <p:name>l3linktemplate</p:name>
                        <p:usage>Service create only</p:usage>
                        <p:variables>
                              <p:variable>
                                    <p:name>addressFamily</p:name>
                                    <p:value>vpnv4</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
                              <p:variable>
                                    <p:name>prefixListName</p:name>
                                    <p:value>BGP2</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
                              <p:variable>
                                    <p:name>routePolicyName</p:name>
                                    <p:value>xyz_demo</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
                              <p:variable>
                                    <p:name>xeClnsMTU</p:name>
                                    <p:value>1502</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
                              <p:variable>
                                    <p:name>xeMTU</p:name>
                                    <p:value>1600</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
                              <p:variable>
                                    <p:name>xrMTU</p:name>
                                    <p:value>1500</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
```

```
                        </p:variables>
                  </p:service-template>
            </p:service-templates>
            <!-- L3 link details -->
            <p:l3-link-data>
                  <p:l2-discovery-protocol>CDP</p:l2-discovery-protocol>
                  <p:routing-protocol>OSPF</p:routing-protocol>
                  <p:link-vlan>123</p:link-vlan>
                  <p:enable-mpls-te>false</p:enable-mpls-te>
            </p:l3-link-data>
            <!-- L3 link TP details -->
            <p:termination-point-list>
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=EPNNCS4216-
120.41!FTP=name=GigabitEthernet0/1/4;lr=lr-gigabit-ethernet</p:tp-ref>
                        <p:directionality>source</p:directionality>
                        <p:ip-address>33.33.33.33</p:ip-address>
                        <p:subnet-mask>24</p:subnet-mask>
                        <!-- <p:ingress-qos-policy-
ref>MD=CISCO_EPNM!ND=EPASR907-
120.22.SWIM.cisco.com!POLICY_QOS=nni</p:ingress-qos-policy-ref>
                              <p:egress-qos-policy-
ref>MD=CISCO_EPNM!ND=EPASR907-
120.22.SWIM.cisco.com!POLICY_QOS=Policy2</p:egress-qos-policy-ref> -->
                        <p:l3-link-data>
                              <p:enable-bv-interface>false</p:enable-bv-
interface>
                              <p:loopback-interface-
ref>MD=CISCO_EPNM!ND=EPNNCS4216-120.41!FTP=name=Loopback79;lr=lr-
loopback</p:loopback-interface-ref>
                              <p:ospf>
                                    <p:process-id>79</p:process-id>
                                    <p:area>0</p:area>
                              <!--  <p:metric>11</p:metric>-->
                                    <p:enable-sync-e>false</p:enable-sync-e>
                                    <p:sync-e-bridge-domain>11</p:sync-e-
bridge-domain>
                              </p:ospf>
                              <p:mpls-te>
                                    <p:te-metric>22</p:te-metric>
                                    <p:te-attributes>0x00</p:te-attributes>
                                    <p:is-percentage>false</p:is-percentage>
                                    <p:bandwidth-unit>Kbps</p:bandwidth-unit>
                                    <p:global-bandwidth>10</p:global-
bandwidth>
                                    <p:subpool-bandwidth>8</p:subpool-
bandwidth>
                              </p:mpls-te>
                        </p:l3-link-data>
                        <p:bfd-settings>
                              <p:bfd-template>bfd-tunnel101</p:bfd-template>
                              <p:min-interval>1</p:min-interval>
                              <p:multiplier>1</p:multiplier>
                              <p:bfd-fast-detect>false</p:bfd-fast-detect>
                        </p:bfd-settings>
                  </p:termination-point-config>
```

```
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=EPNNCS4216-
120.42!FTP=name=GigabitEthernet0/0/4;lr=lr-gigabit-ethernet</p:tp-ref>
                        <p:directionality>sink</p:directionality>
                        <p:ip-address>44.44.44.44</p:ip-address>
                        <p:subnet-mask>24</p:subnet-mask>
                        <!-- <p:ingress-qos-policy-
ref>MD=CISCO_EPNM!ND=NCS4206-120.33!POLICY_QOS=Policysg1</p:ingress-qos-
policy-ref>                                    <p:egress-qos-policy-
ref>MD=CISCO_EPNM!ND=NCS4206-120.33!POLICY_QOS=Policysg2</p:egress-qos-
policy-ref> -->
                        <p:l3-link-data>
                              <!--<p:same-as-source>false</p:same-as-source>
-->
                              <p:enable-bv-interface>false</p:enable-bv-
interface>
                              <p:loopback-interface-
ref>MD=CISCO_EPNM!ND=EPNNCS4216-120.42!FTP=name=Loopback79;lr=lr-
loopback</p:loopback-interface-ref>
                              <p:ospf>
                                    <p:process-id>100</p:process-id>
                                    <p:area>0</p:area>
                                    <!--<p:metric>11</p:metric>-->
                                    <p:enable-sync-e>false</p:enable-sync-e>
                                    <p:sync-e-bridge-domain>11</p:sync-e-
bridge-domain>
                              </p:ospf>
                              <p:mpls-te>
                                    <p:te-metric>23</p:te-metric>
                                    <p:te-attributes>0x11</p:te-attributes>
                                    <p:is-percentage>true</p:is-percentage>
                                    <p:bandwidth-unit>Kbps</p:bandwidth-unit>
                                    <p:global-bandwidth>10</p:global-
bandwidth>
                                    <p:subpool-bandwidth>8</p:subpool-
bandwidth>
                              </p:mpls-te>
                        </p:l3-link-data>
                        <p:bfd-settings>
                              <p:bfd-template>bfd-tunnel105</p:bfd-template>
                              <p:min-interval>1</p:min-interval>
                              <p:multiplier>1</p:multiplier>
                              <p:bfd-fast-detect>false</p:bfd-fast-detect>
                        </p:bfd-settings>
                  </p:termination-point-config>
            </p:termination-point-list>
      </p:service-order-data>
</provision-service-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "sa.service-order-data": {
      "sa.service-name": "OspfL3Link-0413S1",
      "sa.service-description": "OspfL3Link-0413S1 desc",
      "sa.service-type": "mpls-te-tunnel",
      "sa.service-subtype": "layer3-link",
```

```
      "sa.l3-link-data": {
         "sa.l2-discovery-protocol": "CDP",
         "sa.routing-protocol": "OSPF",
         "sa.link-vlan": "123",
         "sa.enable-mpls-te": "false"
      },
      "sa.termination-point-list": {
         "sa.termination-point-config": [
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=EPNNCS4216-
120.41!FTP=name=GigabitEthernet0/1/4;lr=lr-gigabit-ethernet",
               "sa.directionality": "source",
               "sa.ip-address": "33.33.33.33",
               "sa.subnet-mask": "24",
               "sa.l3-link-data": {
                  "sa.enable-bv-interface": "false",
                  "sa.loopback-interface-ref": "MD=CISCO_EPNM!ND=EPNNCS4216-
120.41!FTP=name=Loopback79;lr=lr-loopback",
                  "sa.ospf": {
                     "sa.process-id": "79",
                     "sa.area": "0",
                     "sa.enable-sync-e": "false",
                     "sa.sync-e-bridge-domain": "11"
                  },
                  "sa.mpls-te": {
                     "sa.te-metric": "22",
                     "sa.te-attributes": "0x00",
                     "sa.is-percentage": "false",
                     "sa.bandwidth-unit": "Kbps",
                     "sa.global-bandwidth": "10",
                     "sa.subpool-bandwidth": "8"
                  }
               },
               "sa.bfd-settings": {
                  "sa.bfd-template": "bfd-tunnel101",
                  "sa.min-interval": "1",
                  "sa.multiplier": "1",
                  "sa.bfd-fast-detect": "false"
               }
            },
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=EPNNCS4216-
120.42!FTP=name=GigabitEthernet0/0/4;lr=lr-gigabit-ethernet",
               "sa.directionality": "sink",
               "sa.ip-address": "44.44.44.44",
               "sa.subnet-mask": "24",
               "sa.l3-link-data": {
                  "sa.enable-bv-interface": "false",
                  "sa.loopback-interface-ref": "MD=CISCO_EPNM!ND=EPNNCS4216-
120.42!FTP=name=Loopback79;lr=lr-loopback",
                  "sa.ospf": {
                     "sa.process-id": "100",
                     "sa.area": "0",
                     "sa.enable-sync-e": "false",
                     "sa.sync-e-bridge-domain": "11"
                  },
```

```
                "sa.mpls-te": {
                    "sa.te-metric": "23",
                    "sa.te-attributes": "0x11",
                    "sa.is-percentage": "true",
                    "sa.bandwidth-unit": "Kbps",
                    "sa.global-bandwidth": "10",
                    "sa.subpool-bandwidth": "8"
                }
            },
            "sa.bfd-settings": {
                "sa.bfd-template": "bfd-tunnel105",
                "sa.min-interval": "1",
                "sa.multiplier": "1",
                "sa.bfd-fast-detect": "false"
            }
        }
    ]
  }
 }
}
```

7.6.2 Modify L3 Link with OSPF routing protocol

7.6.2.1 Request

POST /restconf/operations/v1/cisco-service-activation:modify-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:modify-service-request
  xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:y1="urn:cisco:params:xml:ns:yang:nrf-common:v1"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="urn:cisco:params:xml:ns:yang:sa:v1 cisco-service-
activation.xsd urn:cisco:params:xml:ns:yang:service:activation:v1 restc-
provisioning-request-schema.xsd ">
  <p:cfs-ref>MD=CISCO_EPNM!CFS=OspfL3LinkTestService0210S3</p:cfs-ref>
<p:service-order-data>
            <p:service-name>OspfL3LinkTestService0210S3</p:service-name>
            <p:service-description>OspfL3Link-0413S1 desc</p:service-
description>
            <p:service-type>mpls-te-tunnel</p:service-type>
            <p:service-subtype>layer3-link</p:service-subtype>
<!—service template related tags -- >
<p:service-templates>
                  <p:service-template>
                        <p:type>postconfig</p:type>
                        <p:name>l3linktemplate</p:name>
                        <p:usage>Service create only</p:usage>
                        <p:variables>
                              <p:variable>
                                    <p:name>addressFamily</p:name>
                                    <p:value>vpnv4</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
                              <p:variable>
```

```
                                    <p:name>prefixListName</p:name>
                                    <p:value>BGP2</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
                              <p:variable>
                                    <p:name>routePolicyName</p:name>
                                    <p:value>xyz_demo</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
                              <p:variable>
                                    <p:name>xeClnsMTU</p:name>
                                    <p:value>1502</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
                              <p:variable>
                                    <p:name>xeMTU</p:name>
                                    <p:value>1600</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
                              <p:variable>
                                    <p:name>xrMTU</p:name>
                                    <p:value>1500</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
                        </p:variables>
                  </p:service-template>
            </p:service-templates>

            <!-- L3 link details -->
            <p:l3-link-data>
                  <p:l2-discovery-protocol>CDP</p:l2-discovery-protocol>
                  <p:routing-protocol>OSPF</p:routing-protocol>
                  <p:link-vlan>123</p:link-vlan>
                  <p:enable-mpls-te>false</p:enable-mpls-te>
            </p:l3-link-data>
            <!-- L3 link TP details -->
            <p:termination-point-list>
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=EPNNCS4216-
120.41!FTP=name=GigabitEthernet0/1/4;lr=lr-gigabit-ethernet</p:tp-ref>
                        <p:directionality>source</p:directionality>
                        <p:ip-address>33.33.33.33</p:ip-address>
                        <p:subnet-mask>24</p:subnet-mask>
                        <!-- <p:ingress-qos-policy-
ref>MD=CISCO_EPNM!ND=EPASR907-
120.22.SWIM.cisco.com!POLICY_QOS=nni</p:ingress-qos-policy-ref>
                              <p:egress-qos-policy-
ref>MD=CISCO_EPNM!ND=EPASR907-
120.22.SWIM.cisco.com!POLICY_QOS=Policy2</p:egress-qos-policy-ref> -->
                        <p:l3-link-data>
                              <p:enable-bv-interface>false</p:enable-bv-
interface>
                              <p:loopback-interface-
ref>MD=CISCO_EPNM!ND=EPNNCS4216-120.41!FTP=name=Loopback79;lr=lr-
loopback</p:loopback-interface-ref>
                              <p:ospf>
```

```
                                    <p:process-id>79</p:process-id>
                                    <p:area>0</p:area>
                              <!--  <p:metric>11</p:metric>-->
                                    <p:enable-sync-e>false</p:enable-sync-
e>
                                    <p:sync-e-bridge-domain>11</p:sync-e-
bridge-domain>
                              </p:ospf>
                              <p:mpls-te>
                                    <p:te-metric>22</p:te-metric>
                                    <p:te-attributes>0x00</p:te-
attributes>
                                    <p:is-percentage>false</p:is-
percentage>
                                    <p:bandwidth-unit>Kbps</p:bandwidth-
unit>
                                    <p:global-bandwidth>10</p:global-
bandwidth>
                                    <p:subpool-bandwidth>8</p:subpool-
bandwidth>
                              </p:mpls-te>
                        </p:l3-link-data>
                        <p:bfd-settings>
                              <p:bfd-template>bfd-tunnel101</p:bfd-
template>
                              <p:min-interval>1</p:min-interval>
                              <p:multiplier>1</p:multiplier>
                              <p:bfd-fast-detect>false</p:bfd-fast-detect>
                        </p:bfd-settings>
                  </p:termination-point-config>
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=EPNNCS4216-
120.42!FTP=name=GigabitEthernet0/0/4;lr=lr-gigabit-ethernet</p:tp-ref>
                        <p:directionality>sink</p:directionality>
                        <p:ip-address>44.44.44.44</p:ip-address>
                        <p:subnet-mask>24</p:subnet-mask>
                        <!-- <p:ingress-qos-policy-
ref>MD=CISCO_EPNM!ND=NCS4206-120.33!POLICY_QOS=Policysg1</p:ingress-qos-
policy-ref>
                              <p:egress-qos-policy-
ref>MD=CISCO_EPNM!ND=NCS4206-120.33!POLICY_QOS=Policysg2</p:egress-qos-
policy-ref> -->
                        <p:l3-link-data>
                              <!--<p:same-as-source>false</p:same-as-
source> -->
                              <p:enable-bv-interface>false</p:enable-bv-
interface>
                              <p:loopback-interface-
ref>MD=CISCO_EPNM!ND=EPNNCS4216-120.42!FTP=name=Loopback79;lr=lr-
loopback</p:loopback-interface-ref>
                              <p:ospf>
                                    <p:process-id>100</p:process-id>
                                    <p:area>0</p:area>
                                    <!--<p:metric>11</p:metric>-->
                                    <p:enable-sync-e>false</p:enable-sync-
e>
```

```
                                    <p:sync-e-bridge-domain>11</p:sync-e-
bridge-domain>
                              </p:ospf>
                              <p:mpls-te>
                                    <p:te-metric>23</p:te-metric>
                                    <p:te-attributes>0x11</p:te-
attributes>
                                    <p:is-percentage>true</p:is-
percentage>
                                    <p:bandwidth-unit>Kbps</p:bandwidth-
unit>
                                    <p:global-bandwidth>10</p:global-
bandwidth>
                                    <p:subpool-bandwidth>8</p:subpool-
bandwidth>
                              </p:mpls-te>
                        </p:l3-link-data>
                        <p:bfd-settings>
                              <p:bfd-template>bfd-tunnel105</p:bfd-
template>
                              <p:min-interval>1</p:min-interval>
                              <p:multiplier>1</p:multiplier>
                              <p:bfd-fast-detect>false</p:bfd-fast-detect>
                        </p:bfd-settings>
                  </p:termination-point-config>
            </p:termination-point-list>
      </p:service-order-data>
</p:modify-service-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "sa.cfs-ref": "MD=CISCO_EPNM!CFS=OspfL3LinkTestService0210S3",
   "sa.service-order-data": {
      "sa.service-name": "OspfL3LinkTestService0210S3",
      "sa.service-description": "OspfL3Link-0413S1 desc",
      "sa.service-type": "mpls-te-tunnel",
      "sa.service-subtype": "layer3-link",
      "sa.l3-link-data": {
         "sa.l2-discovery-protocol": "CDP",
         "sa.routing-protocol": "OSPF",
         "sa.link-vlan": "123",
         "sa.enable-mpls-te": "false"
      },
      "sa.termination-point-list": {
         "sa.termination-point-config": [
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=EPNNCS4216-
120.41!FTP=name=GigabitEthernet0/1/4;lr=lr-gigabit-ethernet",
               "sa.directionality": "source",
               "sa.ip-address": "33.33.33.33",
               "sa.subnet-mask": "24",
               "sa.l3-link-data": {
                  "sa.enable-bv-interface": "false",
                  "sa.loopback-interface-ref":
"MD=CISCO_EPNM!ND=EPNNCS4216-120.41!FTP=name=Loopback79;lr=lr-loopback",
                  "sa.ospf": {
```

```
                        "sa.process-id": "79",
                        "sa.area": "0",
                        "sa.enable-sync-e": "false",
                        "sa.sync-e-bridge-domain": "11"
                     },
                     "sa.mpls-te": {
                        "sa.te-metric": "22",
                        "sa.te-attributes": "0x00",
                        "sa.is-percentage": "false",
                        "sa.bandwidth-unit": "Kbps",
                        "sa.global-bandwidth": "10",
                        "sa.subpool-bandwidth": "8"
                     }
                  },
                  "sa.bfd-settings": {
                     "sa.bfd-template": "bfd-tunnel101",
                     "sa.min-interval": "1",
                     "sa.multiplier": "1",
                     "sa.bfd-fast-detect": "false"
                  }
               },
               {
                  "sa.tp-ref": "MD=CISCO_EPNM!ND=EPNNCS4216-
120.42!FTP=name=GigabitEthernet0/0/4;lr=lr-gigabit-ethernet",
                  "sa.directionality": "sink",
                  "sa.ip-address": "44.44.44.44",
                  "sa.subnet-mask": "24",
                  "sa.l3-link-data": {
                     "sa.enable-bv-interface": "false",
                     "sa.loopback-interface-ref":
"MD=CISCO_EPNM!ND=EPNNCS4216-120.42!FTP=name=Loopback79;lr=lr-loopback",
                     "sa.ospf": {
                        "sa.process-id": "100",
                        "sa.area": "0",
                        "sa.enable-sync-e": "false",
                        "sa.sync-e-bridge-domain": "11"
                     },
                     "sa.mpls-te": {
                        "sa.te-metric": "23",
                        "sa.te-attributes": "0x11",
                        "sa.is-percentage": "true",
                        "sa.bandwidth-unit": "Kbps",
                        "sa.global-bandwidth": "10",
                        "sa.subpool-bandwidth": "8"
                     }
                  },
                  "sa.bfd-settings": {
                     "sa.bfd-template": "bfd-tunnel105",
                     "sa.min-interval": "1",
                     "sa.multiplier": "1",
                     "sa.bfd-fast-detect": "false"
                  }
               }
            ]
         }
      }
```

```
}
```

7.6.3 Provision L3 Link with BGP routing protocol

7.6.3.1 Request

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
 <?xml version="1.0" encoding="UTF-8"?>
<provision-service-request
      xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1">
      <p:service-order-data>
            <p:service-name>L3LinkBgp-0426S1</p:service-name>
            <p:service-description>L3LinkBgp-0426S1 desc</p:service-
description>
            <p:service-type>mpls-te-tunnel</p:service-type>
            <p:service-subtype>layer3-link</p:service-subtype>
<!—service template related tags -- >
<p:service-templates>
                  <p:service-template>
                        <p:type>postconfig</p:type>
                        <p:name>l3linktemplate</p:name>
                        <p:usage>Service create only</p:usage>
                        <p:variables>
                              <p:variable>
                                    <p:name>addressFamily</p:name>
                                    <p:value>vpnv4</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
                              <p:variable>
                                    <p:name>prefixListName</p:name>
                                    <p:value>BGP2</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
                              <p:variable>
                                    <p:name>routePolicyName</p:name>
                                    <p:value>xyz_demo</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
                              <p:variable>
                                    <p:name>xeClnsMTU</p:name>
                                    <p:value>1502</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
                              <p:variable>
                                    <p:name>xeMTU</p:name>
                                    <p:value>1600</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
                              <p:variable>
                                    <p:name>xrMTU</p:name>
                                    <p:value>1500</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
```

```
                        </p:variables>
                  </p:service-template>
            </p:service-templates>

            <!-- L3 link details -->
            <p:l3-link-data>
                  <p:l2-discovery-protocol>CDP</p:l2-discovery-protocol>
                  <p:routing-protocol>BGP</p:routing-protocol>
                  <p:link-vlan>156</p:link-vlan>
            </p:l3-link-data>
            <!-- L3 link TP details -->
            <p:termination-point-list>
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=EPNNCS4216-
120.41!FTP=name=GigabitEthernet0/1/5;lr=lr-gigabit-ethernet</p:tp-ref>
                        <p:directionality>source</p:directionality>
                        <p:ip-address>31.31.31.31</p:ip-address>
                        <p:subnet-mask>24</p:subnet-mask>
                        <!-- <p:ingress-qos-policy-
ref>MD=CISCO_EPNM!ND=EPASR907-
120.22.SWIM.cisco.com!POLICY_QOS=nni</p:ingress-qos-policy-ref>
                              <p:egress-qos-policy-
ref>MD=CISCO_EPNM!ND=EPASR907-
120.22.SWIM.cisco.com!POLICY_QOS=Policy2</p:egress-qos-policy-ref> -->
                        <p:l3-link-data>
                              <p:enable-bv-interface>false</p:enable-bv-
interface>
                              <p:bgp>
                                    <p:bgp-as-number>100</p:bgp-as-number>
                                    <p:password-type>PlainText</p:password-
type>
                                    <p:route-policy>PERMIT-LOOPBACK-
REMOTE</p:route-policy>
                                    <p:route-reflector-client>true</p:route-
reflector-client>
                                    <p:use-aigp>true</p:use-aigp>
                                    <p:update-source-
ref>MD=CISCO_EPNM!ND=EPNNCS4216-120.41!FTP=name=BDI8;lr=lr-bridge</p:update-
source-ref>
                                    <p:password-type>Encrypted</p:password-
type> <p:password>1234</p:password>
                                    <p:enable-mpls>false</p:enable-mpls>
<p:enable-sync-e>false</p:enable-sync-e>
                                    <p:sync-e-bridge-domain>11</p:sync-e-
bridge-domain>
                              </p:bgp>
                        </p:l3-link-data>
                        <p:bfd-settings>
                           <p:bfd-template>bfd-tunnel101</p:bfd-template>
                           <p:min-interval>1</p:min-interval>
                              <p:multiplier>1</p:multiplier>
                        </p:bfd-settings>
                  </p:termination-point-config>
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=EPNNCS4216-
120.42!FTP=name=GigabitEthernet0/0/5;lr=lr-gigabit-ethernet</p:tp-ref>
```

```
                        <p:directionality>sink</p:directionality>
                        <p:ip-address>41.41.41.41</p:ip-address>
                        <p:subnet-mask>24</p:subnet-mask>
                        <!-- <p:ingress-qos-policy-
ref>MD=CISCO_EPNM!ND=NCS4206-120.33!POLICY_QOS=Policysg1</p:ingress-qos-
policy-ref>
                              <p:egress-qos-policy-
ref>MD=CISCO_EPNM!ND=NCS4206-120.33!POLICY_QOS=Policysg2</p:egress-qos-
policy-ref> -->
                        <p:l3-link-data>
                              <!--<p:same-as-source>false</p:same-as-source>
-->
                              <p:enable-bv-interface>false</p:enable-bv-
interface>
                              <p:bgp>
                                    <p:bgp-as-number>100</p:bgp-as-number>
                                    <p:password-type>PlainText</p:password-
type>
                                    <p:route-policy>PERMIT-LOOPBACK-
REMOTE</p:route-policy>
                                    <p:route-reflector-client>true</p:route-
reflector-client>
                                    <p:use-aigp>true</p:use-aigp>
                                    <p:update-source-
ref>MD=CISCO_EPNM!ND=EPNNCS4216-120.42!FTP=name=BDI9;lr=lr-bridge</p:update-
source-ref>
                                    <p:password-type>Encrypted</p:password-
type>
                                    <p:password>1234</p:password>
                                    <p:enable-mpls>false</p:enable-mpls>
                                    <p:enable-sync-e>false</p:enable-sync-e>
                                    <p:sync-e-bridge-domain>11</p:sync-e-
bridge-domain>
                              </p:bgp>
                        </p:l3-link-data>
                        <p:bfd-settings>
                              <p:bfd-template>bfd-tunnel105</p:bfd-template>
                              <p:min-interval>1</p:min-interval>
                              <p:multiplier>1</p:multiplier>
                        </p:bfd-settings>
                  </p:termination-point-config>
            </p:termination-point-list>
      </p:service-order-data>
</provision-service-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "sa.service-order-data": {
      "sa.service-name": "L3LinkBgp-0426S1",
      "sa.service-description": "L3LinkBgp-0426S1 desc",
      "sa.service-type": "mpls-te-tunnel",
      "sa.service-subtype": "layer3-link",
      "sa.l3-link-data": {
         "sa.l2-discovery-protocol": "CDP",
         "sa.routing-protocol": "BGP",
         "sa.link-vlan": "156"
```

```
      },
      "sa.termination-point-list": {
         "sa.termination-point-config": [
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=EPNNCS4216-
120.41!FTP=name=GigabitEthernet0/1/5;lr=lr-gigabit-ethernet",
               "sa.directionality": "source",
               "sa.ip-address": "31.31.31.31",
               "sa.subnet-mask": "24",
               "sa.l3-link-data": {
                  "sa.enable-bv-interface": "false",
                  "sa.bgp": {
                     "sa.bgp-as-number": "100",
                     "sa.password-type": [
                        "sa.PlainText",
                        "sa.Encrypted"
                     ],
                     "sa.route-policy": "PERMIT-LOOPBACK-REMOTE",
                     "sa.route-reflector-client": "true",
                     "sa.use-aigp": "true",
                     "sa.update-source-ref": "MD=CISCO_EPNM!ND=EPNNCS4216-
120.41!FTP=name=BDI8;lr=lr-bridge",
                     "sa.password": "1234",
                     "sa.enable-mpls": "false",
                     "sa.enable-sync-e": "false",
                     "sa.sync-e-bridge-domain": "11"
                  }
               },
               "sa.bfd-settings": {
                  "sa.bfd-template": "bfd-tunnel101",
                  "sa.min-interval": "1",
                  "sa.multiplier": "1"
               }
            },
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=EPNNCS4216-
120.42!FTP=name=GigabitEthernet0/0/5;lr=lr-gigabit-ethernet",
               "sa.directionality": "sink",
               "sa.ip-address": "41.41.41.41",
               "sa.subnet-mask": "24",
               "sa.l3-link-data": {
                  "sa.enable-bv-interface": "false",
                  "sa.bgp": {
                     "sa.bgp-as-number": "100",
                     "sa.password-type": [
                        "sa.PlainText",
                        "sa.Encrypted"
                     ],
                     "sa.route-policy": "PERMIT-LOOPBACK-REMOTE",
                     "sa.route-reflector-client": "true",
                     "sa.use-aigp": "true",
                     "sa.update-source-ref": "MD=CISCO_EPNM!ND=EPNNCS4216-
120.42!FTP=name=BDI9;lr=lr-bridge",
                     "sa.password": "1234",
                     "sa.enable-mpls": "false",
                     "sa.enable-sync-e": "false",
```

```
                    "sa.sync-e-bridge-domain": "11"
                }
            },
            "sa.bfd-settings": {
                "sa.bfd-template": "bfd-tunnel105",
                "sa.min-interval": "1",
                "sa.multiplier": "1"
            }
        }
    ]
  }
 }
}
```

7.6.4 Modify L3 Link with BGP routing protocol

7.6.4.1 Request

POST /restconf/operations/v1/cisco-service-activation:modify-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:modify-service-request
      xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:y1="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:sa:v1 cisco-
service-activation.xsd urn:cisco:params:xml:ns:yang:service:activation:v1
restc-provisioning-request-schema.xsd ">
      <p:cfs-ref>MD=CISCO_EPNM!CFS=L3LinkBgp-0426S1</p:cfs-ref>
      <p:service-order-data>
            <p:service-name>L3LinkBgp-0426S1</p:service-name>
            <p:service-description>L3LinkBgp-0426S1 desc</p:service-
description>
            <p:service-type>mpls-te-tunnel</p:service-type>
            <p:service-subtype>layer3-link</p:service-subtype>
<!—service template related tags -- >
<p:service-templates>
                  <p:service-template>
                        <p:type>postconfig</p:type>
                        <p:name>l3linktemplate</p:name>
                        <p:usage>Service create only</p:usage>
                        <p:variables>
                              <p:variable>
                                    <p:name>addressFamily</p:name>
                                    <p:value>vpnv4</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
                              <p:variable>
                                    <p:name>prefixListName</p:name>
                                    <p:value>BGP2</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
                              <p:variable>
                                    <p:name>routePolicyName</p:name>
                                    <p:value>xyz_demo</p:value>
```

```
                                    <p:required>No</p:required>
                              </p:variable>
                              <p:variable>
                                    <p:name>xeClnsMTU</p:name>
                                    <p:value>1502</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
                              <p:variable>
                                    <p:name>xeMTU</p:name>
                                    <p:value>1600</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
                              <p:variable>
                                    <p:name>xrMTU</p:name>
                                    <p:value>1500</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
                        </p:variables>
                  </p:service-template>
            </p:service-templates>

            <!-- L3 link details -->
            <p:l3-link-data>
                  <p:l2-discovery-protocol>CDP</p:l2-discovery-protocol>
                  <p:routing-protocol>BGP</p:routing-protocol>
                  <p:link-vlan>156</p:link-vlan>
            </p:l3-link-data>
            <!-- L3 link TP details -->
            <p:termination-point-list>
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=EPNNCS4216-
120.41!FTP=name=GigabitEthernet0/1/5;lr=lr-gigabit-ethernet</p:tp-ref>
                        <p:directionality>source</p:directionality>
                        <p:ip-address>31.31.31.31</p:ip-address>
                        <p:subnet-mask>24</p:subnet-mask>
                        <!-- <p:ingress-qos-policy-
ref>MD=CISCO_EPNM!ND=EPASR907-
120.22.SWIM.cisco.com!POLICY_QOS=nni</p:ingress-qos-policy-ref>
                              <p:egress-qos-policy-
ref>MD=CISCO_EPNM!ND=EPASR907-
120.22.SWIM.cisco.com!POLICY_QOS=Policy2</p:egress-qos-policy-ref> -->
                        <p:l3-link-data>
                              <p:enable-bv-interface>false</p:enable-bv-
interface>
                              <p:bgp>
                                    <p:bgp-as-number>100</p:bgp-as-number>
                                    <p:password-
type>PlainText</p:password-type>
                                    <p:route-policy>PERMIT-LOOPBACK-
REMOTE</p:route-policy>
                                    <p:route-reflector-
client>true</p:route-reflector-client>
                                    <p:use-aigp>true</p:use-aigp>
                                    <p:update-source-
ref>MD=CISCO_EPNM!ND=EPNNCS4216-120.41!FTP=name=BDI8;lr=lr-
bridge</p:update-source-ref>
```

```
                                    <p:password-
type>Encrypted</p:password-type>
                                    <p:password>1234</p:password>
                                    <p:enable-mpls>false</p:enable-mpls>
                                    <p:enable-sync-e>false</p:enable-sync-
e>
                                    <p:sync-e-bridge-domain>11</p:sync-e-
bridge-domain>
                              </p:bgp>
                        </p:l3-link-data>
                        <p:bfd-settings>
                              <p:bfd-template>bfd-tunnel101</p:bfd-
template>
                              <p:min-interval>1</p:min-interval>
                              <p:multiplier>1</p:multiplier>
                        </p:bfd-settings>
                  </p:termination-point-config>
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=EPNNCS4216-
120.42!FTP=name=GigabitEthernet0/0/5;lr=lr-gigabit-ethernet</p:tp-ref>
                        <p:directionality>sink</p:directionality>
                        <p:ip-address>41.41.41.41</p:ip-address>
                        <p:subnet-mask>24</p:subnet-mask>
                        <!-- <p:ingress-qos-policy-
ref>MD=CISCO_EPNM!ND=NCS4206-120.33!POLICY_QOS=Policysg1</p:ingress-qos-
policy-ref>
                              <p:egress-qos-policy-
ref>MD=CISCO_EPNM!ND=NCS4206-120.33!POLICY_QOS=Policysg2</p:egress-qos-
policy-ref> -->
                        <p:l3-link-data>
                              <!--<p:same-as-source>false</p:same-as-
source> -->
                              <p:enable-bv-interface>false</p:enable-bv-
interface>
                              <p:bgp>
                                    <p:bgp-as-number>100</p:bgp-as-number>
                                    <p:password-
type>PlainText</p:password-type>
                                    <p:route-policy>PERMIT-LOOPBACK-
REMOTE</p:route-policy>
                                    <p:route-reflector-
client>true</p:route-reflector-client>
                                    <p:use-aigp>true</p:use-aigp>
                                    <p:update-source-
ref>MD=CISCO_EPNM!ND=EPNNCS4216-120.42!FTP=name=BDI9;lr=lr-
bridge</p:update-source-ref>
                                    <p:password-
type>Encrypted</p:password-type>
                                    <p:password>1234</p:password>
                                    <p:enable-mpls>false</p:enable-mpls>
                                    <p:enable-sync-e>false</p:enable-sync-
e>
                                    <p:sync-e-bridge-domain>11</p:sync-e-
bridge-domain>
                              </p:bgp>
                        </p:l3-link-data>
```

```
                        <p:bfd-settings>
                              <p:bfd-template>bfd-tunnel105</p:bfd-
template>
                              <p:min-interval>1</p:min-interval>
                              <p:multiplier>1</p:multiplier>
                        </p:bfd-settings>
                  </p:termination-point-config>
            </p:termination-point-list>
      </p:service-order-data>
</p:modify-service-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "sa.cfs-ref": "MD=CISCO_EPNM!CFS=L3LinkBgp-0426S1",
   "sa.service-order-data": {
      "sa.service-name": "L3LinkBgp-0426S1",
      "sa.service-description": "L3LinkBgp-0426S1 desc",
      "sa.service-type": "mpls-te-tunnel",
      "sa.service-subtype": "layer3-link",
      "sa.l3-link-data": {
         "sa.l2-discovery-protocol": "CDP",
         "sa.routing-protocol": "BGP",
         "sa.link-vlan": "156"
      },
      "sa.termination-point-list": {
         "sa.termination-point-config": [
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=EPNNCS4216-
120.41!FTP=name=GigabitEthernet0/1/5;lr=lr-gigabit-ethernet",
               "sa.directionality": "source",
               "sa.ip-address": "31.31.31.31",
               "sa.subnet-mask": "24",
               "sa.l3-link-data": {
                  "sa.enable-bv-interface": "false",
                  "sa.bgp": {
                     "sa.bgp-as-number": "100",
                     "sa.password-type": [
                        "sa.PlainText",
                        "sa.Encrypted"
                     ],
                     "sa.route-policy": "PERMIT-LOOPBACK-REMOTE",
                     "sa.route-reflector-client": "true",
                     "sa.use-aigp": "true",
                     "sa.update-source-ref": "MD=CISCO_EPNM!ND=EPNNCS4216-
120.41!FTP=name=BDI8;lr=lr-bridge",
                     "sa.password": "1234",
                     "sa.enable-mpls": "false",
                     "sa.enable-sync-e": "false",
                     "sa.sync-e-bridge-domain": "11"
                  }
               },
               "sa.bfd-settings": {
                  "sa.bfd-template": "bfd-tunnel101",
                  "sa.min-interval": "1",
                  "sa.multiplier": "1"
               }
```

```
            },
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=EPNNCS4216-
120.42!FTP=name=GigabitEthernet0/0/5;lr=lr-gigabit-ethernet",
               "sa.directionality": "sink",
               "sa.ip-address": "41.41.41.41",
               "sa.subnet-mask": "24",
               "sa.l3-link-data": {
                  "sa.enable-bv-interface": "false",
                  "sa.bgp": {
                     "sa.bgp-as-number": "100",
                     "sa.password-type": [
                        "sa.PlainText",
                        "sa.Encrypted"
                     ],
                     "sa.route-policy": "PERMIT-LOOPBACK-REMOTE",
                     "sa.route-reflector-client": "true",
                     "sa.use-aigp": "true",
                     "sa.update-source-ref": "MD=CISCO_EPNM!ND=EPNNCS4216-
120.42!FTP=name=BDI9;lr=lr-bridge",
                     "sa.password": "1234",
                     "sa.enable-mpls": "false",
                     "sa.enable-sync-e": "false",
                     "sa.sync-e-bridge-domain": "11"
                  }
               },
               "sa.bfd-settings": {
                  "sa.bfd-template": "bfd-tunnel105",
                  "sa.min-interval": "1",
                  "sa.multiplier": "1"
               }
            }
         ]
      }
   }
}
```

7.6.5 Provision L3 Link with ISIS routing protocol

7.6.5.1 Request

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<provision-service-request
      xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1">
      <p:service-order-data>
            <p:service-name>L3LinkIsis-MP1-0411S2</p:service-name>
            <p:service-description>L3LinkIsis-MP1-0411S2 desc
            </p:service-description>
            <p:service-type>mpls-te-tunnel</p:service-type>
            <p:service-subtype>layer3-link</p:service-subtype>
<!—service template related tags -- >
<p:service-templates>
```

```
                  <p:service-template>
                        <p:type>postconfig</p:type>
                        <p:name>l3linktemplate</p:name>
                        <p:usage>Service create only</p:usage>
                        <p:variables>
                              <p:variable>
                                    <p:name>addressFamily</p:name>
                                    <p:value>vpnv4</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
                              <p:variable>
                                    <p:name>prefixListName</p:name>
                                    <p:value>BGP2</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
                              <p:variable>
                                    <p:name>routePolicyName</p:name>
                                    <p:value>xyz_demo</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
                              <p:variable>
                                    <p:name>xeClnsMTU</p:name>
                                    <p:value>1502</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
                              <p:variable>
                                    <p:name>xeMTU</p:name>
                                    <p:value>1600</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
                              <p:variable>
                                    <p:name>xrMTU</p:name>
                                    <p:value>1500</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
                        </p:variables>
                  </p:service-template>
            </p:service-templates>

            <!-- L3 link details -->
            <p:l3-link-data>
                  <p:l2-discovery-protocol>CDP</p:l2-discovery-protocol>
                  <p:routing-protocol>ISIS</p:routing-protocol>
                  <p:link-vlan>134</p:link-vlan>
                  <p:enable-mpls-te>false</p:enable-mpls-te>
            </p:l3-link-data>
            <!-- L3 link TP details -->
            <p:termination-point-list>
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=EPNNCS4216-
120.41!FTP=name=TenGigabitEthernet0/12/0;lr=lr-ten-gigabit-ethernet
                        </p:tp-ref>
                        <p:directionality>source</p:directionality>
                        <p:ip-address>55.55.55.55</p:ip-address>
                        <p:subnet-mask>24</p:subnet-mask>
                        <!-- <p:ingress-qos-policy-
```

```
ref>MD=CISCO_EPNM!ND=EPASR907-
120.22.SWIM.cisco.com!POLICY_QOS=nni</p:ingress-qos-policy-ref>
                              <p:egress-qos-policy-
ref>MD=CISCO_EPNM!ND=EPASR907-
120.22.SWIM.cisco.com!POLICY_QOS=Policy2</p:egress-qos-policy-ref> -->
                        <p:l3-link-data>
                              <p:enable-bv-interface>false</p:enable-bv-
interface>
                              <p:loopback-interface-
ref>MD=CISCO_EPNM!ND=EPNNCS4216-120.41!FTP=name=Loopback25;lr=lr-loopback
                              </p:loopback-interface-ref>
                              <p:isis>
                                    <p:process-id>89</p:process-id>
                                    <!--
<p:networks>49.1721.6800.0019.00</p:networks> -->
                                    <!--p:metric>2</p:metric -->
                                    <p:circuit-type>Level-1-2</p:circuit-
type>
                                    <p:level1-metric>1</p:level1-metric>
                                    <p:level2-metric>2</p:level2-metric>
                                    <p:authentication-
mode>TEXT</p:authentication-mode>
                                    <p:authentication-key-
chain>seena</p:authentication-key-chain>
                                    <p:authentication-for-send-only>false
                                    </p:authentication-for-send-only>
                                    <p:enable-sync-e>true</p:enable-sync-e>
                                    <p:sync-e-bridge-domain>11</p:sync-e-
bridge-domain>
                              </p:isis>
                              <p:mpls-te>
                                    <p:te-metric>22</p:te-metric>
                                    <!--<p:te-attributes>0x00</p:te-
attributes> -->
                                    <p:is-percentage>false</p:is-percentage>
                                    <p:bandwidth-unit>Kbps</p:bandwidth-unit>
                                    <p:global-bandwidth>10</p:global-
bandwidth>
                                    <p:subpool-bandwidth>8</p:subpool-
bandwidth>
                              </p:mpls-te>
                        </p:l3-link-data>
                        <p:bfd-settings>
                              <p:bfd-template>bfd-tunnel101</p:bfd-template>
                              <p:min-interval>1</p:min-interval>
                              <p:multiplier>1</p:multiplier>
                              <p:bfd-fast-detect>false</p:bfd-fast-detect>
                        </p:bfd-settings>
                  </p:termination-point-config>
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=EPNNCS4216-
120.42!FTP=name=GigabitEthernet0/0/3;lr=lr-gigabit-ethernet
                        </p:tp-ref>
                        <p:directionality>sink</p:directionality>
                        <p:ip-address>66.66.66.66</p:ip-address>
                        <p:subnet-mask>24</p:subnet-mask>
```

```
                        <!-- <p:ingress-qos-policy-
ref>MD=CISCO_EPNM!ND=NCS4206-120.33!POLICY_QOS=Policysg1</p:ingress-qos-
policy-ref>
                              <p:egress-qos-policy-
ref>MD=CISCO_EPNM!ND=NCS4206-120.33!POLICY_QOS=Policysg2</p:egress-qos-
policy-ref> -->
                        <p:l3-link-data>
                              <!--<p:same-as-source>false</p:same-as-source>
-->
                              <p:enable-bv-interface>false</p:enable-bv-
interface>
                              <p:loopback-interface-
ref>MD=CISCO_EPNM!ND=EPNNCS4216-120.42!FTP=name=Loopback0;lr=lr-loopback
                              </p:loopback-interface-ref>
                              <p:isis>
                                    <p:process-id>100</p:process-id>
                                    <!--
<p:networks>49.1721.6800.0020.00</p:networks> -->
                                    <!--<p:metric>2</p:metric -->
                                    <p:circuit-type>Level-1-2</p:circuit-
type>
                                    <p:level1-metric>1</p:level1-metric>
                                    <p:level2-metric>2</p:level2-metric>
                                    <p:authentication-
mode>TEXT</p:authentication-mode>
                                    <p:authentication-key-
chain>shikha123</p:authentication-key-chain>
                                    <p:authentication-for-send-only>false
                                    </p:authentication-for-send-only>
                                    <p:enable-sync-e>true</p:enable-sync-e>
                                    <p:sync-e-bridge-domain>11</p:sync-e-
bridge-domain>
                              </p:isis>
                              <p:mpls-te>
                                    <p:te-metric>23</p:te-metric>
                                    <!-- <p:te-attributes>0x11</p:te-
attributes> -->
                                    <p:is-percentage>true</p:is-percentage>
                                    <p:global-bandwidth>10</p:global-
bandwidth>
                                    <p:subpool-bandwidth>8</p:subpool-
bandwidth>
                              </p:mpls-te>
                        </p:l3-link-data>
                        <p:bfd-settings>
                              <p:bfd-template>bfd-tunnel105</p:bfd-template>
                              <p:min-interval>1</p:min-interval>
                              <p:multiplier>1</p:multiplier>
                              <p:bfd-fast-detect>false</p:bfd-fast-detect>
                        </p:bfd-settings>
                  </p:termination-point-config>
            </p:termination-point-list>
      </p:service-order-data>
</provision-service-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "sa.service-order-data": {
      "sa.service-name": "L3LinkIsis-MP1-0411S2",
      "sa.service-description": "L3LinkIsis-MP1-0411S2 desc",
      "sa.service-type": "mpls-te-tunnel",
      "sa.service-subtype": "layer3-link",
      "sa.l3-link-data": {
         "sa.l2-discovery-protocol": "CDP",
         "sa.routing-protocol": "ISIS",
         "sa.link-vlan": "134",
         "sa.enable-mpls-te": "false"
      },
      "sa.termination-point-list": {
         "sa.termination-point-config": [
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=EPNNCS4216-
120.41!FTP=name=TenGigabitEthernet0/12/0;lr=lr-ten-gigabit-ethernet",
               "sa.directionality": "source",
               "sa.ip-address": "55.55.55.55",
               "sa.subnet-mask": "24",
               "sa.l3-link-data": {
                  "sa.enable-bv-interface": "false",
                  "sa.loopback-interface-ref": "MD=CISCO_EPNM!ND=EPNNCS4216-
120.41!FTP=name=Loopback25;lr=lr-loopback",
                  "sa.isis": {
                     "sa.process-id": "89",
                     "sa.circuit-type": "Level-1-2",
                     "sa.level1-metric": "1",
                     "sa.level2-metric": "2",
                     "sa.authentication-mode": "TEXT",
                     "sa.authentication-key-chain": "seena",
                     "sa.authentication-for-send-only": "false",
                     "sa.enable-sync-e": "true",
                     "sa.sync-e-bridge-domain": "11"
                  },
                  "sa.mpls-te": {
                     "sa.te-metric": "22",
                     "sa.is-percentage": "false",
                     "sa.bandwidth-unit": "Kbps",
                     "sa.global-bandwidth": "10",
                     "sa.subpool-bandwidth": "8"
                  }
               },
               "sa.bfd-settings": {
                  "sa.bfd-template": "bfd-tunnel101",
                  "sa.min-interval": "1",
                  "sa.multiplier": "1",
                  "sa.bfd-fast-detect": "false"
               }
            },
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=EPNNCS4216-
120.42!FTP=name=GigabitEthernet0/0/3;lr=lr-gigabit-ethernet",
               "sa.directionality": "sink",
               "sa.ip-address": "66.66.66.66",
               "sa.subnet-mask": "24",
```

```
                "sa.l3-link-data": {
                   "sa.enable-bv-interface": "false",
                   "sa.loopback-interface-ref": "MD=CISCO_EPNM!ND=EPNNCS4216-
120.42!FTP=name=Loopback0;lr=lr-loopback",
                   "sa.isis": {
                      "sa.process-id": "100",
                      "sa.circuit-type": "Level-1-2",
                      "sa.level1-metric": "1",
                      "sa.level2-metric": "2",
                      "sa.authentication-mode": "TEXT",
                      "sa.authentication-key-chain": "shikha123",
                      "sa.authentication-for-send-only": "false",
                      "sa.enable-sync-e": "true",
                      "sa.sync-e-bridge-domain": "11"
                   },
                   "sa.mpls-te": {
                      "sa.te-metric": "23",
                      "sa.is-percentage": "true",
                      "sa.global-bandwidth": "10",
                      "sa.subpool-bandwidth": "8"
                   }
                },
                "sa.bfd-settings": {
                   "sa.bfd-template": "bfd-tunnel105",
                   "sa.min-interval": "1",
                   "sa.multiplier": "1",
                   "sa.bfd-fast-detect": "false"
                }
             }
          ]
       }
    }
}
```

7.6.6 Modify L3 Link with ISIS routing protocol

7.6.6.1 Request

POST /restconf/operations/v1/cisco-service-activation:modify-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:modify-service-request
      xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:y1="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:sa:v1 cisco-
service-activation.xsd urn:cisco:params:xml:ns:yang:service:activation:v1
restc-provisioning-request-schema.xsd ">
      <p:cfs-ref>MD=CISCO_EPNM!CFS=L3LinkIsis-MP1-0411S2</p:cfs-ref>
      <p:service-order-data>
            <p:service-name>L3LinkIsis-MP1-0411S2</p:service-name>
            <p:service-description>L3LinkIsis-MP1-0411S2 desc
            </p:service-description>
            <p:service-type>mpls-te-tunnel</p:service-type>
            <p:service-subtype>layer3-link</p:service-subtype>
```

```
<!—service template related tags -- >
<p:service-templates>
                  <p:service-template>
                        <p:type>postconfig</p:type>
                        <p:name>l3linktemplate</p:name>
                        <p:usage>Service create only</p:usage>
                        <p:variables>
                              <p:variable>
                                    <p:name>addressFamily</p:name>
                                    <p:value>vpnv4</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
                              <p:variable>
                                    <p:name>prefixListName</p:name>
                                    <p:value>BGP2</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
                              <p:variable>
                                    <p:name>routePolicyName</p:name>
                                    <p:value>xyz_demo</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
                              <p:variable>
                                    <p:name>xeClnsMTU</p:name>
                                    <p:value>1502</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
                              <p:variable>
                                    <p:name>xeMTU</p:name>
                                    <p:value>1600</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
                              <p:variable>
                                    <p:name>xrMTU</p:name>
                                    <p:value>1500</p:value>
                                    <p:required>No</p:required>
                              </p:variable>
                        </p:variables>
                  </p:service-template>
            </p:service-templates>

            <!-- L3 link details -->
            <p:l3-link-data>
                  <p:l2-discovery-protocol>CDP</p:l2-discovery-protocol>
                  <p:routing-protocol>ISIS</p:routing-protocol>
                  <p:link-vlan>134</p:link-vlan>
                  <p:enable-mpls-te>false</p:enable-mpls-te>
            </p:l3-link-data>
            <!-- L3 link TP details -->
            <p:termination-point-list>
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=EPNNCS4216-
120.41!FTP=name=TenGigabitEthernet0/12/0;lr=lr-ten-gigabit-ethernet
                        </p:tp-ref>
                        <p:directionality>source</p:directionality>
                        <p:ip-address>55.55.55.55</p:ip-address>
```

```
                        <p:subnet-mask>24</p:subnet-mask>
                        <!-- <p:ingress-qos-policy-
ref>MD=CISCO_EPNM!ND=EPASR907-
120.22.SWIM.cisco.com!POLICY_QOS=nni</p:ingress-qos-policy-ref>
                              <p:egress-qos-policy-
ref>MD=CISCO_EPNM!ND=EPASR907-
120.22.SWIM.cisco.com!POLICY_QOS=Policy2</p:egress-qos-policy-ref> -->
                        <p:l3-link-data>
                              <p:enable-bv-interface>false</p:enable-bv-
interface>
                              <p:loopback-interface-
ref>MD=CISCO_EPNM!ND=EPNNCS4216-120.41!FTP=name=Loopback25;lr=lr-loopback
                              </p:loopback-interface-ref>
                              <p:isis>
                                    <p:process-id>89</p:process-id>
                                    <!--
<p:networks>49.1721.6800.0019.00</p:networks> -->
                                    <!--p:metric>2</p:metric -->
                                    <p:circuit-type>Level-1-2</p:circuit-
type>
                                    <p:level1-metric>1</p:level1-metric>
                                    <p:level2-metric>2</p:level2-metric>
                                    <p:authentication-
mode>TEXT</p:authentication-mode>
                                    <p:authentication-key-
chain>seena</p:authentication-key-chain>
                                    <p:authentication-for-send-only>false
                                    </p:authentication-for-send-only>
                                    <p:enable-sync-e>true</p:enable-sync-
e>
                                    <p:sync-e-bridge-domain>11</p:sync-e-
bridge-domain>
                              </p:isis>
                              <p:mpls-te>
                                    <p:te-metric>22</p:te-metric>
                                    <!--<p:te-attributes>0x00</p:te-
attributes> -->
                                    <p:is-percentage>false</p:is-
percentage>
                                    <p:bandwidth-unit>Kbps</p:bandwidth-
unit>
                                    <p:global-bandwidth>10</p:global-
bandwidth>
                                    <p:subpool-bandwidth>8</p:subpool-
bandwidth>
                              </p:mpls-te>
                        </p:l3-link-data>
                        <p:bfd-settings>
                              <p:bfd-template>bfd-tunnel101</p:bfd-
template>
                              <p:min-interval>1</p:min-interval>
                              <p:multiplier>1</p:multiplier>
                              <p:bfd-fast-detect>false</p:bfd-fast-detect>
                        </p:bfd-settings>
                  </p:termination-point-config>
                  <p:termination-point-config>
```

```
                        <p:tp-ref>MD=CISCO_EPNM!ND=EPNNCS4216-
120.42!FTP=name=GigabitEthernet0/0/3;lr=lr-gigabit-ethernet
                        </p:tp-ref>
                        <p:directionality>sink</p:directionality>
                        <p:ip-address>66.66.66.66</p:ip-address>
                        <p:subnet-mask>24</p:subnet-mask>
                        <!-- <p:ingress-qos-policy-
ref>MD=CISCO_EPNM!ND=NCS4206-120.33!POLICY_QOS=Policysg1</p:ingress-qos-
policy-ref>
                              <p:egress-qos-policy-
ref>MD=CISCO_EPNM!ND=NCS4206-120.33!POLICY_QOS=Policysg2</p:egress-qos-
policy-ref> -->
                        <p:l3-link-data>
                              <!--<p:same-as-source>false</p:same-as-
source> -->
                              <p:enable-bv-interface>false</p:enable-bv-
interface>
                              <p:loopback-interface-
ref>MD=CISCO_EPNM!ND=EPNNCS4216-120.42!FTP=name=Loopback0;lr=lr-loopback
                              </p:loopback-interface-ref>
                              <p:isis>
                                    <p:process-id>100</p:process-id>
                                    <!--
<p:networks>49.1721.6800.0020.00</p:networks> -->
                                    <!--<p:metric>2</p:metric -->
                                    <p:circuit-type>Level-1-2</p:circuit-
type>
                                    <p:level1-metric>1</p:level1-metric>
                                    <p:level2-metric>2</p:level2-metric>
                                    <p:authentication-
mode>TEXT</p:authentication-mode>
                                    <p:authentication-key-
chain>shikha123</p:authentication-key-chain>
                                    <p:authentication-for-send-only>false
                                    </p:authentication-for-send-only>
                                    <p:enable-sync-e>true</p:enable-sync-
e>
                                    <p:sync-e-bridge-domain>11</p:sync-e-
bridge-domain>
                              </p:isis>
                              <p:mpls-te>
                                    <p:te-metric>23</p:te-metric>
                                    <!-- <p:te-attributes>0x11</p:te-
attributes> -->
                                    <p:is-percentage>true</p:is-
percentage>
                                    <p:global-bandwidth>10</p:global-
bandwidth>
                                    <p:subpool-bandwidth>8</p:subpool-
bandwidth>
                              </p:mpls-te>
                        </p:l3-link-data>
                        <p:bfd-settings>
                              <p:bfd-template>bfd-tunnel105</p:bfd-
template>
                              <p:min-interval>1</p:min-interval>
```

```
                                <p:multiplier>1</p:multiplier>
                                <p:bfd-fast-detect>false</p:bfd-fast-detect>
                            </p:bfd-settings>
                        </p:termination-point-config>
                    </p:termination-point-list>
                </p:service-order-data>
</p:modify-service-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "sa.cfs-ref": "MD=CISCO_EPNM!CFS=L3LinkIsis-MP1-0411S2",
   "sa.service-order-data": {
      "sa.service-name": "L3LinkIsis-MP1-0411S2",
      "sa.service-description": "L3LinkIsis-MP1-0411S2 desc",
      "sa.service-type": "mpls-te-tunnel",
      "sa.service-subtype": "layer3-link",
      "sa.l3-link-data": {
         "sa.l2-discovery-protocol": "CDP",
         "sa.routing-protocol": "ISIS",
         "sa.link-vlan": "134",
         "sa.enable-mpls-te": "false"
      },
      "sa.termination-point-list": {
         "sa.termination-point-config": [
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=EPNNCS4216-
120.41!FTP=name=TenGigabitEthernet0/12/0;lr=lr-ten-gigabit-ethernet",
               "sa.directionality": "source",
               "sa.ip-address": "55.55.55.55",
               "sa.subnet-mask": "24",
               "sa.l3-link-data": {
                  "sa.enable-bv-interface": "false",
                  "sa.loopback-interface-ref":
"MD=CISCO_EPNM!ND=EPNNCS4216-120.41!FTP=name=Loopback25;lr=lr-loopback",
                  "sa.isis": {
                     "sa.process-id": "89",
                     "sa.circuit-type": "Level-1-2",
                     "sa.level1-metric": "1",
                     "sa.level2-metric": "2",
                     "sa.authentication-mode": "TEXT",
                     "sa.authentication-key-chain": "seena",
                     "sa.authentication-for-send-only": "false",
                     "sa.enable-sync-e": "true",
                     "sa.sync-e-bridge-domain": "11"
                  },
                  "sa.mpls-te": {
                     "sa.te-metric": "22",
                     "sa.is-percentage": "false",
                     "sa.bandwidth-unit": "Kbps",
                     "sa.global-bandwidth": "10",
                     "sa.subpool-bandwidth": "8"
                  }
               },
               "sa.bfd-settings": {
                  "sa.bfd-template": "bfd-tunnel101",
                  "sa.min-interval": "1",
```

```
                    "sa.multiplier": "1",
                    "sa.bfd-fast-detect": "false"
                }
            },
            {
                "sa.tp-ref": "MD=CISCO_EPNM!ND=EPNNCS4216-
120.42!FTP=name=GigabitEthernet0/0/3;lr=lr-gigabit-ethernet",
                "sa.directionality": "sink",
                "sa.ip-address": "66.66.66.66",
                "sa.subnet-mask": "24",
                "sa.l3-link-data": {
                    "sa.enable-bv-interface": "false",
                    "sa.loopback-interface-ref":
"MD=CISCO_EPNM!ND=EPNNCS4216-120.42!FTP=name=Loopback0;lr=lr-loopback",
                    "sa.isis": {
                        "sa.process-id": "100",
                        "sa.circuit-type": "Level-1-2",
                        "sa.level1-metric": "1",
                        "sa.level2-metric": "2",
                        "sa.authentication-mode": "TEXT",
                        "sa.authentication-key-chain": "shikha123",
                        "sa.authentication-for-send-only": "false",
                        "sa.enable-sync-e": "true",
                        "sa.sync-e-bridge-domain": "11"
                    },
                    "sa.mpls-te": {
                        "sa.te-metric": "23",
                        "sa.is-percentage": "true",
                        "sa.global-bandwidth": "10",
                        "sa.subpool-bandwidth": "8"
                    }
                },
                "sa.bfd-settings": {
                    "sa.bfd-template": "bfd-tunnel105",
                    "sa.min-interval": "1",
                    "sa.multiplier": "1",
                    "sa.bfd-fast-detect": "false"
                }
            }
        ]
    }
  }
}
```

7.6.7 Terminate L3Link service (OSPF/BGP/ISIS)

7.6.7.1 *Request*

POST /restconf/operations/v1/cisco-service-activation:terminate-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:terminate-service-request
      xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1">
      <p:cfs-ref>MD=CISCO_EPNM!CFS=L3LinkTestService</p:cfs-ref>
```

```
      <p:service-order-data>
            <p:service-name>L3LinkTestService</p:service-name>
            <p:service-type>mpls-te-tunnel</p:service-type>
            <p:service-subtype>layer3-link</p:service-subtype>
      </p:service-order-data>
</p:terminate-service-request>
```

7.7 Provision L3VPN service

7.7.1 Request

POST /restconf/operations/v1/cisco-service-activation:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:provision-service-request
      xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:service:activation:v1
restconf-provisioning-request-schema.xsd ">
      <p:service-order-data>
            <p:customer-
ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</p:customer-ref>
            <p:service-name>L3VPN-Full-mesh-both449</p:service-name>
            <p:service-description>L3VPN_multi description</p:service-
description>
            <p:service-type>L3VPN</p:service-type>
            <p:service-subtype>L3VPN</p:service-subtype>
            <p:service-activate>true</p:service-activate>
            <p:mpls-l3vpn-data>
                  <p:service-mtu>1522</p:service-mtu>
                  <p:create-full-mesh>true</p:create-full-mesh>
                  <p:enter-full-mesh-prefix>true</p:enter-full-mesh-prefix>
                  <p:full-mesh-prefix></p:full-mesh-prefix>
                  <p:full-mesh-prefix-type>BOTH</p:full-mesh-prefix-type>
                  <p:custom-full-mesh-prefix>202</p:custom-full-mesh-prefix>
                  <p:active>TRUE</p:active>
                  <p:route-target-allocation-list>
                        <p:route-target-allocation>
                              <p:address-family>IPV4</p:address-family>
                              <p:route-target>13:21</p:route-target>
                        </p:route-target-allocation>
                  </p:route-target-allocation-list>

            </p:mpls-l3vpn-data>
            <p:forwarding-path>
                  <p:vrf-details>
                        <p:vrf-information>
                              <p:vrf-detail>
                                    <p:vrf-device-name>MD=CISCO_EPNM!ND=asr-
903a.cisco.com</p:vrf-device-name>
                                    <p:vrf-description>VRFfirst-descr</p:vrf-
description>
                                    <p:vrf-name>L3VPN-fullmeshvrf5</p:vrf-
name>
```

```
                                    <p:is-auto-rd>true</p:is-auto-rd>
                                    <p:route-distinguisher></p:route-
distinguisher>
                              </p:vrf-detail>
                              <p:ip-v4-route-target>
                                    <p:route-target>13:21</p:route-target>
                                    <p:direction>Import</p:direction>
                              </p:ip-v4-route-target>
                        </p:vrf-information>
                  </p:vrf-details>
            </p:forwarding-path>
            <p:termination-point-list>
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=asr-
903a.cisco.com!FTP=name=GigabitEthernet0/0/7;lr=lr-gigabit-ethernet</p:tp-
ref>
                        <p:nd-ref>MD=CISCO_EPNM!ND=asr-903a.cisco.com</p:nd-
ref>
                        <p:directionality>source</p:directionality>
                        <p:network-interface-name>L3VPN-fullmeshuni5
                        </p:network-interface-name>
                        <p:network-interface-ref></p:network-interface-ref>
                  </p:termination-point-config>

            </p:termination-point-list>
            <p:network-interface-list>
                  <p:network-interface>
                        <p:name>L3VPN-fullmeshuni5</p:name>
                        <p:operation>add</p:operation>
                        <p:l3mpls-uni-data>
                              <p:vrf-name-select>L3VPN-fullmeshvrf5</p:vrf-
name-select>
                              <p:enable-link-oam>false</p:enable-link-oam>
                              <p:service-multiplexing>TRUE</p:service-
multiplexing>
                              <p:uni-duplex-mode>FULL DUPLEX</p:uni-duplex-
mode>
                              <p:sep-ipv6-address>2001:0db8:85a3:0001</p:sep-
ipv6-address>
                              <p:sep-ipv6-subnet-mask>11</p:sep-ipv6-subnet-
mask>
                              <p:sep-outer-vlan>1088</p:sep-outer-vlan>
                              <p:sep-ipv4-address>2.3.4.8</p:sep-ipv4-
address>
                              <p:sep-ipv4-subnet-mask>16</p:sep-ipv4-subnet-
mask>
                              <p:sep-inner-vlan></p:sep-inner-vlan>
                              <p:uni-mtu>1540</p:uni-mtu>
                              <p:row-index>0</p:row-index>
                              <p:uni-description>uni descripti</p:uni-
description>
                              <p:enable-link-management>false</p:enable-link-
management>
                              <p:encapsulation>TAGGED</p:encapsulation>
                              <!--p:uni-instance-id></p:uni-instance-id -->
                              <p:service-state>TRUE</p:service-state>
```

```
                              <p:use-irb>TRUE</p:use-irb> <!-- we had this as
false -->
                        </p:l3mpls-uni-data>
                    </p:network-interface>

            </p:network-interface-list>
      </p:service-order-data>
</p:provision-service-request>
```

Content-Type: application/yang.operation+json
Json Payload:

```
{
   "sa.service-order-data": {
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "sa.service-name": "L3VPN_Provisioning_FW_RESTCONF_NBI",
      "sa.service-description": "L3VPN_Provisioning_FW_RESTCONF_NBI",
      "sa.service-type": "L3VPN",
      "sa.service-subtype": "L3VPN",
      "sa.service-activate": "true",
      "sa.mpls-l3vpn-data": {
         "sa.service-mtu": "1522",
         "sa.create-full-mesh": "true",
         "sa.enter-full-mesh-prefix": "true",
         "sa.full-mesh-prefix": "100",
         "sa.route-target-allocation-list": {
            "sa.route-target-allocation": [
               {
                  "sa.address-family": "IPV4",
                  "sa.route-target": "22:33"
               },
               {
                  "sa.address-family": "IPV6",
                  "sa.route-target": "22:44"
               }
            ]
         },
         "sa.vrf-details": {
            "sa.vrf-information": {
               "sa.vrf-detail": {
                  "sa.vrf-device-name": "MD=CISCO_EPNM!ND=TEST903-165.75",
                  "sa.vrf-description": "VRFDesc for the testing",
                  "sa.vrf-name": "VRF_FW_RESTCONF_NBI",
"sa. is-auto-rd":true

               },
               "sa.ip-v4-route-target": {
                  "sa.route-target": "33:55",
                  "sa.direction": "Import"
               },
               "sa.ip-v4-route-distribution": [
                  {
                     "sa.protocol": "OSPF",
                     "sa.metric": null,
                     "sa.routing-process-id": "4",
                     "sa.route-policy": "MGMT-EXPORT",
                     "sa.route-match-type": "External",
```

```
                        "sa.rt-flag": null
                     },
                     {
                        "sa.protocol": "Static",
                        "sa.metric": "12",
                        "sa.routing-process-id": null,
                        "sa.route-policy": "ACCEPT",
                        "sa.route-match-type": null,
                        "sa.rt-flag": null
                     },
                     {
                        "sa.protocol": "RIP",
                        "sa.metric": "14",
                        "sa.routing-process-id": null,
                        "sa.route-policy": "ACCEPT",
                        "sa.route-match-type": null,
                        "sa.rt-flag": null
                     },
                     {
                        "sa.protocol": "Connected",
                        "sa.metric": "16",
                        "sa.routing-process-id": null,
                        "sa.route-policy": "PASS",
                        "sa.route-match-type": null,
                        "sa.rt-flag": null
                     }
                  ],
                  "sa.ip-v6-route-target": {
                     "sa.route-target": "2:3",
                     "sa.direction": "Import"
                  },
                  "sa.ip-v6-route-distribution": {
                     "sa.protocol": "Static",
                     "sa.metric": "20",
                     "sa.routing-process-id": null,
                     "sa.route-policy": "ACCEPT",
                     "sa.route-match-type": null,
                     "sa.rt-flag": null
                  },
                  "sa.ip-v4-import-export-policy": {
                     "sa.import-policy": "ACCEPT",
                     "sa.export-policy": "ACCEPT"
                  },
                  "sa.ip-v6-import-export-policy": {
                     "sa.import-policy": "ACCEPT",
                     "sa.export-policy": "ACCEPT"
                  }
               }
            },
            "sa.multi-site-data": {
               "sa.uni-data": {
                  "sa.uni-name": "L3VPN_UNI_FW_RESTCONF_NBI",
                  "sa.port": "MD=CISCO_EPNM!ND=TEST903-
165.75!CTP=name=GigabitEthernet0/0/1;lr=lr-gigabit-ethernet",
                  "sa.device": "MD=CISCO_EPNM!ND=TEST903-165.75",
                  "sa.create-uni": "TRUE",
```

```
                "sa.vrf-name-select": "VRF_FW_RESTCONF_NBI",
                "sa.enable-link-oam": "false",
                "sa.service-multiplexing": "TRUE",
                "sa.uni-duplex-mode": "FULL DUPLEX",
                "sa.sep-ipv6-address": "0001:0002:0003::0005",
                "sa.sep-outer-vlan": null,
                "sa.sep-ipv4-address": "10.3.10.24",
                "sa.sep-inner-vlan": null,
                "sa.sep-ipv4-subnet-mask": "10",
                "sa.uni-mtu": "1540",
                "sa.row-index": "0",
                "sa.sep-ipv6-subnet-mask": "11",
                "sa.uni-description": "uni description fw test",
                "sa.enable-link-management": "false",
                "sa.uni-instance-id": null,
                "sa.service-state": "TRUE",
                "sa.use-irb": "FALSE"
            }
         },
         "sa.ipv4-bgp-neighbor": {
            "sa.bgp-neighbor-data": {
                "sa.device": "MD=CISCO_EPNM!ND=TEST903-165.75",
                "sa.vrf": "VRF_FW_RESTCONF_NBI",
                "sa.ip-address": "10.2.23.42",
                "sa.neighbor-as": "11",
                "sa.ingress-rp": null,
                "sa.egress-rp": null,
                "sa.local-as": "12",
                "sa.as-action": "No Prepend"
            }
         },
         "sa.ipv6-bgp-neighbor": {
            "sa.bgp-neighbor-data": {
                "sa.device": "MD=CISCO_EPNM!ND=TEST903-165.75",
                "sa.vrf": "VRF_FW_RESTCONF_NBI",
                "sa.ip-address": "1:2:22:33",
                "sa.neighbor-as": "14",
                "sa.ingress-rp": null,
                "sa.egress-rp": null,
                "sa.local-as": "15",
                "sa.as-action": "No Prepend"
            }
         }
      }
   }
}
```

7.7.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
<ns4:response-message
xmlns:ns40="urn:cisco:params:xml:ns:yang:restconf:party"
      xmlns:ns39="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns38="urn:cisco:params:xml:ns:yang:restconf:alarms"
```

```
xmlns:ns37="urn:ietf:params:xml:ns:yang:ietf-restconf"
      xmlns:ns36="urn:cisco:params:xml:ns:yang:service:activation:status:v1"
      xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
      xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns31="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns30="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
      xmlns:ns29="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns28="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
      xmlns:ns27="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns26="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns24="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
      xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
      xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
      xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
      <ns4:header>
            <ns4:firstIndex>0</ns4:firstIndex>
            <ns4:lastIndex>0</ns4:lastIndex>
      </ns4:header>
      <ns4:data>
            <ns36:provision-service-request>
                  <request-id>8c1a3d48-0bcd-4d87-9791-deeccd9b9198</request-
id>
                  <service-name>L3VPN-Full-mesh-both449</service-name>
                  <service-type>L3VPN</service-type>
                  <service-subtype>L3VPN</service-subtype>
                  <preview>false</preview>
                  <request-time>2017-11-06T07:37:03.600Z</request-time>
                  <completion-time>2017-11-06T07:37:34.835Z</completion-time>
                  <deploy-results>
                        <result>
                              <node-ref>MD=CISCO_EPNM!ND=asr-
903a.cisco.com</node-ref>
                              <state>SUCCESSFUL</state>
                              <config>vrf definition L3VPN-fullmeshvrf5
```

```
                                    description VRFfirst-descr
                                    vpn id 36B:10
                                    rd 10.1.1.2:10
                                    address-family ipv4
                                    route-target import 13:21
                                    route-target import 202:1
                                    route-target export 202:1
                                    address-family ipv6
                                    route-target import 202:1
                                    route-target export 202:1
                                    interface GigabitEthernet0/0/7
                                    description uni descripti
                                    duplex full
                                    mtu 1540
                                    service instance 2 ethernet
                                    description L3VPN_multi description
                                    encapsulation dot1q 1088
                                    rewrite ingress tag pop 1 symmetric
                                    bridge-domain 3
                                    exit
                                    interface BDI3
                                    no shutdown
                                    no shutdown
                                    vrf forwarding L3VPN-fullmeshvrf5
                                    ip address 2.3.4.8 255.255.0.0
                                    ipv6 address 2001:db8:85a3:1::/11
                                    ip mtu 1522
                                    ipv6 mtu 1522
                                    router bgp 65412
                                    address-family ipv4 vrf L3VPN-
fullmeshvrf5
                                    address-family ipv6 vrf L3VPN-
fullmeshvrf5
                                    exit
                                    exit
                                </config>
                            </result>
                        </deploy-results>
                        <completion-status>SUCCESS</completion-status>
                    </ns36:provision-service-request>
                </ns4:data>
</ns4:response-message>
```

7.8 Terminate L3VPN

7.8.1 Request

POST /restconf/operations/v1/cisco-service-activation:terminate-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:terminate-service-request
xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="urn:cisco:params:xml:ns:yang:service:activation:v1
```

```
restconf-terminate-request-schema.xsd ">
    <p:cfs-ref>MD=Cisco_EPNM!CFS=L3VPN_Provisioning_FW_RESTCONF_NBI</p:cfs-
ref>
    <p:service-order-data>
        <p:service-name>L3VPN_Provisioning_FW_RESTCONF_NBI</p:service-name>
        <p:service-description>L3VPN_Provisioning_description</p:service-
description>
        <p:service-type>L3VPN</p:service-type>
        <p:service-subtype>L3VPN</p:service-subtype>
        <p:service-activate>true</p:service-activate>
        <p:mpls-l3vpn-data>
            <p:service-mtu>1522</p:service-mtu>
            <p:create-full-mesh>false</p:create-full-mesh>
        </p:mpls-l3vpn-data>
    </p:service-order-data>
</p:terminate-service-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "sa.cfs-ref": "MD=Cisco_EPNM!CFS=L3VPN_Provisioning_FW_RESTCONF_NBI",
   "sa.service-order-data": {
      "sa.service-name": "L3VPN_Provisioning_FW_RESTCONF_NBI",
      "sa.service-description": "L3VPN_Provisioning_description",
      "sa.service-type": "L3VPN",
      "sa.service-subtype": "L3VPN",
      "sa.service-activate": "true",
      "sa.mpls-l3vpn-data": {
         "sa.service-mtu": "1522",
         "sa.create-full-mesh": "false"
      }
   }
}
```

7.8.2 Response

HTTP/1.1 201 Created

Server: <epnm-host>

Content-Type: application/yang.operation+xml

```
{
   "service-id": "9943cfe5-787e-49a6-9153-801ca5b6e5f9",
   "service-name": "L3VPN_Provisioning_FW_RESTCONF_NBI",
   "service-type": "L3VPN",
   "circuit-type": "L3VPN",
   "deploy-action": "Preview",
   "operation-type": "CeaseService",
   "request-time": "Wed May 11 07:46:22 PDT 2016",
   "completion-status": "SUBMITTED",
}
```

7.9 Modify L3VPN service (Add VRF)

7.9.1 Request

POST /restconf/operations/v1/cisco-service-activation:modify-service HTTP/1.1

Host: <epnm-host>

Content-Type: application/yang.operation+xml

XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:modify-service-request
      xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:service:activation:v1
restconf-modify-request-schema.xsd ">
      <p:cfs-ref>MD=Cisco_EPNM!CFS=L3VPN_Provisioning_FW_RESTCONF_NBI</p:cfs-
ref>
      <p:service-order-data>
            <p:customer-
ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</p:customer-ref>
            <p:service-name>L3VPN_Provisioning_FW_RESTCONF_NBI</p:service-
name>
            <p:service-
description>L3VPN_Provisioning_FW_RESTCONF_NBI</p:service-description>
            <p:service-type>L3VPN</p:service-type>
            <p:service-subtype>ADD VRF</p:service-subtype>
            <p:service-activate>true</p:service-activate>
            <p:mpls-l3vpn-data>
                  <p:vrf-details>
                        <p:vrf-information>
                              <p:vrf-detail>
                                    <p:vrf-device-
name>MD=CISCO_EPNM!ND=TEST903-165.75</p:vrf-device-name>
                              <p:vrf-description>VRFDesc for the
testing</p:vrf-description>
                        <p:vrf-name>VRF_FW_RESTCONF_NBI_MODIFY</p:vrf-name>
                                    <p:is-auto-rd>true</p:is-auto-rd>
                              </p:vrf-detail>
                              <p:ip-v4-route-target>
                                    <p:route-target>33:55</p:route-target>
                                    <p:direction>Import</p:direction>
                              </p:ip-v4-route-target>
                              <p:ip-v4-route-distribution>
                                    <p:protocol>OSPF</p:protocol>
                                    <p:metric></p:metric>
                                    <p:routing-process-id>4</p:routing-
process-id>
                                    <p:route-policy>MGMT-EXPORT</p:route-
policy>
                                    <p:route-match-type>External</p:route-
match-type>
                                    <p:rt-flag></p:rt-flag>
                              </p:ip-v4-route-distribution>
                              <p:ip-v4-route-distribution>
                                    <p:protocol>Static</p:protocol>
                                    <p:metric>12</p:metric>
                                    <p:routing-process-id></p:routing-
process-id>
                                    <p:route-policy>ACCEPT</p:route-policy>
                                    <p:route-match-type></p:route-match-type>
                                    <p:rt-flag></p:rt-flag>
                              </p:ip-v4-route-distribution>
                              <p:ip-v4-route-distribution>
                                    <p:protocol>RIP</p:protocol>
```

```
                                    <p:metric>14</p:metric>
                                    <p:routing-process-id></p:routing-
process-id>
                                    <p:route-policy>ACCEPT</p:route-policy>
                                    <p:route-match-type></p:route-match-type>
                                    <p:rt-flag></p:rt-flag>
                              </p:ip-v4-route-distribution>
                              <p:ip-v4-route-distribution>
                                    <p:protocol>Connected</p:protocol>
                                    <p:metric>16</p:metric>
                                    <p:routing-process-id></p:routing-
process-id>
                                    <p:route-policy>PASS</p:route-policy>
                                    <p:route-match-type></p:route-match-type>
                                    <p:rt-flag></p:rt-flag>
                              </p:ip-v4-route-distribution>
                              <p:ip-v6-route-target>
                                    <p:route-target>2:3</p:route-target>
                                    <p:direction>Import</p:direction>
                              </p:ip-v6-route-target>
                              <p:ip-v6-route-distribution>
                                    <p:protocol>Static</p:protocol>
                                    <p:metric>20</p:metric>
                                    <p:routing-process-id></p:routing-
process-id>
                                    <p:route-policy>ACCEPT</p:route-policy>
                                    <p:route-match-type></p:route-match-type>
                                    <p:rt-flag></p:rt-flag>
                              </p:ip-v6-route-distribution>
                              <p:ip-v4-import-export-policy>
                                    <p:import-policy>ACCEPT</p:import-policy>
                                    <p:export-policy>ACCEPT</p:export-policy>
                              </p:ip-v4-import-export-policy>
                              <p:ip-v6-import-export-policy>
                                    <p:import-policy>ACCEPT</p:import-policy>
                                    <p:export-policy>ACCEPT</p:export-policy>
                              </p:ip-v6-import-export-policy>
                        </p:vrf-information>
                  </p:vrf-details>
            </p:mpls-l3vpn-data>
      </p:service-order-data>
</p:modify-service-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "sa.cfs-ref": "MD=Cisco_EPNM!CFS=L3VPN_Provisioning_FW_RESTCONF_NBI",
   "sa.service-order-data": {
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "sa.service-name": "L3VPN_Provisioning_FW_RESTCONF_NBI",
      "sa.service-description": "L3VPN_Provisioning_FW_RESTCONF_NBI",
      "sa.service-type": "L3VPN",
      "sa.service-subtype": "ADD VRF",
      "sa.service-activate": "true",
      "sa.mpls-l3vpn-data": {
         "sa.vrf-details": {
            "sa.vrf-information": {
```

```
                "sa.vrf-detail": {
                   "sa.vrf-device-name": "MD=CISCO_EPNM!ND=TEST903-165.75",
                   "sa.vrf-description": "VRFDesc for the testing",
                   "sa.vrf-name": "VRF_FW_RESTCONF_NBI_MODIFY",
"sa. is-auto-rd":true
                },
                "sa.ip-v4-route-target": {
                   "sa.route-target": "33:55",
                   "sa.direction": "Import"
                },
                "sa.ip-v4-route-distribution": [
                   {
                      "sa.protocol": "OSPF",
                      "sa.metric": null,
                      "sa.routing-process-id": "4",
                      "sa.route-policy": "MGMT-EXPORT",
                      "sa.route-match-type": "External",
                      "sa.rt-flag": null
                   },
                   {
                      "sa.protocol": "Static",
                      "sa.metric": "12",
                      "sa.routing-process-id": null,
                      "sa.route-policy": "ACCEPT",
                      "sa.route-match-type": null,
                      "sa.rt-flag": null
                   },
                   {
                      "sa.protocol": "RIP",
                      "sa.metric": "14",
                      "sa.routing-process-id": null,
                      "sa.route-policy": "ACCEPT",
                      "sa.route-match-type": null,
                      "sa.rt-flag": null
                   },
                   {
                      "sa.protocol": "Connected",
                      "sa.metric": "16",
                      "sa.routing-process-id": null,
                      "sa.route-policy": "PASS",
                      "sa.route-match-type": null,
                      "sa.rt-flag": null
                   }
                ],
                "sa.ip-v6-route-target": {
                   "sa.route-target": "2:3",
                   "sa.direction": "Import"
                },
                "sa.ip-v6-route-distribution": {
                   "sa.protocol": "Static",
                   "sa.metric": "20",
                   "sa.routing-process-id": null,
                   "sa.route-policy": "ACCEPT",
                   "sa.route-match-type": null,
                   "sa.rt-flag": null
                },
```

```
                "sa.ip-v4-import-export-policy": {
                   "sa.import-policy": "ACCEPT",
                   "sa.export-policy": "ACCEPT"
                },
                "sa.ip-v6-import-export-policy": {
                   "sa.import-policy": "ACCEPT",
                   "sa.export-policy": "ACCEPT"
                }
             }
          }
       }
    }
}
```

7.9.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
{
   "customer": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
   "service-id": "65d8d280-d108-4923-9f46-a61392640d46",
   "service-name": "L3VPN_Provisioning_FW_RESTCONF_NBI",
   "service-type": "L3VPN",
   "circuit-type": "ADD VRF",
   "deploy-action": "Preview",
   "operation-type": "AmendService",
   "request-time": "Wed May 11 07:42:08 PDT 2016",
   "completion-status": "SUBMITTED"
}
```

7.10 Modify L3VPN service (Modify VPN)

7.10.1 Request

POST /restconf/operations/v1/cisco-service-activation:modify-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:modify-service-request
      xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:service:activation:
v1 restconf-modify-request-schema.xsd ">
      <p:cfs-ref>MD=CISCO_EPNM!CFS=L3VPN-Full-mesh-both449</p:cfs-ref>
      <p:service-order-data>
            <p:customer-
ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</p:customer-ref>
            <p:service-name>L3VPN-Full-mesh-both449</p:service-name>
            <p:service-description>L3VPN_multi description</p:service-
description>
            <p:service-type>L3VPN</p:service-type>
            <p:service-subtype>L3VPN</p:service-subtype>
            <p:service-activate>true</p:service-activate>
            <p:sub-operation-type>Modify VPN</p:sub-operation-type>
```

```
            <p:mpls-l3vpn-data>
                  <p:service-mtu>1522</p:service-mtu>
                  <p:create-full-mesh>true</p:create-full-mesh>
                  <p:enter-full-mesh-prefix>true</p:enter-full-mesh-
prefix>
                  <p:custom-full-mesh-prefix>202</p:custom-full-mesh-
prefix>
                  <p:full-mesh-prefix-type>IPV4</p:full-mesh-prefix-type>
                  <p:route-target-allocation-list>
                        <p:route-target-allocation>
                              <p:address-family>IPV4</p:address-family>
                              <p:route-target>13:21</p:route-target>
                        </p:route-target-allocation>

                  </p:route-target-allocation-list>
                  <p:hidden-rt-information-list>
                        <p:hidden-route-target-allocation>
                              <p:index>1</p:index>
                              <p:delete-flag>N</p:delete-flag>
                              <p:address-family>IPV4</p:address-family>
                              <p:route-target>13:21</p:route-target>
                              <p:duplicate-address-
family>IPV4</p:duplicate-address-family>
                              <p:duplicate-route-
target>13:21</p:duplicate-route-target>
                        </p:hidden-route-target-allocation>

                  </p:hidden-rt-information-list>
            </p:mpls-l3vpn-data>
      </p:service-order-data>
</p:modify-service-request>
```

7.10.2 Response

```
<ns4:response-message
xmlns:ns40="urn:cisco:params:xml:ns:yang:restconf:party"
      xmlns:ns39="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns38="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns37="urn:ietf:params:xml:ns:yang:ietf-restconf"
      xmlns:ns36="urn:cisco:params:xml:ns:yang:service:activation:status:v
1"
      xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
      xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns31="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns30="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
      xmlns:ns29="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns28="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
      xmlns:ns27="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns26="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns24="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
      xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
```

```
      xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
      xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
      <ns4:header>
            <ns4:firstIndex>0</ns4:firstIndex>
            <ns4:lastIndex>0</ns4:lastIndex>
      </ns4:header>
      <ns4:data>
            <ns36:modify-service-request>
                  <request-id>76c2bcb8-16a9-4610-b5a4-
b9f78451b4e7</request-id>
                  <service-name>L3VPN-Full-mesh-both449</service-name>
                  <service-type>L3VPN</service-type>
                  <service-subtype>L3VPN</service-subtype>
                  <preview>false</preview>
                  <request-time>2017-11-06T12:13:26.744Z</request-time>
                  <completion-time>2017-11-06T12:13:52.912Z</completion-
time>
                  <deploy-results>
                        <result>
                              <node-ref>MD=CISCO_EPNM!ND=asr-
903a.cisco.com</node-ref>
                              <state>SUCCESSFUL</state>
                              <config>vrf definition L3VPN-fullmeshvrf5
                                    address-family ipv6
                                    no route-target import 202:1
                                    no route-target export 202:1
                                    interface BDI3
                                    no shutdown
                                    no shutdown
                                    no ipv6 address
                                    no ip address
                                    vrf forwarding L3VPN-fullmeshvrf5
                                    ip address 2.3.4.8 255.255.0.0
                                    ipv6 address 2001:DB8:85A3:1::/11
                                    ipv6 address 2001:db8:85a3:1::/11
                                    router bgp 65412
                                    address-family ipv4 vrf L3VPN-
fullmeshvrf5
                                    exit
```

```
                                    exit
                                </config>
                            </result>
                        </deploy-results>
                        <completion-status>SUCCESS</completion-status>
                    </ns36:modify-service-request>
                </ns4:data>
            </ns4:response-message>
```

7.11 Standalone BERT Test

7.11.1 Request

POST /restconf/operations/v1/cisco-service-oam:service-oam-config HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:service-oam-config
      xmlns:p="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation"urn:cisco:params:xml:ns:yang:service:oam:v1
restconf-service-oam.xsd ">
      <p:bert-config>
            <p:service-ref>MD=CISCO_EPNM!CFS=CemLink#Con_26551659</p:service-
ref>
            <p:source-tp-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.33!CTP=name=SONET
                  0/5/6.1;lr=lr-sts1-and-au3-high-order-vc3</p:source-tp-ref>
            <p:destination-tp-ref>MD=CISCO_EPNM!ND=EPNNCS4206-
120.33!CTP=name=SONET
                  0/5/2.10;lr=lr-sts1-and-au3-high-order-vc3</p:destination-
tp-ref>
            <p:unmanaged-destination>false</p:unmanaged-destination>
            <p:direction>system</p:direction>
            <p:errors>0</p:errors>
            <p:duration>1</p:duration>
            <p:pattern>2^11</p:pattern>
      </p:bert-config>
</p:service-oam-config>
```

Content-Type: application/yang.operation+json
Json Payload:

```
{
   "oam.bert-config": {
      "oam.service-ref": "MD=CISCO_EPNM!CFS=CemLink#Con_26551659",
      "oam.source-tp-ref": "MD=CISCO_EPNM!ND=EPNNCS4206-120.33!CTP=name=SONET
0/5/6.1;lr=lr-sts1-and-au3-high-order-vc3",
      "oam.destination-tp-ref": "MD=CISCO_EPNM!ND=EPNNCS4206-
120.33!CTP=name=SONET\n\t\t\t0/5/2.10;lr=lr-sts1-and-au3-high-order-vc3",
      "oam.unmanaged-destination": "false",
      "oam.direction": "system",
      "oam.errors": "0",
      "oam.duration": "1",
      "oam.pattern": "2^11"
   }
}
```

7.11.2 Response

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/json

```
{
    "oam.service-oam-results": {
        "oam.request-id": "bert-config$4250249$3791932",
        "oam.service-ref": "MD=CISCO_EPNM!CFS=CemLink#Con_26551659",
        "oam.test-ids": 4250249
    }
}
```

7.12 Standalone Y1564 Test

7.12.1 Request

POST /restconf/operations/v1/cisco-service-oam:service-oam-config HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<service-oam-config xmlns="urn:cisco:params:xml:ns:yang:service:oam:v1">
      <y1564-test-config>
            <service-
ref>MD=CISCO_EPNM!CFS=EvcLink_EthPwLink#EPW_1.1.1.4_272_1.1.1.10
            </service-ref>
            <source-tp-ref>MD=CISCO_EPNM!ND=SJN-NCS4206-
10!FTP=name=GigabitEthernet0/4/4;lr=lr-gigabit-ethernet
            </source-tp-ref>
            <destination-tp-ref>MD=CISCO_EPNM!ND=NCS4206-
146.4!FTP=name=GigabitEthernet0/2/0;lr=lr-gigabit-ethernet
            </destination-tp-ref>
            <is-one-way>true</is-one-way>
            <duration>45</duration>
            <delay>10</delay>
            <is-custom-rates>true</is-custom-rates>
            <rates>1000</rates>
            <eir-rate>1000</eir-rate>
            <cir-rate>500</cir-rate>
            <packet-size>1024</packet-size>
            <ip-type>IPv4</ip-type>
            <inner-tag>
                  <vlan-id>11</vlan-id>
            </inner-tag>
            <outer-tag>
                  <vlan-id>12</vlan-id>
            </outer-tag>
      </y1564-test-config>
</service-oam-config>
```

Content-Type: application/yang.operation+json
Json Payload:

```
{
   "oam.y1564-test-config": {
      "oam.service-ref":
"MD=CISCO_EPNM!CFS=EvcLink_EthPwLink#EPW_1.1.1.4_272_1.1.1.10",
```

```
      "oam.source-tp-ref": "MD=CISCO_EPNM!ND=SJN-NCS4206-
10!FTP=name=GigabitEthernet0/4/4;lr=lr-gigabit-ethernet",
      "oam.destination-tp-ref": "MD=CISCO_EPNM!ND=NCS4206-
146.4!FTP=name=GigabitEthernet0/2/0;lr=lr-gigabit-ethernet",
      "oam.is-one-way": "true",
      "oam.duration": "45",
      "oam.delay": "10",
      "oam.is-custom-rates": "true",
      "oam.rates": "1000",
      "oam.eir-rate": "1000",
      "oam.cir-rate": "500",
      "oam.packet-size": "1024",
      "oam.ip-type": "IPv4",
      "oam.inner-tag": {
         "oam.vlan-id": "11"
      },
      "oam.outer-tag": {
         "oam.vlan-id": "12"
      }
   }
}
```

7.12.2 Response

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/json

```
{
    "oam.service-oam-results": {
        "oam.request-id": "y1564-test-config$1690243$1690243",
        "oam.service-ref":
"MD=CISCO_EPNM!CFS=EvcLink_EthPwLink#EPW_1.1.1.4_272_1.1.1.10",
        "oam.test-ids": 1690243
    }
}
```

7.13 Standalone Y1731 Test

7.13.1 Request

POST /restconf/operations/v1/cisco-service-oam:service-oam-config HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<service-oam-config xmlns="urn:cisco:params:xml:ns:yang:service:oam:v1">
      <y1731-test-config>
            <service-
ref>MD=CISCO_EPNM!CFS=EvcLink_EthPwLink#EPW_1.1.1.4_272_1.1.1.10
            </service-ref>
            <source-tp-ref>MD=CISCO_EPNM!ND=SJN-NCS4206-
10!FTP=name=GigabitEthernet0/4/4;lr=lr-gigabit-ethernet
            </source-tp-ref>
            <destination-tp-ref>MD=CISCO_EPNM!ND=NCS4206-
146.4!FTP=name=GigabitEthernet0/2/0;lr=lr-gigabit-ethernet
            </destination-tp-ref>
```

```
            <is-loss-required>true</is-loss-required>
            <is-delay-required>true</is-delay-required>
            <cos>2</cos>
            <probe-length>30</probe-length>
            <burst-interval>30</burst-interval>
            <packet-count>10</packet-count>
            <packet-interval>1000</packet-interval>
            <packet-size>64</packet-size>
            <duration>30</duration>
      </y1731-test-config>
</service-oam-config>
```

Content-Type: application/yang.operation+json
Json Payload:

```
{
   "oam.y1731-test-config": {
      "oam.service-ref":
"MD=CISCO_EPNM!CFS=EvcLink_EthPwLink#EPW_1.1.1.4_272_1.1.1.10",
      "oam.source-tp-ref": "MD=CISCO_EPNM!ND=SJN-NCS4206-
10!FTP=name=GigabitEthernet0/4/4;lr=lr-gigabit-ethernet",
      "oam.destination-tp-ref": "MD=CISCO_EPNM!ND=NCS4206-
146.4!FTP=name=GigabitEthernet0/2/0;lr=lr-gigabit-ethernet",
      "oam.is-loss-required": "true",
      "oam.is-delay-required": "true",
      "oam.cos": "2",
      "oam.probe-length": "30",
      "oam.burst-interval": "30",
      "oam.packet-count": "10",
      "oam.packet-interval": "1000",
      "oam.packet-size": "64",
      "oam.duration": "30"
   }
}
```

7.13.2 Response

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/json

```
{
    "oam.service-oam-results": {
        "oam.request-id": "y1731-test-config$4250249$4250249",
        "oam.service-ref": "MD=CISCO_EPNM!CFS=EPLpm188",
        "oam.test-ids": 4250249
    }
}
```

7.14 Get Standalone Test Result

7.14.1 Request

GET /restconf/operations/v1/cisco-service-oam:service-oam-config/bert-config$4250249$3791932 HTTP/1.1
Host: <epnm-host>
Content-Type: application/json

7.14.2 Response

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/json


```
{
    "oam:service-oam-results":
    {
        "oam:bert-result-list":
        {
            "oam:bert-result":
            [
                {
                    "oam:service-ref":
"MD=CISCO_EPNM!CFS=CemLink#Con_26551659",
                    "oam:direction": "system",
                    "oam:sync-status": "Not Sync",
                    "oam:errors-last": "0 bits",
                    "oam:duration": 1,
                    "oam:received-bits-last-sync": "2773 Mbits",
                    "oam:sync-count": 1,
                    "oam:test-pattern": "2^11",
                    "oam:total-errors": "0 bits",
                    "oam:received-bits": "2773 Mbits",
                    "oam:last-clearing-counters": "N/A",
                    "oam:test-result-status": "done",
                    "oam:time-remaining": 0
                },

                {
                    "oam:service-ref":
"MD=CISCO_EPNM!CFS=CemLink#Con_26551659",
                    "oam:direction": "system",
                    "oam:sync-status": "Not Sync",
                    "oam:errors-last": "0 bits",
                    "oam:duration": 1,
                    "oam:received-bits-last-sync": "2684 Mbits",
                    "oam:sync-count": 1,
                    "oam:test-pattern": "2^11",
                    "oam:total-errors": "0 bits",
                    "oam:received-bits": "2684 Mbits",
                    "oam:last-clearing-counters": "N/A",
                    "oam:test-result-status": "done",
                    "oam:time-remaining": 0
                }
            ]
        }
    }
}
```


7.15 LSP Ping And Trace

7.15.1 Activate a service

POST URL:https://{ServerIP}/restconf/operations/v1/cisco-service-oam:service-oam-config

XML REQUEST

```
<?xml version="1.0" encoding="UTF-8"?>
<service-oam-config xmlns="urn:cisco:params:xml:ns:yang:service:oam:v1">
      <mpls-lsp-ping-config>
            <service-
ref>MD=CISCO_EPNM!CFS=EvcLink_EthPwLink#EPW_5.5.5.20_2469_5.5.5.28
            </service-ref>
            <service-state-role>active</service-state-role>
      </mpls-lsp-ping-config>
</service-oam-config>
```

JSON REQUEST

```
{
   "oam.mpls-lsp-ping-config": {
      "oam.service-ref":
"MD=CISCO_EPNM!CFS=EvcLink_EthPwLink#EPW_5.5.5.20_2469_5.5.5.28",
      "oam.service-state-role": "active"
   }
}
```

RESPONSE

```
{
"oam.service-oam-results": {
"oam.request-id": "mpls-lsp-ping-config$1006$1689932",
"oam.service-ref":
"MD=CISCO_EPNM!CFS=EvcLink_EthPwLink#EPW_5.5.5.20_2469_5.5.5.28",
"oam.test-ids": 1006
}
}
```

7.15.1.1 *GET Ping Details*

Get URL: `https://{ServerIP}/restconf/operations/v1/cisco-service-oam:service-oam-config/mpls-lsp-ping/1006?check-ready=true`

```
<ns16:service-oam-results
xmlns:ns37="urn:cisco:params:xml:ns:yang:restconf:party"
      xmlns:ns36="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns34="urn:ietf:params:xml:ns:yang:ietf-restconf"
      xmlns:ns33="urn:cisco:params:xml:ns:yang:service:activation:status:v
1"
      xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
      xmlns:ns31="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns30="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns29="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns28="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns27="urn:cisco:params:xml:ns:yang:yang-push:v1"
      xmlns:ns26="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns24="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns22="urn:cisco:params:xml:ns:yang:profile-protection:v1"
      xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns19="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
```

```
      xmlns:ns16="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns14="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns12="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns4="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library"
xmlns:ns2="inet-uri">
      <ns16:mpls-lsp-ping>
            <ns16:raw-output>ping mpls ipv4 6.6.6.165 255.255.255.255
source
                  6.6.6.29

                  Sending 5, 72-byte MPLS Echos to 6.6.6.165/32,
                  timeout is 2 seconds, send interval is 0 msec:

                  Codes: '!' - success, 'Q' - request not sent, '.' -
timeout,
                  'L' - labeled output interface, 'B' - unlabeled output
interface,
                  'D' - DS Map mismatch, 'F' - no FEC mapping, 'f' - FEC
mismatch,
                  'M' - malformed request, 'm' - unsupported tlvs, 'N' -
no label entry,
                  'P' - no rx intf label prot, 'p' - premature termination
of LSP,
                  'R' - transit router, 'I' - unknown upstream index,
                  'l' - Label switched with FEC change, 'd' - see DDMAP
for return code,
                  'X' - unknown return code, 'x' - return code 0

                  Type escape sequence to abort.
                  QQQQQ
                  Success rate is 0 percent (0/5)
                  Total Time Elapsed 235 ms

            </ns16:raw-output>
      </ns16:mpls-lsp-ping>
</ns16:service-oam-results>
```

7.15.2 LSP TraceOut Request and Response

`https://{ServerIP}/restconf/operations/v1/cisco-service-oam:service-oam-config`

XML REQUEST:

```
<?xml version="1.0" encoding="UTF-8"?>
<service-oam-config xmlns="urn:cisco:params:xml:ns:yang:service:oam:v1">
      <mpls-lsp-traceroute-config>
            <service-ref>MD=CISCO_EPNM!CFS=TEST-TRACEROUTE-CFS</service-
```

```
ref>
            <service-state-role>active</service-state-role>
      </mpls-lsp-traceroute-config>
</service-oam-config>
```

JSON REQUEST:

```
{
   "oam.mpls-lsp-traceroute-config": {
      "oam.service-ref":
"MD=CISCO_EPNM!CFS=EvcLink_EthPwLink#EPW_5.5.5.20_2469_5.5.5.28",
      "oam.service-state-role": "active"
   }
}
```

RESPONSE:

```
{
"oam.service-oam-results": {
"oam.request-id": "mpls-lsp-ping-config$1006$1689932",
"oam.service-ref": "MD=CISCO_EPNM!CFS=TEST-TRACEROUTE-CFS",
"oam.test-ids": 1006
}
}
```

7.15.2.1 *Get LSP Traceout Details*

Get URL: `https://{ServerIP}/restconf/operations/v1/cisco-service-oam:service-oam-config/mpls-lsp-trace-route/1002?check-ready=true`

```
<ns16:service-oam-results
xmlns:ns37="urn:cisco:params:xml:ns:yang:restconf:party"
      xmlns:ns36="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns34="urn:ietf:params:xml:ns:yang:ietf-restconf"
      xmlns:ns33="urn:cisco:params:xml:ns:yang:service:activation:status:v
1"
      xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
      xmlns:ns31="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns30="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns29="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns28="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns27="urn:cisco:params:xml:ns:yang:yang-push:v1"
      xmlns:ns26="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns24="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns22="urn:cisco:params:xml:ns:yang:profile-protection:v1"
      xmlns:ns21="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns19="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns14="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns12="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:alarms:v1"
```

```
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns4="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library"
xmlns:ns2="inet-uri">
      <ns16:mpls-lsp-traceroute>
            <ns16:raw-output>traceroute mpls ipv4 6.6.6.29 255.255.255.255
source
                  6.6.6.165

                  Tracing MPLS Label Switched Path to 6.6.6.29/32, timeout
is 2 seconds

                  Codes: '!' - success, 'Q' - request not sent, '.' -
timeout,
                  'L' - labeled output interface, 'B' - unlabeled output
interface,
                  'D' - DS Map mismatch, 'F' - no FEC mapping, 'f' - FEC
mismatch,
                  'M' - malformed request, 'm' - unsupported tlvs, 'N' -
no label entry,
                  'P' - no rx intf label prot, 'p' - premature termination
of LSP,
                  'R' - transit router, 'I' - unknown upstream index,
                  'l' - Label switched with FEC change, 'd' - see DDMAP
for return code,
                  'X' - unknown return code, 'x' - return code 0

                  Type escape sequence to abort.
                  0 6.6.6.165 MRU 0 [No Label]
                  Q 1 *
            </ns16:raw-output>
      </ns16:mpls-lsp-traceroute>
</ns16:service-oam-results>
```

7.16 Run CLI Template

7.16.1 Request

POST /restconf/operations/v1/cisco-resource-activation:run-cli-configuration HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml

```
<?xml version="1.0" encoding="UTF-8"?>
<ns1:config-request xmlns:ns1="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns2="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="urn:cisco:params:xml:ns:yang:ra:v1 cisco-resource-
activation.xsd ">
  <ns1:run-cli-configuration>
    <ns1:template-name>Syslog-Host-Logging-IOS</ns1:template-name>
    <ns1:target-list>
      <ns1:target>
        <ns1:node-ref>MD=CISCO_EPNM!ND=ISR-3900_1</ns1:node-ref>
        <ns1:parameter-list>
```

```
        <ns1:parameter>
          <ns1:name>name</ns1:name>
          <ns1:value>2.4.6.17</ns1:value>
        </ns1:parameter>
        <ns1:parameter>
          <ns1:name>size</ns1:name>
          <ns1:value>4096</ns1:value>
        </ns1:parameter>
        <ns1:parameter>
          <ns1:name>auth</ns1:name>
          <ns1:value></ns1:value>
        </ns1:parameter>
        <ns1:parameter>
          <ns1:name>alerts_history</ns1:name>
          <ns1:value></ns1:value>
        </ns1:parameter>
        <ns1:parameter>
          <ns1:name>alerts_buffer</ns1:name>
          <ns1:value></ns1:value>
        </ns1:parameter>
        <ns1:parameter>
          <ns1:name>alerts_console</ns1:name>
          <ns1:value></ns1:value>
        </ns1:parameter>
      </ns1:parameter-list>
    </ns1:target>

    <ns1:target>
      <ns1:node-ref>MD=CISCO_EPNM!ND=ISR-3900_2</ns1:node-ref>
      <ns1:parameter-list>
        <ns1:parameter>
          <ns1:name>name</ns1:name>
          <ns1:value>2.4.6.18</ns1:value>
        </ns1:parameter>
        <ns1:parameter>
          <ns1:name>size</ns1:name>
          <ns1:value>4096</ns1:value>
        </ns1:parameter>
        <ns1:parameter>
          <ns1:name>auth</ns1:name>
          <ns1:value></ns1:value>
        </ns1:parameter>
        <ns1:parameter>
          <ns1:name>alerts_history</ns1:name>
          <ns1:value></ns1:value>
        </ns1:parameter>
        <ns1:parameter>
          <ns1:name>alerts_buffer</ns1:name>
          <ns1:value></ns1:value>
        </ns1:parameter>
        <ns1:parameter>
          <ns1:name>alerts_console</ns1:name>
          <ns1:value></ns1:value>
        </ns1:parameter>
      </ns1:parameter-list>
    </ns1:target>
```

```
    </ns1:target-list>
  </ns1:run-cli-configuration>
</ns1:config-request>
```

7.16.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
<ns13:config-response
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:party"
      xmlns:ns32="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns31="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns30="urn:cisco:ns:yang:service:activation:v1"
      xmlns:ns29="urn:cisco:params:xml:ns:yang:resource:opt"
xmlns:ns28="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns27="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns26="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns25="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns24="urn:cisco:params:xml:ns:yang:yang-push:v1"
      xmlns:ns23="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:sb:customer:v1"
      xmlns:ns21="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns20="urn:cisco:params:xml:ns:yang:profile-protection:v1"
      xmlns:ns19="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns17="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library"
xmlns:ns2="inet-uri">
      <ns13:job-status>
            <ns13:job-
name>JobCliTemplateDeployIOSDevices08_18_56_526_PM_02_10_2017
            </ns13:job-name>
            <ns13:message>An deploy job has been successfully created.
            </ns13:message>
      </ns13:job-status>
</ns13:config-response>
```

7.17 CLI Template Run Status

7.17.1 Request

GET /restconf/operations/v1/cisco-resource-activation:get-cli-configuration-run-

status/JobCliTemplateDeployIOSDevices08_18_56_526_PM_02_10_2017 HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml

7.17.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
<ns13:config-response
xmlns:ns31="urn:cisco:params:xml:ns:yang:restconf:party"
      xmlns:ns30="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns29="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns28="urn:cisco:ns:yang:service:activation:v1"
      xmlns:ns27="urn:cisco:params:xml:ns:yang:resource:opt"
xmlns:ns26="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns25="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns24="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns23="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns22="urn:cisco:params:xml:ns:yang:yang-push:v1"
      xmlns:ns21="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:sb:customer:v1"
      xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns18="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library"
xmlns:ns2="inet-uri">
      <ns13:job-status>
            <ns13:job-
name>JobCliTemplateDeployIOSDevices08_39_11_398_PM_02_07_2017
            </ns13:job-name>
            <ns13:run-id>3867511</ns13:run-id>
            <ns13:run-status>COMPLETED</ns13:run-status>
            <ns13:status>SUCCESS</ns13:status>
            <ns13:duration>30</ns13:duration>
            <ns13:start-time>2017-02-07 20:39:41.426</ns13:start-time>
            <ns13:completion-time>2017-02-07 20:40:12.442</ns13:completion-
time>
      </ns13:job-status>
      <ns13:deploy-result-list>
            <ns13:deploy-result>
                  <ns13:node-ref>MD=CISCO_EPNM!ND=ISR-3900_1</ns13:node-ref>
                  <ns13:transcript>
```

```
                        configlet:
                        logging on
                        logging host 2.4.6.17
                        logging buffered 4096
                        response:
                        <cliChunks>
                              <cliChunk>
                                    <cli>terminal width 0
                                          config t
                                          logging on
                                          logging host 2.4.6.17
                                          logging buffered 4096
                                    </cli>
                                    <response><![CDATA[terminal width 0
ISR-3900_1#config t
Enter configuration commands, one per line.  End with CNTL/Z.
ISR-3900_1(config)#logging on
ISR-3900_1(config)#logging host 2.4.6.17
ISR-3900_1(config)#logging buffered 4096
ISR-3900_1(config)#]]></response>
                              </cliChunk>
                        </cliChunks>
                  </ns13:transcript>
            </ns13:deploy-result>
            <ns13:deploy-result>
                  <ns13:node-ref>MD=CISCO_EPNM!ND=ISR-3900_2</ns13:node-ref>
                  <ns13:transcript>
                        configlet:
                        logging on
                        logging host 2.4.6.18
                        logging buffered 4096
                        response:
                        <cliChunks>
                              <cliChunk>
                                    <cli>terminal width 0
                                          config t
                                          logging on
                                          logging host 2.4.6.18
                                          logging buffered 4096
                                    </cli>
                                    <response><![CDATA[terminal width 0
ISR-3900_2#config t
Enter configuration commands, one per line.  End with CNTL/Z.
ISR-3900_2(config)#logging on
ISR-3900_2(config)#logging host 2.4.6.18
ISR-3900_2(config)#logging buffered 4096
ISR-3900_2(config)#]]></response>
                              </cliChunk>
                        </cliChunks>
                  </ns13:transcript>
            </ns13:deploy-result>
      </ns13:deploy-result-list>
</ns13:config-response>
```

7.18 Get CLI Template

7.18.1 Request

GET /restconf/data/v1/cisco-resource-activation:cli-template HTTP/1.1
Host: <epnm-host>
Accept: application/json

7.18.2 Response

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/json


```
{
    "com.response-message":
    {
        "com.header":
        {
            "com.firstIndex": 3,
            "com.lastIndex": 5
        },

        "com.data":
        {
            "ra.cli-template":
            [
                {
                    "ra.name": "EEM Environmental Variables",
                    "ra.path": "CLI Templates/System Templates - CLI",
                    "ra.description": "This template is used to configure
Embedded Event Manager(EEM) Environmental Variables which are used by the TCL
script on Cisco Catalyst switches.",
                    "ra.device-type": "Switches and Hubs/Cisco Catalyst 3750
Series Switches,Switches and Hubs/Cisco Catalyst 1900 Series
Switches,Switches and Hubs/Cisco FastHub 200 Series Hubs,Switches and
Hubs/Cisco Catalyst 3550 Series Switches,Switches and Hubs/Cisco Catalyst
8500 Series Multiservice Switch Routers,Switches and Hubs/Cisco ME 3800X
Series Carrier Ethernet Switch Routers,Switches and Hubs/Cisco FastHub 300
Series Hubs,Switches and Hubs/Other Switches and Hubs,Switches and Hubs/Cisco
Catalyst 6800 Series Switches,Switches and Hubs/Rockwell Stratix 8000 Series
Switches,Switches and Hubs/Cisco IE 3010 Series Switches,Switches and
Hubs/Cisco Workgroup Concentrators,Switches and Hubs/Cisco BPX 8600 Series
Switches,Switches and Hubs/Cisco 1538 Series Micro Hubs,Switches and
Hubs/Cisco 1500 Series Micro Hubs,Switches and Hubs/Cisco Catalyst 3750-X
Series Switches,Switches and Hubs/Cisco Catalyst 3750 Metro Series
Switches,Switches and Hubs/Cisco ME 6500 Series Ethernet Switches,Switches
and Hubs/Cisco Catalyst 4500-X Series Switches,Switches and Hubs/Cisco
Catalyst G-L3 Series Switches,Switches and Hubs/Cisco Catalyst 3560-C Series
Switches,Switches and Hubs/Cisco Catalyst 8500 Series Campus Switch
Routers,Switches and Hubs/Cisco Lightstream ATM Switches,Switches and
Hubs/Cisco ME 2400 Series Ethernet Access Switches,Switches and Hubs/Cisco
Catalyst 3560-X Series Switches,Switches and Hubs/Cisco Catalyst 3900 Series
Switches,Switches and Hubs/Cisco 8110 Series Broadband Network Termination
Units,Switches and Hubs/Cisco Catalyst 1600 Series Switches,Switches and
Hubs/Cisco 1220 Etherswitch Series,Switches and Hubs/Cisco Catalyst 3560
Series Switches,Switches and Hubs/Cisco Catalyst Blade Switch 3000
```

```
Series,Switches and Hubs/Cisco Small Business 300 Series Managed
Switches,Switches and Hubs/Cisco Pro Series,Switches and Hubs/Cisco 1548
Series Micro Switch,Switches and Hubs/Cisco Catalyst 4900 Series
Switches,Switches and Hubs/Cisco ME 3400 Series Ethernet Access
Switches,Switches and Hubs/Cisco ME 4900 Series Ethernet Switches,Switches
and Hubs/Cisco Catalyst 3000 Series Switches,Switches and Hubs/Cisco MGX 8900
Series Switches,Switches and Hubs/Cisco Catalyst 5500 Series
Switches,Switches and Hubs/Cisco IGX 8400 Series Switches,Switches and
Hubs/Cisco ME 3600X Series Ethernet Access Switches,Switches and
Hubs/Rockwell Stratix 5700 Series Switches,Switches and Hubs/Cisco Catalyst
3850 Series Ethernet Stackable Switch,Switches and Hubs/Cisco ME 3400E Series
Ethernet Access Switches,Switches and Hubs/Cisco MGX 8800 Series
Switches,Switches and Hubs/Cisco Catalyst 5000 Series Switches,Switches and
Hubs/Cisco FastHub Series Hubs,Switches and Hubs/Cisco Catalyst 4200 Series
Switches,Switches and Hubs/Cisco MGX 8200 Series Edge Concentrators,Switches
and Hubs/Cisco Catalyst 3560-E Series Switches,Switches and Hubs/Cisco
Catalyst 4500 Series Switches,Switches and Hubs/Cisco Catalyst 3650 Series
Switches,Switches and Hubs/Cisco MS200X Series Ethernet Access
Switch,Switches and Hubs/Cisco IE 3000 Series Switches,Switches and
Hubs/Cisco Small Business 500 Series Stackable Managed Switches ,Switches and
Hubs/Cisco FastHub 100 Series Hubs,Switches and Hubs/Cisco Catalyst 1200
Series Switches,Switches and Hubs/Cisco Catalyst 3500 Series XL
Switches,Switches and Hubs/Cisco Catalyst 6000 Series Switches,Switches and
Hubs/Cisco Catalyst 4000 Series Switches,Switches and Hubs/Cisco Catalyst
3750-E Series Switches,Switches and Hubs/Cisco Catalyst 6500 Series
Switches,Routers",
                    "ra.created-time": "2017-01-27 13:49:28.319",
                    "ra.content": "\n#if ( $env_var_action eq \"Add\"
)\n\t#if ( $env_var_name1 != \"\")\n\tevent manager environment
$env_var_name1 $env_var_value1\n\t#end\n\t#if ( $env_var_name2 !=
\"\")\n\tevent manager environment $env_var_name2
$env_var_value2\n\t#end\n\t#if ( $env_var_name3 != \"\")\n\tevent manager
environment $env_var_name3 $env_var_value3\n\t#end\n\t#if ( $env_var_name4 !=
\"\")\n\tevent manager environment $env_var_name4
$env_var_value4\n\t#end\n\t#if ( $env_var_name5 != \"\")\n\tevent manager
environment $env_var_name5 $env_var_value5\n\t#end\n\n\t#elseif
($env_var_action eq \"Remove\" )\n\t#if ( $env_var_name1 != \"\")\n\tno event
manager environment $env_var_name1 $env_var_value1\n\t#end\n\t#if (
$env_var_name2 != \"\")\n\tno event manager environment $env_var_name2
$env_var_value2\n\t#end\n\t#if ( $env_var_name3 != \"\")\n\tno event manager
environment $env_var_name3 $env_var_value3\n\t#end\n\t#if ( $env_var_name4 !=
\"\")\n\tno event manager environment $env_var_name4
$env_var_value4\n\t#end\n\t#if ( $env_var_name5 != \"\")\n\tno event manager
environment $env_var_name5 $env_var_value5\n\t#end\n#end\n",
                    "ra.parameter-list":
                    {
                        "ra.parameter":
                        [
                            {
                                "ra.name": "env_var_action",
                                "ra.required": false
                            },

                            {
                                "ra.name": "env_var_name1",
                                "ra.required": true
```

```
                    },

                    {
                        "ra.name": "env_var_value1",
                        "ra.required": true
                    },

                    {
                        "ra.name": "env_var_name2",
                        "ra.required": false
                    },

                    {
                        "ra.name": "env_var_value2",
                        "ra.required": false
                    },

                    {
                        "ra.name": "env_var_name3",
                        "ra.required": false
                    },

                    {
                        "ra.name": "env_var_value3",
                        "ra.required": false
                    },

                    {
                        "ra.name": "env_var_name4",
                        "ra.required": false
                    },

                    {
                        "ra.name": "env_var_value4",
                        "ra.required": false
                    },

                    {
                        "ra.name": "env_var_name5",
                        "ra.required": false
                    },

                    {
                        "ra.name": "env_var_value5",
                        "ra.required": false
                    }
                ]
            },

            "ra.author": "root"
        },

        {
            "ra.name": "EOAM-CCDB-Content-IOS-XR",
            "ra.path": "CLI Templates/System Templates - CLI",
            "ra.description": "Display information about local
```

```
maintenance end points (MEPs).",
                    "ra.device-type": "Routers/Cisco ASR 9000 Series
Aggregation Services Routers",
                    "ra.created-time": "2017-01-27 13:49:28.822",
                    "ra.content": "#if($nodeId == \"\")\n    do show ethernet
cfm ccm-learning-database\n#else\n    do show ethernet cfm ccm-learning-
database location $nodeId\n#end\n\n\n\n\n\n",
                    "ra.parameter-list":
                    {
                        "ra.parameter":
                        {
                            "ra.name": "nodeId",
                            "ra.required": false
                        }
                    },

                    "ra.author": "root"
                },

                {
                    "ra.name": "Redundancy Forced-Switchover",
                    "ra.path": "CLI Templates/System Templates - CLI",
                    "ra.description": "Configures forced switchover to
standby",
                    "ra.device-type": "Switches and Hubs/Cisco Catalyst 3850
Series Ethernet Stackable Switch,Switches and Hubs/Cisco Catalyst 3750 Series
Switches,Switches and Hubs/Cisco Catalyst 3750-E Series Switches,Switches and
Hubs/Cisco Catalyst 3650 Series Switches,Switches and Hubs/Cisco Catalyst
3750 Metro Series Switches,Switches and Hubs/Cisco Catalyst 3750-X Series
Switches",
                    "ra.created-time": "2017-01-27 13:49:29.231",
                    "ra.content": "\n            \n\t\t\t#if (
$systemConfigModify eq \"true\" and $overWriteBeforeConfig eq \"true\")\n
#MODE_ENABLE                \n            #INTERACTIVE\n\t\t\tredundancy
force-switchover<IQ>yes/no<R>yes<IQ>NVRAM configuration<R>y<IQ>switchover to
standby<R>y\n             #ENDS_INTERACTIVE\n            #MODE_END_ENABLE\n
#elseif ( $systemConfigModify eq \"false\" and $overWriteBeforeConfig eq
\"true\")\n            #MODE_ENABLE\n
#INTERACTIVE\n\t\t\tredundancy force-switchover<IQ>yes/no<R>no<IQ>NVRAM
configuration<R>y<IQ>switchover to standby<R>y\n
#ENDS_INTERACTIVE\n            #MODE_END_ENABLE\n            #elseif (
$systemConfigModify eq \"true\" and $overWriteBeforeConfig eq \"false\")\n
#MODE_ENABLE\n            #INTERACTIVE\n\t\t\tredundancy force-
switchover<IQ>yes/no<R>yes<IQ>NVRAM configuration<R>n<IQ>switchover to
standby<R>y\n             #ENDS_INTERACTIVE\n
#MODE_END_ENABLE\n\t\t\t#else\n\t\t    #MODE_ENABLE\n\t
#INTERACTIVE\n\t\t\tredundancy force-switchover<IQ>yes/no<R>no<IQ>NVRAM
configuration<R>n<IQ>switchover to standby<R>y\n
#ENDS_INTERACTIVE\n            #MODE_END_ENABLE\n
#end\n\t\t\t\n\t\t\t",
                    "ra.parameter-list":
                    {
                        "ra.parameter":
                        [
                            {
                                "ra.name": "systemConfigModify",
```

```
                                "ra.required": false
                            },

                            {
                                "ra.name": "overWriteBeforeConfig",
                                "ra.required": false
                            }
                        ]
                    },

                    "ra.author": "root"
                }
            ]
        }
    }
}
```

7.19 Resource Configuration – Create

7.19.1 Request

POST /restconf/operations/v1/cisco-resource-activation:create-config HTTP/1.1
Host: <epnm-host>

The example request is to create the OSPF process configuration.

Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<ra:create-resource-configuration-request
xmlns:co="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ra="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="urn:cisco:params:xml:ns:yang:ra:v1 cisco-resource-
activation.xsd ">
  <ra:resource-configuration>
    <ra:node-ref>MD=CISCO_EPNM!ND=prime-asr9010-4.tech</ra:node-ref>
    <ra:config-list>
      <ra:config>
        <ra:entity-name>OspfProcessSettings</ra:entity-name>
        <ra:parameter-list>
          <ra:parameter>
            <ra:name>routingProcessId</ra:name>
            <ra:value>100</ra:value>
          </ra:parameter>
          <ra:parameter>
            <ra:name>routerId</ra:name>
            <ra:value>8.8.8.9</ra:value>
          </ra:parameter>
          <ra:parameter>
            <ra:name>cost</ra:name>
            <ra:value>8</ra:value>
          </ra:parameter>
          <ra:parameter>
            <ra:name>priority</ra:name>
            <ra:value>9</ra:value>
          </ra:parameter>
```

```
          <ra:parameter>
            <ra:name>maximumPaths</ra:name>
            <ra:value>7</ra:value>
          </ra:parameter>
          <ra:parameter>
            <ra:name>distanceIP</ra:name>
            <ra:value>6</ra:value>
          </ra:parameter>
          <ra:parameter>
            <ra:name>distanceExternal</ra:name>
            <ra:value>5</ra:value>
          </ra:parameter>
        </ra:parameter-list>
      </ra:config>
    </ra:config-list>
  </ra:resource-configuration>
</ra:create-resource-configuration-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "ra.resource-configuration": {
      "ra.node-ref": "MD=CISCO_EPNM!ND=prime-asr9010-4.tech",
      "ra.config-list": {
         "ra.config": {
            "ra.entity-name": "OspfProcessSettings",
            "ra.parameter-list": {
               "ra.parameter": [
                  {
                     "ra.name": "routingProcessId",
                     "ra.value": "100"
                  },
                  {
                     "ra.name": "routerId",
                     "ra.value": "8.8.8.9"
                  },
                  {
                     "ra.name": "cost",
                     "ra.value": "8"
                  },
                  {
                     "ra.name": "priority",
                     "ra.value": "9"
                  },
                  {
                     "ra.name": "maximumPaths",
                     "ra.value": "7"
                  },
                  {
                     "ra.name": "distanceIP",
                     "ra.value": "6"
                  },
                  {
                     "ra.name": "distanceExternal",
                     "ra.value": "5"
                  }
               ]
```

```
                }
            }
        }
    }
}
```

7.19.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
<ns12:create-resource-configuration-response
      xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns18="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns17="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns16="urn:cisco:params:xml:ns:yang:yang-push:v1"
      xmlns:ns15="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library"
xmlns:ns2="inet-uri">
      <ns12:resource-configuration-response></ns12:resource-configuration-
response>
</ns12:create-resource-configuration-response>
```

7.20 Resource Configuration – Modify

7.20.1 Request

POST /restconf/operations/v1/cisco-resource-activation:modify-config HTTP/1.1
Host: <epnm-host>

The example request is to modify the OSPF process configuration.

Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<ra:modify-resource-configuration-request
xmlns:co="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ra="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="urn:cisco:params:xml:ns:yang:ra:v1 cisco-resource-
activation.xsd ">
  <ra:resource-configuration>
    <ra:node-ref>MD=CISCO_EPNM!ND=prime-asr9010-4.tech</ra:node-ref>
    <ra:config-list>
      <ra:config>
        <ra:entity-name>OspfProcessSettings</ra:entity-name>
```

```
        <ra:key-parameter-name>routerId</ra:key-parameter-name>
        <ra:parameter-list>
          <ra:parameter>
            <ra:name>routingProcessId</ra:name>
            <ra:value>100</ra:value>
          </ra:parameter>
          <ra:parameter>
            <ra:name>routerId</ra:name>
            <ra:value>8.8.8.9</ra:value>
          </ra:parameter>
          <ra:parameter>
            <ra:name>cost</ra:name>
            <ra:value>8</ra:value>
          </ra:parameter>
          <ra:parameter>
            <ra:name>priority</ra:name>
            <ra:value>9</ra:value>
          </ra:parameter>
          <ra:parameter>
            <ra:name>maximumPaths</ra:name>
            <ra:value>7</ra:value>
          </ra:parameter>
          <ra:parameter>
            <ra:name>distanceIP</ra:name>
            <ra:value>8</ra:value>
          </ra:parameter>
          <ra:parameter>
            <ra:name>distanceExternal</ra:name>
            <ra:value>5</ra:value>
          </ra:parameter>
        </ra:parameter-list>
      </ra:config>
    </ra:config-list>
  </ra:resource-configuration>
</ra:modify-resource-configuration-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "ra.resource-configuration": {
      "ra.node-ref": "MD=CISCO_EPNM!ND=prime-asr9010-4.tech",
      "ra.config-list": {
         "ra.config": {
            "ra.entity-name": "OspfProcessSettings",
            "ra.key-parameter-name": "routerId",
            "ra.parameter-list": {
               "ra.parameter": [
                  {
                     "ra.name": "routingProcessId",
                     "ra.value": "100"
                  },
                  {
                     "ra.name": "routerId",
                     "ra.value": "8.8.8.9"
                  },
                  {
                     "ra.name": "cost",
```

```
                        "ra.value": "8"
                    },
                    {
                        "ra.name": "priority",
                        "ra.value": "9"
                    },
                    {
                        "ra.name": "maximumPaths",
                        "ra.value": "7"
                    },
                    {
                        "ra.name": "distanceIP",
                        "ra.value": "8"
                    },
                    {
                        "ra.name": "distanceExternal",
                        "ra.value": "5"
                    }
                ]
            }
        }
    }
}
```

7.20.2 Response

HTTP/1.1 201 Modified
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
<ns12:modify-resource-configuration-response
      xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns18="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns17="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns16="urn:cisco:params:xml:ns:yang:yang-push:v1"
      xmlns:ns15="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library"
xmlns:ns2="inet-uri">
      <ns12:resource-configuration-response></ns12:resource-configuration-
response>
</ns12:modify-resource-configuration-response>
```

7.21 Resource Configuration – Delete

7.21.1 Request

POST /restconf/operations/v1/cisco-resource-activation:delete-config HTTP/1.1
Host: <epnm-host>

The example request is to delete the OSPF process configuration.

Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<ra:delete-resource-configuration-request
xmlns:co="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ra="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="urn:cisco:params:xml:ns:yang:ra:v1 cisco-resource-
activation.xsd ">
  <ra:resource-configuration>
    <ra:node-ref>MD=CISCO_EPNM!ND=prime-asr9010-4.tech</ra:node-ref>
    <ra:config-list>
      <ra:config>
        <ra:entity-name>OspfProcessSettings</ra:entity-name>
        <ra:key-parameter-name>routerId</ra:key-parameter-name>
        <ra:parameter-list>
          <ra:parameter>
            <ra:name>routingProcessId</ra:name>
            <ra:value>100</ra:value>
          </ra:parameter>
          <ra:parameter>
            <ra:name>routerId</ra:name>
            <ra:value>8.8.8.9</ra:value>
          </ra:parameter>
          <ra:parameter>
            <ra:name>cost</ra:name>
            <ra:value>8</ra:value>
          </ra:parameter>
          <ra:parameter>
            <ra:name>priority</ra:name>
            <ra:value>9</ra:value>
          </ra:parameter>
          <ra:parameter>
            <ra:name>maximumPaths</ra:name>
            <ra:value>7</ra:value>
          </ra:parameter>
          <ra:parameter>
            <ra:name>distanceIP</ra:name>
            <ra:value>2</ra:value>
          </ra:parameter>
          <ra:parameter>
            <ra:name>distanceExternal</ra:name>
            <ra:value>5</ra:value>
          </ra:parameter>
        </ra:parameter-list>
      </ra:config>
    </ra:config-list>
  </ra:resource-configuration>
```

```
</ra:delete-resource-configuration-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "ra.resource-configuration": {
      "ra.node-ref": "MD=CISCO_EPNM!ND=prime-asr9010-4.tech",
      "ra.config-list": {
         "ra.config": {
            "ra.entity-name": "OspfProcessSettings",
            "ra.key-parameter-name": "routerId",
            "ra.parameter-list": {
               "ra.parameter": [
                  {
                     "ra.name": "routingProcessId",
                     "ra.value": "100"
                  },
                  {
                     "ra.name": "routerId",
                     "ra.value": "8.8.8.9"
                  },
                  {
                     "ra.name": "cost",
                     "ra.value": "8"
                  },
                  {
                     "ra.name": "priority",
                     "ra.value": "9"
                  },
                  {
                     "ra.name": "maximumPaths",
                     "ra.value": "7"
                  },
                  {
                     "ra.name": "distanceIP",
                     "ra.value": "2"
                  },
                  {
                     "ra.name": "distanceExternal",
                     "ra.value": "5"
                  }
               ]
            }
         }
      }
   }
}
```

7.21.2 Response

HTTP/1.1 201 Deleted

Server: <epnm-host>

Content-Type: application/yang.operation+xml

```
<ns12:delete-resource-configuration-response
      xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns18="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns17="urn:cisco:params:xml:ns:yang:resource:device"
```

```
xmlns:ns16="urn:cisco:params:xml:ns:yang:yang-push:v1"
      xmlns:ns15="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library"
xmlns:ns2="inet-uri">
      <ns12:resource-configuration-response></ns12:resource-configuration-
response>
</ns12:delete-resource-configuration-response>
```

7.22 Patch Cord – Create

7.22.1 Request

POST /restconf/operations/v1/cisco-resource-activation:create-patch-cord HTTP/1.1
Host: <epnm-host>
Authorization: Basic
Accept: application/yang-data+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:patchCordCreateRequest xmlns:p="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
               xsi:schemaLocation="urn:cisco:params:xml:ns:yang:ra:v1 patch-
cord.xsd ">
<p:a-end-tp-ref>MD=CISCO_EPNM!ND=NCS2006-234-141!CTP=name=PSLINE-1-14-10-
TX;lr=lr-optical-section</p:a-end-tp-ref>
    <p:z-end-tp-ref>MD=CISCO_EPNM!ND=NCS2006-234-141!CTP=name=PSLINE-1-1-10-
RX;lr=lr-optical-section</p:z-end-tp-ref>
      <!-- optional -->
    <p:direction>BIDIRECTIONAL</p:direction>
      <!-- optional -->
    <p:wavelength></p:wavelength>
</p:patchCordCreateRequest>
```

Accept: application/yang-data+json
Json Payload:

```
{
   "ra.a-end-tp-ref": "MD=CISCO_EPNM!ND=NCS2006-234-141!CTP=name=PSLINE-1-14-
10-TX;lr=lr-optical-section",
   "ra.z-end-tp-ref": "MD=CISCO_EPNM!ND=NCS2006-234-141!CTP=name=PSLINE-1-1-
10-RX;lr=lr-optical-section",
   "ra.direction": "BIDIRECTIONAL",
   "ra.wavelength": null
}
```

7.22.2 Response

```
    <ns16:patch-cord-create-response
```

```
    xmlns:ns31="urn:cisco:params:xml:ns:yang:restconf:party"
    xmlns:ns30="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
    xmlns:ns29="urn:cisco:params:xml:ns:yang:restconf:alarms"
    xmlns:ns28="urn:cisco:ns:yang:service:activation:v1"
    xmlns:ns27="urn:cisco:params:xml:ns:yang:resource:opt"
    xmlns:ns26="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
    xmlns:ns25="urn:cisco:params:xml:ns:yang:restconf:location"
    xmlns:ns24="urn:cisco:params:xml:ns:yang:restconf:foundation"
    xmlns:ns23="urn:cisco:params:xml:ns:yang:resource:device"
    xmlns:ns22="urn:cisco:params:xml:ns:yang:yang-push:v1"
    xmlns:ns21="urn:cisco:params:xml:ns:yang:qos:v1"
    xmlns:ns20="urn:cisco:params:xml:ns:yang:sb:customer:v1"
    xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
    xmlns:ns18="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
    xmlns:ns17="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
    xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
    xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
    xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
    xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
    xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
    xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
    xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
    xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
    xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
    xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
    xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
    xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
    xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
    xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library"
    xmlns:ns2="inet-uri">
        <ns16:patch-cord-ref>MD=CISCO_EPNM!TL=10.58.234.141:PSLINE-1-14-
    10-TX--10.58.234.141:PSLINE-1-1-10-RX</ns16:patch-cord-ref>
        <ns16:patch-cord-id>1087368</ns16:patch-cord-id>
        <ns16:result>SUCCESS</ns16:result>
        <ns16:message>Create Patch Cord</ns16:message>
    </ns16:patch-cord-create-response>
```

7.23 Patch Cord – Delete

7.23.1 Request

POST /restconf/operations/v1/cisco-resource-activation:delete-patch-cord HTTP/1.1
Host: <epnm-host>
Authorization: Basic
Accept: application/yang-data+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:patchCordDeleteRequest xmlns:p="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
               xsi:schemaLocation="urn:cisco:params:xml:ns:yang:ra:v1 patch-
cord.xsd ">
       <p:patch-cord-ref>MD=CISCO_EPNM!TL=10.58.234.141:PSLINE-1-14-10-TX--
10.58.234.141:PSLINE-1-1-10-RX</p:patch-cord-ref>
</p:patchCordDeleteRequest>
```

Accept: application/yang-data+json

Json Payload:

```
{
   "ra.patch-cord-ref": "MD=CISCO_EPNM!TL=10.58.234.141:PSLINE-1-14-10-TX--
10.58.234.141:PSLINE-1-1-10-RX"
}
```

7.23.2 Response

```
    <ns16:patch-cord-delete-response
    xmlns:ns31="urn:cisco:params:xml:ns:yang:restconf:party"
    xmlns:ns30="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
    xmlns:ns29="urn:cisco:params:xml:ns:yang:restconf:alarms"
    xmlns:ns28="urn:cisco:ns:yang:service:activation:v1"
    xmlns:ns27="urn:cisco:params:xml:ns:yang:resource:opt"
    xmlns:ns26="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
    xmlns:ns25="urn:cisco:params:xml:ns:yang:restconf:location"
    xmlns:ns24="urn:cisco:params:xml:ns:yang:restconf:foundation"
    xmlns:ns23="urn:cisco:params:xml:ns:yang:resource:device"
    xmlns:ns22="urn:cisco:params:xml:ns:yang:yang-push:v1"
    xmlns:ns21="urn:cisco:params:xml:ns:yang:qos:v1"
    xmlns:ns20="urn:cisco:params:xml:ns:yang:sb:customer:v1"
    xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
    xmlns:ns18="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
    xmlns:ns17="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
    xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
    xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
    xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
    xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
    xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
    xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
    xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
    xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
    xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
    xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
    xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
    xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
    xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
    xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library"
    xmlns:ns2="inet-uri">
        <ns16:patch-cord-ref>MD=CISCO_EPNM!TL=10.58.234.141:PSLINE-1-14-
    10-TX--10.58.234.141:PSLINE-1-1-10-RX</ns16:patch-cord-ref>
        <ns16:patch-cord-id>1087368</ns16:patch-cord-id>
        <ns16:result>SUCCESS</ns16:result>
        <ns16:message>Delete Patch Cord</ns16:message>
    </ns16:patch-cord-delete-response>
```

7.24 Patch Cord – Retrieval

The Patch cord is treated as a Topological Link. An attribute in the topological Link response (link-type) indicates if the link is an internal patch cord. The value “internal-patch-cord” will indicate if the link is a patch cord.

7.24.1 Request

GET /restconf//data/v1/cisco-resource-network:topological-link?fdn=<value> HTTP/1.1
Host: <epnm-host>
Accept: application/yang-data+xml

Authorization: Basic

7.24.2 Response

```
<ns4:response-message
xmlns:ns31="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns30="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
xmlns:ns29="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns28="urn:cisco:ns:yang:service:activation:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:resource:opt"
xmlns:ns26="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns25="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns24="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns23="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns22="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>0</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns16:topological-link>
            <ns16:fdn>MD=CISCO_EPNM!TL=10.58.234.141:PSLINE-1-14-10-TX--
10.58.234.141:PSLINE-1-1-10-RX</ns16:fdn>
            <ns16:discovered-name>10.58.234.141:PSLINE-1-14-10-TX--
10.58.234.141:PSLINE-1-1-10-RX</ns16:discovered-name>
            <ns16:oper-state>UP</ns16:oper-state>
            <ns16:direction>ns4:uni-direction</ns16:direction>
            <ns16:type>PHYSICAL</ns16:type>
            <ns16:link-type>internal-patchcord</ns16:link-type>
            <ns16:endpoint-list>
                <ns16:endpoint>
                    <ns16:endpoint-ref>MD=CISCO_EPNM!ND=NCS2006-234-
141!PTP=name=PSLINE-1-14-10-TX;lr=lr-optical-physical</ns16:endpoint-ref>
                </ns16:endpoint>
                <ns16:endpoint>
                    <ns16:endpoint-ref>MD=CISCO_EPNM!ND=NCS2006-234-
141!PTP=name=PSLINE-1-1-10-RX;lr=lr-optical-physical</ns16:endpoint-ref>
```

```
                </ns16:endpoint>
            </ns16:endpoint-list>
        </ns16:topological-link>
    </ns4:data>
</ns4:response-message>
```

7.25 Shared Risk Resource Group (SRRG) – Retrieval

The SRRGs are created on EPNM. The URL allows a user to retrieve the list of SRRGs or by a given SRRG by specifying the FDN of the SRRG

7.25.1 Request

For All SRRGs: GET /restconf/data/v1/cisco-resource-network:shared-risk-resource-group HTTP/1.1
For a given SRRG FDN: GET /restconf/data/v1/cisco-resource-network:shared-risk-resource-group?fdn=<value> HTTP/1.1

Host: <epnm-host>
Accept: application/yang-data+xml
Authorization: Basic

7.25.2 Response

```
<ns4:response-message
xmlns:ns31="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns30="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
xmlns:ns29="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns28="urn:cisco:ns:yang:service:activation:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:resource:opt"
xmlns:ns26="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns25="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns24="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns23="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns22="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>27</ns4:lastIndex>
```

```
    </ns4:header>
    <ns4:data>
        <ns17:srrg-attributes>
            <ns17:srrg-id>2602238208</ns17:srrg-id>
            <ns17:fdn>MD=CISCO_EPNM!SRRG=d5ce6063[2602238208]</ns17:fdn>
            <ns17:name>d5ce6063[2602238208]</ns17:name>
        </ns17:srrg-attributes>
        <ns17:srrg-attributes>
            <ns17:srrg-id>2602238720</ns17:srrg-id>
            <ns17:fdn>MD=CISCO_EPNM!SRRG=d5ce6063[2602238720]</ns17:fdn>
            <ns17:name>d5ce6063[2602238720]</ns17:name>
        </ns17:srrg-attributes>
        <ns17:srrg-attributes>
            <ns17:srrg-id>2603496608</ns17:srrg-id>
            <ns17:fdn>MD=CISCO_EPNM!SRRG=d5ce6063[2603496608]</ns17:fdn>
            <ns17:name>d5ce6063[2603496608]</ns17:name>
        </ns17:srrg-attributes>
        <ns17:srrg-attributes>
            <ns17:srrg-id>222</ns17:srrg-id>
            <ns17:fdn>MD=CISCO_EPNM!SRRG=d5ce6063[222]</ns17:fdn>
            <ns17:name>d5ce6063[222]</ns17:name>
        </ns17:srrg-attributes>
        <ns17:srrg-attributes>
            <ns17:srrg-id>345</ns17:srrg-id>
            <ns17:fdn>MD=CISCO_EPNM!SRRG=d5ce6063[345]</ns17:fdn>
            <ns17:name>d5ce6063[345]</ns17:name>
        </ns17:srrg-attributes>
        <ns17:srrg-attributes>
            <ns17:srrg-id>789</ns17:srrg-id>
            <ns17:fdn>MD=CISCO_EPNM!SRRG=d5ce6063[789]</ns17:fdn>
            <ns17:name>d5ce6063[789]</ns17:name>
        </ns17:srrg-attributes>
        <ns17:srrg-attributes>
            <ns17:srrg-id>33333</ns17:srrg-id>
            <ns17:fdn>MD=CISCO_EPNM!SRRG=d5ce6063[33333]</ns17:fdn>
            <ns17:name>d5ce6063[33333]</ns17:name>
        </ns17:srrg-attributes>
        <ns17:srrg-attributes>
            <ns17:srrg-id>8888</ns17:srrg-id>
            <ns17:fdn>MD=CISCO_EPNM!SRRG=d5ce6063[8888]</ns17:fdn>
            <ns17:name>d5ce6063[8888]</ns17:name>
        </ns17:srrg-attributes>
        <ns17:srrg-attributes>
            <ns17:srrg-id>1111</ns17:srrg-id>
            <ns17:fdn>MD=CISCO_EPNM!SRRG=d5ce6063[1111]</ns17:fdn>
            <ns17:name>d5ce6063[1111]</ns17:name>
        </ns17:srrg-attributes>
        <ns17:srrg-attributes>
            <ns17:srrg-id>4567</ns17:srrg-id>
            <ns17:fdn>MD=CISCO_EPNM!SRRG=d5ce6063[4567]</ns17:fdn>
            <ns17:name>d5ce6063[4567]</ns17:name>
        </ns17:srrg-attributes>
        <ns17:srrg-attributes>
            <ns17:srrg-id>1234</ns17:srrg-id>
            <ns17:fdn>MD=CISCO_EPNM!SRRG=d5ce6063[1234]</ns17:fdn>
            <ns17:name>d5ce6063[1234]</ns17:name>
```

```
        </ns17:srrg-attributes>
        <ns17:srrg-attributes>
            <ns17:srrg-id>2222</ns17:srrg-id>
            <ns17:fdn>MD=CISCO_EPNM!SRRG=d5ce6063[2222]</ns17:fdn>
            <ns17:name>d5ce6063[2222]</ns17:name>
        </ns17:srrg-attributes>
        <ns17:srrg-attributes>
            <ns17:srrg-id>22222</ns17:srrg-id>
            <ns17:fdn>MD=CISCO_EPNM!SRRG=d5ce6063[22222]</ns17:fdn>
            <ns17:name>d5ce6063[22222]</ns17:name>
        </ns17:srrg-attributes>
        <ns17:srrg-attributes>
            <ns17:srrg-id>333</ns17:srrg-id>
            <ns17:fdn>MD=CISCO_EPNM!SRRG=d5ce6063[333]</ns17:fdn>
            <ns17:name>d5ce6063[333]</ns17:name>
        </ns17:srrg-attributes>
    </ns4:data>
</ns4:response-message>
```

7.25.3 SRRG getTL

7.25.3.1 *Request*

https://{ServerIP}/restconf/data/v1/cisco-resource-network:shared-risk-resource-group?tlFdn=MD=CISCO_EPNM!TL=10.58.234.248:[WDMSIDE-A]--10.58.234.249:[WDMSIDE-A]

7.25.3.2 *Response*

```
<ns5:response-message
xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns34="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns32="urn:ietf:params:xml:ns:yang:ietf-restconf"
xmlns:ns31="urn:cisco:params:xml:ns:yang:service:activation:status:v1"
xmlns:ns30="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
xmlns:ns29="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns28="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns27="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns26="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns25="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns24="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
```

```
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns4="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns5:header>
        <ns5:firstIndex>0</ns5:firstIndex>
        <ns5:lastIndex>1</ns5:lastIndex>
    </ns5:header>
    <ns5:data>
        <ns19:srrg-attributes>
            <ns19:fdn>MD=CISCO_EPNM!SRRG=3707510339</ns19:fdn>
            <ns19:name>d5ce6063[3707510339]</ns19:name>
            <ns19:srrg-id>3707510339</ns19:srrg-id>
        </ns19:srrg-attributes>
        <ns19:srrg-attributes>
            <ns19:fdn>MD=CISCO_EPNM!SRRG=3707510339</ns19:fdn>
            <ns19:name>d5ce6063[3707510339]</ns19:name>
            <ns19:srrg-id>3707510339</ns19:srrg-id>
        </ns19:srrg-attributes>
    </ns5:data>
</ns5:response-message>
```

7.25.4 SRRG getTL-(Negative Case)

7.25.4.1 *Request*

```
https://{ServerIP}/restconf/data/v1/cisco-resource-network:shared-risk-
resource-group?tlFdn=MD=CISCO_EPNM!TL=10.58.234.248:[WDMSIDE-A]--
10.58.234.249:
```

7.25.4.2 *Response*

```
<ns5:response-message
xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns34="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns32="urn:ietf:params:xml:ns:yang:ietf-restconf"
xmlns:ns31="urn:cisco:params:xml:ns:yang:service:activation:status:v1"
xmlns:ns30="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
xmlns:ns29="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns28="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns27="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns26="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns25="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns24="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:ra:v1"
```

```
xmlns:ns13="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns4="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns5:header>
        <ns5:firstIndex>0</ns5:firstIndex>
        <ns5:lastIndex>-1</ns5:lastIndex>
    </ns5:header>
    <ns5:data></ns5:data>
</ns5:response-message>
```

7.25.5 SRRG getTL- with non-root user

7.25.5.1 *Request*

```
https://{ServerIP}/restconf/data/v1/cisco-resource-network:shared-risk-
resource-group?tlFdn=MD=CISCO_EPNM!TL=10.58.234.248:[WDMSIDE-A]--
10.58.234.249:[WDMSIDE-A]
User: testUSer/Public123 with config/NBI Read and NBI Write privileges
```

7.25.5.2 *Response*

```
<ns5:response-message
xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns34="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns32="urn:ietf:params:xml:ns:yang:ietf-restconf"
xmlns:ns31="urn:cisco:params:xml:ns:yang:service:activation:status:v1"
xmlns:ns30="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
xmlns:ns29="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns28="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns27="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns26="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns25="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns24="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:alarms:v1"
```

```
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns4="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns5:header>
        <ns5:firstIndex>0</ns5:firstIndex>
        <ns5:lastIndex>1</ns5:lastIndex>
    </ns5:header>
    <ns5:data>
        <ns19:srrg-attributes>
            <ns19:fdn>MD=CISCO_EPNM!SRRG=3707510339</ns19:fdn>
            <ns19:name>d5ce6063[3707510339]</ns19:name>
            <ns19:srrg-id>3707510339</ns19:srrg-id>
        </ns19:srrg-attributes>
        <ns19:srrg-attributes>
            <ns19:fdn>MD=CISCO_EPNM!SRRG=3707510339</ns19:fdn>
            <ns19:name>d5ce6063[3707510339]</ns19:name>
            <ns19:srrg-id>3707510339</ns19:srrg-id>
        </ns19:srrg-attributes>
    </ns5:data>
</ns5:response-message>
```

7.26 Performance Metrics for Topological Link – Retrieval

The Performance metrics is retrieved for a given topological Link. The current support is for retrieving the Span Loss associated with the end points of a given topological Link. The Link FDN is given as filter parameter for the URL.

7.26.1 Request

GET /restconf/data/v1/cisco-resource-network:perf-metrics?tlFdn=<value> HTTP/1.1
Host: <epnm-host>
Accept: application/yang-data+xml
Authorization: Basic

7.26.2 Response

```
<ns4:response-message
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns32="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
xmlns:ns31="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns30="urn:cisco:ns:yang:service:activation:v1"
xmlns:ns29="urn:cisco:params:xml:ns:yang:resource:opt"
xmlns:ns28="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns27="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns26="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns25="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns24="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:profile-protection:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
```

```
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>1</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns17:topological-link-metrics>
            <ns17:span-loss-direction>Z to A</ns17:span-loss-direction>
            <ns17:span-loss-value>10.6</ns17:span-loss-value>
        </ns17:topological-link-metrics>
        <ns17:topological-link-metrics>
            <ns17:span-loss-direction>A to Z</ns17:span-loss-direction>
            <ns17:span-loss-value>11.7</ns17:span-loss-value>
        </ns17:topological-link-metrics>
    </ns4:data>
</ns4:response-message>
```

7.27 Service Profiles

7.27.1 Service Provision Request with Service Profile - 1

Below is the service provisioning request with minimum required data with service profile:
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:provision-service-request
xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
    xmlns:y1="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xsi:schemaLocation="urn:cisco:params:xml:ns:yang:sa:v1 cisco-service-
activation.xsd urn:cisco:params:xml:ns:yang:service:activation:v1 restconf-
provisioning-request-schema.xsd ">
    <p:service-order-data>
        <p:service-profile-ref>MD=CISCO_EPNM!PROFILE_SERVICE=epl-
profile2</p:service-profile-ref>
        <p:service-name>MyEplService1</p:service-name>
        <p:service-description>My Epl Service 1</p:service-description>
        <p:service-type>carrier-ethernet-vpn</p:service-type>
        <p:service-subtype>EPL</p:service-subtype>
    </p:service-order-data>
</p:provision-service-request>
```

Json Payload:

```
{
   "sa.service-order-data": {
      "sa.service-profile-ref": "MD=CISCO_EPNM!PROFILE_SERVICE=epl-profile2",
      "sa.service-name": "MyEplService1",
      "sa.service-description": "My Epl Service 1",
      "sa.service-type": "carrier-ethernet-vpn",
      "sa.service-subtype": "EPL"
   }
}
```

7.27.2 Service Provision Request with Service Profile - 2

Below is the example for the provisioning request with overriding the data in service profile:
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:provision-service-request
      xmlns:p="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:y1="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:sa:v1 cisco-service-
activation.xsd urn:cisco:params:xml:ns:yang:service:activation:v1 restconf-
provisioning-request-schema.xsd ">
      <p:service-order-data>
          <p:service-profile-ref>MD=CISCO_EPNM!PROFILE_SERVICE=epl-profile-
1</p:service-profile-ref>
            <p:service-name>MyEPLServiceNew/p:service-name>
            <p:service-description>MyEPLServiceNew Description</p:service-
description>
            <p:service-type>carrier-ethernet-vpn</p:service-type>
            <p:service-subtype>EPL</p:service-subtype>
            <p:service-activate>true</p:service-activate>
            <p:ce-data>
                  <p:mtu-size>1522</p:mtu-size>
                  <p:max-uni-endpoints>2</p:max-uni-endpoints>
            </p:ce-data>
            <p:termination-point-list>
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=tmh-chn-mvso-asr9k-
3!CTP=name=GigabitEthernet0/0/0/0;lr=lr-gigabit-ethernet</p:tp-ref>  <!-- TP
fdn -->
                        <p:directionality>source</p:directionality>
                        <p:network-interface-name>MyEPLUniA</p:network-
interface-name>
                  </p:termination-point-config>
                  <p:termination-point-config>
                        <p:tp-ref>MD=CISCO_EPNM!ND=tmh-chn-mvso-asr9k-
3!CTP=name=GigabitEthernet0/0/0/1;lr=lr-gigabit-ethernet</p:tp-ref>  <!-- TP
fdn -->
                        <p:directionality>sink</p:directionality>
                        <p:network-interface-name>MyEPLUniZ</p:network-
interface-name>
                  </p:termination-point-config>
            </p:termination-point-list>
            <p:network-interface-list>
                  <p:network-interface>
```

```
                        <p:name>MyEPLUniA</p:name>
                        <p:operation>add</p:operation>
                  </p:network-interface>
                  <p:network-interface>
                        <p:name>MyEPLUniZ</p:name>
                        <p:operation>add</p:operation>
                  </p:network-interface>
            </p:network-interface-list>
      </p:service-order-data>
</p:provision-service-request>
```

Json Payload:

```
{
   "sa.service-order-data": {
      "sa.service-profile-ref": "MD=CISCO_EPNM!PROFILE_SERVICE=epl-profile-
1",
      "sa.service-name": "MyEPLServiceNew",
      "sa.service-description": "MyEPLServiceNew Description",
      "sa.service-type": "carrier-ethernet-vpn",
      "sa.service-subtype": "EPL",
      "sa.service-activate": "true",
      "sa.ce-data": {
         "sa.mtu-size": "1522",
         "sa.max-uni-endpoints": "2"
      },
      "sa.termination-point-list": {
         "sa.termination-point-config": [
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=tmh-chn-mvso-asr9k-
3!CTP=name=GigabitEthernet0/0/0/0;lr=lr-gigabit-ethernet",
               "sa.directionality": "source",
               "sa.network-interface-name": "MyEPLUniA"
            },
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=tmh-chn-mvso-asr9k-
3!CTP=name=GigabitEthernet0/0/0/1;lr=lr-gigabit-ethernet",
               "sa.directionality": "sink",
               "sa.network-interface-name": "MyEPLUniZ"
            }
         ]
      },
      "sa.network-interface-list": {
         "sa.network-interface": [
            {
               "sa.name": "MyEPLUniA",
               "sa.operation": "add"
            },
            {
               "sa.name": "MyEPLUniZ",
               "sa.operation": "add"
            }
         ]
      }
   }
}
```

7.27.3 Get all Service Profiles

7.27.3.1 *Request*

GET /restconf/data/v1/cisco-service-profile:service-profileHTTP/1.1
Host: <epnm-host>
Accept: application/yang-data+xml
Authorization: Basic …

7.27.3.2 *Response*

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/yang-data+xml

```
<ns4:response-message
    xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:party"
    xmlns:ns32="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
    xmlns:ns31="urn:cisco:params:xml:ns:yang:restconf:alarms"
    xmlns:ns30="urn:cisco:ns:yang:service:activation:v1"
    xmlns:ns29="urn:cisco:params:xml:ns:yang:resource:opt"
    xmlns:ns28="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
    xmlns:ns27="urn:cisco:params:xml:ns:yang:restconf:location"
    xmlns:ns26="urn:cisco:params:xml:ns:yang:restconf:foundation"
    xmlns:ns25="urn:cisco:params:xml:ns:yang:resource:device"
    xmlns:ns24="urn:cisco:params:xml:ns:yang:yang-push:v1"
    xmlns:ns23="urn:cisco:params:xml:ns:yang:qos:v1"
    xmlns:ns22="urn:cisco:params:xml:ns:yang:sb:customer:v1"
    xmlns:ns21="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
    xmlns:ns20="urn:cisco:params:xml:ns:yang:profile-protection:v1"
    xmlns:ns19="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
    xmlns:ns18="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
    xmlns:ns17="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
    xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
    xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
    xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
    xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
    xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
    xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
    xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
    xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
    xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
    xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
    xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
    xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
    xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
    xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library"
    xmlns:ns2="inet-uri">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>5</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns21:service-profile>
            <ns21:fdn>MD=CISCO_EPNM!PROFILE_SERVICE=CEM</ns21:fdn>
            <ns21:name>CEM</ns21:name>
            <ns21:description>Profile for CEM</ns21:description>
            <ns21:type>ns4:tdm-cem</ns21:type>
```

```
            <ns21:subtype>ns4:sts1</ns21:subtype>
        </ns21:service-profile>
        <ns21:service-profile>
            <ns21:fdn>MD=CISCO_EPNM!PROFILE_SERVICE=flexlsp</ns21:fdn>
            <ns21:name>flexlsp</ns21:name>
            <ns21:description>SP for flexlsp</ns21:description>
            <ns21:type>ns4:mpls-te-tunnel</ns21:type>
            <ns21:subtype>ns4:bi-directional-te-tunnel</ns21:subtype>
        </ns21:service-profile>
        <ns21:service-profile>
            <ns21:fdn>MD=CISCO_EPNM!PROFILE_SERVICE=CEM-T1</ns21:fdn>
            <ns21:name>CEM-T1</ns21:name>
            <ns21:type>ns4:tdm-cem</ns21:type>
            <ns21:subtype>ns4:t1</ns21:subtype>
        </ns21:service-profile>
        <ns21:service-profile>
            <ns21:fdn>MD=CISCO_EPNM!PROFILE_SERVICE=my-mplste-tunnel-
sp1</ns21:fdn>
            <ns21:name>my-mplste-tunnel-sp1</ns21:name>
            <ns21:description>my mpls te tunnel sp1</ns21:description>
            <ns21:type>ns4:mpls-te-tunnel</ns21:type>
            <ns21:subtype>ns4:bi-directional-te-tunnel</ns21:subtype>
        </ns21:service-profile>
        <ns21:service-profile>
            <ns21:fdn>MD=CISCO_EPNM!PROFILE_SERVICE=cem-sts1</ns21:fdn>
            <ns21:name>cem-sts1</ns21:name>
            <ns21:type>ns4:tdm-cem</ns21:type>
            <ns21:subtype>ns4:sts1</ns21:subtype>
        </ns21:service-profile>
        <ns21:service-profile>
            <ns21:fdn>MD=CISCO_EPNM!PROFILE_SERVICE=flexuni</ns21:fdn>
            <ns21:name>flexuni</ns21:name>
            <ns21:description>UNi tunnel</ns21:description>
            <ns21:type>ns4:mpls-te-tunnel</ns21:type>
            <ns21:subtype>ns4:uni-directional-te-tunnel</ns21:subtype>
        </ns21:service-profile>
    </ns4:data>
</ns4:response-message>
```

7.28 Customer

7.28.1 Get all Customers

7.28.1.1 *Request*

GET /restconf/data/v1/cisco-customer:customer HTTP/1.1
Host: <epnm-host>
Accept: application/yang-data+xml
Authorization: Basic …

7.28.1.2 *Response*

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/yang-data+xml

```
<ns4:response-message
    xmlns:ns14="urn:cisco:params:xml:ns:yang:sb:customer:v1"
```

```
    xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
    xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library"
    xmlns:ns2="inet-uri">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>0</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns14:customer>
            <ns14:fdn>MD=CISCO_EPNM!CUSTOMER=Infrastructure</ns14:fdn>
            <ns14:name>Infrastructure</ns14:name>
            <ns14:description>default customer</ns14:description>
        </ns14:customer>
    </ns4:data>
</ns4:response-message>
```

7.29 Get All QoS Policies

7.29.1 Request

GET /restconf/data/v1/cisco-qos:qos-policy
Host: <epnm-host>
Accept: application/yang-data+xml

7.29.2 Response

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/yang-data+xml

```
<ns4:response-message
    xmlns:ns17="urn:cisco:params:xml:ns:yang:qos:v1"
    xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
    xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library"
    xmlns:ns2="inet-uri">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>1</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns17:qos-policy>
            <ns17:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN.cisco.com!POLICY_QOS=red</ns17:fdn>
            <ns17:name>red</ns17:name>
        </ns17:qos-policy>
        <ns17:qos-policy>
            <ns17:fdn>MD=CISCO_EPNM!ND=ASR901-CSG-1-
DOMAIN.cisco.com!POLICY_QOS=associate</ns17:fdn>
            <ns17:name>associate</ns17:name>
        </ns17:qos-policy>
    </ns4:data>
</ns4:response-message>
```

7.30 Get All QoS Profiles

7.30.1 Request

GET /restconf/data/v1/cisco-qos:qos-profile
Host: <epnm-host>
Accept: application/yang-data+xml

7.30.2 Response

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/yang-data+xml

```
<ns4:response-message
    xmlns:ns17="urn:cisco:params:xml:ns:yang:qos:v1"
    xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
    xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library"
    xmlns:ns2="inet-uri">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>1</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns17:qos-profile>

<ns17:fdn>MD=CISCO_EPNM!PROFILE_QOS=MyUniQoSProfile37aaa</ns17:fdn>
            <ns17:name>MyUniQoSProfile37aaa</ns17:name>
        </ns17:qos-profile>
        <ns17:qos-profile>

<ns17:fdn>MD=CISCO_EPNM!PROFILE_QOS=MySvcQoSProfile37aaa</ns17:fdn>
            <ns17:name>MySvcQoSProfile37aaa</ns17:name>
        </ns17:qos-profile>
    </ns4:data>
</ns4:response-message>
```

7.31 Get All IPSLA Profiles

7.31.1 Request

GET /restconf/data/v1/cisco-service-network:ipsla-profile
Host: <epnm-host>
Accept: application/yang-data+xml

7.31.2 Response

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/yang-data+xml

```
<ns4:response-message
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns32="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
xmlns:ns31="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns30="urn:cisco:params:xml:ns:yang:service:activation:status:v1"
xmlns:ns29="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
xmlns:ns28="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
```

```
xmlns:ns27="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns26="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns25="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns24="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:profile-protection:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>1</ns4:lastIndex>
    </ns4:header>
    <ns4:data>

        <ns19:ipsla-profile-details>
            <ns19:name>MD=CISCO_EPNM!IPSLA_PROFILE=check_ipsla</ns19:name>
            <ns19:sub-type>IPSLA Operations</ns19:sub-type>
            <ns19:ipsla-profile-list>
                <ns19:ipsla-list>
                    <ns19:ipsla-index>0</ns19:ipsla-index>
                    <ns19:operation-name>check_ipsla</ns19:operation-name>
                    <ns19:operation-source-port>1024</ns19:operation-source-
port>
                    <ns19:operation-destination-port>1025</ns19:operation-
destination-port>
                    <ns19:ipsla-operation-type>UDP ECHO</ns19:ipsla-
operation-type>
                    <ns19:ipsla-reaction-variable>CONNECTION
LOSS</ns19:ipsla-reaction-variable>
                    <ns19:ipsla-reaction-type>NONE</ns19:ipsla-reaction-type>
                    <ns19:ipsla-reaction-upper-threshold-value></ns19:ipsla-
reaction-upper-threshold-value>
                    <ns19:ipsla-reaction-lower-threshold-value></ns19:ipsla-
reaction-lower-threshold-value>
                    <ns19:ipsla-reaction-threshold-
type>CONSECUTIVE</ns19:ipsla-reaction-threshold-type>
                    <ns19:ipsla-average-number-value></ns19:ipsla-average-
number-value>
```

```
                    <ns19:ipsla-reaction-xaxis-value></ns19:ipsla-reaction-
xaxis-value>
                    <ns19:ipsla-reaction-yaxis-value></ns19:ipsla-reaction-
yaxis-value>
                    <ns19:ipsla-simple-frequency>3333</ns19:ipsla-simple-
frequency>
                    <ns19:ipsla-simple-lifetime>2222</ns19:ipsla-simple-
lifetime>
                    <ns19:ipsla-simple-ageout>4444</ns19:ipsla-simple-ageout>
                </ns19:ipsla-list>
            </ns19:ipsla-profile-list>
        </ns19:ipsla-profile-details>
    </ns4:data>
</ns4:response-message>
```

7.32 Create Customer

7.32.1 Request

POST /restconf/data/v1/cisco-customer:customer HTTP/1.1
Host: <epnm-host>
Authorization: Basic …
Accept: application/yang-data+xml
XML Payload:

```
<ns12:customer xmlns:ns12="urn:cisco:params:xml:ns:yang:sb:customer:v1"  >
            <ns12:fdn>MD=CISCO_EPNM!CUSTOMER=Foo</ns12:fdn>
            <ns12:name>Foo</ns12:name>
            <ns12:description>foo description</ns12:description>
        </ns12:customer>
```

Accept: application/yang-data+json
Json Payload:

```
{
   "cus.fdn": "MD=CISCO_EPNM!CUSTOMER=Foo",
   "cus.name": "Foo",
   "cus.description": "foo description"
}
```

7.32.2 Response

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/yang-data+xml

7.33 Update Customer

7.33.1 Request

PUT /restconf/data/v1/cisco-customer:customer/MyCustomer HTTP/1.1
Host: <epnm-host>
Authorization: Basic …
Accept: application/yang-data+xml
XML Payload:

```
<ns12:customer xmlns:ns12="urn:cisco:params:xml:ns:yang:sb:customer:v1"  >
            <ns12:fdn>MD=CISCO_EPNM!CUSTOMER= MyCustomer</ns12:fdn>
            <ns12:name>MyCustomer</ns12:name>
```

```
            <ns12:description>updated customer description</ns12:description>
        </ns12:customer>
```

Accept: application/yang-data+json
Json Payload:

```
{
   "cus.fdn": "MD=CISCO_EPNM!CUSTOMER= MyCustomer",
   "cus.name": "MyCustomer",
   "cus.description": "updated customer description"
}
```

7.33.2 Response

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/yang-data+xml

7.34 Delete Customer

7.34.1 Request

DELETE /restconf/data/v1/cisco-customer:customer/MyCustomer HTTP/1.1
Host: <epnm-host>
Accept: application/yang-data+xml
Authorization: Basic …

7.34.2 Response

HTTP/1.1 200 OK
Server: <epnm-host>
Content-Type: application/yang-data+xml

7.35 MPLS TE Explicit Path – Create

7.35.1 Request

POST /restconf/operations/v1/cisco-resource-activation:create-explicit-path HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:mpls-te-explicit-path-request
               xmlns:p="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:ra:v1 restconf-
explicitPath.xsd">
        <p:node-ref>MD=CISCO_EPNM!ND=cvg-scapa-223.cisco.com</p:node-ref><!--
4k device-->
            <p:path-name>235_first_expicit_path_provision30001</p:path-name>
            <p:path-hop>
              <p:node-ref>MD=CISCO_EPNM!ND=NCS2006-239-20</p:node-ref>
              <p:tp-ref>MD=CISCO_EPNM!ND=NCS2006-239-20!CTP=name=PSLINE-1-6-
5-RX&amp;PSLINE-1-6-5-TX;lr=lr_OPTICAL_SECTION</p:tp-ref><!--2K device-->
              <p:constraint-level>strict</p:constraint-level>
              <p:constraint-type>next</p:constraint-type>
            </p:path-hop>
            <p:path-hop>
```

```
            <p:node-ref>MD=CISCO_EPNM!ND=cvg-scapa-225.cisco.com</p:node-
ref>
            <p:tp-ref>MD=CISCO_EPNM!ND=cvg-scapa-
225.cisco.com!PTP=name=Optics0/14/0/2;lr=lr_PHYSICAL_OPTICAL</p:tp-ref><!--2K
device-->
            <p:constraint-level>loose</p:constraint-level>
            <p:constraint-type>next</p:constraint-type>
          </p:path-hop>
</p:mpls-te-explicit-path-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "ra.node-ref": "MD=CISCO_EPNM!ND=cvg-scapa-223.cisco.com",
   "ra.path-name": "235_first_expicit_path_provision30001",
   "ra.path-hop": [
      {
         "ra.node-ref": "MD=CISCO_EPNM!ND=NCS2006-239-20",
         "ra.tp-ref": "MD=CISCO_EPNM!ND=NCS2006-239-20!CTP=name=PSLINE-1-6-5-
RX&PSLINE-1-6-5-TX;lr=lr_OPTICAL_SECTION",
         "ra.constraint-level": "strict",
         "ra.constraint-type": "next"
      },
      {
         "ra.node-ref": "MD=CISCO_EPNM!ND=cvg-scapa-225.cisco.com",
         "ra.tp-ref": "MD=CISCO_EPNM!ND=cvg-scapa-
225.cisco.com!PTP=name=Optics0/14/0/2;lr=lr_PHYSICAL_OPTICAL",
         "ra.constraint-level": "loose",
         "ra.constraint-type": "next"
      }
   ]
}
```

7.35.2 Response

```
<ns13:mpls-te-explicit-path-response
xmlns:ns24="urn:cisco:ns:yang:service:activation:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns22="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns21="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns20="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
```

```
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns13:result>true</ns13:result>
    <ns13:message>explicit-path name 235_first_expicit_path_provision30001
index 1 next-address strict ipv4 unicast unnumbered 10.58.239.20 2130709002
index 2 next-address loose ipv4 unicast unnumbered 10.58.235.225 29
</ns13:message>
</ns13:mpls-te-explicit-path-response>
```

7.36 MPLS TE Explicit Path – Modify

7.36.1 Request

POST /restconf/operations/v1/cisco-resource-activation:modify-explicit-path HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:mpls-te-explicit-path-request
               xmlns:p="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:ra:v1 restconf-
explicitPath.xsd">
           <p:node-ref>MD=CISCO_EPNM!ND=cvg-scapa-223.cisco.com</p:node-
ref><!--4k device-->
           <p:path-name>235_first_expicit_path_provision30001</p:path-name>
           <p:path-hop>
             <p:node-ref>MD=CISCO_EPNM!ND=NCS2006-239-20</p:node-ref>
             <p:tp-ref>MD=CISCO_EPNM!ND=NCS2006-239-20!CTP=name=PSLINE-1-6-
5-RX&amp;PSLINE-1-6-5-TX;lr=lr_OPTICAL_SECTION</p:tp-ref><!--2K device-->
             <p:constraint-level>strict</p:constraint-level>
             <p:constraint-type>next</p:constraint-type>
           </p:path-hop>
           <p:path-hop>
             <p:node-ref>MD=CISCO_EPNM!ND=cvg-scapa-225.cisco.com</p:node-
ref>
             <p:tp-ref>MD=CISCO_EPNM!ND=cvg-scapa-
225.cisco.com!PTP=name=Optics0/14/0/2;lr=lr_PHYSICAL_OPTICAL</p:tp-ref><!--2K
device-->
             <p:constraint-level>strict</p:constraint-level>
             <p:constraint-type>next</p:constraint-type>
           </p:path-hop>
</p:mpls-te-explicit-path-request>
```

Content-Type: application/yang.operation+json
Json Payload:

```
{
   "ra.node-ref": "MD=CISCO_EPNM!ND=cvg-scapa-223.cisco.com",
   "ra.path-name": "235_first_expicit_path_provision30001",
   "ra.path-hop": [
      {
         "ra.node-ref": "MD=CISCO_EPNM!ND=NCS2006-239-20",
         "ra.tp-ref": "MD=CISCO_EPNM!ND=NCS2006-239-20!CTP=name=PSLINE-1-6-5-
RX&PSLINE-1-6-5-TX;lr=lr_OPTICAL_SECTION",
         "ra.constraint-level": "strict",
```

```
            "ra.constraint-type": "next"
        },
        {
            "ra.node-ref": "MD=CISCO_EPNM!ND=cvg-scapa-225.cisco.com",
            "ra.tp-ref": "MD=CISCO_EPNM!ND=cvg-scapa-
225.cisco.com!PTP=name=Optics0/14/0/2;lr=lr_PHYSICAL_OPTICAL",
            "ra.constraint-level": "strict",
            "ra.constraint-type": "next"
        }
    ]
}
```

7.36.2 Response

```
<ns13:mpls-te-explicit-path-response
xmlns:ns24="urn:cisco:ns:yang:service:activation:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns22="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns21="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns20="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns13:result>true</ns13:result>
    <ns13:message>no explicit-path name
235_first_expicit_path_provision30001
explicit-path name 235_first_expicit_path_provision30001
index 1 next-address strict ipv4 unicast unnumbered 10.58.239.20
2130709002
index 2 next-address strict ipv4 unicast unnumbered 10.58.235.225 29
</ns13:message>
</ns13:mpls-te-explicit-path-response>
```

7.37 MPLS TE Explicit Path – Terminate

7.37.1 Request

POST /restconf/operations/v1/cisco-resource-activation:delete-explicit-path HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<p:mpls-te-explicit-path-request
                xmlns:p="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:cisco:params:xml:ns:yang:ra:v1 restconf-
explicitPath.xsd">
                    <p:node-ref>MD=CISCO_EPNM!ND=cvg-scapa-
223.cisco.com</p:node-ref><!--4k device-->
                    <p:path-name>235_first_expicit_path_provision3000</p:path-
name>
</p:mpls-te-explicit-path-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "ra.node-ref": "MD=CISCO_EPNM!ND=cvg-scapa-223.cisco.com",
   "ra.path-name": "235_first_expicit_path_provision3000"
}
```

7.37.2 Response

```
<ns13:mpls-te-explicit-path-response
xmlns:ns24="urn:cisco:ns:yang:service:activation:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns22="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns21="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns20="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns13:result>true</ns13:result>
    <ns13:message>no explicit-path name
235_first_expicit_path_provision3000
</ns13:message>
</ns13:mpls-te-explicit-path-response>
```

7.38 Protection Profile Create

7.38.1 Request

POST /restconf/operations/v1/cisco-resource-activation:create-protection-profile HTTP/1.1

Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
    <?xml version="1.0" encoding="UTF-8"?>
    <p:protection-profile-request
                    xmlns:p="urn:cisco:params:xml:ns:yang:ra:v1"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
                    xsi:schemaLocation="urn:cisco:params:xml:ns:yang:ra:v1
    restconf-protectionprofile.xsd ">

        <p:protection-profile-ref>MD=CISCO_EPNM!ND=cvg-scapa-
    221.cisco.com!PPF=Test_PPF_profile_name4</p:protection-profile-ref><!--4k
    device-->
                    <p:profile-name>Test PPF profile name</p:profile-name>
                    <p:protection-type>ONE_PLUS_ONE_BDIR_APS</p:protection-
    type>
                    <p:protection-mode>NON_REVERTIVE</p:protection-mode>
                    <p:hold-of-timer>101</p:hold-of-timer>
                    <p:wait-to-restore-timer>360</p:wait-to-restore-timer>
                                    <p:vc-mode>VC_MODE_I</p:vc-mode>
                    <p:tcm-id>NONE</p:tcm-id>
</p:protection-profile-request>
```

Content-Type: application/yang.operation+json
Json Payload:

```
{
       "ra.protection-profile-ref": "MD=CISCO_EPNM!ND=cvg-scapa-
    221.cisco.com!PPF=Test_PPF_profile_name4",
       "ra.profile-name": "Test PPF profile name",
       "ra.protection-type": "ONE_PLUS_ONE_BDIR_APS",
       "ra.protection-mode": "NON_REVERTIVE",
       "ra.hold-of-timer": "101",
       "ra.wait-to-restore-timer": "360",
       "ra.vc-mode": "VC_MODE_I",
       "ra.tcm-id": "NONE"
    }
```

7.38.2 Response

```
    <ns13:protection-profile-response
    xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:party"
    xmlns:ns31="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
    xmlns:ns30="urn:cisco:params:xml:ns:yang:restconf:alarms"
    xmlns:ns29="urn:cisco:ns:yang:service:activation:v1"
    xmlns:ns28="urn:cisco:params:xml:ns:yang:resource:opt"
    xmlns:ns27="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
    xmlns:ns26="urn:cisco:params:xml:ns:yang:restconf:location"
    xmlns:ns25="urn:cisco:params:xml:ns:yang:restconf:foundation"
    xmlns:ns24="urn:cisco:params:xml:ns:yang:resource:device"
    xmlns:ns23="urn:cisco:params:xml:ns:yang:yang-push:v1"
    xmlns:ns22="urn:cisco:params:xml:ns:yang:qos:v1"
    xmlns:ns21="urn:cisco:params:xml:ns:yang:sb:customer:v1"
    xmlns:ns20="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
    xmlns:ns19="urn:cisco:params:xml:ns:yang:profile-protection:v1"
    xmlns:ns18="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
    xmlns:ns17="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
    xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
```

```
    xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
    xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
    xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
    xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
    xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
    xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
    xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
    xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
    xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
    xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
    xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
    xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
    xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
    uri">
        <ns13:message>           mpls traffic-eng
                                                no attribute-set path-
    protection-aps Test_PPF_profile_name4 protection-mode revertive
                    commit
                                                                attribute-set
    path-protection-aps Test_PPF_profile_name4 protection-type BIDIR-APS
                    commit
                                                                attribute-set
    path-protection-aps Test_PPF_profile_name4 sub-network connection-mode
    SNC-I
                    commit
                                                attribute-set path-
    protection-aps Test_PPF_profile_name4 timers hold-off 101
                    commit
                                                attribute-set path-
    protection-aps Test_PPF_profile_name4 timers wait-to-restore 360
                    commit
                    </ns13:message>
        <ns13:result>true</ns13:result>
</ns13:protection-profile-response>
```

7.39 Protection Profile modify

7.39.1 Request

POST /restconf/operations/v1/cisco-resource-activation:modify-protection-profile HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
    <?xml version="1.0" encoding="UTF-8"?>
    <p:protection-profile-request
                    xmlns:p="urn:cisco:params:xml:ns:yang:ra:v1"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
                    xsi:schemaLocation="urn:cisco:params:xml:ns:yang:ra:v1
    restconf-protectionprofile.xsd ">

        <p:protection-profile-ref>MD=CISCO_EPNM!ND=cvg-scapa-
    221.cisco.com!PPF=Test_PPF_profile_name4</p:protection-profile-ref><!--4k
    device-->
                    <p:profile-name>Test_PPF_profile_name</p:profile-name>
                    <p:protection-type>ONE_PLUS_ONE_BDIR_APS</p:protection-
    type>
```

```
                    <p:protection-mode>NON_REVERTIVE</p:protection-mode>
                    <p:hold-of-timer>101</p:hold-of-timer>
                    <p:wait-to-restore-timer>360</p:wait-to-restore-timer>
                                <p:vc-mode>VC_MODE_S</p:vc-mode>
                    <p:tcm-id>TCM3</p:tcm-id>
</p:protection-profile-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
       "ra.protection-profile-ref": "MD=CISCO_EPNM!ND=cvg-scapa-
    221.cisco.com!PPF=Test_PPF_profile_name4",
       "ra.profile-name": "Test_PPF_profile_name",
       "ra.protection-type": "ONE_PLUS_ONE_BDIR_APS",
       "ra.protection-mode": "NON_REVERTIVE",
       "ra.hold-of-timer": "101",
       "ra.wait-to-restore-timer": "360",
       "ra.vc-mode": "VC_MODE_S",
       "ra.tcm-id": "TCM3"
}
```

7.39.2 Response

```
    <ns13:protection-profile-response
    xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:party"
    xmlns:ns31="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
    xmlns:ns30="urn:cisco:params:xml:ns:yang:restconf:alarms"
    xmlns:ns29="urn:cisco:ns:yang:service:activation:v1"
    xmlns:ns28="urn:cisco:params:xml:ns:yang:resource:opt"
    xmlns:ns27="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
    xmlns:ns26="urn:cisco:params:xml:ns:yang:restconf:location"
    xmlns:ns25="urn:cisco:params:xml:ns:yang:restconf:foundation"
    xmlns:ns24="urn:cisco:params:xml:ns:yang:resource:device"
    xmlns:ns23="urn:cisco:params:xml:ns:yang:yang-push:v1"
    xmlns:ns22="urn:cisco:params:xml:ns:yang:qos:v1"
    xmlns:ns21="urn:cisco:params:xml:ns:yang:sb:customer:v1"
    xmlns:ns20="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
    xmlns:ns19="urn:cisco:params:xml:ns:yang:profile-protection:v1"
    xmlns:ns18="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
    xmlns:ns17="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
    xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
    xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
    xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
    xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
    xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
    xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
    xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
    xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
    xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
    xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
    xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
    xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
    xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
    xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
    uri">
        <ns13:message>          mpls traffic-eng
                                              no attribute-set path-
```

```
    protection-aps Test_PPF_profile_name4 protection-mode revertive
                   commit
                                                                attribute-set
    path-protection-aps Test_PPF_profile_name4 protection-type BIDIR-APS
                   commit
                                                attribute-set path-
    protection-aps Test_PPF_profile_name4 sub-network connection-mode SNC-S
    tcm-id 3
                   commit
                                                                attribute-set
    path-protection-aps Test_PPF_profile_name4 timers hold-off 101
                   commit
                                                attribute-set path-
    protection-aps Test_PPF_profile_name4 timers wait-to-restore 360
                   commit
                   </ns13:message>
        <ns13:result>true</ns13:result>
</ns13:protection-profile-response>
```

7.40 Protection Profile terminate

7.40.1 Request

POST /restconf/operations/v1/cisco-resource-activation:delete-protection-profile HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
    <?xml version="1.0" encoding="UTF-8"?>
    <p:protection-profile-request
                   xmlns:p="urn:cisco:params:xml:ns:yang:ra:v1"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
                   xsi:schemaLocation="urn:cisco:params:xml:ns:yang:ra:v1
    restconf-protectionprofile.xsd ">

        <p:protection-profile-ref>MD=CISCO_EPNM!ND=cvg-scapa-
    221.cisco.com!PPF=Test_PPF_profile_name4</p:protection-profile-ref><!--4k
    device-->

    </p:protection-profile-request>
                   <p:tcm-id>TCM3</p:tcm-id>
</p:protection-profile-request>
```

Content-Type: application/yang.operation+json
Json Payload:

```
{
       "ra.protection-profile-ref": "MD=CISCO_EPNM!ND=cvg-scapa-
    221.cisco.com!PPF=Test_PPF_profile_name4",
       "ra.tcm-id": "TCM3"
}
```

7.40.2 Response

```
    <ns13:protection-profile-response
    xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:party"
    xmlns:ns31="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
    xmlns:ns30="urn:cisco:params:xml:ns:yang:restconf:alarms"
    xmlns:ns29="urn:cisco:ns:yang:service:activation:v1"
```

```
    xmlns:ns28="urn:cisco:params:xml:ns:yang:resource:opt"
    xmlns:ns27="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
    xmlns:ns26="urn:cisco:params:xml:ns:yang:restconf:location"
    xmlns:ns25="urn:cisco:params:xml:ns:yang:restconf:foundation"
    xmlns:ns24="urn:cisco:params:xml:ns:yang:resource:device"
    xmlns:ns23="urn:cisco:params:xml:ns:yang:yang-push:v1"
    xmlns:ns22="urn:cisco:params:xml:ns:yang:qos:v1"
    xmlns:ns21="urn:cisco:params:xml:ns:yang:sb:customer:v1"
    xmlns:ns20="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
    xmlns:ns19="urn:cisco:params:xml:ns:yang:profile-protection:v1"
    xmlns:ns18="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
    xmlns:ns17="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
    xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
    xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
    xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
    xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
    xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
    xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
    xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
    xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
    xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
    xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
    xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
    xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
    xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
    xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
    uri">
        <ns13:message>mpls traffic-eng
    no attribute-set path-protection-aps Test_PPF_profile_name4
    </ns13:message>
        <ns13:result>true</ns13:result>
</ns13:protection-profile-response>
```

7.41 Provision Optical Service

7.41.1 Request

POST /restconf/operations/v1/cisco-service-provision:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<provision-service-request
xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1">
      <service-order-data>
            <customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</customer-
ref>
            <service-name>OCHNC_Service_Provision_Example</service-name>
            <service-description>OCHNC_Service_Provision_Example</service-
description>
            <service-type>optical</service-type>
            <service-subtype>OCHNC</service-subtype>
            <service-activate>true</service-activate>
            <direction>BIDIRECTIONAL</direction>
            <optical-data>
                  <uni>false</uni>
```

```
                  <label>OchncExample</label>
                  <protection>NONE</protection>
                  <ochnc-data>
                        <validation>NONE</validation>
                        <optical-threshold>GREEN</optical-threshold>
                        <optical-threshold-protected>GREEN</optical-
threshold-protected>
                        <up-stream-channel-power-offset>0.0</up-stream-
channel-power-offset>
                        <down-stream-channel-power-offset>0.0</down-stream-
channel-power-offset>
                        <ignore-path-alarm>true</ignore-path-alarm>
                        <allow-regeneration>false</allow-regeneration>
                        <restoration>NONE</restoration>
                        <revert>AUTOMATIC</revert>
                        <soak-time>00:00:00-05:00</soak-time>
                        <priority>HIGH</priority>
                        <validation-restoration>NONE</validation-restoration>
                        <optical-threshold-restoration>GREEN</optical-
threshold-restoration>
                        <optical-threshold-restoration-
protected>GREEN</optical-threshold-restoration-protected>
                        <frequency>195500.0</frequency>
                        <width>50</width>
                        <frequency-required>true</frequency-required>
                        <frequency-protected>frequency195900.0</frequency-
protected>
                        <width-protected>50.0</width-protected>
                        <frequency-protected-required>true</frequency-
protected-required>
                  </ochnc-data>
            </optical-data>
            <termination-point-list>
                  <termination-point-config>
                        <tp-ref>MD=CISCO_EPNM!ND=M6-234-248!FTP=name=PCHAN-2-
14-RX;lr=LR_PHYSICAL_OPTICAL</tp-ref>
                        <directionality>source</directionality>
                        <optical-data>
                              <ochnc-data>
                                    <drop-port-ref>MD=CISCO_EPNM!ND=M6-234-
248!FTP=name=PCHAN-2-15-TX;lr=LR_PHYSICAL_OPTICAL</drop-port-ref>
                              </ochnc-data>
                        </optical-data>
                  </termination-point-config>
                  <termination-point-config>
                        <tp-ref>MD=CISCO_EPNM!ND=M6-234-249!FTP=name=PCHAN-2-
14-RX;lr=LR_PHYSICAL_OPTICAL</tp-ref>
                        <directionality>sink</directionality>
                        <optical-data>
                              <ochnc-data>
                                    <drop-port-ref>MD=CISCO_EPNM!ND=M6-234-
249!FTP=name=PCHAN-2-15-TX;lr=LR_PHYSICAL_OPTICAL</drop-port-ref>
                              </ochnc-data>
                        </optical-data>
                  </termination-point-config>
            </termination-point-list>
```

```
      </service-order-data>
</provision-service-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "sa.service-order-data": {
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "sa.service-name": "OCHNC_Service_Provision_Example",
      "sa.service-description": "OCHNC_Service_Provision_Example",
      "sa.service-type": "optical",
      "sa.service-subtype": "OCHNC",
      "sa.service-activate": "true",
      "sa.direction": "BIDIRECTIONAL",
      "sa.optical-data": {
         "sa.uni": "false",
         "sa.label": "OchncExample",
         "sa.protection": "NONE",
         "sa.ochnc-data": {
            "sa.validation": "NONE",
            "sa.optical-threshold": "GREEN",
            "sa.optical-threshold-protected": "GREEN",
            "sa.up-stream-channel-power-offset": "0.0",
            "sa.down-stream-channel-power-offset": "0.0",
            "sa.ignore-path-alarm": "true",
            "sa.allow-regeneration": "false",
            "sa.restoration": "NONE",
            "sa.revert": "AUTOMATIC",
            "sa.soak-time": "00:00:00-05:00",
            "sa.priority": "HIGH",
            "sa.validation-restoration": "NONE",
            "sa.optical-threshold-restoration": "GREEN",
            "sa.optical-threshold-restoration-protected": "GREEN",
            "sa.frequency": "195500.0",
            "sa.width": "50",
            "sa.frequency-required": "true",
            "sa.frequency-protected": "frequency195900.0",
            "sa.width-protected": "50.0",
            "sa.frequency-protected-required": "true"
         }
      },
      "sa.termination-point-list": {
         "sa.termination-point-config": [
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=M6-234-248!FTP=name=PCHAN-2-14-
RX;lr=LR_PHYSICAL_OPTICAL",
               "sa.directionality": "source",
               "sa.optical-data": {
                  "sa.ochnc-data": {
                     "sa.drop-port-ref": "MD=CISCO_EPNM!ND=M6-234-
248!FTP=name=PCHAN-2-15-TX;lr=LR_PHYSICAL_OPTICAL"
                  }
               }
            },
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=M6-234-249!FTP=name=PCHAN-2-14-
RX;lr=LR_PHYSICAL_OPTICAL",
```

```
                "sa.directionality": "sink",
                "sa.optical-data": {
                   "sa.ochnc-data": {
                      "sa.drop-port-ref": "MD=CISCO_EPNM!ND=M6-234-
249!FTP=name=PCHAN-2-15-TX;lr=LR_PHYSICAL_OPTICAL"
                   }
                }
             }
          ]
       }
    }
}
```

7.41.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+json

```
<ns13:provision-service-response
xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns18="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns17="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns13:request-id>9fdbc599-9d82-467a-843a-7ef138a6808e</ns13:request-id>
    <ns13:service-name>OCHNC_Service_Provision_Example</ns13:service-name>
    <ns13:service-type>optical</ns13:service-type>
    <ns13:service-subtype>OCHNC</ns13:service-subtype>
    <ns13:preview>false</ns13:preview>
    <ns13:request-time>Tue Jul 12 11:59:18 PDT 2016</ns13:request-time>
    <ns13:completion-status>SUBMITTED</ns13:completion-status>
</ns13:provision-service-response>
```

7.41.3 Notification

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ns14:push-change-update xmlns:ns2="urn:cisco:params:xml:ns:yang:nrf-ce-
extension:v1" xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns3="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:si-service:v1"
```

```
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns16="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:restconf:resource:physical">
    <ns14:request-id>386a132f-42b1-439d-a6c9-3c67229281ac</ns14:request-id>
    <ns14:topic>service-activation</ns14:topic>
    <ns14:time-of-update>Tue Jul 12 12:13:20 PDT 2016</ns14:time-of-update>
    <ns14:operation>ns14:configure</ns14:operation>
    <ns14:config-response>
        <ns10:provision-service-response>
            <ns10:cfs-
ref>MD=CISCO_EPNM!CFS=OCHNC_Service_Provision_Example</ns10:cfs-ref>
            <ns10:service-name>OCHNC_Service_Provision_Example</ns10:service-
name>
            <ns10:service-type>optical</ns10:service-type>
            <ns10:service-subtype>OCHNC</ns10:service-subtype>
            <ns10:preview>false</ns10:preview>
            <ns10:request-time>Tue Jul 12 12:12:37 PDT 2016</ns10:request-
time>
            <ns10:completion-time>Tue Jul 12 12:13:19 PDT
2016</ns10:completion-time>
            <ns10:deploy-results>
                <ns10:result>
                    <ns10:node-ref>MD=CISCO_EPNM!ND=M6-234-248</ns10:node-
ref>
                    <ns10:state>SUCCESSFUL</ns10:state>
                    <ns10:config>ENT-CPS::PCHAN-2-14-RX&amp;amp;PCHAN-2-15-
TX:ctag::10.58.234.249,PCHAN-2-15-TX&amp;amp;PCHAN-2-14-
RX,2WAY,ADD:CKTID="OCHNC_Service_Provision_Example",VALMODE=NONE,RESTTYPE=NON
E,CKTLABEL="OchncExample",FREQ=195500.0,ISMANDATORYFREQ=TRUE,WIDTH=50,ALLOWRG
N=N,PATHPOLICY=ANY,DSPWROFS=0.0,USPWROFS=0.0:;
ED-CPS::PCHAN-2-14-RX&amp;PCHAN-2-15-TX:ctag:::CMDMDE=FRCD:locked,disabled;
OPR-CPS::PCHAN-2-14-RX&amp;PCHAN-2-15-TX:ctag:::IGNPATHALM=YES;
</ns10:config>
                    <ns10:error></ns10:error>
                </ns10:result>
            </ns10:deploy-results>
            <ns10:completion-status>SUCCESS</ns10:completion-status>
        </ns10:provision-service-response>
    </ns14:config-response>
</ns14:push-change-update>
```

7.42 Modify Optical Service

7.42.1 Request

POST /restconf/operations/v1/cisco-service-provision:modify-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml

XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<modify-service-request
xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1">
    <cfs-ref>MD=CISCO_EPNM!CFS=OCHNC_Service_Provision_Example</cfs-ref>
      <service-order-data>
            <customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</customer-
ref>
            <service-name>OCHNC_Service_Provision_Example</service-name>
            <service-description>OCHNC_Service_Provision_Example1</service-
description>
            <service-type>optical</service-type>
            <service-subtype>OCHNC</service-subtype>
            <service-activate>true</service-activate>
            <direction>BIDIRECTIONAL</direction>
            <optical-data>
                  <uni>false</uni>
                  <label>OchncExample</label>
                  <protection>NONE</protection>
                  <ochnc-data>
                        <validation>NONE</validation>
                        <optical-threshold>GREEN</optical-threshold>
                        <optical-threshold-protected>GREEN</optical-
threshold-protected>
                        <up-stream-channel-power-offset>0.0</up-stream-
channel-power-offset>
                        <down-stream-channel-power-offset>0.0</down-stream-
channel-power-offset>
                        <ignore-path-alarm>true</ignore-path-alarm>
                        <allow-regeneration>false</allow-regeneration>
                        <restoration>NONE</restoration>
                        <revert>AUTOMATIC</revert>
                        <soak-time>00:00:00-05:00</soak-time>
                        <priority>HIGH</priority>
                        <validation-restoration>NONE</validation-restoration>
                        <optical-threshold-restoration>GREEN</optical-
threshold-restoration>
                        <optical-threshold-restoration-
protected>GREEN</optical-threshold-restoration-protected>
                        <frequency>195500.0</frequency>
                        <width>50</width>
                        <frequency-required>true</frequency-required>
                        <frequency-protected>frequency195900.0</frequency-
protected>
                        <width-protected>50.0</width-protected>
                        <frequency-protected-required>true</frequency-
protected-required>
                  </ochnc-data>
            </optical-data>
            <termination-point-list>
                  <termination-point-config>
                        <tp-ref>MD=CISCO_EPNM!ND=M6-234-248!FTP=name=PCHAN-2-
14-RX;lr=LR_PHYSICAL_OPTICAL</tp-ref>
                        <directionality>source</directionality>
                        <optical-data>
                              <ochnc-data>
```

```
                                    <drop-port-ref>MD=CISCO_EPNM!ND=M6-234-
248!FTP=name=PCHAN-2-15-TX;lr=LR_PHYSICAL_OPTICAL</drop-port-ref>
                              </ochnc-data>
                        </optical-data>
                  </termination-point-config>
                  <termination-point-config>
                        <tp-ref>MD=CISCO_EPNM!ND=M6-234-249!FTP=name=PCHAN-2-
14-RX;lr=LR_PHYSICAL_OPTICAL</tp-ref>
                        <directionality>sink</directionality>
                        <optical-data>
                              <ochnc-data>
                                    <drop-port-ref>MD=CISCO_EPNM!ND=M6-234-
249!FTP=name=PCHAN-2-15-TX;lr=LR_PHYSICAL_OPTICAL</drop-port-ref>
                              </ochnc-data>
                        </optical-data>
                  </termination-point-config>
            </termination-point-list>
      </service-order-data>
</modify-service-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "sa.cfs-ref": "MD=CISCO_EPNM!CFS=OCHNC_Service_Provision_Example",
   "sa.service-order-data": {
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "sa.service-name": "OCHNC_Service_Provision_Example",
      "sa.service-description": "OCHNC_Service_Provision_Example1",
      "sa.service-type": "optical",
      "sa.service-subtype": "OCHNC",
      "sa.service-activate": "true",
      "sa.direction": "BIDIRECTIONAL",
      "sa.optical-data": {
         "sa.uni": "false",
         "sa.label": "OchncExample",
         "sa.protection": "NONE",
         "sa.ochnc-data": {
            "sa.validation": "NONE",
            "sa.optical-threshold": "GREEN",
            "sa.optical-threshold-protected": "GREEN",
            "sa.up-stream-channel-power-offset": "0.0",
            "sa.down-stream-channel-power-offset": "0.0",
            "sa.ignore-path-alarm": "true",
            "sa.allow-regeneration": "false",
            "sa.restoration": "NONE",
            "sa.revert": "AUTOMATIC",
            "sa.soak-time": "00:00:00-05:00",
            "sa.priority": "HIGH",
            "sa.validation-restoration": "NONE",
            "sa.optical-threshold-restoration": "GREEN",
            "sa.optical-threshold-restoration-protected": "GREEN",
            "sa.frequency": "195500.0",
            "sa.width": "50",
            "sa.frequency-required": "true",
            "sa.frequency-protected": "frequency195900.0",
            "sa.width-protected": "50.0",
            "sa.frequency-protected-required": "true"
```

```
         }
      },
      "sa.termination-point-list": {
         "sa.termination-point-config": [
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=M6-234-248!FTP=name=PCHAN-2-14-
RX;lr=LR_PHYSICAL_OPTICAL",
               "sa.directionality": "source",
               "sa.optical-data": {
                  "sa.ochnc-data": {
                     "sa.drop-port-ref": "MD=CISCO_EPNM!ND=M6-234-
248!FTP=name=PCHAN-2-15-TX;lr=LR_PHYSICAL_OPTICAL"
                  }
               }
            },
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=M6-234-249!FTP=name=PCHAN-2-14-
RX;lr=LR_PHYSICAL_OPTICAL",
               "sa.directionality": "sink",
               "sa.optical-data": {
                  "sa.ochnc-data": {
                     "sa.drop-port-ref": "MD=CISCO_EPNM!ND=M6-234-
249!FTP=name=PCHAN-2-15-TX;lr=LR_PHYSICAL_OPTICAL"
                  }
               }
            }
         ]
      }
   }
}
```

7.42.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
<ns13:modify-service-response
xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns18="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns17="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
```

```
    <ns13:request-id>46e6231f-403e-41d2-9693-2a1494f38a8b</ns13:request-id>
    <ns13:service-name>OCHNC_Service_Provision_Example</ns13:service-name>
    <ns13:service-type>optical</ns13:service-type>
    <ns13:service-subtype>OCHNC</ns13:service-subtype>
    <ns13:preview>false</ns13:preview>
    <ns13:request-time>Tue Jul 12 12:19:58 PDT 2016</ns13:request-time>
    <ns13:completion-status>SUBMITTED</ns13:completion-status>
</ns13:modify-service-response>
```

7.42.3 Notification

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ns14:push-change-update xmlns:ns2="urn:cisco:params:xml:ns:yang:nrf-ce-
extension:v1" xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns3="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns16="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:restconf:resource:physical">
    <ns14:request-id>46e6231f-403e-41d2-9693-2a1494f38a8b</ns14:request-id>
    <ns14:topic>service-activation</ns14:topic>
    <ns14:time-of-update>Tue Jul 12 12:20:01 PDT 2016</ns14:time-of-update>
    <ns14:operation>ns14:configure</ns14:operation>
    <ns14:config-response>
        <ns10:modify-service-response>
            <ns10:cfs-
ref>MD=CISCO_EPNM!CFS=OCHNC_Service_Provision_Example</ns10:cfs-ref>
            <ns10:service-name>OCHNC_Service_Provision_Example</ns10:service-
name>
            <ns10:service-type>optical</ns10:service-type>
            <ns10:service-subtype>OCHNC</ns10:service-subtype>
            <ns10:preview>false</ns10:preview>
            <ns10:completion-time>Tue Jul 12 12:20:00 PDT
2016</ns10:completion-time>
            <ns10:deploy-results>
                <ns10:result>
                    <ns10:node-ref>MD=CISCO_EPNM!ND=M6-234-248</ns10:node-
ref>
                    <ns10:state>SUCCESSFUL</ns10:state>
                    <ns10:config>ENT-CPS::PCHAN-2-14-RX&amp;PCHAN-2-15-
TX:ctag::10.58.234.249,PCHAN-2-15-TX&amp;PCHAN-2-14-
RX,2WAY,ADD:CKTID="OCHNC_Service_Provision_Example",VALMODE=NONE,RESTTYPE=NON
E,CKTLABEL="OchncExample",FREQ=195500.0,ISMANDATORYFREQ=TRUE,WIDTH=50,ALLOWRG
N=N,PATHPOLICY=ANY,DSPWROFS=0.0,USPWROFS=0.0:;
ED-CPS::PCHAN-2-14-RX&amp;PCHAN-2-15-TX:ctag:::CMDMDE=FRCD:locked,disabled;
OPR-CPS::PCHAN-2-14-RX&amp;PCHAN-2-15-TX:ctag:::IGNPATHALM=YES;
</ns10:config>
```

```
                    <ns10:error></ns10:error>
                </ns10:result>
            </ns10:deploy-results>
            <ns10:completion-status>SUCCESS</ns10:completion-status>
        </ns10:modify-service-response>
    </ns14:config-response>
</ns14:push-change-update>
```

7.43 Terminate Optical Service

7.43.1 Request

POST /restconf/operations/v1/cisco-service-provision:terminate-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<terminate-service-request
xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1">
    <cfs-ref>MD=CISCO_EPNM!CFS=OCHNC_Service_Provision_Example</cfs-ref>
      <service-order-data>
            <customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</customer-
ref>
            <service-name>OCHNC_Service_Provision_Example</service-name>
            <service-description>OCHNC_Service_Provision_Example</service-
description>
            <service-type>optical</service-type>
            <service-subtype>OCHNC</service-subtype>
      </service-order-data>
</terminate-service-request>
```

Content-Type: application/yang.operation+json
Json Payload:

```
{
   "sa.cfs-ref": "MD=CISCO_EPNM!CFS=OCHNC_Service_Provision_Example",
   "sa.service-order-data": {
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "sa.service-name": "OCHNC_Service_Provision_Example",
      "sa.service-description": "OCHNC_Service_Provision_Example",
      "sa.service-type": "optical",
      "sa.service-subtype": "OCHNC"
   }
}
```

7.43.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
<ns13:terminate-service-response
xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns18="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns17="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:sb:customer:v1"
```

```
xmlns:ns14="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns13:request-id>f6396f4e-9c31-406f-b64e-284f16ab130f</ns13:request-id>
    <ns13:service-name>OCHNC_Service_Provision_Example</ns13:service-name>
    <ns13:service-type>optical</ns13:service-type>
    <ns13:service-subtype>OCHNC</ns13:service-subtype>
    <ns13:preview>false</ns13:preview>
    <ns13:request-time>Tue Jul 12 12:21:23 PDT 2016</ns13:request-time>
    <ns13:completion-status>SUBMITTED</ns13:completion-status>
</ns13:terminate-service-response>
```

7.43.3 Notification

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ns14:push-change-update xmlns:ns2="urn:cisco:params:xml:ns:yang:nrf-ce-
extension:v1" xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns3="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns16="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:restconf:resource:physical">
    <ns14:request-id>f6396f4e-9c31-406f-b64e-284f16ab130f</ns14:request-id>
    <ns14:topic>service-activation</ns14:topic>
    <ns14:time-of-update>Tue Jul 12 12:21:24 PDT 2016</ns14:time-of-update>
    <ns14:operation>ns14:configure</ns14:operation>
    <ns14:config-response>
        <ns10:terminate-service-response>
            <ns10:cfs-
ref>MD=CISCO_EPNM!CFS=OCHNC_Service_Provision_Example</ns10:cfs-ref>
            <ns10:service-name>OCHNC_Service_Provision_Example</ns10:service-
name>
            <ns10:service-type>optical</ns10:service-type>
            <ns10:service-subtype>OCHNC</ns10:service-subtype>
            <ns10:preview>false</ns10:preview>
            <ns10:completion-time>Tue Jul 12 12:21:23 PDT
2016</ns10:completion-time>
```

```
            <ns10:deploy-results/>
            <ns10:completion-status>SUCCESS</ns10:completion-status>
        </ns10:terminate-service-response>
    </ns14:config-response>
</ns14:push-change-update>
```

7.44 Provisioning Optical Services

7.44.1 Provision OCHTrail UNI

7.44.1.1 *Request*

XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<provision-service-request
xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1">
<service-order-data>
<customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</customer-ref>
<service-name>TrailUni-Service</service-name>
<service-description>OCHTRAILUNIbugverificationtest</service-description>
<service-type>optical</service-type>
<service-subtype>OCHTRAIL_UNI</service-subtype>
<service-activate>true</service-activate>
<direction>BIDIRECTIONAL</direction>
<optical-data>
<label>OchtrailuniExample</label>
<protection>NONE</protection>
<state-type>IN_SERVICE</state-type>
<admin-state>UP</admin-state>
      <manage-constraints>true</manage-constraints>
<constraints>
<constraint>
<constraint>constraint_name1</constraint>
<nd-ref>MD=CISCO_EPNM!ND=M6-234-249</nd-ref>
<constraint-path-type>LOOSE</constraint-path-type>
<as>INCLUDE</as>
<route>WORK</route>
</constraint>
<constraint>
<constraint>constraint_name2</constraint>
<tp-ref>MD=CISCO_EPNM!ND=M6-234-249!FTP=name=PCHAN-2-14-
RX;lr=LR_PHYSICAL_OPTICAL</tp-ref>
<constraint-path-type>STRICT</constraint-path-type>
<as>EXCLUDE</as>
<route>WORK</route>
</constraint>
</constraints>

<explicit-path>
      <option>WORKING</option>
      <type>EXPLICIT</type>
      <name>123EP</name>
      <protected-by></protected-by>
      <restored-by></restored-by>
      </explicit-path>
      -->
 <och-trail-uni-data>
```

```
      <validation>NONE</validation>
      <optical-threshold>GREEN</optical-threshold>
      <allow-regeneration>false</allow-regeneration>
      <restoration>NONE</restoration>
      <priority>HIGH</priority>
      <soak-time>10:22:23</soak-time>

      <revert>MANUAL</revert>
      <diverse-from-tunnel-id></diverse-from-tunnel-id>
      <diverse-xro-name></diverse-xro-name>
      <wavelength>153033.00</wavelength>
      <wavelength-options>SET_PREFERED</wavelength-options>

      <tl1-description>Exampledescription</tl1-description>

      <restoration-mode>NONE</restoration-mode>

      <validation-restoration>INHERITED</validation-restoration>

      <optical-threshold-restoration>GREEN</optical-threshold-restoration>

</och-trail-uni-data>
</optical-data>
<termination-point-list>
<termination-point-config>
                        <tp-ref>MD=CISCO_EPNM!ND=cvg-scapa-
90.cisco.com!PTP=name=Optics0/1/0/2;lr=lr-optical-physical</tp-ref>
                        <directionality>source</directionality>
                  </termination-point-config>
                  <termination-point-config>
                        <tp-ref>MD=CISCO_EPNM!ND=cvg-frodo-
220.cisco.com!PTP=name=Optics0/0/0/2;lr=lr-optical-physical</tp-ref>
                        <directionality>sink</directionality>
                  </termination-point-config>
</termination-point-list>
</service-order-data>
</provision-service-request>
```

Json Payload:

```
{
   "sa.service-order-data": {
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "sa.service-name": "TrailUni-Service",
      "sa.service-description": "OCHTRAILUNIbugverificationtest",
      "sa.service-type": "optical",
      "sa.service-subtype": "OCHTRAIL_UNI",
      "sa.service-activate": "true",
      "sa.direction": "BIDIRECTIONAL",
      "sa.optical-data": {
         "sa.label": "OchtrailuniExample",
         "sa.protection": "NONE",
         "sa.state-type": "IN_SERVICE",
         "sa.admin-state": "UP",
         "sa.manage-constraints": "true",
         "sa.constraints": {
            "sa.constraint": [
               {
```

```
                  "sa.constraint": "constraint_name1",
                  "sa.nd-ref": "MD=CISCO_EPNM!ND=M6-234-249",
                  "sa.constraint-path-type": "LOOSE",
                  "sa.as": "INCLUDE",
                  "sa.route": "WORK"
               },
               {
                  "sa.constraint": "constraint_name2",
                  "sa.tp-ref": "MD=CISCO_EPNM!ND=M6-234-
249!FTP=name=PCHAN-2-14-RX;lr=LR_PHYSICAL_OPTICAL",
                  "sa.constraint-path-type": "STRICT",
                  "sa.as": "EXCLUDE",
                  "sa.route": "WORK"
               }
            ]
         },
         "sa.explicit-path": {
            "sa.option": "WORKING",
            "sa.type": "EXPLICIT",
            "sa.name": "123EP",
            "sa.protected-by": null,
            "sa.restored-by": null
         },
         "sa.och-trail-uni-data": {
            "sa.validation": "NONE",
            "sa.optical-threshold": "GREEN",
            "sa.allow-regeneration": "false",
            "sa.restoration": "NONE",
            "sa.priority": "HIGH",
            "sa.soak-time": "10:22:23",
            "sa.revert": "MANUAL",
            "sa.diverse-from-tunnel-id": null,
            "sa.diverse-xro-name": null,
            "sa.wavelength": "153033.00",
            "sa.wavelength-options": "SET_PREFERED",
            "sa.tl1-description": "Exampledescription",
            "sa.restoration-mode": "NONE",
            "sa.validation-restoration": "INHERITED",
            "sa.optical-threshold-restoration": "GREEN"
         }
      },
      "sa.termination-point-list": {
         "sa.termination-point-config": [
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=cvg-scapa-
90.cisco.com!PTP=name=Optics0/1/0/2;lr=lr-optical-physical",
               "sa.directionality": "source"
            },
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=cvg-frodo-
220.cisco.com!PTP=name=Optics0/0/0/2;lr=lr-optical-physical",
               "sa.directionality": "sink"
            }
         ]
      }
   }
```

```
}
```

7.44.1.2 *Response*

```
<ns13:provision-service-response
xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns18="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns17="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns13:request-id>9fdbc599-9d82-467a-843a-7ef138a6808e</ns13:request-
id>
    <ns13:service-name>TrailUni-Service</ns13:service-name>
    <ns13:service-type>optical</ns13:service-type>
    <ns13:service-subtype>OCHTRAIL_UNI</ns13:service-subtype>
    <ns13:preview>false</ns13:preview>
    <ns13:request-time>Tue Jul 12 11:59:18 PDT 2016</ns13:request-time>
    <ns13:completion-status>SUBMITTED</ns13:completion-status>
    </ns13:provision-service-response>
```

7.44.2 Modify OCHTrail UNI

7.44.2.1 *Request*

XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<modify-service-request
xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1">
    <cfs-ref>MD=CISCO_EPNM!CFS=TrailUni-Service</cfs-ref>
<service-order-data>
<customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</customer-ref>
<service-name>TrailUni-Service</service-name>
<service-description>OCHTRAILUNIdescrmodify</service-description>
<service-type>optical</service-type>
<service-subtype>OCHTRAIL_UNI</service-subtype>
<service-activate>true</service-activate>
<direction>BIDIRECTIONAL</direction>
<optical-data>
<label>OchtrailuniExample</label>
<protection>NONE</protection>
<state-type>IN_SERVICE</state-type>
<admin-state>UP</admin-state>
<manage-constraints>true</manage-constraints>
<constraints>
```

```
<constraint>
<constraint>constraint_name1</constraint>
<nd-ref>MD=CISCO_EPNM!ND=M6-234-249</nd-ref>
<constraint-path-type>LOOSE</constraint-path-type>
<as>INCLUDE</as>
<route>WORK</route>
</constraint>
<constraint>
<constraint>constraint_name2</constraint>
<tp-ref>MD=CISCO_EPNM!ND=M6-234-249!FTP=name=PCHAN-2-14-
RX;lr=LR_PHYSICAL_OPTICAL</tp-ref>
<constraint-path-type>STRICT</constraint-path-type>
<as>EXCLUDE</as>
<route>WORK</route>
</constraint>
</constraints>

<!--
<explicit-path>
      <option>WORKING</option>
      <type>EXPLICIT</type>
      <name>123EP</name>
      <protected-by></protected-by>
      <restored-by></restored-by>
      </explicit-path>
      -->
 <och-trail-uni-data>
      <validation>NONE</validation>
      <optical-threshold>GREEN</optical-threshold>
      <allow-regeneration>false</allow-regeneration>
      <restoration>NONE</restoration>
      <priority>HIGH</priority>
      <soak-time>10:22:23</soak-time>

      <revert>MANUAL</revert>
      <diverse-from-tunnel-id></diverse-from-tunnel-id>
      <diverse-xro-name></diverse-xro-name>
      <!--<wavelength>153033.00</wavelength>
      <wavelength-options>SET_PREFERED</wavelength-options>-->

      <tl1-description>Exampledescription</tl1-description>

      <restoration-mode>NONE</restoration-mode>

      <validation-restoration>INHERITED</validation-restoration>

      <optical-threshold-restoration>GREEN</optical-threshold-restoration>

</och-trail-uni-data>
</optical-data>
<termination-point-list>
<termination-point-config>
                        <tp-ref>MD=CISCO_EPNM!ND=cvg-scapa-
90.cisco.com!PTP=name=Optics0/1/0/2;lr=lr-optical-physical</tp-ref>
                        <directionality>source</directionality>
                  </termination-point-config>
```

```
                  <termination-point-config>
                        <tp-ref>MD=CISCO_EPNM!ND=cvg-frodo-
220.cisco.com!PTP=name=Optics0/0/0/2;lr=lr-optical-physical</tp-ref>
                        <directionality>sink</directionality>
                  </termination-point-config>
</termination-point-list>
</service-order-data>
</modify-service-request>
```

Json Payload:

```
{
   "sa.cfs-ref": "MD=CISCO_EPNM!CFS=TrailUni-Service",
   "sa.service-order-data": {
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "sa.service-name": "TrailUni-Service",
      "sa.service-description": "OCHTRAILUNIdescrmodify",
      "sa.service-type": "optical",
      "sa.service-subtype": "OCHTRAIL_UNI",
      "sa.service-activate": "true",
      "sa.direction": "BIDIRECTIONAL",
      "sa.optical-data": {
         "sa.label": "OchtrailuniExample",
         "sa.protection": "NONE",
         "sa.state-type": "IN_SERVICE",
         "sa.admin-state": "UP",
         "sa.manage-constraints": "true",
         "sa.constraints": {
            "sa.constraint": [
               {
                  "sa.constraint": "constraint_name1",
                  "sa.nd-ref": "MD=CISCO_EPNM!ND=M6-234-249",
                  "sa.constraint-path-type": "LOOSE",
                  "sa.as": "INCLUDE",
                  "sa.route": "WORK"
               },
               {
                  "sa.constraint": "constraint_name2",
                  "sa.tp-ref": "MD=CISCO_EPNM!ND=M6-234-
249!FTP=name=PCHAN-2-14-RX;lr=LR_PHYSICAL_OPTICAL",
                  "sa.constraint-path-type": "STRICT",
                  "sa.as": "EXCLUDE",
                  "sa.route": "WORK"
               }
            ]
         },
         "sa.och-trail-uni-data": {
            "sa.validation": "NONE",
            "sa.optical-threshold": "GREEN",
            "sa.allow-regeneration": "false",
            "sa.restoration": "NONE",
            "sa.priority": "HIGH",
            "sa.soak-time": "10:22:23",
            "sa.revert": "MANUAL",
            "sa.diverse-from-tunnel-id": null,
            "sa.diverse-xro-name": null,
            "sa.tl1-description": "Exampledescription",
            "sa.restoration-mode": "NONE",
```

```
            "sa.validation-restoration": "INHERITED",
            "sa.optical-threshold-restoration": "GREEN"
         }
      },
      "sa.termination-point-list": {
         "sa.termination-point-config": [
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=cvg-scapa-
90.cisco.com!PTP=name=Optics0/1/0/2;lr=lr-optical-physical",
               "sa.directionality": "source"
            },
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=cvg-frodo-
220.cisco.com!PTP=name=Optics0/0/0/2;lr=lr-optical-physical",
               "sa.directionality": "sink"
            }
         ]
      }
   }
}
```

7.44.2.2 *Response*

```
<ns13:modify-service-response
xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns18="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns17="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns13:request-id>9fdbc599-9d82-467a-843a-7ef138a6808e</ns13:request-
id>
    <ns13:service-name> TrailUni-Service</ns13:service-name>
    <ns13:service-type>optical</ns13:service-type>
    <ns13:service-subtype>OCHTRAIL_UNI</ns13:service-subtype>
    <ns13:preview>false</ns13:preview>
    <ns13:request-time>Tue Jul 12 11:59:18 PDT 2016</ns13:request-time>
    <ns13:completion-status>SUBMITTED</ns13:completion-status>
    </ns13:modify-service-response>
```

7.44.3 Terminate OCHTrail UNI

7.44.3.1 *Request*

XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<terminate-service-request
xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1">
    <cfs-ref>MD=CISCO_EPNM!CFS=Restconfopuoverodu</cfs-ref>
      <service-order-data>
            <customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</customer-
ref>
            <service-name>RestconfOCHTRAILUNI</service-name>
            <service-description></service-description>
            <service-type>optical</service-type>
            <service-subtype>OCHTRAIL_UNI</service-subtype>
      </service-order-data>
</terminate-service-request>
```

Json Payload:

```
{
   "sa.cfs-ref": "MD=CISCO_EPNM!CFS=Restconfopuoverodu",
   "sa.service-order-data": {
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "sa.service-name": "RestconfOCHTRAILUNI",
      "sa.service-description": null,
      "sa.service-type": "optical",
      "sa.service-subtype": "OCHTRAIL_UNI"
   }
}
```

7.44.3.2 *Response*

```
<ns14:terminate-service-response
xmlns:ns24="urn:cisco:ns:yang:service:activation:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns22="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns21="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns20="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns14:request-id>dfe86f80-3ba1-496d-b98a-8d488a41547b</ns14:request-
id>
    <ns14:service-name> RestconfOCHTRAILUNI </ns14:service-name>
    <ns14:service-type>optical</ns14:service-type>
    <ns14:service-subtype>OCHTRAIL_UNI</ns14:service-subtype>
    <ns14:preview>false</ns14:preview>
```

```
    <ns14:request-time>Wed Nov 02 17:14:25 UTC 2016</ns14:request-time>
    <ns14:completion-status>SUBMITTED</ns14:completion-status>
</ns14:terminate-service-response>
```

7.44.4 Provision OCHNC Service

7.44.4.1 Request

POST /restconf/operations/v1/cisco-service-provision:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<provision-service-request
xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1">
      <service-order-data>
            <customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</customer-
ref>
            <service-name>OCHNC_Service_Provision_Example</service-name>
            <service-description>OCHNC_Service_Provision_Example</service-
description>
            <service-type>optical</service-type>
            <service-subtype>OCHNC</service-subtype>
            <service-activate>true</service-activate>
            <direction>BIDIRECTIONAL</direction>
            <optical-data>
                  <uni>false</uni>
                  <label>OchncExample</label>
                  <protection>NONE</protection>
                  <constraints>
                     <constraint>
                      <constraint>constraint_name1</constraint>
                      <nd-ref>MD=CISCO_EPNM!ND=M6-234-249</nd-ref>
                      <constraint-path-type>LOOSE</constraint-path-type>
                      <as>INCLUDE</as>
                      <route>WORK</route>
                     </constraint>
                  <constraint>
                     <constraint>constraint_name2</constraint>
                     <tp-ref>MD=CISCO_EPNM!ND=M6-234-249!FTP=name=PCHAN-2-14-
RX;lr=LR_PHYSICAL_OPTICAL</tp-ref>
                     <constraint-path-type>STRICT</constraint-path-type>
                     <as>EXCLUDE</as>
                     <route>WORK</route>
                  </constraint>
               </constraints>

                  <ochnc-data>
                        <validation>NONE</validation>
                        <optical-threshold>GREEN</optical-threshold>
                        <optical-threshold-protected>GREEN</optical-
threshold-protected>
                        <up-stream-channel-power-offset>0.0</up-stream-
channel-power-offset>
                        <down-stream-channel-power-offset>0.0</down-stream-
channel-power-offset>
                        <ignore-path-alarm>true</ignore-path-alarm>
```

```
                        <allow-regeneration>false</allow-regeneration>
                        <restoration>NONE</restoration>
                        <revert>AUTOMATIC</revert>
                        <soak-time>00:00:00-05:00</soak-time>
                        <priority>HIGH</priority>
                        <validation-restoration>NONE</validation-restoration>
                        <optical-threshold-restoration>GREEN</optical-
threshold-restoration>
                        <optical-threshold-restoration-
protected>GREEN</optical-threshold-restoration-protected>
                        <frequency>195500.0</frequency>
                        <width>50</width>
                        <frequency-required>true</frequency-required>
                        <frequency-protected>frequency195900.0</frequency-
protected>
                        <width-protected>50.0</width-protected>
                        <frequency-protected-required>true</frequency-
protected-required>
                  </ochnc-data>
            </optical-data>
            <termination-point-list>
                  <termination-point-config>
                        <tp-ref>MD=CISCO_EPNM!ND=M6-234-248!FTP=name=PCHAN-2-
14-RX;lr=LR_PHYSICAL_OPTICAL</tp-ref>
                        <directionality>source</directionality>
                        <optical-data>
                              <ochnc-data>
                                    <drop-port-ref>MD=CISCO_EPNM!ND=M6-234-
248!FTP=name=PCHAN-2-15-TX;lr=LR_PHYSICAL_OPTICAL</drop-port-ref>
                              </ochnc-data>
                        </optical-data>
                  </termination-point-config>
                  <termination-point-config>
                        <tp-ref>MD=CISCO_EPNM!ND=M6-234-249!FTP=name=PCHAN-2-
14-RX;lr=LR_PHYSICAL_OPTICAL</tp-ref>
                        <directionality>sink</directionality>
                        <optical-data>
                              <ochnc-data>
                                    <drop-port-ref>MD=CISCO_EPNM!ND=M6-234-
249!FTP=name=PCHAN-2-15-TX;lr=LR_PHYSICAL_OPTICAL</drop-port-ref>
                              </ochnc-data>
                        </optical-data>
                  </termination-point-config>
            </termination-point-list>
      </service-order-data>
</provision-service-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "sa.service-order-data": {
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "sa.service-name": "OCHNC_Service_Provision_Example",
      "sa.service-description": "OCHNC_Service_Provision_Example",
      "sa.service-type": "optical",
      "sa.service-subtype": "OCHNC",
      "sa.service-activate": "true",
```

```
      "sa.direction": "BIDIRECTIONAL",
      "sa.optical-data": {
         "sa.uni": "false",
         "sa.label": "OchncExample",
         "sa.protection": "NONE",
         "sa.constraints": {
            "sa.constraint": [
               {
                  "sa.constraint": "constraint_name1",
                  "sa.nd-ref": "MD=CISCO_EPNM!ND=M6-234-249",
                  "sa.constraint-path-type": "LOOSE",
                  "sa.as": "INCLUDE",
                  "sa.route": "WORK"
               },
               {
                  "sa.constraint": "constraint_name2",
                  "sa.tp-ref": "MD=CISCO_EPNM!ND=M6-234-249!FTP=name=PCHAN-2-
14-              RX;lr=LR_PHYSICAL_OPTICAL",
                  "sa.constraint-path-type": "STRICT",
                  "sa.as": "EXCLUDE",
                  "sa.route": "WORK"
               }
            ]
         },
         "sa.ochnc-data": {
            "sa.validation": "NONE",
            "sa.optical-threshold": "GREEN",
            "sa.optical-threshold-protected": "GREEN",
            "sa.up-stream-channel-power-offset": "0.0",
            "sa.down-stream-channel-power-offset": "0.0",
            "sa.ignore-path-alarm": "true",
            "sa.allow-regeneration": "false",
            "sa.restoration": "NONE",
            "sa.revert": "AUTOMATIC",
            "sa.soak-time": "00:00:00-05:00",
            "sa.priority": "HIGH",
            "sa.validation-restoration": "NONE",
            "sa.optical-threshold-restoration": "GREEN",
            "sa.optical-threshold-restoration-protected": "GREEN",
            "sa.frequency": "195500.0",
            "sa.width": "50",
            "sa.frequency-required": "true",
            "sa.frequency-protected": "frequency195900.0",
            "sa.width-protected": "50.0",
            "sa.frequency-protected-required": "true"
         }
      },
      "sa.termination-point-list": {
         "sa.termination-point-config": [
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=M6-234-248!FTP=name=PCHAN-2-14-
RX;lr=LR_PHYSICAL_OPTICAL",
               "sa.directionality": "source",
               "sa.optical-data": {
                  "sa.ochnc-data": {
                     "sa.drop-port-ref": "MD=CISCO_EPNM!ND=M6-234-
```

```
248!FTP=name=PCHAN-2-15-TX;lr=LR_PHYSICAL_OPTICAL"
                    }
                }
            },
            {
                "sa.tp-ref": "MD=CISCO_EPNM!ND=M6-234-249!FTP=name=PCHAN-2-14-
RX;lr=LR_PHYSICAL_OPTICAL",
                "sa.directionality": "sink",
                "sa.optical-data": {
                    "sa.ochnc-data": {
                        "sa.drop-port-ref": "MD=CISCO_EPNM!ND=M6-234-
249!FTP=name=PCHAN-2-15-TX;lr=LR_PHYSICAL_OPTICAL"
                    }
                }
            }
        ]
    }
  }
}
```

7.44.4.2 *Response*

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
<ns13:provision-service-response
xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns18="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns17="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns13:request-id>9fdbc599-9d82-467a-843a-7ef138a6808e</ns13:request-id>
    <ns13:service-name>OCHNC_Service_Provision_Example</ns13:service-name>
    <ns13:service-type>optical</ns13:service-type>
    <ns13:service-subtype>OCHNC</ns13:service-subtype>
    <ns13:preview>false</ns13:preview>
    <ns13:request-time>Tue Jul 12 11:59:18 PDT 2016</ns13:request-time>
    <ns13:completion-status>SUBMITTED</ns13:completion-status>
</ns13:provision-service-response>
```

7.44.5 Modify OCHNC Service

7.44.5.1 Request

POST /restconf/operations/v1/cisco-service-provision:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<modify-service-request
xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1">
    <cfs-ref>MD=CISCO_EPNM!CFS=OCHNC_Service_Provision_Example</cfs-ref>
      <service-order-data>
            <customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</customer-
ref>
            <service-name>OCHNC_Service_Provision_Example</service-name>
            <service-description>OCHNC_Service_Provision_Example1</service-
description>
            <service-type>optical</service-type>
            <service-subtype>OCHNC</service-subtype>
            <service-activate>true</service-activate>
            <direction>BIDIRECTIONAL</direction>
            <optical-data>
                  <uni>false</uni>
                  <label>OchncExample</label>
                  <protection>NONE</protection>
                    <constraints>
                     <constraint>
                      <constraint>constraint_name1</constraint>
                      <nd-ref>MD=CISCO_EPNM!ND=M6-234-249</nd-ref>
                      <constraint-path-type>LOOSE</constraint-path-type>
                      <as>INCLUDE</as>
                      <route>WORK</route>
                     </constraint>
                  <constraint>
                     <constraint>constraint_name2</constraint>
                     <tp-ref>MD=CISCO_EPNM!ND=M6-234-249!FTP=name=PCHAN-2-14-
RX;lr=LR_PHYSICAL_OPTICAL</tp-ref>
                     <constraint-path-type>STRICT</constraint-path-type>
                     <as>EXCLUDE</as>
                     <route>WORK</route>
                  </constraint>
                </constraints>
                  <ochnc-data>
                        <validation>NONE</validation>
                        <optical-threshold>GREEN</optical-threshold>
                        <optical-threshold-protected>GREEN</optical-
threshold-protected>
                        <up-stream-channel-power-offset>0.0</up-stream-
channel-power-offset>
                        <down-stream-channel-power-offset>0.0</down-stream-
channel-power-offset>
                        <ignore-path-alarm>true</ignore-path-alarm>
                        <allow-regeneration>false</allow-regeneration>
                        <restoration>NONE</restoration>
                        <revert>AUTOMATIC</revert>
                        <soak-time>00:00:00-05:00</soak-time>
```

```
                        <priority>HIGH</priority>
                        <validation-restoration>NONE</validation-restoration>
                        <optical-threshold-restoration>GREEN</optical-
threshold-restoration>
                        <optical-threshold-restoration-
protected>GREEN</optical-threshold-restoration-protected>
                        <frequency>195500.0</frequency>
                        <width>50</width>
                        <frequency-required>true</frequency-required>
                        <frequency-protected>frequency195900.0</frequency-
protected>
                        <width-protected>50.0</width-protected>
                        <frequency-protected-required>true</frequency-
protected-required>
                  </ochnc-data>
            </optical-data>
            <termination-point-list>
                  <termination-point-config>
                        <tp-ref>MD=CISCO_EPNM!ND=M6-234-248!FTP=name=PCHAN-2-
14-RX;lr=LR_PHYSICAL_OPTICAL</tp-ref>
                        <directionality>source</directionality>
                        <optical-data>
                              <ochnc-data>
                                    <drop-port-ref>MD=CISCO_EPNM!ND=M6-234-
248!FTP=name=PCHAN-2-15-TX;lr=LR_PHYSICAL_OPTICAL</drop-port-ref>
                              </ochnc-data>
                        </optical-data>
                  </termination-point-config>
                  <termination-point-config>
                        <tp-ref>MD=CISCO_EPNM!ND=M6-234-249!FTP=name=PCHAN-2-
14-RX;lr=LR_PHYSICAL_OPTICAL</tp-ref>
                        <directionality>sink</directionality>
                        <optical-data>
                              <ochnc-data>
                                    <drop-port-ref>MD=CISCO_EPNM!ND=M6-234-
249!FTP=name=PCHAN-2-15-TX;lr=LR_PHYSICAL_OPTICAL</drop-port-ref>
                              </ochnc-data>
                        </optical-data>
                  </termination-point-config>
            </termination-point-list>
      </service-order-data>
</modify-service-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "sa.cfs-ref": "MD=CISCO_EPNM!CFS=OCHNC_Service_Provision_Example",
   "sa.service-order-data": {
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "sa.service-name": "OCHNC_Service_Provision_Example",
      "sa.service-description": "OCHNC_Service_Provision_Example1",
      "sa.service-type": "optical",
      "sa.service-subtype": "OCHNC",
      "sa.service-activate": "true",
      "sa.direction": "BIDIRECTIONAL",
      "sa.optical-data": {
         "sa.uni": "false",
```

```
         "sa.label": "OchncExample",
         "sa.protection": "NONE",
         "sa.constraints": {
            "sa.constraint": [
               {
                  "sa.constraint": "constraint_name1",
                  "sa.nd-ref": "MD=CISCO_EPNM!ND=M6-234-249",
                  "sa.constraint-path-type": "LOOSE",
                  "sa.as": "INCLUDE",
                  "sa.route": "WORK"
               },
               {
                  "sa.constraint": "constraint_name2",
                  "sa.tp-ref": "MD=CISCO_EPNM!ND=M6-234-249!FTP=name=PCHAN-2-
14-              RX;lr=LR_PHYSICAL_OPTICAL",
                  "sa.constraint-path-type": "STRICT",
                  "sa.as": "EXCLUDE",
                  "sa.route": "WORK"
               }
            ]
         },
         "sa.ochnc-data": {
            "sa.validation": "NONE",
            "sa.optical-threshold": "GREEN",
            "sa.optical-threshold-protected": "GREEN",
            "sa.up-stream-channel-power-offset": "0.0",
            "sa.down-stream-channel-power-offset": "0.0",
            "sa.ignore-path-alarm": "true",
            "sa.allow-regeneration": "false",
            "sa.restoration": "NONE",
            "sa.revert": "AUTOMATIC",
            "sa.soak-time": "00:00:00-05:00",
            "sa.priority": "HIGH",
            "sa.validation-restoration": "NONE",
            "sa.optical-threshold-restoration": "GREEN",
            "sa.optical-threshold-restoration-protected": "GREEN",
            "sa.frequency": "195500.0",
            "sa.width": "50",
            "sa.frequency-required": "true",
            "sa.frequency-protected": "frequency195900.0",
            "sa.width-protected": "50.0",
            "sa.frequency-protected-required": "true"
         }
      },
      "sa.termination-point-list": {
         "sa.termination-point-config": [
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=M6-234-248!FTP=name=PCHAN-2-14-
RX;lr=LR_PHYSICAL_OPTICAL",
               "sa.directionality": "source",
               "sa.optical-data": {
                  "sa.ochnc-data": {
                     "sa.drop-port-ref": "MD=CISCO_EPNM!ND=M6-234-
248!FTP=name=PCHAN-2-15-TX;lr=LR_PHYSICAL_OPTICAL"
                  }
               }
```

```
            },
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=M6-234-249!FTP=name=PCHAN-2-14-
RX;lr=LR_PHYSICAL_OPTICAL",
               "sa.directionality": "sink",
               "sa.optical-data": {
                  "sa.ochnc-data": {
                     "sa.drop-port-ref": "MD=CISCO_EPNM!ND=M6-234-
249!FTP=name=PCHAN-2-15-TX;lr=LR_PHYSICAL_OPTICAL"
                  }
               }
            }
         ]
      }
   }
}
```

7.44.5.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
<ns13:modify-service-response
xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns18="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns17="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns13:request-id>46e6231f-403e-41d2-9693-2a1494f38a8b</ns13:request-id>
    <ns13:service-name>OCHNC_Service_Provision_Example</ns13:service-name>
    <ns13:service-type>optical</ns13:service-type>
    <ns13:service-subtype>OCHNC</ns13:service-subtype>
    <ns13:preview>false</ns13:preview>
    <ns13:request-time>Tue Jul 12 12:19:58 PDT 2016</ns13:request-time>
    <ns13:completion-status>SUBMITTED</ns13:completion-status>
</ns13:modify-service-response>
```

7.44.6 Terminate OCHNC Service

7.44.6.1 Request

POST /restconf/operations/v1/cisco-service-provision:provision-service HTTP/1.1
Host: <epnm-host>

Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<terminate-service-request
xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1">
    <cfs-ref>MD=CISCO_EPNM!CFS=OCHNC_Service_Provision_Example</cfs-ref>
      <service-order-data>
            <customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</customer-
ref>
            <service-name>OCHNC_Service_Provision_Example</service-name>
            <service-description>OCHNC_Service_Provision_Example</service-
description>
            <service-type>optical</service-type>
            <service-subtype>OCHNC</service-subtype>
      </service-order-data>
</terminate-service-request>
```

Content-Type: application/yang.operation+json
Json Payload:

```
{
   "sa.cfs-ref": "MD=CISCO_EPNM!CFS=OCHNC_Service_Provision_Example",
   "sa.service-order-data": {
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "sa.service-name": "OCHNC_Service_Provision_Example",
      "sa.service-description": "OCHNC_Service_Provision_Example",
      "sa.service-type": "optical",
      "sa.service-subtype": "OCHNC"
   }
}
```

7.44.6.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
<ns13:terminate-service-response
xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns18="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns17="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns13:request-id>f6396f4e-9c31-406f-b64e-284f16ab130f</ns13:request-id>
    <ns13:service-name>OCHNC_Service_Provision_Example</ns13:service-name>
```

```
    <ns13:service-type>optical</ns13:service-type>
    <ns13:service-subtype>OCHNC</ns13:service-subtype>
    <ns13:preview>false</ns13:preview>
    <ns13:request-time>Tue Jul 12 12:21:23 PDT 2016</ns13:request-time>
    <ns13:completion-status>SUBMITTED</ns13:completion-status>
</ns13:terminate-service-response>
```

7.44.7 Provision OCHCC Service

7.44.7.1 Request

POST /restconf/operations/v1/cisco-service-provision:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<provision-service-request
xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1">
      <service-order-data>
            <customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</customer-
ref>
            <service-name>OCHCC_Service_Provision_Example</service-name>
            <service-description>OCHCC_Service_Provision_Example</service-
description>
            <service-type>optical</service-type>
            <service-subtype>OCHCC</service-subtype>
            <service-activate>true</service-activate>
            <direction>BIDIRECTIONAL</direction>
            <optical-data>
                  <uni>false</uni>
                  <label>OchccExample</label>
                  <protection>NONE</protection>
                  <constraints>
                     <constraint>
                      <constraint>constraint_name1</constraint>
                      <nd-ref>MD=CISCO_EPNM!ND=M6-234-249</nd-ref>
                      <constraint-path-type>LOOSE</constraint-path-type>
                      <as>INCLUDE</as>
                      <route>WORK</route>
                     </constraint>
                  <constraint>
                     <constraint>constraint_name2</constraint>
                     <tp-ref>MD=CISCO_EPNM!ND=M6-234-249!FTP=name=PCHAN-2-14-
RX;lr=LR_PHYSICAL_OPTICAL</tp-ref>
                     <constraint-path-type>STRICT</constraint-path-type>
                     <as>EXCLUDE</as>
                     <route>WORK</route>
                  </constraint>
                </constraints>
                  <ochcc-data>
                        <validation>NONE</validation>
                        <optical-threshold>GREEN</optical-threshold>
                        <optical-threshold-protected>GREEN</optical-
threshold-protected>
                        <up-stream-channel-power-offset>0.0</up-stream-
channel-power-offset>
                        <down-stream-channel-power-offset>0.0</down-stream-
```

```
channel-power-offset>
                        <ignore-path-alarm>true</ignore-path-alarm>
                        <allow-regeneration>false</allow-regeneration>
                        <restoration>NONE</restoration>
                        <revert>AUTOMATIC</revert>
                        <soak-time>00:00:00-05:00</soak-time>
                        <priority>HIGH</priority>
                        <validation-restoration>NONE</validation-restoration>
                        <optical-threshold-restoration>GREEN</optical-
threshold-restoration>
                        <optical-threshold-restoration-
protected>GREEN</optical-threshold-restoration-protected>
      <wavelength-attributes>
                        <isRequired>true</isRequired>
                        <wavelength>1528.77</wavelength>
            </wavelength-attributes>
            <wavelength-attributes-protected>
                        <isRequired>true</isRequired>
                        <wavelength>1528.77</wavelength>
            </wavelength-attributes-protected>
                  </ochcc-data>
            </optical-data>
            <termination-point-list>
                  <termination-point-config>
                        <tp-ref>MD=CISCO_EPNM!ND=M6-234-248!FTP=name=PCHAN-2-
14-RX;lr=LR_PHYSICAL_OPTICAL</tp-ref>
                        <directionality>source</directionality>
                  </termination-point-config>
                  <termination-point-config>
                        <tp-ref>MD=CISCO_EPNM!ND=M6-234-249!FTP=name=PCHAN-2-
14-RX;lr=LR_PHYSICAL_OPTICAL</tp-ref>
                        <directionality>sink</directionality>
                  </termination-point-config>
            </termination-point-list>
      </service-order-data>
</provision-service-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "sa.service-order-data": {
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "sa.service-name": "OCHCC_Service_Provision_Example",
      "sa.service-description": "OCHCC_Service_Provision_Example",
      "sa.service-type": "optical",
      "sa.service-subtype": "OCHCC",
      "sa.service-activate": "true",
      "sa.direction": "BIDIRECTIONAL",
      "sa.optical-data": {
         "sa.uni": "false",
         "sa.label": "OchccExample",
         "sa.protection": "NONE",
         "sa.constraints": {
            "sa.constraint": [
               {
                  "sa.constraint": "constraint_name1",
                  "sa.nd-ref": "MD=CISCO_EPNM!ND=M6-234-249",
```

```
                  "sa.constraint-path-type": "LOOSE",
                  "sa.as": "INCLUDE",
                  "sa.route": "WORK"
               },
               {
                  "sa.constraint": "constraint_name2",
                  "sa.tp-ref": "MD=CISCO_EPNM!ND=M6-234-249!FTP=name=PCHAN-2-
14-RX;lr=LR_PHYSICAL_OPTICAL",
                  "sa.constraint-path-type": "STRICT",
                  "sa.as": "EXCLUDE",
                  "sa.route": "WORK"
               }
            ]
         },
         "sa.ochcc-data": {
            "sa.validation": "NONE",
            "sa.optical-threshold": "GREEN",
            "sa.optical-threshold-protected": "GREEN",
            "sa.up-stream-channel-power-offset": "0.0",
            "sa.down-stream-channel-power-offset": "0.0",
            "sa.ignore-path-alarm": "true",
            "sa.allow-regeneration": "false",
            "sa.restoration": "NONE",
            "sa.revert": "AUTOMATIC",
            "sa.soak-time": "00:00:00-05:00",
            "sa.priority": "HIGH",
            "sa.validation-restoration": "NONE",
            "sa.optical-threshold-restoration": "GREEN",
            "sa.optical-threshold-restoration-protected": "GREEN"
         }
      },
      "sa.termination-point-list": {
         "sa.termination-point-config": [
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=M6-234-248!FTP=name=PCHAN-2-14-
RX;lr=LR_PHYSICAL_OPTICAL",
               "sa.directionality": "source"
            },
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=M6-234-249!FTP=name=PCHAN-2-14-
RX;lr=LR_PHYSICAL_OPTICAL",
               "sa.directionality": "sink"
            }
         ]
      }
   }
}
```

7.44.7.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
<ns13:provision-service-response
xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns18="urn:cisco:params:xml:ns:yang:resource:device"
```

```
xmlns:ns17="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns13:request-id>9fdbc599-9d82-467a-843a-7ef138a6808e</ns13:request-id>
    <ns13:service-name> OCHCC_Service_Provision_Example</ns13:service-name>
    <ns13:service-type>optical</ns13:service-type>
    <ns13:service-subtype>OCHCC</ns13:service-subtype>
    <ns13:preview>false</ns13:preview>
    <ns13:request-time>Tue Jul 13 11:59:18 PDT 2016</ns13:request-time>
    <ns13:completion-status>SUBMITTED</ns13:completion-status>
</ns13:provision-service-response>
```

7.44.8 Modify OCHCC Service

7.44.8.1 Request

POST /restconf/operations/v1/cisco-service-provision:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<modify-service-request
xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1">
    <cfs-ref>MD=CISCO_EPNM!CFS=OCH_CC_STM_64</cfs-ref>
  <service-order-data>
    <customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</customer-ref>
    <service-name>OCH_CC_STM_64</service-name>
    <service-description>OCHCC_Service_Provision_Example1</service-
description>
    <service-type>optical</service-type>
    <service-subtype>OCHCC</service-subtype>
    <service-activate>true</service-activate>
    <direction>BIDIRECTIONAL</direction>
      <optical-data>
      <uni>false</uni>
      <label>OchccExample</label>
      <protection>NONE</protection>
            <constraints>
                  <constraint>
                        <constraint>constraint_name1</constraint>
                        <nd-ref>MD=CISCO_EPNM!ND=M6-234-249</nd-ref>
                        <constraint-path-type>LOOSE</constraint-path-type>
                        <as>INCLUDE</as>
                        <route>WORK</route>
```

```
                  </constraint>
                  <constraint>
                        <constraint>constraint_name2</constraint>
                        <tp-ref>MD=CISCO_EPNM!ND=M6-234-249!FTP=name=PCHAN-2-
14-RX;lr=LR_PHYSICAL_OPTICAL</tp-ref>
                        <constraint-path-type>STRICT</constraint-path-type>
                        <as>EXCLUDE</as>
                        <route>WORK</route>
                  </constraint>
            </constraints>
      <ochcc-data>
        <validation>NONE</validation>
        <optical-threshold>GREEN</optical-threshold>
        <optical-threshold-protected>GREEN</optical-threshold-protected>
        <up-stream-channel-power-offset>0.0</up-stream-channel-power-offset>
        <down-stream-channel-power-offset>0.0</down-stream-channel-power-
offset>
        <ignore-path-alarm>true</ignore-path-alarm>
        <allow-regeneration>false</allow-regeneration>
        <restoration>NONE</restoration>
        <revert>AUTOMATIC</revert>
        <priority>HIGH</priority>
        <validation-restoration>NONE</validation-restoration>
        <optical-threshold-restoration>GREEN</optical-threshold-restoration>
        <optical-threshold-restoration-protected>GREEN</optical-threshold-
restoration-protected>
<wavelength-attributes>
                        <isRequired>true</isRequired>
                        <wavelength>1528.77</wavelength>
            </wavelength-attributes>
            <wavelength-attributes-protected>
                        <isRequired>true</isRequired>
                        <wavelength>1528.77</wavelength>
            </wavelength-attributes-protected>

      </ochcc-data>
    </optical-data>
    <termination-point-list>
      <termination-point-config>
        <tp-ref>MD=CISCO_EPNM!ND=M6-234-248!FTP=name=AGGR-1-7-1-
1;lr=LR_DSR_100Gigabit_Ethernet</tp-ref>
        <directionality>source</directionality>
      </termination-point-config>
      <termination-point-config>
        <tp-ref>MD=CISCO_EPNM!ND=M6-234-249!FTP=name=AGGR-2-3-1-
1;lr=LR_PHYSICAL_OPTICAL</tp-ref>
        <directionality>sink</directionality>
      </termination-point-config>
    </termination-point-list>
  </service-order-data>
</modify-service-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "sa.cfs-ref": "MD=CISCO_EPNM!CFS=OCH_CC_STM_64",
   "sa.service-order-data": {
```

```
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "sa.service-name": "OCH_CC_STM_64",
      "sa.service-description": "OCHCC_Service_Provision_Example1",
      "sa.service-type": "optical",
      "sa.service-subtype": "OCHCC",
      "sa.service-activate": "true",
      "sa.direction": "BIDIRECTIONAL",
      "sa.optical-data": {
         "sa.uni": "false",
         "sa.label": "OchccExample",
         "sa.protection": "NONE",
         "sa.constraints": {
            "sa.constraint": [
               {
                  "sa.constraint": "constraint_name1",
                  "sa.nd-ref": "MD=CISCO_EPNM!ND=M6-234-249",
                  "sa.constraint-path-type": "LOOSE",
                  "sa.as": "INCLUDE",
                  "sa.route": "WORK"
               },
               {
                  "sa.constraint": "constraint_name2",
                  "sa.tp-ref": "MD=CISCO_EPNM!ND=M6-234-249!FTP=name=PCHAN-2-
14-RX;lr=LR_PHYSICAL_OPTICAL",
                  "sa.constraint-path-type": "STRICT",
                  "sa.as": "EXCLUDE",
                  "sa.route": "WORK"
               }
            ]
         },
         "sa.ochcc-data": {
            "sa.validation": "NONE",
            "sa.optical-threshold": "GREEN",
            "sa.optical-threshold-protected": "GREEN",
            "sa.up-stream-channel-power-offset": "0.0",
            "sa.down-stream-channel-power-offset": "0.0",
            "sa.ignore-path-alarm": "true",
            "sa.allow-regeneration": "false",
            "sa.restoration": "NONE",
            "sa.revert": "AUTOMATIC",
            "sa.priority": "HIGH",
            "sa.validation-restoration": "NONE",
            "sa.optical-threshold-restoration": "GREEN",
            "sa.optical-threshold-restoration-protected": "GREEN"
         }
      },
      "sa.termination-point-list": {
         "sa.termination-point-config": [
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=M6-234-248!FTP=name=AGGR-1-7-1-
1;lr=LR_DSR_100Gigabit_Ethernet",
               "sa.directionality": "source"
            },
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=M6-234-249!FTP=name=AGGR-2-3-1-
1;lr=LR_PHYSICAL_OPTICAL",
```

```
                "sa.directionality": "sink"
            }
        ]
    }
  }
}
```

7.44.8.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
<ns13:modify-service-response
xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns18="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns17="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns13:request-id>9fdbc599-9d82-467a-843a-7ef138a6808e</ns13:request-id>
    <ns13:service-name>OCH_CC_STM_64</ns13:service-name>
    <ns13:service-type>optical</ns13:service-type>
    <ns13:service-subtype>OCHCC</ns13:service-subtype>
    <ns13:preview>false</ns13:preview>
    <ns13:request-time>Tue Jul 12 11:59:18 PDT 2016</ns13:request-time>
    <ns13:completion-status>SUBMITTED</ns13:completion-status>
</ns13:modify-service-response>
```

7.44.9 Terminate OCHCC Service

7.44.9.1 Request

POST /restconf/operations/v1/cisco-service-provision:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml

7.44.10 Provision OCHTrail Service

7.44.10.1 Request

POST /restconf/operations/v1/cisco-service-provision:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
```

```
<provision-service-request
xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1">
      <service-order-data>
            <customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</customer-
ref>
            <service-name>OCHTRAIL_Service_Provision_Example</service-name>
            <service-description>OCHTRAIL_Service_Provision_Example</service-
description>
            <service-type>optical</service-type>
            <service-subtype>OCHTRAIL</service-subtype>
            <service-activate>true</service-activate>
            <direction>BIDIRECTIONAL</direction>
            <optical-data>
                  <uni>false</uni>
                  <label>OchTrailExample</label>
                  <protection>NONE</protection>
                  <och-trail-data>
                        <validation>NONE</validation>
                        <optical-threshold>GREEN</optical-threshold>
                        <optical-threshold-protected>GREEN</optical-
threshold-protected>
                        <up-stream-channel-power-offset>0.0</up-stream-
channel-power-offset>
                        <down-stream-channel-power-offset>0.0</down-stream-
channel-power-offset>
                        <ignore-path-alarm>true</ignore-path-alarm>
                        <allow-regeneration>false</allow-regeneration>
                        <restoration>NONE</restoration>
                        <revert>AUTOMATIC</revert>
                        <soak-time>00:00:00-05:00</soak-time>
                        <priority>HIGH</priority>
                        <validation-restoration>NONE</validation-restoration>
                        <optical-threshold-restoration>GREEN</optical-
threshold-restoration>
                        <optical-threshold-restoration-
protected>GREEN</optical-threshold-restoration-protected>
                        <frequency>195500.0</frequency>
                        <width>50</width>
                        <frequency-required>true</frequency-required>
                        <frequency-protected>frequency195900.0</frequency-
protected>
                        <width-protected>50.0</width-protected>
                        <frequency-protected-required>true</frequency-
protected-required>
                  </och-trail-data>
            </optical-data>
            <termination-point-list>
                  <termination-point-config>
                        <tp-ref>MD=CISCO_EPNM!ND=M6-234-248!FTP=name=PCHAN-2-
14-RX;lr=LR_PHYSICAL_OPTICAL</tp-ref>
                        <directionality>source</directionality>
                  </termination-point-config>
                  <termination-point-config>
                        <tp-ref>MD=CISCO_EPNM!ND=M6-234-249!FTP=name=PCHAN-2-
14-RX;lr=LR_PHYSICAL_OPTICAL</tp-ref>
                        <directionality>sink</directionality>
```

```
                </termination-point-config>
            </termination-point-list>
        </service-order-data>
</provision-service-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "sa.service-order-data": {
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "sa.service-name": "OCHTRAIL_Service_Provision_Example",
      "sa.service-description": "OCHTRAIL_Service_Provision_Example",
      "sa.service-type": "optical",
      "sa.service-subtype": "OCHTRAIL",
      "sa.service-activate": "true",
      "sa.direction": "BIDIRECTIONAL",
      "sa.optical-data": {
         "sa.uni": "false",
         "sa.label": "OchTrailExample",
         "sa.protection": "NONE",
         "sa.och-trail-data": {
            "sa.validation": "NONE",
            "sa.optical-threshold": "GREEN",
            "sa.optical-threshold-protected": "GREEN",
            "sa.up-stream-channel-power-offset": "0.0",
            "sa.down-stream-channel-power-offset": "0.0",
            "sa.ignore-path-alarm": "true",
            "sa.allow-regeneration": "false",
            "sa.restoration": "NONE",
            "sa.revert": "AUTOMATIC",
            "sa.soak-time": "00:00:00-05:00",
            "sa.priority": "HIGH",
            "sa.validation-restoration": "NONE",
            "sa.optical-threshold-restoration": "GREEN",
            "sa.optical-threshold-restoration-protected": "GREEN",
            "sa.frequency": "195500.0",
            "sa.width": "50",
            "sa.frequency-required": "true",
            "sa.frequency-protected": "frequency195900.0",
            "sa.width-protected": "50.0",
            "sa.frequency-protected-required": "true"
         }
      },
      "sa.termination-point-list": {
         "sa.termination-point-config": [
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=M6-234-248!FTP=name=PCHAN-2-14-
RX;lr=LR_PHYSICAL_OPTICAL",
               "sa.directionality": "source"
            },
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=M6-234-249!FTP=name=PCHAN-2-14-
RX;lr=LR_PHYSICAL_OPTICAL",
               "sa.directionality": "sink"
            }
         ]
      }
```

```
    }
}
```

7.44.10.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
<ns13:provision-service-response
xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns18="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns17="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns13:request-id>9fdbc599-9d82-467a-843a-7ef138a6808e</ns13:request-id>
    <ns13:service-name> OCHTRAIL_Service_Provision_Example </ns13:service-
name>
    <ns13:service-type>optical</ns13:service-type>
    <ns13:service-subtype>OCHTRAIL</ns13:service-subtype>
    <ns13:preview>false</ns13:preview>
    <ns13:request-time>Tue Jul 13 11:59:18 PDT 2016</ns13:request-time>
    <ns13:completion-status>SUBMITTED</ns13:completion-status>
</ns13:provision-service-response>
```

7.44.11 Modify OCHTrail Service

7.44.11.1 Request

POST /restconf/operations/v1/cisco-service-activation:modify-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<modify-service-request
xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1">
    <cfs-ref>MD=CISCO_EPNM!CFS=OCHTrail_Service_Provision_Example</cfs-ref>
  <service-order-data>
    <customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</customer-ref>
    <service-name>OCHTrail_Service_Provision_Example1</service-name>
    <service-description>OCHTrail_Service_Provision_Example1</service-
description>
    <service-type>optical</service-type>
    <service-subtype>OCHTRAIL</service-subtype>
```

```
    <service-activate>true</service-activate>
    <direction>BIDIRECTIONAL</direction>
        <optical-data>
      <uni>false</uni>
      <label>OchTrailExample</label>
      <protection>NONE</protection>
                  <constraints>
                  <constraint>
                        <constraint>constraint_name1</constraint>
                        <nd-ref>MD=CISCO_EPNM!ND=M6-234-249</nd-ref>
                        <constraint-path-type>LOOSE</constraint-path-type>
                        <as>INCLUDE</as>
                        <route>WORK</route>
                  </constraint>
                  <constraint>
                        <constraint>constraint_name2</constraint>
                        <tp-ref>MD=CISCO_EPNM!ND=M6-234-249!FTP=name=PCHAN-2-
14-RX;lr=LR_PHYSICAL_OPTICAL</tp-ref>
                        <constraint-path-type>STRICT</constraint-path-type>
                        <as>EXCLUDE</as>
                        <route>WORK</route>
                  </constraint>
            </constraints>
      <och-trail-data>
        <validation>NONE</validation>
        <optical-threshold>GREEN</optical-threshold>
        <optical-threshold-protected>GREEN</optical-threshold-protected>
        <up-stream-channel-power-offset>0.0</up-stream-channel-power-offset>
        <down-stream-channel-power-offset>0.0</down-stream-channel-power-
offset>
        <ignore-path-alarm>true</ignore-path-alarm>
        <allow-regeneration>false</allow-regeneration>
        <restoration>NONE</restoration>
        <revert>AUTOMATIC</revert>
        <soak-time>00:00:00-05:00</soak-time>
        <priority>HIGH</priority>
        <validation-restoration>NONE</validation-restoration>
        <optical-threshold-restoration>GREEN</optical-threshold-restoration>
        <optical-threshold-restoration-protected>GREEN</optical-threshold-
restoration-protected>
        <frequency>195500.0</frequency>
        <frequency-required>true</frequency-required>
        <frequency-protected>frequency195900.0</frequency-protected>
        <width-protected>50.0</width-protected>
        <frequency-protected-required>true</frequency-protected-required>
      </och-trail-data>
    </optical-data>
    <termination-point-list>
      <termination-point-config>
        <tp-ref>MD=CISCO_EPNM!ND=M6-234-248!FTP=name=CHAN-1-7-
2;lr=LR_PHYSICAL_OPTICAL</tp-ref>
        <directionality>source</directionality>
      </termination-point-config>
      <termination-point-config>
        <tp-ref>MD=CISCO_EPNM!ND=M6-234-249!FTP=name=CHAN-1-7-
2;lr=LR_PHYSICAL_OPTICAL</tp-ref>
```

```
        <directionality>sink</directionality>
      </termination-point-config>
    </termination-point-list>
  </service-order-data>
</modify-service-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "sa.service-order-data": {
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "sa.service-name": "OCHTRAIL_Service_Provision_Example",
      "sa.service-description": "OCHTRAIL_Service_Provision_Example",
      "sa.service-type": "optical",
      "sa.service-subtype": "OCHTRAIL",
      "sa.service-activate": "true",
      "sa.direction": "BIDIRECTIONAL",
      "sa.optical-data": {
         "sa.uni": "false",
         "sa.label": "OchTrailExample",
         "sa.protection": "NONE",
         "sa.och-trail-data": {
            "sa.validation": "NONE",
            "sa.optical-threshold": "GREEN",
            "sa.optical-threshold-protected": "GREEN",
            "sa.up-stream-channel-power-offset": "0.0",
            "sa.down-stream-channel-power-offset": "0.0",
            "sa.ignore-path-alarm": "true",
            "sa.allow-regeneration": "false",
            "sa.restoration": "NONE",
            "sa.revert": "AUTOMATIC",
            "sa.soak-time": "00:00:00-05:00",
            "sa.priority": "HIGH",
            "sa.validation-restoration": "NONE",
            "sa.optical-threshold-restoration": "GREEN",
            "sa.optical-threshold-restoration-protected": "GREEN",
            "sa.frequency": "195500.0",
            "sa.width": "50",
            "sa.frequency-required": "true",
            "sa.frequency-protected": "frequency195900.0",
            "sa.width-protected": "50.0",
            "sa.frequency-protected-required": "true"
         }
      },
      "sa.termination-point-list": {
         "sa.termination-point-config": [
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=M6-234-248!FTP=name=PCHAN-2-14-
RX;lr=LR_PHYSICAL_OPTICAL",
               "sa.directionality": "source"
            },
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=M6-234-249!FTP=name=PCHAN-2-14-
RX;lr=LR_PHYSICAL_OPTICAL",
               "sa.directionality": "sink"
            }
         ]
```

```
        }
    }
}
```

7.44.11.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
<ns13:modify-service-response
xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns18="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns17="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns13:request-id>9fdbc599-9d82-467a-843a-7ef138a6808e</ns13:request-id>
    <ns13:service-name>OCHTrail_Service_Provision_Example1</ns13:service-
name>
    <ns13:service-type>optical</ns13:service-type>
    <ns13:service-subtype>OCHTRAIL</ns13:service-subtype>
    <ns13:preview>false</ns13:preview>
    <ns13:request-time>Tue Jul 12 11:59:18 PDT 2016</ns13:request-time>
    <ns13:completion-status>SUBMITTED</ns13:completion-status>
</ns13:modify-service-response>
```

7.44.12 Terminate OCHTrail Service

7.44.12.1 Request

POST /restconf/operations/v1/cisco-service-activation:terminate-service HTTP/1.1
Host: <epnm-host>
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<terminate-service-request
xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1">
    <cfs-ref>MD=CISCO_EPNM!CFS=OCHTRAIL_Service_Provision_Example1</cfs-ref>
  <service-order-data>
    <customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</customer-ref>
    <service-name>OCHTRAIL_Service_Provision_Example1</service-name>
    <service-description>OCHTRAIL_Service_Provision_Example1</service-
description>
    <service-type>optical</service-type>
    <service-subtype>OCHTRAIL</service-subtype>
```

```
  </service-order-data>
</terminate-service-request>
```

Json Payload:

```
{
   "sa.cfs-ref": "MD=CISCO_EPNM!CFS=OCHTRAIL_Service_Provision_Example1",
   "sa.service-order-data": {
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "sa.service-name": "OCHTRAIL_Service_Provision_Example1",
      "sa.service-description": "OCHTRAIL_Service_Provision_Example1",
      "sa.service-type": "optical",
      "sa.service-subtype": "OCHTRAIL"
   }
}
```

7.44.12.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
<ns14:terminate-service-response
xmlns:ns24="urn:cisco:ns:yang:service:activation:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns22="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns21="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns20="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns14:request-id>dfe86f80-3ba1-496d-b98a-8d488a41547b</ns14:request-id>
    <ns14:service-name>OCHTRAIL_Service_Provision_Example1</ns14:service-
name>
    <ns14:service-type>optical</ns14:service-type>
    <ns14:service-subtype>OCHTRAIL</ns14:service-subtype>
    <ns14:preview>false</ns14:preview>
    <ns14:request-time>Wed Nov 02 17:14:25 UTC 2016</ns14:request-time>
    <ns14:completion-status>SUBMITTED</ns14:completion-status>
</ns14:terminate-service-response>
```

7.44.13 Provision ODU_TUNNEL Service

7.44.13.1 Request

POST /restconf/operations/v1/cisco-service-provision:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<provision-service-request
xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1">
      <service-order-data>
            <customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</customer-
ref>
            <service-name>ODUTunnel_Service_Provision_Example</service-name>
            <service-
description>ODUTunnel_Service_Provision_Example</service-description>
            <service-type>optical</service-type>
            <service-subtype>ODU_TUNNEL</service-subtype>
            <service-activate>true</service-activate>
            <direction>BIDIRECTIONAL</direction>
            <optical-data>
                  <uni>false</uni>
                  <label>OduTunnelExample</label>
                  <protection>NONE</protection>
                  <odu-tunnel-data>
                        <record-route>true</record-route>
                        <open-end>true</open-end>
                        <otn-service-type>OTN_OPU_FLEX</otn-service-type>
                        <bandwidth>ODU1</bandwidth>
                        <framing-type>GFP-F-Fixed</framing-type>
                        <bit-rate>200</bit-rate>
                        <protection-profile>MD=CISCO_EPNM!ND=cvg-scapa-
    225.cisco.com!PPF=test_234_1</protection-profile>

                  </odu-tunnel-data>
            </optical-data>
            <termination-point-list>
                  <termination-point-config>
                        <nd-ref>MD=CISCO_EPNM!ND=cvg-frodo-228.cisco.com</nd-
ref>
                        <directionality>source</directionality>
                  </termination-point-config>
                  <termination-point-config>
                        <nd-ref>MD=CISCO_EPNM!ND=cvg-frodo-234.cisco.com</nd-
ref>
                        <directionality>sink</directionality>
                  </termination-point-config>
            </termination-point-list>
      </service-order-data>
</provision-service-request>
```

Content-Type: application/yang.operation+json
Json Payload:

```
{
   "sa.service-order-data": {
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "sa.service-name": "ODUTunnel_Service_Provision_Example",
```

```
      "sa.service-description": "ODUTunnel_Service_Provision_Example",
      "sa.service-type": "optical",
      "sa.service-subtype": "ODU_TUNNEL",
      "sa.service-activate": "true",
      "sa.direction": "BIDIRECTIONAL",
      "sa.optical-data": {
         "sa.uni": "false",
         "sa.label": "OduTunnelExample",
         "sa.protection": "NONE",
         "sa.odu-tunnel-data": {
            "sa.record-route": "true",
            "sa.open-end": "true",
            "sa.otn-service-type": "OTN_OPU_FLEX",
            "sa.bandwidth": "ODU1",
            "sa.framing-type": "GFP-F-Fixed",
            "sa.bit-rate": "200",
            "sa.protection-profile": "MD=CISCO_EPNM!ND=cvg-scapa-
225.cisco.com!PPF=test_234_1"
         }
      },
      "sa.termination-point-list": {
         "sa.termination-point-config": [
            {
               "sa.nd-ref": "MD=CISCO_EPNM!ND=cvg-frodo-228.cisco.com",
               "sa.directionality": "source"
            },
            {
               "sa.nd-ref": "MD=CISCO_EPNM!ND=cvg-frodo-234.cisco.com",
               "sa.directionality": "sink"
            }
         ]
      }
   }
}
```

7.44.13.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
<ns13:provision-service-response
xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns18="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns17="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
```

```
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns13:request-id>9fdbc599-9d82-467a-843a-7ef138a6808e</ns13:request-id>
    <ns13:service-name> ODUTunnel_Service_Provision_Example</ns13:service-
name>
    <ns13:service-type>optical</ns13:service-type>
    <ns13:service-subtype>ODU_TUNNEL</ns13:service-subtype>
    <ns13:preview>false</ns13:preview>
    <ns13:request-time>Tue Jul 13 11:59:18 PDT 2016</ns13:request-time>
    <ns13:completion-status>SUBMITTED</ns13:completion-status>
</ns13:provision-service-response>
```

7.44.14 Modify ODU_TUNNEL Service

7.44.14.1 Request

POST /restconf/operations/v1/cisco-service-activation:modify-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<modify-service-request
xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1">
    <cfs-ref>MD=CISCO_EPNM!CFS=ODU_UNI_SAN_NBI</cfs-ref>
  <service-order-data>
    <customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</customer-ref>
    <service-name>ODU_UNI_SAN_NBI</service-name>
    <service-description>ODUUNI_Service_Provision_Example1</service-
description>
    <service-type>optical</service-type>
    <service-subtype>ODU_UNI</service-subtype>
    <service-activate>true</service-activate>
    <direction>BIDIRECTIONAL</direction>
    <optical-data>
      <uni>false</uni>
      <label>OduUniExample</label>
      <protection>NONE</protection>
      <odu-uni-data>
        <record-route>true</record-route>
        <open-end>true</open-end>
        <otn-service-type>Ethernet OPU0 GMP</otn-service-type>
        <bandwidth>ODU0</bandwidth>
        <framing-type>GFP-F-Fixed</framing-type>
        <bit-rate>200</bit-rate>
<protection-profile>MD=CISCO_EPNM!ND=cvg-scapa-
225.cisco.com!PPF=test_234_1</protection-profile>
      </odu-uni-data>
    </optical-data>
    <termination-point-list>
      <termination-point-config>
        <tp-ref>MD=CISCO_EPNM!ND=cvg-frodo-
39.cisco.com!FTP=name=Optics0/7/0/22;lr=lr-optical-physical</tp-ref>
        <directionality>source</directionality>
      </termination-point-config>
      <termination-point-config>
        <tp-ref>MD=CISCO_EPNM!ND=cvg-frodo-
```

```
235.cisco.com!FTP=name=Optics0/2/0/10;lr=lr-optical-physical</tp-ref>
        <directionality>sink</directionality>
      </termination-point-config>
    </termination-point-list>
  </service-order-data>
</modify-service-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "sa.cfs-ref": "MD=CISCO_EPNM!CFS=ODU_UNI_SAN_NBI",
   "sa.service-order-data": {
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "sa.service-name": "ODU_UNI_SAN_NBI",
      "sa.service-description": "ODUUNI_Service_Provision_Example1",
      "sa.service-type": "optical",
      "sa.service-subtype": "ODU_UNI",
      "sa.service-activate": "true",
      "sa.direction": "BIDIRECTIONAL",
      "sa.optical-data": {
         "sa.uni": "false",
         "sa.label": "OduUniExample",
         "sa.protection": "NONE",
         "sa.odu-uni-data": {
            "sa.record-route": "true",
            "sa.open-end": "true",
            "sa.otn-service-type": "Ethernet OPU0 GMP",
            "sa.bandwidth": "ODU0",
            "sa.framing-type": "GFP-F-Fixed",
            "sa.bit-rate": "200",
            "sa.protection-profile": "MD=CISCO_EPNM!ND=cvg-scapa-
225.cisco.com!PPF=test_234_1"
         }
      },
      "sa.termination-point-list": {
         "sa.termination-point-config": [
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=cvg-frodo-
39.cisco.com!FTP=name=Optics0/7/0/22;lr=lr-optical-physical",
               "sa.directionality": "source"
            },
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=cvg-frodo-
235.cisco.com!FTP=name=Optics0/2/0/10;lr=lr-optical-physical",
               "sa.directionality": "sink"
            }
         ]
      }
   }
}
```

7.44.14.2 Response

HTTP/1.1 201 Created

Server: <epnm-host>

Content-Type: application/yang.operation+xml

```
<ns13:modify-service-response
```

```
xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns18="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns17="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns13:request-id>9fdbc599-9d82-467a-843a-7ef138a6808e</ns13:request-id>
    <ns13:service-name>ODU_UNI_SAN_NBI</ns13:service-name>
    <ns13:service-type>optical</ns13:service-type>
    <ns13:service-subtype>ODU_UNI</ns13:service-subtype>
    <ns13:preview>false</ns13:preview>
    <ns13:request-time>Tue Jul 12 11:59:18 PDT 2016</ns13:request-time>
    <ns13:completion-status>SUBMITTED</ns13:completion-status>
</ns13:modify-service-response>
```

7.44.15 Terminate ODU_TUNNEL Service

7.44.15.1 Request

POST /restconf/operations/v1/cisco-service-activation:terminate-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<terminate-service-request
xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1">
    <cfs-ref>MD=CISCO_EPNM!CFS=ODUTunnel_Service_Provision_Example</cfs-ref>
  <service-order-data>
    <customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</customer-ref>
    <service-name>ODUTunnel_Service_Provision_Example</service-name>
    <service-description>ODUTunnel_Service_Provision_Example1</service-
description>
    <service-type>optical</service-type>
    <service-subtype>ODU_TUNNEL</service-subtype>
  </service-order-data>
</terminate-service-request>
```

Content-Type: application/yang.operation+json
Json Payload:

```
{
   "sa.cfs-ref": "MD=CISCO_EPNM!CFS=ODUTunnel_Service_Provision_Example",
   "sa.service-order-data": {
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "sa.service-name": "ODUTunnel_Service_Provision_Example",
      "sa.service-description": "ODUTunnel_Service_Provision_Example1",
```

```
      "sa.service-type": "optical",
      "sa.service-subtype": "ODU_TUNNEL"
   }
}
```

7.44.15.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
<ns14:terminate-service-response
xmlns:ns24="urn:cisco:ns:yang:service:activation:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns22="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns21="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns20="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns14:request-id>dfe86f80-3ba1-496d-b98a-8d488a41547b</ns14:request-id>
    <ns14:service-name>ODUTunnel_Service_Provision_Example</ns14:service-
name>
    <ns14:service-type>optical</ns14:service-type>
    <ns14:service-subtype>ODU_TUNNEL</ns14:service-subtype>
    <ns14:preview>false</ns14:preview>
    <ns14:request-time>Wed Nov 02 17:14:25 UTC 2016</ns14:request-time>
    <ns14:completion-status>SUBMITTED</ns14:completion-status>
</ns14:terminate-service-response>
```

7.44.16 Provision ODU_UNI Service

7.44.16.1 Request

POST /restconf/operations/v1/cisco-service-provision:provision-service HTTP/1.1
Host: <epnm-host>
Content-Type: application/yang.operation+xml
XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<provision-service-request
xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1">
      <service-order-data>
            <customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</customer-
```

```
ref>
            <service-name>ODUUni_Service_Provision_Example</service-name>
            <service-description>ODUUni_Service_Provision_Example</service-
description>
            <service-type>optical</service-type>
            <service-subtype>ODU_UNI</service-subtype>
            <service-activate>true</service-activate>
            <direction>BIDIRECTIONAL</direction>
<explicit-path>
      <option>WORKING</option>
      <type>EXPLICIT</type>
      <path-ref>MD=CISCO_EPNM!ND=cvg-frodo-
220.cisco.com!PATH=ExplicitPath0_1_0_2to10_58_235_93_sh0_sl2_p3</path-ref>
      <protected-by></protected-by>
      <restored-by></restored-by>
</explicit-path>
            <optical-data>
                  <uni>false</uni>
                  <label>OduUniExample</label>
                  <protection>NONE</protection>
                  <odu-uni-data>
                        <record-route>true</record-route>
                        <open-end>true</open-end>
                        <otn-service-type>OTN_OPU_FLEX</otn-service-type>
                        <bandwidth>ODU1</bandwidth>
                        <framing-type>GFP-F-Fixed</framing-type>
                        <bit-rate>200</bit-rate>
                        <protection-profile>MD=CISCO_EPNM!ND=cvg-scapa-
    225.cisco.com!PPF=test_234_1</protection-profile>

                  </odu-uni-data>
            </optical-data>
            <termination-point-list>
                  <termination-point-config>
                        <tp-ref>MD=CISCO_EPNM!ND=M6-234-248!FTP=name=PCHAN-2-
14-RX;lr=LR_PHYSICAL_OPTICAL</tp-ref>
                        <nd-ref>MD=CISCO_EPNM!ND=cvg-frodo-228.cisco.com</nd-
ref>
                        <directionality>source</directionality>
                  </termination-point-config>
                  <termination-point-config>
                        <tp-ref>MD=CISCO_EPNM!ND=M6-234-249!FTP=name=PCHAN-2-
14-RX;lr=LR_PHYSICAL_OPTICAL</tp-ref>
                        <nd-ref>MD=CISCO_EPNM!ND=cvg-frodo-234.cisco.com</nd-
ref>
                        <directionality>sink</directionality>
                  </termination-point-config>
            </termination-point-list>
      </service-order-data>
</provision-service-request>
```

Content-Type: application/yang.operation+json

Json Payload:

```
{
   "sa.service-order-data": {
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "sa.service-name": "ODUUni_Service_Provision_Example",
```

```
      "sa.service-description": "ODUUni_Service_Provision_Example",
      "sa.service-type": "optical",
      "sa.service-subtype": "ODU_UNI",
      "sa.service-activate": "true",
      "sa.direction": "BIDIRECTIONAL",
      "sa.optical-data": {
         "sa.uni": "false",
         "sa.label": "OduUniExample",
         "sa.protection": "NONE",
         "sa.odu-uni-data": {
            "sa.record-route": "true",
            "sa.open-end": "true",
            "sa.otn-service-type": "OTN_OPU_FLEX",
            "sa.bandwidth": "ODU1",
            "sa.framing-type": "GFP-F-Fixed",
            "sa.bit-rate": "200",
            "sa.protection-profile": "MD=CISCO_EPNM!ND=cvg-scapa-
225.cisco.com!PPF=test_234_1"
         }
      },
      "sa.termination-point-list": {
         "sa.termination-point-config": [
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=M6-234-248!FTP=name=PCHAN-2-14-
RX;lr=LR_PHYSICAL_OPTICAL",
               "sa.nd-ref": "MD=CISCO_EPNM!ND=cvg-frodo-228.cisco.com",
               "sa.directionality": "source"
            },
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=M6-234-249!FTP=name=PCHAN-2-14-
RX;lr=LR_PHYSICAL_OPTICAL",
               "sa.nd-ref": "MD=CISCO_EPNM!ND=cvg-frodo-234.cisco.com",
               "sa.directionality": "sink"
            }
         ]
      }
   }
}
```

7.44.16.2 Response

HTTP/1.1 201 Created
Server: <epnm-host>
Content-Type: application/yang.operation+xml

```
<ns13:provision-service-response
xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns18="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns17="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
```

```
xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns13:request-id>9fdbc599-9d82-467a-843a-7ef138a6808e</ns13:request-id>
    <ns13:service-name> ODUUni_Service_Provision_Example </ns13:service-name>
    <ns13:service-type>optical</ns13:service-type>
    <ns13:service-subtype>ODU_UNI</ns13:service-subtype>
    <ns13:preview>false</ns13:preview>
    <ns13:request-time>Tue Oct 15 10:41:19 PDT 2016</ns13:request-time>
    <ns13:completion-status>SUBMITTED</ns13:completion-status>
</ns13:provision-service-response>
```

7.44.17 Modify ODUUNI service

7.44.17.1 *Request*

XML Payload:

```
    <?xml version="1.0" encoding="UTF-8"?>
    <modify-service-request
    xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1">
        <cfs-ref>MD=CISCO_EPNM!CFS=ODU_UNI_SAN_NBI</cfs-ref>
      <service-order-data>
        <customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</customer-ref>
        <service-name>ODU_UNI_SAN_NBI</service-name>
        <service-description>ODUUNI_Service_Provision_Example1</service-
    description>
        <service-type>optical</service-type>
        <service-subtype>ODU_UNI</service-subtype>
        <service-activate>true</service-activate>
        <direction>BIDIRECTIONAL</direction>
<explicit-path>
      <option>WORKING</option>
      <type>EXPLICIT</type>
      <path-ref>MD=CISCO_EPNM!ND=cvg-frodo-
220.cisco.com!PATH=ExplicitPath0_1_0_2to10_58_235_93_sh0_sl2_p3</path-ref>
      <protected-by></protected-by>
      <restored-by></restored-by>
</explicit-path>

        <optical-data>
          <uni>false</uni>
          <label>OduUniExample</label>
          <protection>NONE</protection>
          <odu-uni-data>
            <record-route>true</record-route>
            <open-end>true</open-end>
            <otn-service-type>Ethernet OPU0 GMP</otn-service-type>
            <bandwidth>ODU0</bandwidth>
            <framing-type>GFP-F-Fixed</framing-type>
            <bit-rate>200</bit-rate>
            <protection-profile>MD=CISCO_EPNM!ND=cvg-scapa-
    225.cisco.com!PPF=test_234_1</protection-profile>
          </odu-uni-data>
```

```
        </optical-data>
        <termination-point-list>
          <termination-point-config>
            <tp-ref>MD=CISCO_EPNM!ND=cvg-frodo-
    39.cisco.com!FTP=name=Optics0/7/0/22;lr=lr-optical-physical</tp-ref>
            <directionality>source</directionality>
          </termination-point-config>
          <termination-point-config>
            <tp-ref>MD=CISCO_EPNM!ND=cvg-frodo-
    235.cisco.com!FTP=name=Optics0/2/0/10;lr=lr-optical-physical</tp-ref>
            <directionality>sink</directionality>
          </termination-point-config>
        </termination-point-list>
      </service-order-data>
</modify-service-request>
```

Json Payload:

```
    {
       "sa.cfs-ref": "MD=CISCO_EPNM!CFS=ODU_UNI_SAN_NBI",
       "sa.service-order-data": {
          "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
          "sa.service-name": "ODU_UNI_SAN_NBI",
          "sa.service-description": "ODUUNI_Service_Provision_Example1",
          "sa.service-type": "optical",
          "sa.service-subtype": "ODU_UNI",
          "sa.service-activate": "true",
          "sa.direction": "BIDIRECTIONAL",
          "sa.optical-data": {
             "sa.uni": "false",
             "sa.label": "OduUniExample",
             "sa.protection": "NONE",
             "sa.odu-uni-data": {
                "sa.record-route": "true",
                "sa.open-end": "true",
                "sa.otn-service-type": "Ethernet OPU0 GMP",
                "sa.bandwidth": "ODU0",
                "sa.framing-type": "GFP-F-Fixed",
                "sa.bit-rate": "200",
                "sa.protection-profile": "MD=CISCO_EPNM!ND=cvg-scapa-
    225.cisco.com!PPF=test_234_1"
             }
          },
          "sa.termination-point-list": {
             "sa.termination-point-config": [
                {
                   "sa.tp-ref": "MD=CISCO_EPNM!ND=cvg-frodo-
    39.cisco.com!FTP=name=Optics0/7/0/22;lr=lr-optical-physical",
                   "sa.directionality": "source"
                },
                {
                   "sa.tp-ref": "MD=CISCO_EPNM!ND=cvg-frodo-
    235.cisco.com!FTP=name=Optics0/2/0/10;lr=lr-optical-physical",
                   "sa.directionality": "sink"
                }
             ]
          }
       }
```

```
}
```

7.44.17.2 *Response*

```
    <ns13:modify-service-response
    xmlns:ns20="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
    xmlns:ns19="urn:cisco:params:xml:ns:yang:restconf:foundation"
    xmlns:ns18="urn:cisco:params:xml:ns:yang:resource:device"
    xmlns:ns17="urn:cisco:params:xml:ns:yang:yang-push:v1"
    xmlns:ns16="urn:cisco:params:xml:ns:yang:qos:v1"
    xmlns:ns15="urn:cisco:params:xml:ns:yang:sb:customer:v1"
    xmlns:ns14="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
    xmlns:ns13="urn:cisco:params:xml:ns:yang:service:activation:v1"
    xmlns:ns12="urn:cisco:params:xml:ns:yang:ra:v1"
    xmlns:ns11="urn:cisco:params:xml:ns:yang:si-service:v1"
    xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
    xmlns:ns9="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
    xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
    xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
    xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
    xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
    xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
    xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library"
    xmlns:ns2="inet-uri">
        <ns13:request-id>9fdbc599-9d82-467a-843a-
    7ef138a6808e</ns13:request-id>
        <ns13:service-name>ODU_UNI_SAN_NBI</ns13:service-name>
        <ns13:service-type>optical</ns13:service-type>
        <ns13:service-subtype>ODU_UNI</ns13:service-subtype>
        <ns13:preview>false</ns13:preview>
        <ns13:request-time>Tue Jul 12 11:59:18 PDT 2016</ns13:request-
    time>
        <ns13:completion-status>SUBMITTED</ns13:completion-status>
</ns13:modify-service-response>
```

7.44.18 Terminate ODUUNI Service

XML Payload:

```
    <?xml version="1.0" encoding="UTF-8"?>
    <terminate-service-request
    xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1">
        <cfs-ref>MD=CISCO_EPNM!CFS=ODU_UNI_SAN_NBI</cfs-ref>
      <service-order-data>
        <customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</customer-ref>
        <service-name>ODU_UNI_SAN_NBI</service-name>
        <service-description>OPUoverODU_port_8</service-description>
        <service-type>optical</service-type>
        <service-subtype>ODU_UNI</service-subtype>
      </service-order-data>
</terminate-service-request>
```

Json Payload:

```
{
       "sa.cfs-ref": "MD=CISCO_EPNM!CFS=ODU_UNI_SAN_NBI",
       "sa.service-order-data": {
          "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
          "sa.service-name": "ODU_UNI_SAN_NBI",
          "sa.service-description": "OPUoverODU_port_8",
```

```
            "sa.service-type": "optical",
            "sa.service-subtype": "ODU_UNI"
        }
}
```

7.44.18.1 *Response*

```
    <ns14:terminate-service-response
    xmlns:ns24="urn:cisco:ns:yang:service:activation:v1"
    xmlns:ns23="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
    xmlns:ns22="urn:cisco:params:xml:ns:yang:restconf:foundation"
    xmlns:ns21="urn:cisco:params:xml:ns:yang:resource:device"
    xmlns:ns20="urn:cisco:params:xml:ns:yang:yang-push:v1"
    xmlns:ns19="urn:cisco:params:xml:ns:yang:qos:v1"
    xmlns:ns18="urn:cisco:params:xml:ns:yang:sb:customer:v1"
    xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
    xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
    xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
    xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
    xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
    xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
    xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
    xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
    xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
    xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
    xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
    xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
    xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
    xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
    xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library"
    xmlns:ns2="inet-uri">
        <ns14:request-id>dfe86f80-3ba1-496d-b98a-
    8d488a41547b</ns14:request-id>
        <ns14:service-name>ODU_UNI_SAN_NBI</ns14:service-name>
        <ns14:service-type>optical</ns14:service-type>
        <ns14:service-subtype>ODU_UNI</ns14:service-subtype>
        <ns14:preview>false</ns14:preview>
        <ns14:request-time>Wed Nov 02 17:14:25 UTC 2016</ns14:request-
    time>
        <ns14:completion-status>SUBMITTED</ns14:completion-status>
</ns14:terminate-service-response>
```

7.44.19 Provision Mutually Diverse OCHTrail UNI

7.44.19.1 *Request*

XML Payload:

```
    <?xml version="1.0" encoding="UTF-8"?>
    <provision-service-request
    xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1">
    <service-order-data-list>
      <service-order-data>
            <customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</customer-
    ref>
            <service-name>OCH_TRAIL_UNI_MD1</service-name>
            <service-description>OCH_TRAIL_UNI_MD1</service-description>
            <service-type>optical</service-type>
            <service-subtype>OCHTRAIL_UNI</service-subtype>
```

```
            <mutual-diverse>true</mutual-diverse>
            <diverse-from-name>OCH_TRAIL_UNI_MD2</diverse-from-name>
            <service-activate>true</service-activate>
            <direction>BIDIRECTIONAL</direction>
            <optical-data>
                  <label>TestLabelS1</label>
                  <protection>NONE</protection>
                  <admin-state>UP</admin-state>
                  <och-trail-uni-data>
                        <validation>NONE</validation>
                        <optical-threshold>GREEN</optical-threshold>

                        <allow-regeneration>false</allow-regeneration>
                        <restoration>NONE</restoration>
                        <priority>HIGH</priority>
                        <soak-time>10:22:23</soak-time>

                        <revert>MANUAL</revert>

                        <diverse-from-tunnel-id></diverse-from-tunnel-id>

                        <diverse-xro-name></diverse-xro-name>

                        <wavelength>162545.00</wavelength>
                        <!--<wavelength-options>SET_PREFERED</wavelength-
options>-->
                        <tl1-description>TL1_DESC_1</tl1-description>

                        <restoration-mode>UNI_C</restoration-mode>

                        <validation-restoration>FULL</validation-
restoration>
                        <optical-threshold-restoration>GREEN</optical-
threshold-restoration>
                  </och-trail-uni-data>
            </optical-data>
            <termination-point-list>
                  <termination-point-config>
                        <tp-ref>MD=CISCO_EPNM!ND=cvg-scapa-
90.cisco.com!PTP=name=Optics0/1/0/3;lr=lr-optical-physical</tp-ref>
                        <directionality>source</directionality>
                  </termination-point-config>
                  <termination-point-config>
                        <tp-ref>MD=CISCO_EPNM!ND=cvg-scapa-
93.cisco.com!CTP=name=Optics0/1/0/3;lr=lr-optical-channel</tp-ref>
                        <directionality>sink</directionality>
                  </termination-point-config>
            </termination-point-list>
      </service-order-data>
      <service-order-data>
            <customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</customer-
ref>
            <service-name>OCH_TRAIL_UNI_MD2</service-name>
            <service-description>OCH_TRAIL_UNI_MD2</service-description>
            <service-type>optical</service-type>
            <service-subtype>OCHTRAIL_UNI</service-subtype>
```

```
            <mutual-diverse>true</mutual-diverse>
            <diverse-from-name>OCH_TRAIL_UNI_MD1</diverse-from-name>
            <service-activate>true</service-activate>
            <direction>BIDIRECTIONAL</direction>
            <optical-data>
                  <label>TestLabelS1</label>
                  <protection>NONE</protection>
                  <admin-state>UP</admin-state>
                  <och-trail-uni-data>
                        <validation>NONE</validation>
                        <optical-threshold>GREEN</optical-threshold>

                        <allow-regeneration>false</allow-regeneration>
                        <restoration>NONE</restoration>
                        <priority>HIGH</priority>
                        <soak-time>10:22:24</soak-time>

                        <revert>MANUAL</revert>

                        <diverse-from-tunnel-id></diverse-from-tunnel-id>

                        <diverse-xro-name></diverse-xro-name>

                        <wavelength>162545.00</wavelength>
                        <!--<wavelength-options>SET_PREFERED</wavelength-
options>-->
                        <tl1-description>TL1_DESC_2</tl1-description>

                        <restoration-mode>UNI_C</restoration-mode>

                        <validation-restoration>FULL</validation-
restoration>
                        <optical-threshold-restoration>GREEN</optical-
threshold-restoration>
                  </och-trail-uni-data>
            </optical-data>
            <termination-point-list>
                  <termination-point-config>
                        <tp-ref>MD=CISCO_EPNM!ND=cvg-scapa-
90.cisco.com!PTP=name=Optics0/1/0/2;lr=lr-optical-physical</tp-ref>
                        <directionality>source</directionality>
                  </termination-point-config>
                  <termination-point-config>
                        <tp-ref>MD=CISCO_EPNM!ND=cvg-scapa-
93.cisco.com!PTP=name=Optics0/1/0/2;lr=lr-optical-physical</tp-ref>
                        <directionality>sink</directionality>
                  </termination-point-config>
            </termination-point-list>
      </service-order-data>
   </service-order-data-list>
   </provision-service-request>
```

Json Payload:

```
   {
      "sa.service-order-data-list": {
         "sa.service-order-data": [
```

```
            {
               "sa.customer-ref":
   "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
               "sa.service-name": "OCH_TRAIL_UNI_MD1",
               "sa.service-description": "OCH_TRAIL_UNI_MD1",
               "sa.service-type": "optical",
               "sa.service-subtype": "OCHTRAIL_UNI",
               "sa.mutual-diverse": "true",
               "sa.diverse-from-name": "OCH_TRAIL_UNI_MD2",
               "sa.service-activate": "true",
               "sa.direction": "BIDIRECTIONAL",
               "sa.optical-data": {
                  "sa.label": "TestLabelS1",
                  "sa.protection": "NONE",
                  "sa.admin-state": "UP",
                  "sa.och-trail-uni-data": {
                     "sa.validation": "NONE",
                     "sa.optical-threshold": "GREEN",
                     "sa.allow-regeneration": "false",
                     "sa.restoration": "NONE",
                     "sa.priority": "HIGH",
                     "sa.soak-time": "10:22:23",
                     "sa.revert": "MANUAL",
                     "sa.diverse-from-tunnel-id": null,
                     "sa.diverse-xro-name": null,
                     "sa.wavelength": "162545.00",
                     "sa.tl1-description": "TL1_DESC_1",
                     "sa.restoration-mode": "UNI_C",
                     "sa.validation-restoration": "FULL",
                     "sa.optical-threshold-restoration": "GREEN"
                  }
               },
               "sa.termination-point-list": {
                  "sa.termination-point-config": [
                     {
                        "sa.tp-ref": "MD=CISCO_EPNM!ND=cvg-scapa-
   90.cisco.com!PTP=name=Optics0/1/0/3;lr=lr-optical-physical",
                        "sa.directionality": "source"
                     },
                     {
                        "sa.tp-ref": "MD=CISCO_EPNM!ND=cvg-scapa-
   93.cisco.com!CTP=name=Optics0/1/0/3;lr=lr-optical-channel",
                        "sa.directionality": "sink"
                     }
                  ]
               }
            },
            {
               "sa.customer-ref":
   "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
               "sa.service-name": "OCH_TRAIL_UNI_MD2",
               "sa.service-description": "OCH_TRAIL_UNI_MD2",
               "sa.service-type": "optical",
               "sa.service-subtype": "OCHTRAIL_UNI",
               "sa.mutual-diverse": "true",
               "sa.diverse-from-name": "OCH_TRAIL_UNI_MD1",
```

```
                "sa.service-activate": "true",
                "sa.direction": "BIDIRECTIONAL",
                "sa.optical-data": {
                   "sa.label": "TestLabelS1",
                   "sa.protection": "NONE",
                   "sa.admin-state": "UP",
                   "sa.och-trail-uni-data": {
                      "sa.validation": "NONE",
                      "sa.optical-threshold": "GREEN",
                      "sa.allow-regeneration": "false",
                      "sa.restoration": "NONE",
                      "sa.priority": "HIGH",
                      "sa.soak-time": "10:22:24",
                      "sa.revert": "MANUAL",
                      "sa.diverse-from-tunnel-id": null,
                      "sa.diverse-xro-name": null,
                      "sa.wavelength": "162545.00",
                      "sa.tl1-description": "TL1_DESC_2",
                      "sa.restoration-mode": "UNI_C",
                      "sa.validation-restoration": "FULL",
                      "sa.optical-threshold-restoration": "GREEN"
                   }
                },
                "sa.termination-point-list": {
                   "sa.termination-point-config": [
                      {
                         "sa.tp-ref": "MD=CISCO_EPNM!ND=cvg-scapa-
    90.cisco.com!PTP=name=Optics0/1/0/2;lr=lr-optical-physical",
                         "sa.directionality": "source"
                      },
                      {
                         "sa.tp-ref": "MD=CISCO_EPNM!ND=cvg-scapa-
    93.cisco.com!PTP=name=Optics0/1/0/2;lr=lr-optical-physical",
                         "sa.directionality": "sink"
                      }
                   ]
                }
             }
          ]
       }
}
```

7.44.19.2 *Response*

```
    <ns14:provision-service-request-list
    xmlns:ns24="urn:cisco:ns:yang:service:activation:v1"
    xmlns:ns23="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
    xmlns:ns22="urn:cisco:params:xml:ns:yang:restconf:foundation"
    xmlns:ns21="urn:cisco:params:xml:ns:yang:resource:device"
    xmlns:ns20="urn:cisco:params:xml:ns:yang:yang-push:v1"
    xmlns:ns19="urn:cisco:params:xml:ns:yang:qos:v1"
    xmlns:ns18="urn:cisco:params:xml:ns:yang:sb:customer:v1"
    xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
    xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
    xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
    xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
    xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
    xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
    xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
    xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
    xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
    xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
    xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
    xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
    xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
    xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
    xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library"
    xmlns:ns2="inet-uri">
        <provision-service-request>
            <request-id>91d7cbb2-8f8e-40db-ab22-832bda276a93</request-id>
            <service-name>OCH_TRAIL_UNI_MD1,OCH_TRAIL_UNI_MD2</service-
    name>
            <service-type>optical</service-type>
            <service-subtype>OCHTRAIL_UNI</service-subtype>
            <preview>false</preview>
            <request-time>2016-11-15T10:57:36.878-08:00</request-time>
            <completion-status>SUBMITTED</completion-status>
        </provision-service-request>
    </ns14:provision-service-request-list>
```

7.44.20 Provision OPU Over ODU

7.44.20.1 *Request*

XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<provision-service-request
xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1">
      <service-order-data>
            <customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</customer-
ref>
            <service-name>Restconfopuoverodu</service-name>
            <service-
description>OPUOVERODUServiceProvisionExample</service-description>
            <service-type>optical</service-type>
            <service-subtype>OPU_OVER_ODU</service-subtype>
            <service-activate>true</service-activate>
            <direction>BIDIRECTIONAL</direction>
            <optical-data>
```

```
                  <uni>false</uni>
                  <label>ooosample</label>
                  <protection>NONE</protection>
<admin-state>UP</admin-state>
                  <state-type>IN_SERVICE</state-type>

      </optical-data>
            <termination-point-list>
                  <termination-point-config>
                        <tp-ref>MD=CISCO_EPNM!ND=ncs2006-239-
71!CTP=name=VFAC-6-1-1;lr=lr_DSR_10Gigabit_Ethernet</tp-ref>
                        <directionality>source</directionality>
                  </termination-point-config>
                  <termination-point-config>
                        <tp-ref>MD=CISCO_EPNM!ND=ncs2006-239-
72!CTP=name=VFAC-6-1-1;lr=lr_DSR_10Gigabit_Ethernet</tp-ref>
                        <directionality>sink</directionality>
                        </termination-point-config>
            </termination-point-list>
      </service-order-data>
</provision-service-request>
```

Json Payload:

```
{
   "sa.service-order-data": {
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "sa.service-name": "Restconfopuoverodu",
      "sa.service-description": "OPUOVERODUServiceProvisionExample",
      "sa.service-type": "optical",
      "sa.service-subtype": "OPU_OVER_ODU",
      "sa.service-activate": "true",
      "sa.direction": "BIDIRECTIONAL",
      "sa.optical-data": {
         "sa.uni": "false",
         "sa.label": "ooosample",
         "sa.protection": "NONE",
         "sa.admin-state": "UP",
         "sa.state-type": "IN_SERVICE"
      },
      "sa.termination-point-list": {
         "sa.termination-point-config": [
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=ncs2006-239-
71!CTP=name=VFAC-6-1-1;lr=lr_DSR_10Gigabit_Ethernet",
               "sa.directionality": "source"
            },
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=ncs2006-239-
72!CTP=name=VFAC-6-1-1;lr=lr_DSR_10Gigabit_Ethernet",
               "sa.directionality": "sink"
            }
         ]
      }
   }
}
```

7.44.20.2 *Response*

```
<ns14:provision-service-response
xmlns:ns24="urn:cisco:ns:yang:service:activation:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns22="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns21="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns20="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns14:request-id>aa3aef26-9cc9-4cbd-81b4-15bedfe2a850</ns14:request-
id>
    <ns14:service-name>Restconfopuoverodu</ns14:service-name>
    <ns14:service-type>optical</ns14:service-type>
    <ns14:service-subtype>OPU_OVER_ODU</ns14:service-subtype>
    <ns14:preview>false</ns14:preview>
    <ns14:request-time>Tue Oct 25 11:27:05 UTC 2016</ns14:request-time>
    <ns14:completion-status>SUBMITTED</ns14:completion-status>
</ns14:provision-service-response>
```

7.44.21 Modify OPU Over ODU

7.44.21.1 *Request*

XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<modify-service-request
xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1">
    <cfs-ref>MD=CISCO_EPNM!CFS=Restconfopuoverodu</cfs-ref>
      <service-order-data>
            <customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</customer-
ref>
            <service-name>Restconfopuoverodu</service-name>
            <service-
description>OPUOVERODUServiceProvisionExample</service-description>
            <service-type>optical</service-type>
            <service-subtype>OPU_OVER_ODU</service-subtype>
            <service-activate>true</service-activate>
            <direction>BIDIRECTIONAL</direction>
            <optical-data>
                  <uni>false</uni>
```

```
                  <label>ooosample</label>
                  <protection>NONE</protection>
<admin-state>UP</admin-state>
                  <state-type>IN_SERVICE</state-type>

      </optical-data>
            <termination-point-list>
                  <termination-point-config>
                        <tp-ref>MD=CISCO_EPNM!ND=ncs2006-239-
71!CTP=name=VFAC-6-1-1;lr=lr_DSR_10Gigabit_Ethernet</tp-ref>
                        <directionality>source</directionality>
                  </termination-point-config>
                  <termination-point-config>
                        <tp-ref>MD=CISCO_EPNM!ND=ncs2006-239-
72!CTP=name=VFAC-6-1-1;lr=lr_DSR_10Gigabit_Ethernet</tp-ref>
                        <directionality>sink</directionality>
                        </termination-point-config>
            </termination-point-list>
      </service-order-data>
</modify-service-request>
```

Json Payload:

```
{
   "sa.cfs-ref": "MD=CISCO_EPNM!CFS=Restconfopuoverodu",
   "sa.service-order-data": {
      "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
      "sa.service-name": "Restconfopuoverodu",
      "sa.service-description": "OPUOVERODUServiceProvisionExample",
      "sa.service-type": "optical",
      "sa.service-subtype": "OPU_OVER_ODU",
      "sa.service-activate": "true",
      "sa.direction": "BIDIRECTIONAL",
      "sa.optical-data": {
         "sa.uni": "false",
         "sa.label": "ooosample",
         "sa.protection": "NONE",
         "sa.admin-state": "UP",
         "sa.state-type": "IN_SERVICE"
      },
      "sa.termination-point-list": {
         "sa.termination-point-config": [
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=ncs2006-239-
71!CTP=name=VFAC-6-1-1;lr=lr_DSR_10Gigabit_Ethernet",
               "sa.directionality": "source"
            },
            {
               "sa.tp-ref": "MD=CISCO_EPNM!ND=ncs2006-239-
72!CTP=name=VFAC-6-1-1;lr=lr_DSR_10Gigabit_Ethernet",
               "sa.directionality": "sink"
            }
         ]
      }
   }
}
```

7.44.21.2 *Response*

```
<ns14:modify-service-response
xmlns:ns24="urn:cisco:ns:yang:service:activation:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns22="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns21="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns20="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns14:request-id>97524f19-86a3-4e77-883e-6f17a93bffc1</ns14:request-
id>
    <ns14:service-name>Restconfopuoverodu</ns14:service-name>
    <ns14:service-type>optical</ns14:service-type>
    <ns14:service-subtype>OPU_OVER_ODU</ns14:service-subtype>
    <ns14:preview>false</ns14:preview>
    <ns14:request-time>Tue Oct 25 11:44:26 UTC 2016</ns14:request-time>
    <ns14:completion-status>SUBMITTED</ns14:completion-status>
</ns14:modify-service-response>
```

7.44.22 Terminate OPU Over ODU

7.44.22.1 *Request*

XML Payload:

```
<?xml version="1.0" encoding="UTF-8"?>
<terminate-service-request
xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1">
    <cfs-ref>MD=CISCO_EPNM!CFS=Restconfopuoverodu</cfs-ref>
      <service-order-data>
            <customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</customer-
ref>
            <service-name>Restconfopuoverodu</service-name>
            <service-description></service-description>
            <service-type>optical</service-type>
            <service-subtype>OPU_OVER_ODU</service-subtype>
      </service-order-data>
</terminate-service-request>
```

Json Payload:

```
{
```

```
    "sa.cfs-ref": "MD=CISCO_EPNM!CFS=Restconfopuoverodu",
    "sa.service-order-data": {
        "sa.customer-ref": "MD=CISCO_EPNM!CUSTOMER=Infrastructure",
        "sa.service-name": "Restconfopuoverodu",
        "sa.service-description": null,
        "sa.service-type": "optical",
        "sa.service-subtype": "OPU_OVER_ODU"
    }
}
```

7.44.22.2 *Response*

```
<ns14:terminate-service-response
xmlns:ns24="urn:cisco:ns:yang:service:activation:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns22="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns21="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns20="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-
uri">
    <ns14:request-id>dfe86f80-3ba1-496d-b98a-8d488a41547b</ns14:request-
id>
    <ns14:service-name>opu-over-odu-test-service</ns14:service-name>
    <ns14:service-type>optical</ns14:service-type>
    <ns14:service-subtype>OPU_OVER_ODU</ns14:service-subtype>
    <ns14:preview>false</ns14:preview>
    <ns14:request-time>Wed Nov 02 17:14:25 UTC 2016</ns14:request-time>
    <ns14:completion-status>SUBMITTED</ns14:completion-status>
</ns14:terminate-service-response>
```

7.44.23 Provision ODU UNI –Hairpin

In Cisco EPN Manager 2.1.2, we have a new serviceType for handling ODU UNI Hairpin, same will removed in Cisco EPN Manager 2.1.3.

7.44.23.1 *Request:*

```
<?xml version="1.0" encoding="UTF-8"?>
<provision-service-request
      xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1">
      <service-order-data>
            <customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</customer-
```

```
ref>
            <service-name>ODUUNI_HP</service-name>
            <service-description>ODUUNI_Hairpin_Service</service-
description>
            <service-type>optical</service-type>
            <service-subtype>ODU_UNI</service-subtype>
            <service-activate>true</service-activate>
            <direction>BIDIRECTIONAL</direction>
            <optical-data>
                  <uni>false</uni>
                  <label>OduUniExample</label>
                  <protection>NONE</protection>
                  <state-type>IN_SERVICE</state-type>
                  <admin-state>UP</admin-state>
                  <odu-uni-data>
                     <bandwidth>ODU2</bandwidth>
                  </odu-uni-data>
            </optical-data>
            <termination-point-list>
                  <termination-point-config>
                        <tp-ref>MD=CISCO_EPNM!ND=NCS4K-146-
18!CTP=name=ODU20/6/0/4;lr=LR_OCH_Data_Unit_2</tp-ref>
                        <directionality>source</directionality>
                  </termination-point-config>
                  <termination-point-config>
                        <tp-ref>MD=CISCO_EPNM!ND=NCS4K-146-
18!CTP=name=ODU20/6/0/6;lr=LR_OCH_Data_Unit_2</tp-ref>
                        <directionality>sink</directionality>
                  </termination-point-config>
            </termination-point-list>
      </service-order-data>
</provision-service-request>
```

7.44.23.2 *Response:*

```
<ns4:response-message
xmlns:ns41="urn:cisco:params:xml:ns:yang:restconf:party"
      xmlns:ns40="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns39="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns38="urn:ietf:params:xml:ns:yang:ietf-restconf"
      xmlns:ns37="urn:cisco:params:xml:ns:yang:service:activation:status:v
1"
      xmlns:ns36="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
      xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns32="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns31="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
      xmlns:ns30="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns29="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
      xmlns:ns28="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns26="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns24="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
      xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical-ops:v1"
```

```
      xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
      xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
      xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
      <ns4:header>
            <ns4:firstIndex>0</ns4:firstIndex>
            <ns4:lastIndex>0</ns4:lastIndex>
      </ns4:header>
      <ns4:data>
            <ns37:provision-service-request>
                  <request-id>cb2f8027-8bf7-4348-98c7-
e2691a067bfa</request-id>
                  <service-name>ODUUNI_HP</service-name>
                  <service-type>optical</service-type>
                  <service-subtype>ODU_UNI</service-subtype>
                  <preview>false</preview>
                  <request-time>2017-08-01T11:35:40.192Z</request-time>
                  <completion-time>2017-08-01T11:36:22.056Z</completion-
time>
                  <deploy-results>
                        <result>
                              <node-ref>MD=CISCO_EPNM!ND=NCS4K-146-
18</node-ref>
                              <state>SUCCESSFUL</state>
                              <config>controller ODU20/6/0/6
                                    xconnect 1 endpoint-1 ODU20/6/0/4
endpoint-2 ODU20/6/0/6 ODUUNI_HP
                              </config>
                        </result>
                  </deploy-results>
                  <completion-status>SUCCESS</completion-status>
            </ns37:provision-service-request>
      </ns4:data>
</ns4:response-message>
```

7.44.24 Modify ODU UNI –Hairpin

7.44.24.1 *Request*

```
<?xml version="1.0" encoding="UTF-8"?>
<modify-service-request
```

```
      xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1">
      <cfs-ref>MD=CISCO_EPNM!CFS=ODUUNI_HPmodify</cfs-ref>
      <service-order-data>
            <customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</customer-
ref>
            <service-name>ODUUNI_HP</service-name>
            <service-description>ODUUNI_Hairpin_Service</service-
description>
            <service-type>optical</service-type>
            <service-subtype>ODU_UNI</service-subtype>
            <service-activate>true</service-activate>
            <direction>BIDIRECTIONAL</direction>
            <optical-data>
                  <uni>false</uni>
                  <label>OduUniExample123</label>
                  <protection>NONE</protection>
                  <state-type>IN_SERVICE</state-type>
                  <admin-state>UP</admin-state>
                  <odu-uni-data>
                        <bandwidth>ODU2</bandwidth>
                  </odu-uni-data>
            </optical-data>
            <termination-point-list>
                  <termination-point-config>
                        <tp-ref>MD=CISCO_EPNM!ND=NCS4K-146-
18!CTP=name=ODU20/6/0/4;lr=LR_OCH_Data_Unit_2</tp-ref>
                        <directionality>source</directionality>
                  </termination-point-config>
                  <termination-point-config>
                        <tp-ref>MD=CISCO_EPNM!ND=NCS4K-146-
18!CTP=name=ODU20/6/0/6;lr=LR_OCH_Data_Unit_2</tp-ref>
                        <directionality>sink</directionality>
                  </termination-point-config>
            </termination-point-list>
      </service-order-data>
</modify-service-request>
```

7.44.24.2 *Response*

```
      <ns37:modify-service-request>
      <request-id>2c4728b4-23a8-4201-8602-baf61569535a</request-id>
      <service-name>ODUUNI_HP</service-name>
      <service-type>optical</service-type>
      <service-subtype>ODU_UNI</service-subtype>
      <preview>false</preview>
      <request-time>2017-08-01T12:14:13.409Z</request-time>
      <completion-time>2017-08-01T12:14:28.562Z</completion-time>
      <deploy-results>
            <result>
                  <node-ref>MD=CISCO_EPNM!ND=NCS4K-146-18</node-ref>
                  <state>SUCCESSFUL</state>
                  <config>controller ODU20/6/0/6
                        exit
                  </config>
            </result>
      </deploy-results>
      <completion-status>SUCCESS</completion-status>
```

```
</ns37:modify-service-request>
</ns4:data>
```

7.44.25 Terminate ODU UNI -Hairpin

7.44.25.1 *Request*

```
<?xml version="1.0" encoding="UTF-8"?>
<terminate-service-request
      xmlns="urn:cisco:params:xml:ns:yang:service:activation:v1">
      <cfs-ref>MD=CISCO_EPNM!CFS=ODUUNI_HP</cfs-ref>
      <service-order-data>
            <customer-ref>MD=CISCO_EPNM!CUSTOMER=Infrastructure</customer-
ref>
            <service-name>ODUUNI_HP</service-name>
            <service-description>ODUUNI_Service_Provision_Example
            </service-description>
            <service-type>optical</service-type>
            <service-subtype>ODU_UNI</service-subtype>
      </service-order-data>
</terminate-service-request>
```

7.44.25.2 *Response*

```
<ns4:response-message
xmlns:ns41="urn:cisco:params:xml:ns:yang:restconf:party"
      xmlns:ns40="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
      xmlns:ns39="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns38="urn:ietf:params:xml:ns:yang:ietf-restconf"
      xmlns:ns37="urn:cisco:params:xml:ns:yang:service:activation:status:v
1"
      xmlns:ns36="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
      xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns32="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns31="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
      xmlns:ns30="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns29="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
      xmlns:ns28="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns26="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
      xmlns:ns24="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
      xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical-ops:v1"
      xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
      xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
      xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
```

```
      xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
      xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
      <ns4:header>
            <ns4:firstIndex>0</ns4:firstIndex>
            <ns4:lastIndex>0</ns4:lastIndex>
      </ns4:header>
      <ns4:data>
            <ns37:terminate-service-request>
                  <request-id>8fd6205c-ada3-442e-af2b-
cebd3866178c</request-id>
                  <service-name>ODUUNI_HP</service-name>
                  <service-type>optical</service-type>
                  <service-subtype>ODU_UNI</service-subtype>
                  <preview>false</preview>
                  <request-time>2017-08-02T17:52:14.864Z</request-time>
                  <completion-time>2017-08-02T17:52:24.374Z</completion-
time>
                  <deploy-results>
                        <result>
                              <node-ref>MD=CISCO_EPNM!ND=NCS4K-146-
18</node-ref>
                              <state>SUCCESSFUL</state>
                              <config>no xconnect 1
                              </config>
                        </result>
                  </deploy-results>
                  <completion-status>SUCCESS</completion-status>
            </ns37:terminate-service-request>
      </ns4:data>
</ns4:response-message>
```

7.45 Get All Alarm Request

GET /restconf/data/v1/cisco-rtm:alarm
Host: <epnm-host>
Accept: application/yang-data+xml

7.45.1 Response

```
<ns4:response-message xmlns:ns31="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns30="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
xmlns:ns29="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns28="urn:cisco:ns:yang:service:activation:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:resource:opt"
xmlns:ns26="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns25="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns24="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns23="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns22="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:qos:v1"
```

```
xmlns:ns20="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:sb:srrg:v1" xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-
topology:v1" xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1" xmlns:ns12="urn:cisco:params:xml:ns:yang:si-
service:v1" xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1" xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-
tp:v1" xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-uri">
  <ns4:header>
    <ns4:firstIndex>0</ns4:firstIndex>
    <ns4:lastIndex>19</ns4:lastIndex>
  </ns4:header>
  <ns4:data>
    <ns8:alarm>
      <ns8:alarm-identifier>
        <ns8:event-identifier>1123145</ns8:event-identifier>
        <ns8:resource-object-ref>MD=CISCO_EPNM!ND=ONS15454-44</ns8:resource-object-ref>
        <ns8:probable-cause>COLLECTION_FAILURE</ns8:probable-cause>
      </ns8:alarm-identifier>
      <ns8:description>Collection Failure for '172.20.109.44'</ns8:description>
      <ns8:category>Optical Transport</ns8:category>
      <ns8:source-object-ref>MD=CISCO_EPNM!ND=ONS15454-44</ns8:source-object-ref>
      <ns8:node-ref>ONS15454-44</ns8:node-ref>
      <ns8:cause-type>cause-unknown</ns8:cause-type>
      <ns8:ack-state>unacknowledged</ns8:ack-state>
      <ns8:remote-interface-ip-address>172. 20.109. 44</ns8:remote-interface-ip-address>
      <ns8:perceived-severity>critical</ns8:perceived-severity>
      <ns8:system-received-time>2017-01-24 14:18:55.168</ns8:system-received-time>
      <ns8:system-update-time>2017-01-24 14:18:55.168</ns8:system-update-time>
      <ns8:probable-cause>COLLECTION_FAILURE</ns8:probable-cause>
<ns9:impacted-objects>MD=CISCO_EPNM!CFS=OCHNC_Passive_2</ns9:impacted-objects>
    </ns8:alarm>
    <ns8:alarm>
      <ns8:alarm-identifier>
        <ns8:event-identifier>1123146</ns8:event-identifier>
        <ns8:resource-object-ref>MD=CISCO_EPNM!ND=ONS15454-44!EQ=name=SLOT-1-
7;partnumber=15454-TCC3-K9</ns8:resource-object-ref>
        <ns8:probable-cause>PROTNA</ns8:probable-cause>
      </ns8:alarm-identifier>
      <ns8:description>Protection Unit Not Available</ns8:description>
      <ns8:category>Optical Transport</ns8:category>
      <ns8:source-object-ref>MD=CISCO_EPNM!ND=ONS15454-44!EQ=name=SLOT-1-
7;partnumber=15454-TCC3-K9</ns8:source-object-ref>
      <ns8:source-object-name>TCC</ns8:source-object-name>
      <ns8:node-ref>ONS15454-44 SLOT-1-7</ns8:node-ref>
```

```
        <ns8:cause-type>cause-unknown</ns8:cause-type>
        <ns8:ack-state>unacknowledged</ns8:ack-state>
        <ns8:remote-interface-ip-address>172. 20.109. 44</ns8:remote-interface-ip-address>
        <ns8:perceived-severity>minor</ns8:perceived-severity>
        <ns8:system-received-time>2017-01-24 14:18:56.012</ns8:system-received-time>
        <ns8:system-update-time>2017-01-24 14:18:56.012</ns8:system-update-time>
        <ns8:node-event-time>2002-08-19 18:39:19.0</ns8:node-event-time>
        <ns8:probable-cause>PROTNA</ns8:probable-cause>
        <ns8:service-affecting>non-service-affecting</ns8:service-affecting>
      </ns8:alarm>
      <ns8:alarm>
        <ns8:alarm-identifier>
          <ns8:event-identifier>1123147</ns8:event-identifier>
          <ns8:resource-object-ref>MD=CISCO_EPNM!ND=ONS15454-44!EQ=name=SLOT-1-
5</ns8:resource-object-ref>
          <ns8:probable-cause>IMPROPRMVL</ns8:probable-cause>
        </ns8:alarm-identifier>
        <ns8:description>Improper Removal</ns8:description>
        <ns8:category>Optical Transport</ns8:category>
        <ns8:source-object-ref>MD=CISCO_EPNM!ND=ONS15454-44!EQ=name=SLOT-1-5</ns8:source-
object-ref>
        <ns8:source-object-name>40-MUX-C</ns8:source-object-name>
        <ns8:node-ref>ONS15454-44 SLOT-1-5</ns8:node-ref>
        <ns8:cause-type>cause-unknown</ns8:cause-type>
        <ns8:ack-state>unacknowledged</ns8:ack-state>
        <ns8:remote-interface-ip-address>172. 20.109. 44</ns8:remote-interface-ip-address>
        <ns8:perceived-severity>minor</ns8:perceived-severity>
        <ns8:system-received-time>2017-01-24 14:18:56.072</ns8:system-received-time>
        <ns8:system-update-time>2017-01-24 14:18:56.072</ns8:system-update-time>
        <ns8:node-event-time>2002-08-19 18:39:22.0</ns8:node-event-time>
        <ns8:probable-cause>IMPROPRMVL</ns8:probable-cause>
        <ns8:service-affecting>non-service-affecting</ns8:service-affecting>
      </ns8:alarm>
      <ns8:alarm>
        <ns8:alarm-identifier>
          <ns8:event-identifier>1123148</ns8:event-identifier>
          <ns8:resource-object-ref>MD=CISCO_EPNM!ND=ONS15454-44!EQ=name=SLOT-2-
7;partnumber=15454-TCC3-K9</ns8:resource-object-ref>
          <ns8:probable-cause>PROTNA</ns8:probable-cause>
        </ns8:alarm-identifier>
        <ns8:description>Protection Unit Not Available</ns8:description>
        <ns8:category>Optical Transport</ns8:category>
        <ns8:source-object-ref>MD=CISCO_EPNM!ND=ONS15454-44!EQ=name=SLOT-2-
7;partnumber=15454-TCC3-K9</ns8:source-object-ref>
        <ns8:source-object-name>TCC</ns8:source-object-name>
        <ns8:node-ref>ONS15454-44 SLOT-2-7</ns8:node-ref>
        <ns8:cause-type>cause-unknown</ns8:cause-type>
        <ns8:ack-state>unacknowledged</ns8:ack-state>
        <ns8:remote-interface-ip-address>172. 20.109. 44</ns8:remote-interface-ip-address>
        <ns8:perceived-severity>minor</ns8:perceived-severity>
        <ns8:system-received-time>2017-01-24 14:18:56.076</ns8:system-received-time>
        <ns8:system-update-time>2017-01-24 14:18:56.076</ns8:system-update-time>
```

```
        <ns8:node-event-time>2002-08-19 18:39:35.0</ns8:node-event-time>
        <ns8:probable-cause>PROTNA</ns8:probable-cause>
        <ns8:service-affecting>non-service-affecting</ns8:service-affecting>
      </ns8:alarm>
      <ns8:alarm>
        <ns8:alarm-identifier>
          <ns8:event-identifier>1123149</ns8:event-identifier>
          <ns8:resource-object-ref>MD=CISCO_EPNM!ND=ONS15454-44</ns8:resource-object-ref>
          <ns8:probable-cause>CP-UNVER-CLEARED</ns8:probable-cause>
        </ns8:alarm-identifier>
        <ns8:description>Control Plane Unverified Cleared Alarms Present</ns8:description>
        <ns8:category>Optical Transport</ns8:category>
        <ns8:source-object-ref>MD=CISCO_EPNM!ND=ONS15454-44</ns8:source-object-ref>
        <ns8:source-object-name>ONS15454-44</ns8:source-object-name>
        <ns8:node-ref>ONS15454-44 COM</ns8:node-ref>
        <ns8:cause-type>cause-unknown</ns8:cause-type>
        <ns8:ack-state>unacknowledged</ns8:ack-state>
        <ns8:remote-interface-ip-address>172. 20.109. 44</ns8:remote-interface-ip-address>
        <ns8:perceived-severity>minor</ns8:perceived-severity>
        <ns8:system-received-time>2017-01-24 14:18:56.174</ns8:system-received-time>
        <ns8:system-update-time>2017-01-24 14:18:56.174</ns8:system-update-time>
        <ns8:node-event-time>2002-08-19 18:39:47.0</ns8:node-event-time>
        <ns8:probable-cause>CP-UNVER-CLEARED</ns8:probable-cause>
        <ns8:service-affecting>non-service-affecting</ns8:service-affecting>
      </ns8:alarm>
      <ns8:alarm>
        <ns8:alarm-identifier>
          <ns8:event-identifier>1123150</ns8:event-identifier>
          <ns8:resource-object-ref>MD=CISCO_EPNM!ND=ONS15454-44!EQ=name=SLOT-1-
5</ns8:resource-object-ref>
          <ns8:probable-cause>APC-DISABLED</ns8:probable-cause>
        </ns8:alarm-identifier>
        <ns8:description>Automatic Power Control Disabled</ns8:description>
        <ns8:category>Optical Transport</ns8:category>
        <ns8:source-object-ref>MD=CISCO_EPNM!ND=ONS15454-44!EQ=name=SLOT-1-5</ns8:source-
object-ref>
        <ns8:source-object-name>40-MUX-C</ns8:source-object-name>
        <ns8:node-ref>ONS15454-44 SLOT-1-5</ns8:node-ref>
        <ns8:cause-type>cause-unknown</ns8:cause-type>
        <ns8:ack-state>unacknowledged</ns8:ack-state>
        <ns8:remote-interface-ip-address>172. 20.109. 44</ns8:remote-interface-ip-address>
        <ns8:perceived-severity>minor</ns8:perceived-severity>
        <ns8:system-received-time>2017-01-24 14:18:56.251</ns8:system-received-time>
        <ns8:system-update-time>2017-01-24 14:18:56.251</ns8:system-update-time>
        <ns8:node-event-time>2002-09-22 18:26:42.0</ns8:node-event-time>
        <ns8:probable-cause>APC-DISABLED</ns8:probable-cause>
        <ns8:service-affecting>non-service-affecting</ns8:service-affecting>
      </ns8:alarm>
      <ns8:alarm>
        <ns8:alarm-identifier>
          <ns8:event-identifier>1123151</ns8:event-identifier>
          <ns8:resource-object-ref>MD=CISCO_EPNM!ND=232</ns8:resource-object-ref>
```

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            <ns8:probable-cause>FC-REDUNDANCY-LOST</ns8:probable-cause>
        </ns8:alarm-identifier>
        <ns8:description>Fabric Card Redundancy Lost</ns8:description>
        <ns8:category>Optical Transport</ns8:category>
        <ns8:source-object-ref>MD=CISCO_EPNM!ND=232</ns8:source-object-ref>
        <ns8:source-object-name>232</ns8:source-object-name>
        <ns8:node-ref>232 0</ns8:node-ref>
        <ns8:cause-type>cause-unknown</ns8:cause-type>
        <ns8:ack-state>unacknowledged</ns8:ack-state>
        <ns8:remote-interface-ip-address>172. 23.222.232</ns8:remote-interface-ip-address>
        <ns8:perceived-severity>critical</ns8:perceived-severity>
        <ns8:system-received-time>2017-01-24 14:21:55.0</ns8:system-received-time>
        <ns8:system-update-time>2017-01-24 14:21:55.0</ns8:system-update-time>
        <ns8:node-event-time>1971-08-28 20:53:03.0</ns8:node-event-time>
        <ns8:probable-cause>FC-REDUNDANCY-LOST</ns8:probable-cause>
    </ns8:alarm>
    <ns8:alarm>
        <ns8:alarm-identifier>
            <ns8:event-identifier>1123152</ns8:event-identifier>
            <ns8:resource-object-ref>MD=CISCO_EPNM!ND=232</ns8:resource-object-ref>
            <ns8:probable-cause>Optical Alarm</ns8:probable-cause>
        </ns8:alarm-identifier>
        <ns8:description>Power Shelf redundancy lost</ns8:description>
        <ns8:category>Optical Transport</ns8:category>
        <ns8:source-object-ref>MD=CISCO_EPNM!ND=232</ns8:source-object-ref>
        <ns8:source-object-name>232</ns8:source-object-name>
        <ns8:node-ref>232 0</ns8:node-ref>
        <ns8:cause-type>cause-unknown</ns8:cause-type>
        <ns8:ack-state>unacknowledged</ns8:ack-state>
        <ns8:remote-interface-ip-address>172. 23.222.232</ns8:remote-interface-ip-address>
        <ns8:perceived-severity>major</ns8:perceived-severity>
        <ns8:system-received-time>2017-01-24 14:21:55.0</ns8:system-received-time>
        <ns8:system-update-time>2017-01-24 14:21:55.0</ns8:system-update-time>
        <ns8:node-event-time>1971-08-28 20:53:11.0</ns8:node-event-time>
        <ns8:probable-cause>Optical Alarm</ns8:probable-cause>
    </ns8:alarm>
    <ns8:alarm>
        <ns8:alarm-identifier>
            <ns8:event-identifier>1123153</ns8:event-identifier>
            <ns8:resource-object-ref>MD=CISCO_EPNM!ND=232</ns8:resource-object-ref>
            <ns8:probable-cause>Optical Alarm</ns8:probable-cause>
        </ns8:alarm-identifier>
        <ns8:description>SWITCH_LINK_ERR_E</ns8:description>
        <ns8:category>Optical Transport</ns8:category>
        <ns8:source-object-ref>MD=CISCO_EPNM!ND=232</ns8:source-object-ref>
        <ns8:source-object-name>232</ns8:source-object-name>
        <ns8:node-ref>232 ?/RP0/RP_SW/33</ns8:node-ref>
        <ns8:cause-type>cause-unknown</ns8:cause-type>
        <ns8:ack-state>unacknowledged</ns8:ack-state>
        <ns8:remote-interface-ip-address>172. 23.222.232</ns8:remote-interface-ip-address>
        <ns8:perceived-severity>minor</ns8:perceived-severity>
        <ns8:system-received-time>2017-01-24 14:21:55.0</ns8:system-received-time>
```

```
    <ns8:system-update-time>2017-01-24 14:21:55.0</ns8:system-update-time>
    <ns8:node-event-time>1971-08-28 20:53:12.0</ns8:node-event-time>
    <ns8:probable-cause>Optical Alarm</ns8:probable-cause>
  </ns8:alarm>
  <ns8:alarm>
    <ns8:alarm-identifier>
      <ns8:event-identifier>1123154</ns8:event-identifier>
      <ns8:resource-object-ref>MD=CISCO_EPNM!ND=232</ns8:resource-object-ref>
      <ns8:probable-cause>Optical Alarm</ns8:probable-cause>
    </ns8:alarm-identifier>
    <ns8:description>SPI_FLASH_CFG_INIT_ERR_E</ns8:description>
    <ns8:category>Optical Transport</ns8:category>
    <ns8:source-object-ref>MD=CISCO_EPNM!ND=232</ns8:source-object-ref>
    <ns8:source-object-name>232</ns8:source-object-name>
    <ns8:node-ref>232 0/LC4/LC_SW</ns8:node-ref>
    <ns8:cause-type>cause-unknown</ns8:cause-type>
    <ns8:ack-state>unacknowledged</ns8:ack-state>
    <ns8:remote-interface-ip-address>172. 23.222.232</ns8:remote-interface-ip-address>
    <ns8:perceived-severity>major</ns8:perceived-severity>
    <ns8:system-received-time>2017-01-24 14:21:55.0</ns8:system-received-time>
    <ns8:system-update-time>2017-01-24 14:21:55.0</ns8:system-update-time>
    <ns8:node-event-time>1971-08-28 20:53:15.0</ns8:node-event-time>
    <ns8:probable-cause>Optical Alarm</ns8:probable-cause>
  </ns8:alarm>
  <ns8:alarm>
    <ns8:alarm-identifier>
      <ns8:event-identifier>1123155</ns8:event-identifier>
      <ns8:resource-object-ref>MD=CISCO_EPNM!ND=232</ns8:resource-object-ref>
      <ns8:probable-cause>Optical Alarm</ns8:probable-cause>
    </ns8:alarm-identifier>
    <ns8:description>temperature alarm</ns8:description>
    <ns8:category>Optical Transport</ns8:category>
    <ns8:source-object-ref>MD=CISCO_EPNM!ND=232</ns8:source-object-ref>
    <ns8:source-object-name>232</ns8:source-object-name>
    <ns8:node-ref>232 0/4</ns8:node-ref>
    <ns8:cause-type>cause-unknown</ns8:cause-type>
    <ns8:ack-state>unacknowledged</ns8:ack-state>
    <ns8:remote-interface-ip-address>172. 23.222.232</ns8:remote-interface-ip-address>
    <ns8:perceived-severity>major</ns8:perceived-severity>
    <ns8:system-received-time>2017-01-24 14:21:55.0</ns8:system-received-time>
    <ns8:system-update-time>2017-01-24 14:21:55.0</ns8:system-update-time>
    <ns8:node-event-time>1971-08-28 20:53:20.0</ns8:node-event-time>
    <ns8:probable-cause>Optical Alarm</ns8:probable-cause>
  </ns8:alarm>
  <ns8:alarm>
    <ns8:alarm-identifier>
      <ns8:event-identifier>1123156</ns8:event-identifier>
      <ns8:resource-object-ref>MD=CISCO_EPNM!ND=232</ns8:resource-object-ref>
      <ns8:probable-cause>FAN-TRAY-REMOVAL</ns8:probable-cause>
    </ns8:alarm-identifier>
    <ns8:description>Fan tray is removed from chassis</ns8:description>
    <ns8:category>Optical Transport</ns8:category>
```

```
    <ns8:source-object-ref>MD=CISCO_EPNM!ND=232</ns8:source-object-ref>
    <ns8:source-object-name>232</ns8:source-object-name>
    <ns8:node-ref>232 0/FT1</ns8:node-ref>
    <ns8:cause-type>cause-unknown</ns8:cause-type>
    <ns8:ack-state>unacknowledged</ns8:ack-state>
    <ns8:remote-interface-ip-address>172. 23.222.232</ns8:remote-interface-ip-address>
    <ns8:perceived-severity>critical</ns8:perceived-severity>
    <ns8:system-received-time>2017-01-24 14:21:55.0</ns8:system-received-time>
    <ns8:system-update-time>2017-01-24 14:21:55.0</ns8:system-update-time>
    <ns8:node-event-time>1971-08-28 20:53:28.0</ns8:node-event-time>
    <ns8:probable-cause>FAN-TRAY-REMOVAL</ns8:probable-cause>
  </ns8:alarm>
  <ns8:alarm>
    <ns8:alarm-identifier>
      <ns8:event-identifier>1123157</ns8:event-identifier>
      <ns8:resource-object-ref>MD=CISCO_EPNM!ND=232</ns8:resource-object-ref>
      <ns8:probable-cause>RP-REDUNDANCY-LOST</ns8:probable-cause>
    </ns8:alarm-identifier>
    <ns8:description>Route Processor Redundancy Lost</ns8:description>
    <ns8:category>Optical Transport</ns8:category>
    <ns8:source-object-ref>MD=CISCO_EPNM!ND=232</ns8:source-object-ref>
    <ns8:source-object-name>232</ns8:source-object-name>
    <ns8:node-ref>232 0</ns8:node-ref>
    <ns8:cause-type>cause-unknown</ns8:cause-type>
    <ns8:ack-state>unacknowledged</ns8:ack-state>
    <ns8:remote-interface-ip-address>172. 23.222.232</ns8:remote-interface-ip-address>
    <ns8:perceived-severity>major</ns8:perceived-severity>
    <ns8:system-received-time>2017-01-24 14:21:55.0</ns8:system-received-time>
    <ns8:system-update-time>2017-01-30 06:23:40.0</ns8:system-update-time>
    <ns8:node-event-time>1971-08-28 20:54:38.0</ns8:node-event-time>
    <ns8:probable-cause>RP-REDUNDANCY-LOST</ns8:probable-cause>
    <ns8:note>
      <ns8:creator-id>root</ns8:creator-id>
      <ns8:text>Alarm acknowledged </ns8:text>
      <ns8:note-time>2017-01-25 10:40:18.171</ns8:note-time>
    </ns8:note>
    <ns8:note>
      <ns8:creator-id>root</ns8:creator-id>
      <ns8:text>Alarm unacknowledged </ns8:text>
      <ns8:note-time>2017-01-25 10:40:37.963</ns8:note-time>
    </ns8:note>
  </ns8:alarm>
  <ns8:alarm>
    <ns8:alarm-identifier>
      <ns8:event-identifier>1123158</ns8:event-identifier>
      <ns8:resource-object-ref>MD=CISCO_EPNM!ND=232</ns8:resource-object-ref>
      <ns8:probable-cause>FPD-NEED-UPGRADE</ns8:probable-cause>
    </ns8:alarm-identifier>
    <ns8:description>One or more FPDs need upgrade OR not in CURRENT state</ns8:description>
    <ns8:category>Optical Transport</ns8:category>
    <ns8:source-object-ref>MD=CISCO_EPNM!ND=232</ns8:source-object-ref>
    <ns8:source-object-name>232</ns8:source-object-name>
```

```
    <ns8:node-ref>232 0/4</ns8:node-ref>
    <ns8:cause-type>cause-unknown</ns8:cause-type>
    <ns8:ack-state>unacknowledged</ns8:ack-state>
    <ns8:remote-interface-ip-address>172. 23.222.232</ns8:remote-interface-ip-address>
    <ns8:perceived-severity>major</ns8:perceived-severity>
    <ns8:system-received-time>2017-01-24 14:21:55.0</ns8:system-received-time>
    <ns8:system-update-time>2017-01-24 14:21:55.0</ns8:system-update-time>
    <ns8:node-event-time>1971-08-28 20:54:19.0</ns8:node-event-time>
    <ns8:probable-cause>FPD-NEED-UPGRADE</ns8:probable-cause>
  </ns8:alarm>
  <ns8:alarm>
    <ns8:alarm-identifier>
      <ns8:event-identifier>1123159</ns8:event-identifier>
      <ns8:resource-object-ref>MD=CISCO_EPNM!ND=232</ns8:resource-object-ref>
      <ns8:probable-cause>FPD-NEED-UPGRADE</ns8:probable-cause>
    </ns8:alarm-identifier>
    <ns8:description>One or more FPDs need upgrade OR not in CURRENT state</ns8:description>
    <ns8:category>Optical Transport</ns8:category>
    <ns8:source-object-ref>MD=CISCO_EPNM!ND=232</ns8:source-object-ref>
    <ns8:source-object-name>232</ns8:source-object-name>
    <ns8:node-ref>232 0/6</ns8:node-ref>
    <ns8:cause-type>cause-unknown</ns8:cause-type>
    <ns8:ack-state>unacknowledged</ns8:ack-state>
    <ns8:remote-interface-ip-address>172. 23.222.232</ns8:remote-interface-ip-address>
    <ns8:perceived-severity>major</ns8:perceived-severity>
    <ns8:system-received-time>2017-01-24 14:21:55.0</ns8:system-received-time>
    <ns8:system-update-time>2017-01-24 14:21:55.0</ns8:system-update-time>
    <ns8:node-event-time>1971-08-28 20:54:19.0</ns8:node-event-time>
    <ns8:probable-cause>FPD-NEED-UPGRADE</ns8:probable-cause>
  </ns8:alarm>
  <ns8:alarm>
    <ns8:alarm-identifier>
      <ns8:event-identifier>1123160</ns8:event-identifier>
      <ns8:resource-object-ref>MD=CISCO_EPNM!ND=232</ns8:resource-object-ref>
      <ns8:probable-cause>FPD-NEED-UPGRADE</ns8:probable-cause>
    </ns8:alarm-identifier>
    <ns8:description>One or more FPDs need upgrade OR not in CURRENT state</ns8:description>
    <ns8:category>Optical Transport</ns8:category>
    <ns8:source-object-ref>MD=CISCO_EPNM!ND=232</ns8:source-object-ref>
    <ns8:source-object-name>232</ns8:source-object-name>
    <ns8:node-ref>232 0/RP0</ns8:node-ref>
    <ns8:cause-type>cause-unknown</ns8:cause-type>
    <ns8:ack-state>unacknowledged</ns8:ack-state>
    <ns8:remote-interface-ip-address>172. 23.222.232</ns8:remote-interface-ip-address>
    <ns8:perceived-severity>major</ns8:perceived-severity>
    <ns8:system-received-time>2017-01-24 14:21:55.0</ns8:system-received-time>
    <ns8:system-update-time>2017-01-24 14:21:55.0</ns8:system-update-time>
    <ns8:node-event-time>1971-08-28 20:54:19.0</ns8:node-event-time>
    <ns8:probable-cause>FPD-NEED-UPGRADE</ns8:probable-cause>
  </ns8:alarm>
  <ns8:alarm>
    <ns8:alarm-identifier>
```

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            <ns8:event-identifier>1123161</ns8:event-identifier>
            <ns8:resource-object-ref>MD=CISCO_EPNM!ND=232</ns8:resource-object-ref>
            <ns8:probable-cause>FPD-NEED-UPGRADE</ns8:probable-cause>
          </ns8:alarm-identifier>
          <ns8:description>One or more FPDs need upgrade OR not in CURRENT state</ns8:description>
          <ns8:category>Optical Transport</ns8:category>
          <ns8:source-object-ref>MD=CISCO_EPNM!ND=232</ns8:source-object-ref>
          <ns8:source-object-name>232</ns8:source-object-name>
          <ns8:node-ref>232 0/FC1</ns8:node-ref>
          <ns8:cause-type>cause-unknown</ns8:cause-type>
          <ns8:ack-state>unacknowledged</ns8:ack-state>
          <ns8:remote-interface-ip-address>172. 23.222.232</ns8:remote-interface-ip-address>
          <ns8:perceived-severity>major</ns8:perceived-severity>
          <ns8:system-received-time>2017-01-24 14:21:55.0</ns8:system-received-time>
          <ns8:system-update-time>2017-01-24 14:21:55.0</ns8:system-update-time>
          <ns8:node-event-time>1971-08-28 20:54:19.0</ns8:node-event-time>
          <ns8:probable-cause>FPD-NEED-UPGRADE</ns8:probable-cause>
        </ns8:alarm>
        <ns8:alarm>
          <ns8:alarm-identifier>
            <ns8:event-identifier>1123162</ns8:event-identifier>
            <ns8:resource-object-ref>MD=CISCO_EPNM!ND=232!CTP=name=Optics0/4/0/11;lr=lr-optical-
section</ns8:resource-object-ref>
            <ns8:probable-cause>MEA</ns8:probable-cause>
          </ns8:alarm-identifier>
          <ns8:description>Mismatch Of Equipment And Attributes</ns8:description>
          <ns8:category>Optical Transport</ns8:category>
          <ns8:source-object-ref>MD=CISCO_EPNM!ND=232!CTP=name=Optics0/4/0/11;lr=lr-optical-
section</ns8:source-object-ref>
          <ns8:source-object-name>Optics0/4/0/11</ns8:source-object-name>
          <ns8:node-ref>232 Optics0/4/0/11</ns8:node-ref>
          <ns8:cause-type>cause-unknown</ns8:cause-type>
          <ns8:ack-state>unacknowledged</ns8:ack-state>
          <ns8:remote-interface-ip-address>172. 23.222.232</ns8:remote-interface-ip-address>
          <ns8:perceived-severity>minor</ns8:perceived-severity>
          <ns8:system-received-time>2017-01-24 14:21:55.0</ns8:system-received-time>
          <ns8:system-update-time>2017-01-24 14:21:55.0</ns8:system-update-time>
          <ns8:node-event-time>1971-08-28 20:56:59.0</ns8:node-event-time>
          <ns8:probable-cause>MEA</ns8:probable-cause>
        </ns8:alarm>
        <ns8:alarm>
          <ns8:alarm-identifier>
            <ns8:event-identifier>1123163</ns8:event-identifier>
            <ns8:resource-object-ref>MD=CISCO_EPNM!ND=232!CTP=name=Optics0/4/0/7;lr=lr-optical-
channel</ns8:resource-object-ref>
            <ns8:probable-cause>HI-RXPOWER</ns8:probable-cause>
          </ns8:alarm-identifier>
          <ns8:description>Facility High Rx power</ns8:description>
          <ns8:category>Optical Transport</ns8:category>
          <ns8:source-object-ref>MD=CISCO_EPNM!ND=232!CTP=name=Optics0/4/0/7;lr=lr-optical-
channel</ns8:source-object-ref>
          <ns8:source-object-name>Optics0/4/0/7</ns8:source-object-name>
```

```
            <ns8:node-ref>232 Optics0/4/0/7</ns8:node-ref>
            <ns8:cause-type>cause-unknown</ns8:cause-type>
            <ns8:ack-state>unacknowledged</ns8:ack-state>
            <ns8:remote-interface-ip-address>172. 23.222.232</ns8:remote-interface-ip-address>
            <ns8:perceived-severity>minor</ns8:perceived-severity>
            <ns8:system-received-time>2017-01-24 14:21:55.0</ns8:system-received-time>
            <ns8:system-update-time>2017-01-24 14:21:55.0</ns8:system-update-time>
            <ns8:node-event-time>1971-08-28 20:57:11.0</ns8:node-event-time>
            <ns8:probable-cause>HI-RXPOWER</ns8:probable-cause>
        </ns8:alarm>
        <ns8:alarm>
            <ns8:alarm-identifier>
                <ns8:event-identifier>1123164</ns8:event-identifier>
                <ns8:resource-object-ref>MD=CISCO_EPNM!ND=232!CTP=name=OTU40/4/0/0;lr=lr-och-
transport-unit-4</ns8:resource-object-ref>
                <ns8:probable-cause>LOS-P</ns8:probable-cause>
            </ns8:alarm-identifier>
            <ns8:description>Loss of Signal - Payload</ns8:description>
            <ns8:category>Optical Transport</ns8:category>
            <ns8:source-object-ref>MD=CISCO_EPNM!ND=232!CTP=name=OTU40/4/0/0;lr=lr-och-transport-
unit-4</ns8:source-object-ref>
            <ns8:source-object-name>OTU40/4/0/0</ns8:source-object-name>
            <ns8:node-ref>232 OTU40/4/0/0</ns8:node-ref>
            <ns8:cause-type>cause-unknown</ns8:cause-type>
            <ns8:ack-state>unacknowledged</ns8:ack-state>
            <ns8:remote-interface-ip-address>172. 23.222.232</ns8:remote-interface-ip-address>
            <ns8:perceived-severity>minor</ns8:perceived-severity>
            <ns8:system-received-time>2017-01-24 14:21:55.0</ns8:system-received-time>
            <ns8:system-update-time>2017-01-24 14:21:55.0</ns8:system-update-time>
            <ns8:node-event-time>1971-09-14 12:35:22.0</ns8:node-event-time>
            <ns8:probable-cause>LOS-P</ns8:probable-cause>
        </ns8:alarm>
    </ns4:data>
</ns4:response-message>
```

7.45.2 Get All Alarm by Tp-Ref Request

GET /restconf/data/v1/cisco-rtm:alarm?tp-ref=MD=CISCO_EPNM!ND=232!CTP=name=Optics0/4/0/11;lr=lr-optical-section
Host: <epnm-host>
Accept: application/yang-data+xml

7.45.3 Response

```
<ns4:response-message xmlns:ns31="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns30="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
xmlns:ns29="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns28="urn:cisco:ns:yang:service:activation:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:resource:opt"
xmlns:ns26="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns25="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns24="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns23="urn:cisco:params:xml:ns:yang:resource:device"
```

```
xmlns:ns22="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:sb:srrg:v1" xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-
topology:v1" xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1" xmlns:ns12="urn:cisco:params:xml:ns:yang:si-
service:v1" xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1" xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-
tp:v1" xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-uri">
  <ns4:header>
    <ns4:firstIndex>0</ns4:firstIndex>
    <ns4:lastIndex>0</ns4:lastIndex>
  </ns4:header>
  <ns4:data>
    <ns8:alarm>
      <ns8:alarm-identifier>
        <ns8:event-identifier>1123162</ns8:event-identifier>
        <ns8:resource-object-ref>MD=CISCO_EPNM!ND=232!CTP=name=Optics0/4/0/11;lr=lr-optical-
section</ns8:resource-object-ref>
        <ns8:probable-cause>MEA</ns8:probable-cause>
      </ns8:alarm-identifier>
      <ns8:description>Mismatch Of Equipment And Attributes</ns8:description>
      <ns8:category>Optical Transport</ns8:category>
      <ns8:source-object-ref>MD=CISCO_EPNM!ND=232!CTP=name=Optics0/4/0/11;lr=lr-optical-
section</ns8:source-object-ref>
      <ns8:source-object-name>Optics0/4/0/11</ns8:source-object-name>
      <ns8:node-ref>232 Optics0/4/0/11</ns8:node-ref>
      <ns8:cause-type>cause-unknown</ns8:cause-type>
      <ns8:ack-state>unacknowledged</ns8:ack-state>
      <ns8:remote-interface-ip-address>172. 23.222.232</ns8:remote-interface-ip-address>
      <ns8:perceived-severity>minor</ns8:perceived-severity>
      <ns8:system-received-time>2017-01-24 14:21:55.0</ns8:system-received-time>
      <ns8:system-update-time>2017-01-24 14:21:55.0</ns8:system-update-time>
      <ns8:node-event-time>1971-08-28 20:56:59.0</ns8:node-event-time>
      <ns8:probable-cause>MEA</ns8:probable-cause>
    </ns8:alarm>
  </ns4:data>
</ns4:response-message>
```

7.45.4 Get All Alarm by Nd-Ref Request

```
GET /restconf/data/v1/cisco-rtm:alarm?nd-ref=MD=CISCO_EPNM!ND=ONS15454-44
Host:  <epnm-host>
Accept: application/yang-data+xml
```

7.45.5 Response


```
<ns4:response-message xmlns:ns31="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns30="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
xmlns:ns29="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns28="urn:cisco:ns:yang:service:activation:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:resource:opt"
xmlns:ns26="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns25="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns24="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns23="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns22="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:sb:srrg:v1" xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-
topology:v1" xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1" xmlns:ns12="urn:cisco:params:xml:ns:yang:si-
service:v1" xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1" xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-
tp:v1" xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-uri">
  <ns4:header>
    <ns4:firstIndex>0</ns4:firstIndex>
    <ns4:lastIndex>5</ns4:lastIndex>
  </ns4:header>
  <ns4:data>
    <ns8:alarm>
      <ns8:alarm-identifier>
        <ns8:event-identifier>1123145</ns8:event-identifier>
        <ns8:resource-object-ref>MD=CISCO_EPNM!ND=ONS15454-44</ns8:resource-object-ref>
        <ns8:probable-cause>COLLECTION_FAILURE</ns8:probable-cause>
      </ns8:alarm-identifier>
      <ns8:description>Collection Failure for '172.20.109.44'</ns8:description>
      <ns8:category>Optical Transport</ns8:category>
      <ns8:source-object-ref>MD=CISCO_EPNM!ND=ONS15454-44</ns8:source-object-ref>
      <ns8:node-ref>ONS15454-44</ns8:node-ref>
      <ns8:cause-type>cause-unknown</ns8:cause-type>
      <ns8:ack-state>unacknowledged</ns8:ack-state>
      <ns8:remote-interface-ip-address>172. 20.109. 44</ns8:remote-interface-ip-address>
      <ns8:perceived-severity>critical</ns8:perceived-severity>
      <ns8:system-received-time>2017-01-24 14:18:55.168</ns8:system-received-time>
      <ns8:system-update-time>2017-01-24 14:18:55.168</ns8:system-update-time>
      <ns8:probable-cause>COLLECTION_FAILURE</ns8:probable-cause>
    </ns8:alarm>
    <ns8:alarm>
      <ns8:alarm-identifier>
```

```
            <ns8:event-identifier>1123146</ns8:event-identifier>
            <ns8:resource-object-ref>MD=CISCO_EPNM!ND=ONS15454-44!EQ=name=SLOT-1-
7;partnumber=15454-TCC3-K9</ns8:resource-object-ref>
            <ns8:probable-cause>PROTNA</ns8:probable-cause>
          </ns8:alarm-identifier>
          <ns8:description>Protection Unit Not Available</ns8:description>
          <ns8:category>Optical Transport</ns8:category>
          <ns8:source-object-ref>MD=CISCO_EPNM!ND=ONS15454-44!EQ=name=SLOT-1-
7;partnumber=15454-TCC3-K9</ns8:source-object-ref>
          <ns8:source-object-name>TCC</ns8:source-object-name>
          <ns8:node-ref>ONS15454-44 SLOT-1-7</ns8:node-ref>
          <ns8:cause-type>cause-unknown</ns8:cause-type>
          <ns8:ack-state>unacknowledged</ns8:ack-state>
          <ns8:remote-interface-ip-address>172. 20.109. 44</ns8:remote-interface-ip-address>
          <ns8:perceived-severity>minor</ns8:perceived-severity>
          <ns8:system-received-time>2017-01-24 14:18:56.012</ns8:system-received-time>
          <ns8:system-update-time>2017-01-24 14:18:56.012</ns8:system-update-time>
          <ns8:node-event-time>2002-08-19 18:39:19.0</ns8:node-event-time>
          <ns8:probable-cause>PROTNA</ns8:probable-cause>
          <ns8:service-affecting>non-service-affecting</ns8:service-affecting>
        </ns8:alarm>
        <ns8:alarm>
          <ns8:alarm-identifier>
            <ns8:event-identifier>1123147</ns8:event-identifier>
            <ns8:resource-object-ref>MD=CISCO_EPNM!ND=ONS15454-44!EQ=name=SLOT-1-
5</ns8:resource-object-ref>
            <ns8:probable-cause>IMPROPRMVL</ns8:probable-cause>
          </ns8:alarm-identifier>
          <ns8:description>Improper Removal</ns8:description>
          <ns8:category>Optical Transport</ns8:category>
          <ns8:source-object-ref>MD=CISCO_EPNM!ND=ONS15454-44!EQ=name=SLOT-1-5</ns8:source-
object-ref>
          <ns8:source-object-name>40-MUX-C</ns8:source-object-name>
          <ns8:node-ref>ONS15454-44 SLOT-1-5</ns8:node-ref>
          <ns8:cause-type>cause-unknown</ns8:cause-type>
          <ns8:ack-state>unacknowledged</ns8:ack-state>
          <ns8:remote-interface-ip-address>172. 20.109. 44</ns8:remote-interface-ip-address>
          <ns8:perceived-severity>minor</ns8:perceived-severity>
          <ns8:system-received-time>2017-01-24 14:18:56.072</ns8:system-received-time>
          <ns8:system-update-time>2017-01-24 14:18:56.072</ns8:system-update-time>
          <ns8:node-event-time>2002-08-19 18:39:22.0</ns8:node-event-time>
          <ns8:probable-cause>IMPROPRMVL</ns8:probable-cause>
          <ns8:service-affecting>non-service-affecting</ns8:service-affecting>
        </ns8:alarm>
        <ns8:alarm>
          <ns8:alarm-identifier>
            <ns8:event-identifier>1123148</ns8:event-identifier>
            <ns8:resource-object-ref>MD=CISCO_EPNM!ND=ONS15454-44!EQ=name=SLOT-2-
7;partnumber=15454-TCC3-K9</ns8:resource-object-ref>
            <ns8:probable-cause>PROTNA</ns8:probable-cause>
          </ns8:alarm-identifier>
          <ns8:description>Protection Unit Not Available</ns8:description>
```

```
        <ns8:category>Optical Transport</ns8:category>
        <ns8:source-object-ref>MD=CISCO_EPNM!ND=ONS15454-44!EQ=name=SLOT-2-
7;partnumber=15454-TCC3-K9</ns8:source-object-ref>
        <ns8:source-object-name>TCC</ns8:source-object-name>
        <ns8:node-ref>ONS15454-44 SLOT-2-7</ns8:node-ref>
        <ns8:cause-type>cause-unknown</ns8:cause-type>
        <ns8:ack-state>unacknowledged</ns8:ack-state>
        <ns8:remote-interface-ip-address>172. 20.109. 44</ns8:remote-interface-ip-address>
        <ns8:perceived-severity>minor</ns8:perceived-severity>
        <ns8:system-received-time>2017-01-24 14:18:56.076</ns8:system-received-time>
        <ns8:system-update-time>2017-01-24 14:18:56.076</ns8:system-update-time>
        <ns8:node-event-time>2002-08-19 18:39:35.0</ns8:node-event-time>
        <ns8:probable-cause>PROTNA</ns8:probable-cause>
        <ns8:service-affecting>non-service-affecting</ns8:service-affecting>
      </ns8:alarm>
      <ns8:alarm>
        <ns8:alarm-identifier>
          <ns8:event-identifier>1123149</ns8:event-identifier>
          <ns8:resource-object-ref>MD=CISCO_EPNM!ND=ONS15454-44</ns8:resource-object-ref>
          <ns8:probable-cause>CP-UNVER-CLEARED</ns8:probable-cause>
        </ns8:alarm-identifier>
        <ns8:description>Control Plane Unverified Cleared Alarms Present</ns8:description>
        <ns8:category>Optical Transport</ns8:category>
        <ns8:source-object-ref>MD=CISCO_EPNM!ND=ONS15454-44</ns8:source-object-ref>
        <ns8:source-object-name>ONS15454-44</ns8:source-object-name>
        <ns8:node-ref>ONS15454-44 COM</ns8:node-ref>
        <ns8:cause-type>cause-unknown</ns8:cause-type>
        <ns8:ack-state>unacknowledged</ns8:ack-state>
        <ns8:remote-interface-ip-address>172. 20.109. 44</ns8:remote-interface-ip-address>
        <ns8:perceived-severity>minor</ns8:perceived-severity>
        <ns8:system-received-time>2017-01-24 14:18:56.174</ns8:system-received-time>
        <ns8:system-update-time>2017-01-24 14:18:56.174</ns8:system-update-time>
        <ns8:node-event-time>2002-08-19 18:39:47.0</ns8:node-event-time>
        <ns8:probable-cause>CP-UNVER-CLEARED</ns8:probable-cause>
        <ns8:service-affecting>non-service-affecting</ns8:service-affecting>
      </ns8:alarm>
      <ns8:alarm>
        <ns8:alarm-identifier>
          <ns8:event-identifier>1123150</ns8:event-identifier>
          <ns8:resource-object-ref>MD=CISCO_EPNM!ND=ONS15454-44!EQ=name=SLOT-1-
5</ns8:resource-object-ref>
          <ns8:probable-cause>APC-DISABLED</ns8:probable-cause>
        </ns8:alarm-identifier>
        <ns8:description>Automatic Power Control Disabled</ns8:description>
        <ns8:category>Optical Transport</ns8:category>
        <ns8:source-object-ref>MD=CISCO_EPNM!ND=ONS15454-44!EQ=name=SLOT-1-5</ns8:source-
object-ref>
        <ns8:source-object-name>40-MUX-C</ns8:source-object-name>
        <ns8:node-ref>ONS15454-44 SLOT-1-5</ns8:node-ref>
        <ns8:cause-type>cause-unknown</ns8:cause-type>
        <ns8:ack-state>unacknowledged</ns8:ack-state>
        <ns8:remote-interface-ip-address>172. 20.109. 44</ns8:remote-interface-ip-address>
```

```
            <ns8:perceived-severity>minor</ns8:perceived-severity>
            <ns8:system-received-time>2017-01-24 14:18:56.251</ns8:system-received-time>
            <ns8:system-update-time>2017-01-24 14:18:56.251</ns8:system-update-time>
            <ns8:node-event-time>2002-09-22 18:26:42.0</ns8:node-event-time>
            <ns8:probable-cause>APC-DISABLED</ns8:probable-cause>
            <ns8:service-affecting>non-service-affecting</ns8:service-affecting>
          </ns8:alarm>
        </ns4:data>
</ns4:response-message>
```

7.45.6 Get All Alarm by Eq-Ref Request

```
GET / restconf/data/v1/cisco-rtm:alarm?eq-ref=MD=CISCO_EPNM!ND=ONS15454-44!EQ=name=SLOT-1-5
Host:  <epnm-host>
Accept: application/yang-data+xml
```

7.45.7 Response

```
<ns4:response-message xmlns:ns31="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns30="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
xmlns:ns29="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns28="urn:cisco:ns:yang:service:activation:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:resource:opt"
xmlns:ns26="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns25="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns24="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns23="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns22="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:sb:srrg:v1" xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-
topology:v1" xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1" xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1" xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1" xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-
yang-library" xmlns:ns2="inet-uri">
  <ns4:header>
    <ns4:firstIndex>0</ns4:firstIndex>
    <ns4:lastIndex>1</ns4:lastIndex>
  </ns4:header>
  <ns4:data>
    <ns8:alarm>
      <ns8:alarm-identifier>
        <ns8:event-identifier>1123147</ns8:event-identifier>
        <ns8:resource-object-ref>MD=CISCO_EPNM!ND=ONS15454-44!EQ=name=SLOT-1-5</ns8:resource-
```

```
object-ref>
            <ns8:probable-cause>IMPROPRMVL</ns8:probable-cause>
        </ns8:alarm-identifier>
        <ns8:description>Improper Removal</ns8:description>
        <ns8:category>Optical Transport</ns8:category>
        <ns8:source-object-ref>MD=CISCO_EPNM!ND=ONS15454-44!EQ=name=SLOT-1-5</ns8:source-object-
ref>
        <ns8:source-object-name>40-MUX-C</ns8:source-object-name>
        <ns8:node-ref>ONS15454-44 SLOT-1-5</ns8:node-ref>
        <ns8:cause-type>cause-unknown</ns8:cause-type>
        <ns8:ack-state>unacknowledged</ns8:ack-state>
        <ns8:remote-interface-ip-address>172. 20.109. 44</ns8:remote-interface-ip-address>
        <ns8:perceived-severity>minor</ns8:perceived-severity>
        <ns8:system-received-time>2017-01-24 14:18:56.072</ns8:system-received-time>
        <ns8:system-update-time>2017-01-24 14:18:56.072</ns8:system-update-time>
        <ns8:node-event-time>2002-08-19 18:39:22.0</ns8:node-event-time>
        <ns8:probable-cause>IMPROPRMVL</ns8:probable-cause>
        <ns8:service-affecting>non-service-affecting</ns8:service-affecting>
      </ns8:alarm>
      <ns8:alarm>
        <ns8:alarm-identifier>
          <ns8:event-identifier>1123150</ns8:event-identifier>
          <ns8:resource-object-ref>MD=CISCO_EPNM!ND=ONS15454-44!EQ=name=SLOT-1-5</ns8:resource-
object-ref>
          <ns8:probable-cause>APC-DISABLED</ns8:probable-cause>
        </ns8:alarm-identifier>
        <ns8:description>Automatic Power Control Disabled</ns8:description>
        <ns8:category>Optical Transport</ns8:category>
        <ns8:source-object-ref>MD=CISCO_EPNM!ND=ONS15454-44!EQ=name=SLOT-1-5</ns8:source-object-
ref>
        <ns8:source-object-name>40-MUX-C</ns8:source-object-name>
        <ns8:node-ref>ONS15454-44 SLOT-1-5</ns8:node-ref>
        <ns8:cause-type>cause-unknown</ns8:cause-type>
        <ns8:ack-state>unacknowledged</ns8:ack-state>
        <ns8:remote-interface-ip-address>172. 20.109. 44</ns8:remote-interface-ip-address>
        <ns8:perceived-severity>minor</ns8:perceived-severity>
        <ns8:system-received-time>2017-01-24 14:18:56.251</ns8:system-received-time>
        <ns8:system-update-time>2017-01-24 14:18:56.251</ns8:system-update-time>
        <ns8:node-event-time>2002-09-22 18:26:42.0</ns8:node-event-time>
        <ns8:probable-cause>APC-DISABLED</ns8:probable-cause>
        <ns8:service-affecting>non-service-affecting</ns8:service-affecting>
      </ns8:alarm>
    </ns4:data>
</ns4:response-message>
```

7.45.8 Get All Alarm by perceived severity Request

```
GET /restconf/data/v1/cisco-rtm:alarm?perceived-severity=major
Host:  <epnm-host>
Accept: application/yang-data+xml
```

7.45.9 Response


```
<ns4:response-message xmlns:ns31="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns30="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
xmlns:ns29="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns28="urn:cisco:ns:yang:service:activation:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:resource:opt"
xmlns:ns26="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns25="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns24="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns23="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns22="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:sb:srrg:v1" xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-
topology:v1" xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1" xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1" xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1" xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-
yang-library" xmlns:ns2="inet-uri">
  <ns4:header>
    <ns4:firstIndex>0</ns4:firstIndex>
    <ns4:lastIndex>7</ns4:lastIndex>
  </ns4:header>
  <ns4:data>
    <ns8:alarm>
      <ns8:alarm-identifier>
        <ns8:event-identifier>1123152</ns8:event-identifier>
        <ns8:resource-object-ref>MD=CISCO_EPNM!ND=232</ns8:resource-object-ref>
        <ns8:probable-cause>Optical Alarm</ns8:probable-cause>
      </ns8:alarm-identifier>
      <ns8:description>Power Shelf redundancy lost</ns8:description>
      <ns8:category>Optical Transport</ns8:category>
      <ns8:source-object-ref>MD=CISCO_EPNM!ND=232</ns8:source-object-ref>
      <ns8:source-object-name>232</ns8:source-object-name>
      <ns8:node-ref>232 0</ns8:node-ref>
      <ns8:cause-type>cause-unknown</ns8:cause-type>
      <ns8:ack-state>unacknowledged</ns8:ack-state>
      <ns8:remote-interface-ip-address>172. 23.222.232</ns8:remote-interface-ip-address>
      <ns8:perceived-severity>major</ns8:perceived-severity>
      <ns8:system-received-time>2017-01-24 14:21:55.0</ns8:system-received-time>
      <ns8:system-update-time>2017-01-24 14:21:55.0</ns8:system-update-time>
      <ns8:node-event-time>1971-08-28 20:53:11.0</ns8:node-event-time>
      <ns8:probable-cause>Optical Alarm</ns8:probable-cause>
    </ns8:alarm>
```

```
<ns8:alarm>
  <ns8:alarm-identifier>
    <ns8:event-identifier>1123154</ns8:event-identifier>
    <ns8:resource-object-ref>MD=CISCO_EPNM!ND=232</ns8:resource-object-ref>
    <ns8:probable-cause>Optical Alarm</ns8:probable-cause>
  </ns8:alarm-identifier>
  <ns8:description>SPI_FLASH_CFG_INIT_ERR_E</ns8:description>
  <ns8:category>Optical Transport</ns8:category>
  <ns8:source-object-ref>MD=CISCO_EPNM!ND=232</ns8:source-object-ref>
  <ns8:source-object-name>232</ns8:source-object-name>
  <ns8:node-ref>232 0/LC4/LC_SW</ns8:node-ref>
  <ns8:cause-type>cause-unknown</ns8:cause-type>
  <ns8:ack-state>unacknowledged</ns8:ack-state>
  <ns8:remote-interface-ip-address>172. 23.222.232</ns8:remote-interface-ip-address>
  <ns8:perceived-severity>major</ns8:perceived-severity>
  <ns8:system-received-time>2017-01-24 14:21:55.0</ns8:system-received-time>
  <ns8:system-update-time>2017-01-24 14:21:55.0</ns8:system-update-time>
  <ns8:node-event-time>1971-08-28 20:53:15.0</ns8:node-event-time>
  <ns8:probable-cause>Optical Alarm</ns8:probable-cause>
</ns8:alarm>
<ns8:alarm>
  <ns8:alarm-identifier>
    <ns8:event-identifier>1123155</ns8:event-identifier>
    <ns8:resource-object-ref>MD=CISCO_EPNM!ND=232</ns8:resource-object-ref>
    <ns8:probable-cause>Optical Alarm</ns8:probable-cause>
  </ns8:alarm-identifier>
  <ns8:description>temperature alarm</ns8:description>
  <ns8:category>Optical Transport</ns8:category>
  <ns8:source-object-ref>MD=CISCO_EPNM!ND=232</ns8:source-object-ref>
  <ns8:source-object-name>232</ns8:source-object-name>
  <ns8:node-ref>232 0/4</ns8:node-ref>
  <ns8:cause-type>cause-unknown</ns8:cause-type>
  <ns8:ack-state>unacknowledged</ns8:ack-state>
  <ns8:remote-interface-ip-address>172. 23.222.232</ns8:remote-interface-ip-address>
  <ns8:perceived-severity>major</ns8:perceived-severity>
  <ns8:system-received-time>2017-01-24 14:21:55.0</ns8:system-received-time>
  <ns8:system-update-time>2017-01-24 14:21:55.0</ns8:system-update-time>
  <ns8:node-event-time>1971-08-28 20:53:20.0</ns8:node-event-time>
  <ns8:probable-cause>Optical Alarm</ns8:probable-cause>
</ns8:alarm>
<ns8:alarm>
  <ns8:alarm-identifier>
    <ns8:event-identifier>1123157</ns8:event-identifier>
    <ns8:resource-object-ref>MD=CISCO_EPNM!ND=232</ns8:resource-object-ref>
    <ns8:probable-cause>RP-REDUNDANCY-LOST</ns8:probable-cause>
  </ns8:alarm-identifier>
  <ns8:description>Route Processor Redundancy Lost</ns8:description>
  <ns8:category>Optical Transport</ns8:category>
  <ns8:source-object-ref>MD=CISCO_EPNM!ND=232</ns8:source-object-ref>
  <ns8:source-object-name>232</ns8:source-object-name>
  <ns8:node-ref>232 0</ns8:node-ref>
  <ns8:cause-type>cause-unknown</ns8:cause-type>
```

```
    <ns8:ack-state>unacknowledged</ns8:ack-state>
    <ns8:remote-interface-ip-address>172. 23.222.232</ns8:remote-interface-ip-address>
    <ns8:perceived-severity>major</ns8:perceived-severity>
    <ns8:system-received-time>2017-01-24 14:21:55.0</ns8:system-received-time>
    <ns8:system-update-time>2017-01-30 06:28:40.0</ns8:system-update-time>
    <ns8:node-event-time>1971-08-28 20:54:38.0</ns8:node-event-time>
    <ns8:probable-cause>RP-REDUNDANCY-LOST</ns8:probable-cause>
    <ns8:note>
      <ns8:creator-id>root</ns8:creator-id>
      <ns8:text>Alarm acknowledged </ns8:text>
      <ns8:note-time>2017-01-25 10:40:18.171</ns8:note-time>
    </ns8:note>
    <ns8:note>
      <ns8:creator-id>root</ns8:creator-id>
      <ns8:text>Alarm unacknowledged </ns8:text>
      <ns8:note-time>2017-01-25 10:40:37.963</ns8:note-time>
    </ns8:note>
  </ns8:alarm>
  <ns8:alarm>
    <ns8:alarm-identifier>
      <ns8:event-identifier>1123158</ns8:event-identifier>
      <ns8:resource-object-ref>MD=CISCO_EPNM!ND=232</ns8:resource-object-ref>
      <ns8:probable-cause>FPD-NEED-UPGRADE</ns8:probable-cause>
    </ns8:alarm-identifier>
    <ns8:description>One or more FPDs need upgrade OR not in CURRENT state</ns8:description>
    <ns8:category>Optical Transport</ns8:category>
    <ns8:source-object-ref>MD=CISCO_EPNM!ND=232</ns8:source-object-ref>
    <ns8:source-object-name>232</ns8:source-object-name>
    <ns8:node-ref>232 0/4</ns8:node-ref>
    <ns8:cause-type>cause-unknown</ns8:cause-type>
    <ns8:ack-state>unacknowledged</ns8:ack-state>
    <ns8:remote-interface-ip-address>172. 23.222.232</ns8:remote-interface-ip-address>
    <ns8:perceived-severity>major</ns8:perceived-severity>
    <ns8:system-received-time>2017-01-24 14:21:55.0</ns8:system-received-time>
    <ns8:system-update-time>2017-01-24 14:21:55.0</ns8:system-update-time>
    <ns8:node-event-time>1971-08-28 20:54:19.0</ns8:node-event-time>
    <ns8:probable-cause>FPD-NEED-UPGRADE</ns8:probable-cause>
  </ns8:alarm>
  <ns8:alarm>
    <ns8:alarm-identifier>
      <ns8:event-identifier>1123159</ns8:event-identifier>
      <ns8:resource-object-ref>MD=CISCO_EPNM!ND=232</ns8:resource-object-ref>
      <ns8:probable-cause>FPD-NEED-UPGRADE</ns8:probable-cause>
    </ns8:alarm-identifier>
    <ns8:description>One or more FPDs need upgrade OR not in CURRENT state</ns8:description>
    <ns8:category>Optical Transport</ns8:category>
    <ns8:source-object-ref>MD=CISCO_EPNM!ND=232</ns8:source-object-ref>
    <ns8:source-object-name>232</ns8:source-object-name>
    <ns8:node-ref>232 0/6</ns8:node-ref>
    <ns8:cause-type>cause-unknown</ns8:cause-type>
    <ns8:ack-state>unacknowledged</ns8:ack-state>
    <ns8:remote-interface-ip-address>172. 23.222.232</ns8:remote-interface-ip-address>
```

```
        <ns8:perceived-severity>major</ns8:perceived-severity>
        <ns8:system-received-time>2017-01-24 14:21:55.0</ns8:system-received-time>
        <ns8:system-update-time>2017-01-24 14:21:55.0</ns8:system-update-time>
        <ns8:node-event-time>1971-08-28 20:54:19.0</ns8:node-event-time>
        <ns8:probable-cause>FPD-NEED-UPGRADE</ns8:probable-cause>
      </ns8:alarm>
      <ns8:alarm>
        <ns8:alarm-identifier>
          <ns8:event-identifier>1123160</ns8:event-identifier>
          <ns8:resource-object-ref>MD=CISCO_EPNM!ND=232</ns8:resource-object-ref>
          <ns8:probable-cause>FPD-NEED-UPGRADE</ns8:probable-cause>
        </ns8:alarm-identifier>
        <ns8:description>One or more FPDs need upgrade OR not in CURRENT state</ns8:description>
        <ns8:category>Optical Transport</ns8:category>
        <ns8:source-object-ref>MD=CISCO_EPNM!ND=232</ns8:source-object-ref>
        <ns8:source-object-name>232</ns8:source-object-name>
        <ns8:node-ref>232 0/RP0</ns8:node-ref>
        <ns8:cause-type>cause-unknown</ns8:cause-type>
        <ns8:ack-state>unacknowledged</ns8:ack-state>
        <ns8:remote-interface-ip-address>172. 23.222.232</ns8:remote-interface-ip-address>
        <ns8:perceived-severity>major</ns8:perceived-severity>
        <ns8:system-received-time>2017-01-24 14:21:55.0</ns8:system-received-time>
        <ns8:system-update-time>2017-01-24 14:21:55.0</ns8:system-update-time>
        <ns8:node-event-time>1971-08-28 20:54:19.0</ns8:node-event-time>
        <ns8:probable-cause>FPD-NEED-UPGRADE</ns8:probable-cause>
      </ns8:alarm>
      <ns8:alarm>
        <ns8:alarm-identifier>
          <ns8:event-identifier>1123161</ns8:event-identifier>
          <ns8:resource-object-ref>MD=CISCO_EPNM!ND=232</ns8:resource-object-ref>
          <ns8:probable-cause>FPD-NEED-UPGRADE</ns8:probable-cause>
        </ns8:alarm-identifier>
        <ns8:description>One or more FPDs need upgrade OR not in CURRENT state</ns8:description>
        <ns8:category>Optical Transport</ns8:category>
        <ns8:source-object-ref>MD=CISCO_EPNM!ND=232</ns8:source-object-ref>
        <ns8:source-object-name>232</ns8:source-object-name>
        <ns8:node-ref>232 0/FC1</ns8:node-ref>
        <ns8:cause-type>cause-unknown</ns8:cause-type>
        <ns8:ack-state>unacknowledged</ns8:ack-state>
        <ns8:remote-interface-ip-address>172. 23.222.232</ns8:remote-interface-ip-address>
        <ns8:perceived-severity>major</ns8:perceived-severity>
        <ns8:system-received-time>2017-01-24 14:21:55.0</ns8:system-received-time>
        <ns8:system-update-time>2017-01-24 14:21:55.0</ns8:system-update-time>
        <ns8:node-event-time>1971-08-28 20:54:19.0</ns8:node-event-time>
        <ns8:probable-cause>FPD-NEED-UPGRADE</ns8:probable-cause>
      </ns8:alarm>
    </ns4:data>
</ns4:response-message>
```

7.45.10 Get Alarm by scope

Alarm retrieval can be done with a scope, scope implies creating a new virtual domain or even with a existing domain creating a new user and assign a single or multiple Network Element to the same user in EPNM GUI.

Use the newly created username/password in the rest-client and retireve alarm with following rest url
GET /restconf/data/v1/cisco-rtm:alarm ?nd-ref=MD=CISCO_EPNM!ND=NCS4k-A
Host: <epnm-host>
Accept: application/yang-data+xml

7.45.11 Response

```
<ns4:response-message xmlns:ns31="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns30="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
xmlns:ns29="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns28="urn:cisco:ns:yang:service:activation:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:resource:opt"
xmlns:ns26="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns25="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns24="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns23="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns22="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:sb:srrg:v1" xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-
topology:v1" xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1" xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1" xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1" xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-
yang-library" xmlns:ns2="inet-uri">
  <ns4:header>
    <ns4:firstIndex>0</ns4:firstIndex>
    <ns4:lastIndex>20</ns4:lastIndex>
  </ns4:header>
  <ns4:data>
    <ns8:alarm>
      <ns8:alarm-identifier>
        <ns8:event-identifier>1776801</ns8:event-identifier>
        <ns8:resource-object-ref>MD=CISCO_EPNM!ND=NCS4k-A</ns8:resource-object-ref>
        <ns8:probable-cause>RP-RED-LOST-PNP</ns8:probable-cause>
      </ns8:alarm-identifier>
      <ns8:description>Redundancy Partner Not Present</ns8:description>
      <ns8:category>Optical Transport</ns8:category>
      <ns8:source-object-ref>MD=CISCO_EPNM!ND=NCS4k-A</ns8:source-object-ref>
      <ns8:source-object-name>NCS4k-A</ns8:source-object-name>
      <ns8:node-ref>NCS4k-A 0</ns8:node-ref>
      <ns8:cause-type>cause-unknown</ns8:cause-type>
      <ns8:ack-state>unacknowledged</ns8:ack-state>
      <ns8:remote-interface-ip-address> 10. 56. 23.139</ns8:remote-interface-ip-address>
      <ns8:perceived-severity>critical</ns8:perceived-severity>
```

```
    <ns8:system-received-time>2017-02-03 23:29:27.0</ns8:system-received-time>
    <ns8:system-update-time>2017-02-03 23:29:27.0</ns8:system-update-time>
    <ns8:node-event-time>2016-12-05 23:06:35.0</ns8:node-event-time>
    <ns8:probable-cause>RP-RED-LOST-PNP</ns8:probable-cause>
  </ns8:alarm>
  <ns8:alarm>
    <ns8:alarm-identifier>
      <ns8:event-identifier>1776802</ns8:event-identifier>
      <ns8:resource-object-ref>MD=CISCO_EPNM!ND=NCS4k-A</ns8:resource-object-ref>
      <ns8:probable-cause>Optical Alarm</ns8:probable-cause>
    </ns8:alarm-identifier>
    <ns8:description>Power Module Error (PM_NO_INPUT_DETECTED)</ns8:description>
    <ns8:category>Optical Transport</ns8:category>
    <ns8:source-object-ref>MD=CISCO_EPNM!ND=NCS4k-A</ns8:source-object-ref>
    <ns8:source-object-name>NCS4k-A</ns8:source-object-name>
    <ns8:node-ref>NCS4k-A 0/PT0-PM2</ns8:node-ref>
    <ns8:cause-type>cause-unknown</ns8:cause-type>
    <ns8:ack-state>unacknowledged</ns8:ack-state>
    <ns8:remote-interface-ip-address> 10. 56. 23.139</ns8:remote-interface-ip-address>
    <ns8:perceived-severity>major</ns8:perceived-severity>
    <ns8:system-received-time>2017-02-03 23:29:27.0</ns8:system-received-time>
    <ns8:system-update-time>2017-02-03 23:29:27.0</ns8:system-update-time>
    <ns8:node-event-time>2016-12-04 08:07:54.0</ns8:node-event-time>
    <ns8:probable-cause>Optical Alarm</ns8:probable-cause>
  </ns8:alarm>
  <ns8:alarm>
    <ns8:alarm-identifier>
      <ns8:event-identifier>1776803</ns8:event-identifier>
      <ns8:resource-object-ref>MD=CISCO_EPNM!ND=NCS4k-A</ns8:resource-object-ref>
      <ns8:probable-cause>Optical Alarm</ns8:probable-cause>
    </ns8:alarm-identifier>
    <ns8:description>Power Module Output Disabled (PM_OUTPUT_EN_PIN_HI)</ns8:description>
    <ns8:category>Optical Transport</ns8:category>
    <ns8:source-object-ref>MD=CISCO_EPNM!ND=NCS4k-A</ns8:source-object-ref>
    <ns8:source-object-name>NCS4k-A</ns8:source-object-name>
    <ns8:node-ref>NCS4k-A 0/PT0-PM2</ns8:node-ref>
    <ns8:cause-type>cause-unknown</ns8:cause-type>
    <ns8:ack-state>unacknowledged</ns8:ack-state>
    <ns8:remote-interface-ip-address> 10. 56. 23.139</ns8:remote-interface-ip-address>
    <ns8:perceived-severity>major</ns8:perceived-severity>
    <ns8:system-received-time>2017-02-03 23:29:27.0</ns8:system-received-time>
    <ns8:system-update-time>2017-02-03 23:29:27.0</ns8:system-update-time>
    <ns8:node-event-time>2016-12-04 08:07:54.0</ns8:node-event-time>
    <ns8:probable-cause>Optical Alarm</ns8:probable-cause>
  </ns8:alarm>
  <ns8:alarm>
    <ns8:alarm-identifier>
      <ns8:event-identifier>1776804</ns8:event-identifier>
      <ns8:resource-object-ref>MD=CISCO_EPNM!ND=NCS4k-A</ns8:resource-object-ref>
      <ns8:probable-cause>Optical Alarm</ns8:probable-cause>
    </ns8:alarm-identifier>
    <ns8:description>Power Module Error (PM_NO_INPUT_DETECTED)</ns8:description>
```

```
    <ns8:category>Optical Transport</ns8:category>
    <ns8:source-object-ref>MD=CISCO_EPNM!ND=NCS4k-A</ns8:source-object-ref>
    <ns8:source-object-name>NCS4k-A</ns8:source-object-name>
    <ns8:node-ref>NCS4k-A 0/PT0-PM3</ns8:node-ref>
    <ns8:cause-type>cause-unknown</ns8:cause-type>
    <ns8:ack-state>unacknowledged</ns8:ack-state>
    <ns8:remote-interface-ip-address> 10. 56. 23.139</ns8:remote-interface-ip-address>
    <ns8:perceived-severity>major</ns8:perceived-severity>
    <ns8:system-received-time>2017-02-03 23:29:27.0</ns8:system-received-time>
    <ns8:system-update-time>2017-02-03 23:29:27.0</ns8:system-update-time>
    <ns8:node-event-time>2016-12-04 08:07:54.0</ns8:node-event-time>
    <ns8:probable-cause>Optical Alarm</ns8:probable-cause>
  </ns8:alarm>
  <ns8:alarm>
    <ns8:alarm-identifier>
      <ns8:event-identifier>1776805</ns8:event-identifier>
      <ns8:resource-object-ref>MD=CISCO_EPNM!ND=NCS4k-A</ns8:resource-object-ref>
      <ns8:probable-cause>Optical Alarm</ns8:probable-cause>
    </ns8:alarm-identifier>
    <ns8:description>Power Module Output Disabled (PM_OUTPUT_EN_PIN_HI)</ns8:description>
    <ns8:category>Optical Transport</ns8:category>
    <ns8:source-object-ref>MD=CISCO_EPNM!ND=NCS4k-A</ns8:source-object-ref>
    <ns8:source-object-name>NCS4k-A</ns8:source-object-name>
    <ns8:node-ref>NCS4k-A 0/PT0-PM3</ns8:node-ref>
    <ns8:cause-type>cause-unknown</ns8:cause-type>
    <ns8:ack-state>unacknowledged</ns8:ack-state>
    <ns8:remote-interface-ip-address> 10. 56. 23.139</ns8:remote-interface-ip-address>
    <ns8:perceived-severity>major</ns8:perceived-severity>
    <ns8:system-received-time>2017-02-03 23:29:27.0</ns8:system-received-time>
    <ns8:system-update-time>2017-02-03 23:29:27.0</ns8:system-update-time>
    <ns8:node-event-time>2016-12-04 08:07:54.0</ns8:node-event-time>
    <ns8:probable-cause>Optical Alarm</ns8:probable-cause>
  </ns8:alarm>
  <ns8:alarm>
    <ns8:alarm-identifier>
      <ns8:event-identifier>1776806</ns8:event-identifier>
      <ns8:resource-object-ref>MD=CISCO_EPNM!ND=NCS4k-A</ns8:resource-object-ref>
      <ns8:probable-cause>Optical Alarm</ns8:probable-cause>
    </ns8:alarm-identifier>
    <ns8:description>Power Shelf redundancy lost</ns8:description>
    <ns8:category>Optical Transport</ns8:category>
    <ns8:source-object-ref>MD=CISCO_EPNM!ND=NCS4k-A</ns8:source-object-ref>
    <ns8:source-object-name>NCS4k-A</ns8:source-object-name>
    <ns8:node-ref>NCS4k-A 0</ns8:node-ref>
    <ns8:cause-type>cause-unknown</ns8:cause-type>
    <ns8:ack-state>unacknowledged</ns8:ack-state>
    <ns8:remote-interface-ip-address> 10. 56. 23.139</ns8:remote-interface-ip-address>
    <ns8:perceived-severity>major</ns8:perceived-severity>
    <ns8:system-received-time>2017-02-03 23:29:27.0</ns8:system-received-time>
    <ns8:system-update-time>2017-02-03 23:29:27.0</ns8:system-update-time>
    <ns8:node-event-time>2016-12-04 08:07:54.0</ns8:node-event-time>
    <ns8:probable-cause>Optical Alarm</ns8:probable-cause>
```

```
</ns8:alarm>
<ns8:alarm>
  <ns8:alarm-identifier>
    <ns8:event-identifier>1776807</ns8:event-identifier>
    <ns8:resource-object-ref>MD=CISCO_EPNM!ND=NCS4k-A</ns8:resource-object-ref>
    <ns8:probable-cause>Optical Alarm</ns8:probable-cause>
  </ns8:alarm-identifier>
  <ns8:description>SWITCH_LINK_ERR_E</ns8:description>
  <ns8:category>Optical Transport</ns8:category>
  <ns8:source-object-ref>MD=CISCO_EPNM!ND=NCS4k-A</ns8:source-object-ref>
  <ns8:source-object-name>NCS4k-A</ns8:source-object-name>
  <ns8:node-ref>NCS4k-A ?/RP1/RP_SW/32</ns8:node-ref>
  <ns8:cause-type>cause-unknown</ns8:cause-type>
  <ns8:ack-state>unacknowledged</ns8:ack-state>
  <ns8:remote-interface-ip-address> 10. 56. 23.139</ns8:remote-interface-ip-address>
  <ns8:perceived-severity>minor</ns8:perceived-severity>
  <ns8:system-received-time>2017-02-03 23:29:27.0</ns8:system-received-time>
  <ns8:system-update-time>2017-02-03 23:29:27.0</ns8:system-update-time>
  <ns8:node-event-time>2016-12-04 08:07:55.0</ns8:node-event-time>
  <ns8:probable-cause>Optical Alarm</ns8:probable-cause>
</ns8:alarm>
<ns8:alarm>
  <ns8:alarm-identifier>
    <ns8:event-identifier>1776808</ns8:event-identifier>
    <ns8:resource-object-ref>MD=CISCO_EPNM!ND=NCS4k-A</ns8:resource-object-ref>
    <ns8:probable-cause>FPD-NEED-UPGRADE</ns8:probable-cause>
  </ns8:alarm-identifier>
  <ns8:description>One or more FPDs need upgrade OR not in CURRENT state</ns8:description>
  <ns8:category>Optical Transport</ns8:category>
  <ns8:source-object-ref>MD=CISCO_EPNM!ND=NCS4k-A</ns8:source-object-ref>
  <ns8:source-object-name>NCS4k-A</ns8:source-object-name>
  <ns8:node-ref>NCS4k-A 0/0</ns8:node-ref>
  <ns8:cause-type>cause-unknown</ns8:cause-type>
  <ns8:ack-state>unacknowledged</ns8:ack-state>
  <ns8:remote-interface-ip-address> 10. 56. 23.139</ns8:remote-interface-ip-address>
  <ns8:perceived-severity>major</ns8:perceived-severity>
  <ns8:system-received-time>2017-02-03 23:29:27.0</ns8:system-received-time>
  <ns8:system-update-time>2017-02-03 23:29:27.0</ns8:system-update-time>
  <ns8:node-event-time>2016-12-05 23:06:37.0</ns8:node-event-time>
  <ns8:probable-cause>FPD-NEED-UPGRADE</ns8:probable-cause>
</ns8:alarm>
<ns8:alarm>
  <ns8:alarm-identifier>
    <ns8:event-identifier>1776809</ns8:event-identifier>
    <ns8:resource-object-ref>MD=CISCO_EPNM!ND=NCS4k-A</ns8:resource-object-ref>
    <ns8:probable-cause>FPD-NEED-UPGRADE</ns8:probable-cause>
  </ns8:alarm-identifier>
  <ns8:description>One or more FPDs need upgrade OR not in CURRENT state</ns8:description>
  <ns8:category>Optical Transport</ns8:category>
  <ns8:source-object-ref>MD=CISCO_EPNM!ND=NCS4k-A</ns8:source-object-ref>
  <ns8:source-object-name>NCS4k-A</ns8:source-object-name>
  <ns8:node-ref>NCS4k-A 0/RP1</ns8:node-ref>
```

```
        <ns8:cause-type>cause-unknown</ns8:cause-type>
        <ns8:ack-state>unacknowledged</ns8:ack-state>
        <ns8:remote-interface-ip-address> 10. 56. 23.139</ns8:remote-interface-ip-address>
        <ns8:perceived-severity>major</ns8:perceived-severity>
        <ns8:system-received-time>2017-02-03 23:29:27.0</ns8:system-received-time>
        <ns8:system-update-time>2017-02-03 23:29:27.0</ns8:system-update-time>
        <ns8:node-event-time>2016-12-05 23:06:37.0</ns8:node-event-time>
        <ns8:probable-cause>FPD-NEED-UPGRADE</ns8:probable-cause>
      </ns8:alarm>
      <ns8:alarm>
        <ns8:alarm-identifier>
          <ns8:event-identifier>1776810</ns8:event-identifier>
          <ns8:resource-object-ref>MD=CISCO_EPNM!ND=NCS4k-A!CTP=name=Optics0/0/0/8;lr=lr-optical-
section</ns8:resource-object-ref>
          <ns8:probable-cause>UNQUAL-PPM</ns8:probable-cause>
        </ns8:alarm-identifier>
        <ns8:description>Unqualified PPM Inserted</ns8:description>
        <ns8:category>Optical Transport</ns8:category>
        <ns8:source-object-ref>MD=CISCO_EPNM!ND=NCS4k-A!CTP=name=Optics0/0/0/8;lr=lr-optical-
section</ns8:source-object-ref>
        <ns8:source-object-name>Optics0/0/0/8</ns8:source-object-name>
        <ns8:node-ref>NCS4k-A Optics0/0/0/8</ns8:node-ref>
        <ns8:cause-type>cause-unknown</ns8:cause-type>
        <ns8:ack-state>unacknowledged</ns8:ack-state>
        <ns8:remote-interface-ip-address> 10. 56. 23.139</ns8:remote-interface-ip-address>
        <ns8:perceived-severity>minor</ns8:perceived-severity>
        <ns8:system-received-time>2017-02-03 23:29:27.0</ns8:system-received-time>
        <ns8:system-update-time>2017-02-03 23:29:27.0</ns8:system-update-time>
        <ns8:node-event-time>2016-12-05 23:11:36.0</ns8:node-event-time>
        <ns8:probable-cause>UNQUAL-PPM</ns8:probable-cause>
      </ns8:alarm>
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        <ns8:alarm-identifier>
          <ns8:event-identifier>1776811</ns8:event-identifier>
          <ns8:resource-object-ref>MD=CISCO_EPNM!ND=NCS4k-A!CTP=name=Optics0/0/0/2;lr=lr-optical-
section</ns8:resource-object-ref>
          <ns8:probable-cause>UNQUAL-PPM</ns8:probable-cause>
        </ns8:alarm-identifier>
        <ns8:description>Unqualified PPM Inserted</ns8:description>
        <ns8:category>Optical Transport</ns8:category>
        <ns8:source-object-ref>MD=CISCO_EPNM!ND=NCS4k-A!CTP=name=Optics0/0/0/2;lr=lr-optical-
section</ns8:source-object-ref>
        <ns8:source-object-name>Optics0/0/0/2</ns8:source-object-name>
        <ns8:node-ref>NCS4k-A Optics0/0/0/2</ns8:node-ref>
        <ns8:cause-type>cause-unknown</ns8:cause-type>
        <ns8:ack-state>unacknowledged</ns8:ack-state>
        <ns8:remote-interface-ip-address> 10. 56. 23.139</ns8:remote-interface-ip-address>
        <ns8:perceived-severity>minor</ns8:perceived-severity>
        <ns8:system-received-time>2017-02-03 23:29:27.0</ns8:system-received-time>
        <ns8:system-update-time>2017-02-03 23:29:27.0</ns8:system-update-time>
        <ns8:node-event-time>2016-12-05 23:11:41.0</ns8:node-event-time>
        <ns8:probable-cause>UNQUAL-PPM</ns8:probable-cause>
```

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    </ns8:alarm>
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      <ns8:alarm-identifier>
        <ns8:event-identifier>1776812</ns8:event-identifier>
        <ns8:resource-object-ref>MD=CISCO_EPNM!ND=NCS4k-A!CTP=name=Optics0/0/0/3;lr=lr-optical-
section</ns8:resource-object-ref>
        <ns8:probable-cause>UNQUAL-PPM</ns8:probable-cause>
      </ns8:alarm-identifier>
      <ns8:description>Unqualified PPM Inserted</ns8:description>
      <ns8:category>Optical Transport</ns8:category>
      <ns8:source-object-ref>MD=CISCO_EPNM!ND=NCS4k-A!CTP=name=Optics0/0/0/3;lr=lr-optical-
section</ns8:source-object-ref>
      <ns8:source-object-name>Optics0/0/0/3</ns8:source-object-name>
      <ns8:node-ref>NCS4k-A Optics0/0/0/3</ns8:node-ref>
      <ns8:cause-type>cause-unknown</ns8:cause-type>
      <ns8:ack-state>unacknowledged</ns8:ack-state>
      <ns8:remote-interface-ip-address> 10. 56. 23.139</ns8:remote-interface-ip-address>
      <ns8:perceived-severity>minor</ns8:perceived-severity>
      <ns8:system-received-time>2017-02-03 23:29:27.0</ns8:system-received-time>
      <ns8:system-update-time>2017-02-03 23:29:27.0</ns8:system-update-time>
      <ns8:node-event-time>2016-12-05 23:11:43.0</ns8:node-event-time>
      <ns8:probable-cause>UNQUAL-PPM</ns8:probable-cause>
    </ns8:alarm>
    <ns8:alarm>
      <ns8:alarm-identifier>
        <ns8:event-identifier>1776813</ns8:event-identifier>
        <ns8:resource-object-ref>MD=CISCO_EPNM!ND=NCS4k-A</ns8:resource-object-ref>
        <ns8:probable-cause>FPD-NEED-UPGRADE</ns8:probable-cause>
      </ns8:alarm-identifier>
      <ns8:description>One or more FPDs need upgrade OR not in CURRENT state</ns8:description>
      <ns8:category>Optical Transport</ns8:category>
      <ns8:source-object-ref>MD=CISCO_EPNM!ND=NCS4k-A</ns8:source-object-ref>
      <ns8:source-object-name>NCS4k-A</ns8:source-object-name>
      <ns8:node-ref>NCS4k-A 0/1</ns8:node-ref>
      <ns8:cause-type>cause-unknown</ns8:cause-type>
      <ns8:ack-state>unacknowledged</ns8:ack-state>
      <ns8:remote-interface-ip-address> 10. 56. 23.139</ns8:remote-interface-ip-address>
      <ns8:perceived-severity>major</ns8:perceived-severity>
      <ns8:system-received-time>2017-02-03 23:29:27.0</ns8:system-received-time>
      <ns8:system-update-time>2017-02-03 23:29:27.0</ns8:system-update-time>
      <ns8:node-event-time>2016-12-05 23:11:47.0</ns8:node-event-time>
      <ns8:probable-cause>FPD-NEED-UPGRADE</ns8:probable-cause>
    </ns8:alarm>
    <ns8:alarm>
      <ns8:alarm-identifier>
        <ns8:event-identifier>1776814</ns8:event-identifier>
        <ns8:resource-object-ref>MD=CISCO_EPNM!ND=NCS4k-A!CTP=name=Optics0/0/0/4;lr=lr-optical-
section</ns8:resource-object-ref>
        <ns8:probable-cause>IMPROPRMVL</ns8:probable-cause>
      </ns8:alarm-identifier>
      <ns8:description>Improper Removal</ns8:description>
      <ns8:category>Optical Transport</ns8:category>
```

```
        <ns8:source-object-ref>MD=CISCO_EPNM!ND=NCS4k-A!CTP=name=Optics0/0/0/4;lr=lr-optical-
section</ns8:source-object-ref>
        <ns8:source-object-name>Optics0/0/0/4</ns8:source-object-name>
        <ns8:node-ref>NCS4k-A Optics0/0/0/4</ns8:node-ref>
        <ns8:cause-type>cause-unknown</ns8:cause-type>
        <ns8:ack-state>unacknowledged</ns8:ack-state>
        <ns8:remote-interface-ip-address> 10. 56. 23.139</ns8:remote-interface-ip-address>
        <ns8:perceived-severity>minor</ns8:perceived-severity>
        <ns8:system-received-time>2017-02-03 23:29:27.0</ns8:system-received-time>
        <ns8:system-update-time>2017-02-03 23:29:27.0</ns8:system-update-time>
        <ns8:node-event-time>2016-12-05 23:11:53.0</ns8:node-event-time>
        <ns8:probable-cause>IMPROPRMVL</ns8:probable-cause>
      </ns8:alarm>
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        <ns8:alarm-identifier>
          <ns8:event-identifier>1776815</ns8:event-identifier>
          <ns8:resource-object-ref>MD=CISCO_EPNM!ND=NCS4k-A!CTP=name=Optics0/0/0/5;lr=lr-optical-
section</ns8:resource-object-ref>
          <ns8:probable-cause>IMPROPRMVL</ns8:probable-cause>
        </ns8:alarm-identifier>
        <ns8:description>Improper Removal</ns8:description>
        <ns8:category>Optical Transport</ns8:category>
        <ns8:source-object-ref>MD=CISCO_EPNM!ND=NCS4k-A!CTP=name=Optics0/0/0/5;lr=lr-optical-
section</ns8:source-object-ref>
        <ns8:source-object-name>Optics0/0/0/5</ns8:source-object-name>
        <ns8:node-ref>NCS4k-A Optics0/0/0/5</ns8:node-ref>
        <ns8:cause-type>cause-unknown</ns8:cause-type>
        <ns8:ack-state>unacknowledged</ns8:ack-state>
        <ns8:remote-interface-ip-address> 10. 56. 23.139</ns8:remote-interface-ip-address>
        <ns8:perceived-severity>minor</ns8:perceived-severity>
        <ns8:system-received-time>2017-02-03 23:29:27.0</ns8:system-received-time>
        <ns8:system-update-time>2017-02-03 23:29:27.0</ns8:system-update-time>
        <ns8:node-event-time>2016-12-05 23:11:53.0</ns8:node-event-time>
        <ns8:probable-cause>IMPROPRMVL</ns8:probable-cause>
      </ns8:alarm>
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        <ns8:alarm-identifier>
          <ns8:event-identifier>1776816</ns8:event-identifier>
          <ns8:resource-object-ref>MD=CISCO_EPNM!ND=NCS4k-A!CTP=name=Optics0/0/0/6;lr=lr-optical-
section</ns8:resource-object-ref>
          <ns8:probable-cause>IMPROPRMVL</ns8:probable-cause>
        </ns8:alarm-identifier>
        <ns8:description>Improper Removal</ns8:description>
        <ns8:category>Optical Transport</ns8:category>
        <ns8:source-object-ref>MD=CISCO_EPNM!ND=NCS4k-A!CTP=name=Optics0/0/0/6;lr=lr-optical-
section</ns8:source-object-ref>
        <ns8:source-object-name>Optics0/0/0/6</ns8:source-object-name>
        <ns8:node-ref>NCS4k-A Optics0/0/0/6</ns8:node-ref>
        <ns8:cause-type>cause-unknown</ns8:cause-type>
        <ns8:ack-state>unacknowledged</ns8:ack-state>
        <ns8:remote-interface-ip-address> 10. 56. 23.139</ns8:remote-interface-ip-address>
        <ns8:perceived-severity>minor</ns8:perceived-severity>
```

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        <ns8:system-received-time>2017-02-03 23:29:27.0</ns8:system-received-time>
        <ns8:system-update-time>2017-02-03 23:29:27.0</ns8:system-update-time>
        <ns8:node-event-time>2016-12-05 23:11:53.0</ns8:node-event-time>
        <ns8:probable-cause>IMPROPRMVL</ns8:probable-cause>
      </ns8:alarm>
      <ns8:alarm>
        <ns8:alarm-identifier>
          <ns8:event-identifier>1776817</ns8:event-identifier>
          <ns8:resource-object-ref>MD=CISCO_EPNM!ND=NCS4k-A!CTP=name=Optics0/0/0/9;lr=lr-optical-
section</ns8:resource-object-ref>
          <ns8:probable-cause>IMPROPRMVL</ns8:probable-cause>
        </ns8:alarm-identifier>
        <ns8:description>Improper Removal</ns8:description>
        <ns8:category>Optical Transport</ns8:category>
        <ns8:source-object-ref>MD=CISCO_EPNM!ND=NCS4k-A!CTP=name=Optics0/0/0/9;lr=lr-optical-
section</ns8:source-object-ref>
        <ns8:source-object-name>Optics0/0/0/9</ns8:source-object-name>
        <ns8:node-ref>NCS4k-A Optics0/0/0/9</ns8:node-ref>
        <ns8:cause-type>cause-unknown</ns8:cause-type>
        <ns8:ack-state>unacknowledged</ns8:ack-state>
        <ns8:remote-interface-ip-address> 10. 56. 23.139</ns8:remote-interface-ip-address>
        <ns8:perceived-severity>minor</ns8:perceived-severity>
        <ns8:system-received-time>2017-02-03 23:29:27.0</ns8:system-received-time>
        <ns8:system-update-time>2017-02-03 23:29:27.0</ns8:system-update-time>
        <ns8:node-event-time>2016-12-05 23:11:53.0</ns8:node-event-time>
        <ns8:probable-cause>IMPROPRMVL</ns8:probable-cause>
      </ns8:alarm>
      <ns8:alarm>
        <ns8:alarm-identifier>
          <ns8:event-identifier>1776818</ns8:event-identifier>
          <ns8:resource-object-ref>MD=CISCO_EPNM!ND=NCS4k-A!CTP=name=Optics0/0/0/10;lr=lr-optical-
section</ns8:resource-object-ref>
          <ns8:probable-cause>UNQUAL-PPM</ns8:probable-cause>
        </ns8:alarm-identifier>
        <ns8:description>Unqualified PPM Inserted</ns8:description>
        <ns8:category>Optical Transport</ns8:category>
        <ns8:source-object-ref>MD=CISCO_EPNM!ND=NCS4k-A!CTP=name=Optics0/0/0/10;lr=lr-optical-
section</ns8:source-object-ref>
        <ns8:source-object-name>Optics0/0/0/10</ns8:source-object-name>
        <ns8:node-ref>NCS4k-A Optics0/0/0/10</ns8:node-ref>
        <ns8:cause-type>cause-unknown</ns8:cause-type>
        <ns8:ack-state>unacknowledged</ns8:ack-state>
        <ns8:remote-interface-ip-address> 10. 56. 23.139</ns8:remote-interface-ip-address>
        <ns8:perceived-severity>minor</ns8:perceived-severity>
        <ns8:system-received-time>2017-02-03 23:29:27.0</ns8:system-received-time>
        <ns8:system-update-time>2017-02-03 23:29:27.0</ns8:system-update-time>
        <ns8:node-event-time>2016-12-05 23:11:53.0</ns8:node-event-time>
        <ns8:probable-cause>UNQUAL-PPM</ns8:probable-cause>
      </ns8:alarm>
      <ns8:alarm>
        <ns8:alarm-identifier>
          <ns8:event-identifier>1776819</ns8:event-identifier>
```

```
            <ns8:resource-object-ref>MD=CISCO_EPNM!ND=NCS4k-A!CTP=name=Optics0/0/0/11;lr=lr-optical-
section</ns8:resource-object-ref>
            <ns8:probable-cause>UNQUAL-PPM</ns8:probable-cause>
          </ns8:alarm-identifier>
          <ns8:description>Unqualified PPM Inserted</ns8:description>
          <ns8:category>Optical Transport</ns8:category>
          <ns8:source-object-ref>MD=CISCO_EPNM!ND=NCS4k-A!CTP=name=Optics0/0/0/11;lr=lr-optical-
section</ns8:source-object-ref>
          <ns8:source-object-name>Optics0/0/0/11</ns8:source-object-name>
          <ns8:node-ref>NCS4k-A Optics0/0/0/11</ns8:node-ref>
          <ns8:cause-type>cause-unknown</ns8:cause-type>
          <ns8:ack-state>unacknowledged</ns8:ack-state>
          <ns8:remote-interface-ip-address> 10. 56. 23.139</ns8:remote-interface-ip-address>
          <ns8:perceived-severity>minor</ns8:perceived-severity>
          <ns8:system-received-time>2017-02-03 23:29:27.0</ns8:system-received-time>
          <ns8:system-update-time>2017-02-03 23:29:27.0</ns8:system-update-time>
          <ns8:node-event-time>2016-12-05 23:12:02.0</ns8:node-event-time>
          <ns8:probable-cause>UNQUAL-PPM</ns8:probable-cause>
        </ns8:alarm>
        <ns8:alarm>
          <ns8:alarm-identifier>
            <ns8:event-identifier>1776820</ns8:event-identifier>
            <ns8:resource-object-ref>MD=CISCO_EPNM!ND=NCS4k-A</ns8:resource-object-ref>
            <ns8:probable-cause>Optical Alarm</ns8:probable-cause>
          </ns8:alarm-identifier>
          <ns8:description>temperature alarm</ns8:description>
          <ns8:category>Optical Transport</ns8:category>
          <ns8:source-object-ref>MD=CISCO_EPNM!ND=NCS4k-A</ns8:source-object-ref>
          <ns8:source-object-name>NCS4k-A</ns8:source-object-name>
          <ns8:node-ref>NCS4k-A 0/1</ns8:node-ref>
          <ns8:cause-type>cause-unknown</ns8:cause-type>
          <ns8:ack-state>unacknowledged</ns8:ack-state>
          <ns8:remote-interface-ip-address> 10. 56. 23.139</ns8:remote-interface-ip-address>
          <ns8:perceived-severity>major</ns8:perceived-severity>
          <ns8:system-received-time>2017-02-03 23:29:27.0</ns8:system-received-time>
          <ns8:system-update-time>2017-02-04 04:59:37.0</ns8:system-update-time>
          <ns8:node-event-time>2016-12-05 23:14:47.0</ns8:node-event-time>
          <ns8:probable-cause>Optical Alarm</ns8:probable-cause>
        </ns8:alarm>
        <ns8:alarm>
          <ns8:alarm-identifier>
            <ns8:event-identifier>1776821</ns8:event-identifier>
            <ns8:resource-object-ref>MD=CISCO_EPNM!ND=NCS4k-A!CTP=name=Optics0/0/0/7;lr=lr-optical-
section</ns8:resource-object-ref>
            <ns8:probable-cause>IMPROPRMVL</ns8:probable-cause>
          </ns8:alarm-identifier>
          <ns8:description>Improper Removal</ns8:description>
          <ns8:category>Optical Transport</ns8:category>
          <ns8:source-object-ref>MD=CISCO_EPNM!ND=NCS4k-A!CTP=name=Optics0/0/0/7;lr=lr-optical-
section</ns8:source-object-ref>
          <ns8:source-object-name>Optics0/0/0/7</ns8:source-object-name>
          <ns8:node-ref>NCS4k-A Optics0/0/0/7</ns8:node-ref>
```

```
        <ns8:cause-type>cause-unknown</ns8:cause-type>
        <ns8:ack-state>unacknowledged</ns8:ack-state>
        <ns8:remote-interface-ip-address> 10. 56. 23.139</ns8:remote-interface-ip-address>
        <ns8:perceived-severity>minor</ns8:perceived-severity>
        <ns8:system-received-time>2017-02-03 23:29:27.0</ns8:system-received-time>
        <ns8:system-update-time>2017-02-03 23:29:27.0</ns8:system-update-time>
        <ns8:node-event-time>2017-02-01 23:54:06.0</ns8:node-event-time>
        <ns8:probable-cause>IMPROPRMVL</ns8:probable-cause>
      </ns8:alarm>
    </ns4:data>
      </ns4:response-message>
```

7.46 Alarm Handling

Alarm Handling capability allows to Acknowledge/ UnAcknowledge/ Clear and Delete alarms
PUT /restconf/data/v1/cisco-alarm:handle-alarm
Host: <epnm-host>
Accept: application/yang-data+xml

```
<p:action-performed>alarm-acknowledge</p:action-performed>
<p:action-performed>alarm-unacknowledge</p:action-performed>
<p:action-performed>alarm-clear</p:action-performed>
<p:action-performed>alarm-delete</p:action-performed>
```

7.46.1 Request

```
<?xml version="1.0" encoding="UTF-8"?>
<p:alarm-request
                xmlns:p="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
                xsi:schemaLocation="urn:cisco:params:xml:ns:yang:alarms:v1
cisco-alarms.xsd ">
      <p:alarm-list>
            <p:alarm>
                  <p:alarm-identifier>
                        <p:event-identifier>2549588</p:event-identifier>
                        <p:resource-object-ref>MD=CISCO_EPNM!ND=EPNASR903-
120-133.Cisco.com</p:resource-object-ref>
                        <p:probable-
cause>TV_MEMORY_UTILIZATION</p:probable-cause>
                  </p:alarm-identifier>
                  <p:alarm-id>2549588</p:alarm-id>
                  <p:description>Device 'EPNASR901-120-156.Cisco.com' is
reachable.</p:description>
                  <p:category>Routers</p:category>
                  <!-- <p:source-object-ref>MD=CISCO_EPNM!ND=EPNASR903-
120-133.Cisco.com</p:source-object-ref> -->
                  <p:source-object-name>EPNASR903-120-
133.Cisco.com</p:source-object-name>
                  <!--<p:node-
ref>MD=CISCO_EPNM!ND=MD=CISCO_EPNM!ND=EPNASR903-120-133.Cisco.com</p:node-
ref>-->
                  <!--<p:ack-state>fg</p:ack-state> -->
                  <p:perceived-severity>critical</p:perceived-severity>
                  <p:action-performed>alarm-acknowledge</p:action-
performed>
```

```
                  <p:owner>root</p:owner>
                  <p:probable-cause>2549588</p:probable-cause>
                  <p:note-list>
                        <p:text>test critical for critical alarm
clear</p:text>
                  </p:note-list>
            </p:alarm>
      </p:alarm-list>
</p:alarm-request>
```

7.46.2 Response

```
<ns8:alarm-
response xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:party" xmlns:ns32="urn:cisco:params:xml:ns:yang:xmpim:events-
alarms" xmlns:ns31="urn:cisco:params:xml:ns:yang:restconf:alarms" xmlns:ns30="urn:cisco:params:xml:ns:yang:service:activation:status:v1" xmlns:ns29="urn:cisco:params:xml:ns:yang:restconf:resource:opt" xmlns:ns28="urn:cisco:params:xml:ns:yang:restconf:resource:physical" xmlns:ns27="urn:cisco:params:xml:ns:yang:restconf:location" xmlns:ns26="urn:cisco:params:xml:ns:yang:restconf:foundation" xmlns:ns25="urn:cisco:params:xml:ns:yang:resource:device" xmlns:ns24="urn:cisco:params:xml:ns:yang:yang-
push:v1" xmlns:ns23="urn:cisco:params:xml:ns:yang:qos:v1" xmlns:ns22="urn:cisco:params:xml:ns:yang:sb:customer:v1" xmlns:ns21="urn:cisco:params:xml:ns:yang:sb:service-
profile:v1" xmlns:ns20="urn:cisco:params:xml:ns:yang:profile-
protection:v1" xmlns:ns19="urn:cisco:params:xml:ns:yang:nrf-
ipsla:v1" xmlns:ns18="urn:cisco:params:xml:ns:yang:sb:srrg:v1" xmlns:ns17="urn:cisco:params:xml:ns:yang:nrp-perf:v1" xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-
topology:v1" xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-
extension:v1" xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1" xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1" xmlns:ns12="urn:cisco:params:xml:ns:yang:si-
service:v1" xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-
virtualforward:v1" xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1" xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-
virtualconnection:v1" xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1" xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1" xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-
extension:v1" xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-
extension:v1" xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-
common:v1" xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-uri">
   <ns8:alarm-list>
    </ns8:alarm-list>
</ns8:alarm-response>
```

7.47 Alarm to Service Association

Alarms releated to a service can be retrieved by the CFS-Ref
GET /restconf/data/v1/cisco-rtm:impacting-alarms-by-service?cfs-ref=<value>
Host: <epnm-host>
Accept: application/yang-data+xml

7.47.1 Response


```
<ns5:response-message xmlns:ns36="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns35="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns33="urn:ietf:params:xml:ns:yang:ietf-restconf"
xmlns:ns32="urn:cisco:params:xml:ns:yang:service:activation:status:v1"
xmlns:ns31="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
xmlns:ns30="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns29="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns28="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns27="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns26="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns24="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1" xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-
perf:v1" xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:ra:v1" xmlns:ns13="urn:cisco:params:xml:ns:yang:si-
service:v1" xmlns:ns12="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:alarms:v1" xmlns:ns8="urn:cisco:params:xml:ns:yang:nrf-
tp:v1" xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns4="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library" xmlns:ns2="inet-uri">
  <ns5:header>
    <ns5:firstIndex>0</ns5:firstIndex>
    <ns5:lastIndex>0</ns5:lastIndex>
  </ns5:header>
  <ns5:data>
    <ns13:impacted-service-list>
      <ns13:alarm-identifier>
        <ns13:event-identifier>1150186</ns13:event-identifier>
        <ns13:resource-object-ref>MD=CISCO_EPNM!ND=cvg-rosco-
42.cisco.com!CTP=name=Optics0/0/0/5;lr=lr-optical-section</ns13:resource-object-ref>
        <ns13:probable-cause>DGD</ns13:probable-cause>
      </ns13:alarm-identifier>
      <ns13:alarm-severity-type>minor</ns13:alarm-severity-type>
    </ns13:impacted-service-list>
  </ns5:data>
</ns5:response-message>
```


7.48 Get Controller Port

GET https://{{host}}/restconf/data/v1/cisco-nrf-controller:controller-port?ndFdn=MD=CISCO_EPNM!ND=NCS4206-

146.4&.maxCount=4
Host: <epnm-host>
Accept: application/yang-data+xml

7.48.1 Response


```
<ns4:response-message xmlns:ns40="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns39="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
xmlns:ns38="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns37="urn:ietf:params:xml:ns:yang:ietf-restconf"
xmlns:ns36="urn:cisco:params:xml:ns:yang:service:activation:status:v1"
xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns31="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns30="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns29="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
xmlns:ns28="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns26="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
xmlns:ns24="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical-ops:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1" xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-
perf:v1" xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1" xmlns:ns12="urn:cisco:params:xml:ns:yang:si-
service:v1" xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1" xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-
tp:v1" xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
  <ns4:header>
    <ns4:firstIndex>0</ns4:firstIndex>
    <ns4:lastIndex>3</ns4:lastIndex>
  </ns4:header>
  <ns4:data>
    <ns24:controller-port>
      <ns24:fdn>MD=CISCO_EPNM!ND=NCS4206-146.4!CTRLP=MediaType 0/4/0</ns24:fdn>
      <ns24:discovered-name>MediaType 0/4/0</ns24:discovered-name>
      <ns24:media-type>
        <ns24:mode>T3</ns24:mode>
      </ns24:media-type>
```

```
        <ns24:card-type>NCS4200-48T3E3-CE</ns24:card-type>
      </ns24:controller-port>
      <ns24:controller-port>
        <ns24:fdn>MD=CISCO_EPNM!ND=NCS4206-146.4!CTRLP=MediaType 0/4/1</ns24:fdn>
        <ns24:discovered-name>MediaType 0/4/1</ns24:discovered-name>
        <ns24:media-type></ns24:media-type>
        <ns24:card-type>NCS4200-48T3E3-CE</ns24:card-type>
      </ns24:controller-port>
      <ns24:controller-port>
        <ns24:fdn>MD=CISCO_EPNM!ND=NCS4206-146.4!CTRLP=MediaType 0/4/10</ns24:fdn>
        <ns24:discovered-name>MediaType 0/4/10</ns24:discovered-name>
        <ns24:media-type></ns24:media-type>
        <ns24:card-type>NCS4200-48T3E3-CE</ns24:card-type>
      </ns24:controller-port>
      <ns24:controller-port>
        <ns24:fdn>MD=CISCO_EPNM!ND=NCS4206-146.4!CTRLP=MediaType 0/4/11</ns24:fdn>
        <ns24:discovered-name>MediaType 0/4/11</ns24:discovered-name>
        <ns24:media-type></ns24:media-type>
        <ns24:card-type>NCS4200-48T3E3-CE</ns24:card-type>
      </ns24:controller-port>
    </ns4:data>
</ns4:response-message>
```

7.49 Update Controller Port – MediaType Controller Mode

PUT https://{{host}}/restconf/data/v1/cisco-nrf-controller:controller-port
Host: <epnm-host>
Accept: application/yang-data+xml

7.49.1 Request

```
<ns24:controller-port xmlns:ns24="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1">
        <ns24:fdn>MD=CISCO_EPNM!ND=NCS4206-146.4!CTRLP=MediaType 0/4/47</ns24:fdn>
        <ns24:discovered-name>MediaType 0/4/45</ns24:discovered-name>
        <ns24:media-type>
          <ns24:mode>T3</ns24:mode>
        </ns24:media-type>
        <ns24:card-type>NCS4200-48T3E3-CE</ns24:card-type>
 </ns24:controller-port>
```

7.50 Multi-Layer Trace Retrival

7.50.1 Get MLT Request for OCHRAIL UNI

```
https://<serverIp>/restconf/data/v1/cisco-resource-network:virtual-
connection-multi-layer-route?vcFdn=MD=CISCO_EPNM!VC=OCHTRAILUNI_
```

7.50.2 Response

```
<ns4:response-message
xmlns:ns40="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns39="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
xmlns:ns38="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns37="urn:ietf:params:xml:ns:yang:ietf-restconf"
xmlns:ns36="urn:cisco:params:xml:ns:yang:service:activation:status:v1"
```

```
xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns32="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns31="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns30="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns29="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
xmlns:ns28="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns26="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
xmlns:ns24="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical-ops:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>0</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns17:virtual-connection-multi-layer-route-list>
            <ns17:carrying_vc-
fdn>MD=CISCO_EPNM!VC=MD=CISCO_EPNM!VC=OCHTRAILUNI_DMP2NBImodify</ns17:carr
ying_vc-fdn>
            <ns17:virtual-connection-multi-layer-route>
                <ns17:topo-index>0</ns17:topo-index>
                <ns17:topology-layer>ns17:och-link-layer</ns17:topology-
layer>
                <ns17:protection-role>ns4:working-path</ns17:protection-
role>
                <ns17:protection-state>ns4:path-active</ns17:protection-
state>
                <ns17:tl-list>
                    <ns17:topological-link>
                        <ns17:tl-index>0</ns17:tl-index>

<ns17:fdn>MD=CISCO_EPNM!TL=OCHTRAILUNI_DMP2NBImodify</ns17:fdn>
```

```
                        <ns17:is-cc>false</ns17:is-cc>
                        <ns17:direction>ns4:bi-direction</ns17:direction>
                        <ns17:endpoint-list>
                            <ns17:endpoint>
                                <ns17:endpoint-ref>MD=CISCO_EPNM!ND=cvg-
scapa-90.cisco.com!CTP=name=Optics0/1/0/2;lr=lr-optical-
channel</ns17:endpoint-ref>
                                <ns17:directionality>ns4:bi-
direction</ns17:directionality>
                                <ns17:contained-endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-90.cisco.com!CTP=name=Optics0/1/0/2;lr=lr-
optical-section</ns17:contained-endpoint-ref>
                            </ns17:endpoint>
                            <ns17:endpoint>
                                <ns17:endpoint-ref>MD=CISCO_EPNM!ND=cvg-
scapa-93.cisco.com!CTP=name=Optics0/1/0/2;lr=lr-optical-
channel</ns17:endpoint-ref>
                                <ns17:directionality>ns4:bi-
direction</ns17:directionality>
                                <ns17:contained-endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-93.cisco.com!CTP=name=Optics0/1/0/2;lr=lr-
optical-section</ns17:contained-endpoint-ref>
                            </ns17:endpoint>
                        </ns17:endpoint-list>
                    </ns17:topological-link>
                    <ns17:topological-link>
                        <ns17:tl-index>1</ns17:tl-index>
                        <ns17:fdn>MD=CISCO_EPNM!TL=FPSLINE-1-5-5-RX-
Ochtrailunimodify&amp;FPSLINE-1-5-5-TX-Ochtrailunimodify,LINEWL-1-2-3-RX-
Ochtrailunimodify&amp;LINEWL-1-2-3-TX-Ochtrailunimodify@ncs2006-239-
20</ns17:fdn>
                        <ns17:is-cc>true</ns17:is-cc>
                        <ns17:direction>ns4:bi-direction</ns17:direction>
                        <ns17:endpoint-list>
                            <ns17:endpoint>
                                <ns17:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-20!CTP=name=FPSLINE-1-5-5-RX-
Ochtrailunimodify;lr=lr-optical-channel</ns17:endpoint-ref>
                                <ns17:directionality>ns4:bi-
direction</ns17:directionality>
                            </ns17:endpoint>
                            <ns17:endpoint>
                                <ns17:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-20!CTP=name=LINEWL-1-2-3-TX-
Ochtrailunimodify;lr=lr-optical-channel</ns17:endpoint-ref>
                                <ns17:directionality>ns4:bi-
direction</ns17:directionality>
                            </ns17:endpoint>
                        </ns17:endpoint-list>
                    </ns17:topological-link>
                    <ns17:topological-link>
                        <ns17:tl-index>2</ns17:tl-index>
                        <ns17:fdn>MD=CISCO_EPNM!TL=FPSLINE-1-5-5-RX-
Ochtrailunimodify&amp;FPSLINE-1-5-5-TX-Ochtrailunimodify,LINEWL-1-7-3-RX-
Ochtrailunimodify&amp;LINEWL-1-7-3-TX-Ochtrailunimodify@ncs2006-234-
109</ns17:fdn>
```

```
                        <ns17:is-cc>true</ns17:is-cc>
                        <ns17:direction>ns4:bi-direction</ns17:direction>
                        <ns17:endpoint-list>
                            <ns17:endpoint>
                                <ns17:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-234-109!CTP=name=FPSLINE-1-5-5-RX-
Ochtrailunimodify;lr=lr-optical-channel</ns17:endpoint-ref>
                                <ns17:directionality>ns4:bi-
direction</ns17:directionality>
                            </ns17:endpoint>
                            <ns17:endpoint>
                                <ns17:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-234-109!CTP=name=LINEWL-1-7-3-TX-
Ochtrailunimodify;lr=lr-optical-channel</ns17:endpoint-ref>
                                <ns17:directionality>ns4:bi-
direction</ns17:directionality>
                            </ns17:endpoint>
                        </ns17:endpoint-list>
                    </ns17:topological-link>
                </ns17:tl-list>
                <ns17:carried-by-topo-layer>ns17:ops-link-
layer</ns17:carried-by-topo-layer>
            </ns17:virtual-connection-multi-layer-route>
            <ns17:virtual-connection-multi-layer-route>
                <ns17:topo-index>1</ns17:topo-index>
                <ns17:topology-layer>ns17:ops-link-layer</ns17:topology-
layer>
                <ns17:protection-role>ns4:working-path</ns17:protection-
role>
                <ns17:protection-state>ns4:path-active</ns17:protection-
state>
                <ns17:tl-list>
                    <ns17:topological-link>
                        <ns17:tl-index>0</ns17:tl-index>
                        <ns17:fdn>MD=CISCO_EPNM!TL=10.58.235.90:22--
10.58.239.20:2130708746</ns17:fdn>
                        <ns17:is-cc>false</ns17:is-cc>
                        <ns17:direction>ns4:bi-direction</ns17:direction>
                        <ns17:endpoint-list>
                            <ns17:endpoint>
                                <ns17:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-20!CTP=name=PSLINE-1-5-5-TX;lr=lr-
optical-section</ns17:endpoint-ref>
                                <ns17:directionality>ns4:bi-
direction</ns17:directionality>
                            </ns17:endpoint>
                            <ns17:endpoint>
                                <ns17:endpoint-ref>MD=CISCO_EPNM!ND=cvg-
scapa-90.cisco.com!CTP=name=Optics0/1/0/2;lr=lr-optical-
section</ns17:endpoint-ref>
                                <ns17:directionality>ns4:bi-
direction</ns17:directionality>
                                <ns17:containing-endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-90.cisco.com!CTP=name=Optics0/1/0/2;lr=lr-
optical-channel</ns17:containing-endpoint-ref>
                            </ns17:endpoint>
```

```
                        </ns17:endpoint-list>
                    </ns17:topological-link>
                    <ns17:topological-link>
                        <ns17:tl-index>1</ns17:tl-index>
                        <ns17:fdn>MD=CISCO_EPNM!TL=TRAIL-
OCHTRAILUNI_DMP2NBImodify</ns17:fdn>
                        <ns17:is-cc>false</ns17:is-cc>
                        <ns17:direction>ns4:bi-direction</ns17:direction>
                        <ns17:endpoint-list>
                            <ns17:endpoint>
                                <ns17:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-20!CTP=name=PSLINE-1-5-5-TX;lr=lr-
optical-section</ns17:endpoint-ref>
                                <ns17:directionality>ns4:bi-
direction</ns17:directionality>
                            </ns17:endpoint>
                            <ns17:endpoint>
                                <ns17:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-234-109!CTP=name=PSLINE-1-5-5-TX;lr=lr-
optical-section</ns17:endpoint-ref>
                                <ns17:directionality>ns4:bi-
direction</ns17:directionality>
                            </ns17:endpoint>
                        </ns17:endpoint-list>
                    </ns17:topological-link>
                    <ns17:topological-link>
                        <ns17:tl-index>2</ns17:tl-index>

<ns17:fdn>MD=CISCO_EPNM!TL=10.58.234.109:2130708746--
10.58.235.93:22</ns17:fdn>
                        <ns17:is-cc>false</ns17:is-cc>
                        <ns17:direction>ns4:bi-direction</ns17:direction>
                        <ns17:endpoint-list>
                            <ns17:endpoint>
                                <ns17:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-234-109!CTP=name=PSLINE-1-5-5-TX;lr=lr-
optical-section</ns17:endpoint-ref>
                                <ns17:directionality>ns4:bi-
direction</ns17:directionality>
                            </ns17:endpoint>
                            <ns17:endpoint>
                                <ns17:endpoint-ref>MD=CISCO_EPNM!ND=cvg-
scapa-93.cisco.com!CTP=name=Optics0/1/0/2;lr=lr-optical-
section</ns17:endpoint-ref>
                                <ns17:directionality>ns4:bi-
direction</ns17:directionality>
                                <ns17:containing-endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-93.cisco.com!CTP=name=Optics0/1/0/2;lr=lr-
optical-channel</ns17:containing-endpoint-ref>
                            </ns17:endpoint>
                        </ns17:endpoint-list>
                    </ns17:topological-link>
                </ns17:tl-list>
                <ns17:carrying-topo-layer>ns17:och-link-
layer</ns17:carrying-topo-layer>
                <ns17:carried-by-topo-layer>ns17:ots-link-
```

```
layer</ns17:carried-by-topo-layer>
            </ns17:virtual-connection-multi-layer-route>
            <ns17:virtual-connection-multi-layer-route>
                <ns17:topo-index>2</ns17:topo-index>
                <ns17:topology-layer>ns17:ots-link-layer</ns17:topology-
layer>
                <ns17:protection-role>ns4:working-path</ns17:protection-
role>
                <ns17:protection-state>ns4:path-active</ns17:protection-
state>
                <ns17:tl-list>
                    <ns17:topological-link>
                        <ns17:tl-index>0</ns17:tl-index>
                        <ns17:fdn>MD=CISCO_EPNM!TL=10.58.234.109:[WDMSIDE-
B]--10.58.239.20:[WDMSIDE-A]</ns17:fdn>
                        <ns17:is-cc>false</ns17:is-cc>
                        <ns17:direction>ns4:bi-direction</ns17:direction>
                        <ns17:endpoint-list>
                            <ns17:endpoint>
                                <ns17:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-234-109!CTP=name=LINE-1-7-3-RX;lr=lr-optical-
transmission-section</ns17:endpoint-ref>
                                <ns17:directionality>ns4:bi-
direction</ns17:directionality>
                            </ns17:endpoint>
                            <ns17:endpoint>
                                <ns17:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-20!CTP=name=LINE-1-2-3-RX;lr=lr-optical-
transmission-section</ns17:endpoint-ref>
                                <ns17:directionality>ns4:bi-
direction</ns17:directionality>
                            </ns17:endpoint>
                        </ns17:endpoint-list>
                    </ns17:topological-link>
                </ns17:tl-list>
                <ns17:carrying-topo-layer>ns17:ops-link-
layer</ns17:carrying-topo-layer>
            </ns17:virtual-connection-multi-layer-route>
        </ns17:virtual-connection-multi-layer-route-list>
    </ns4:data>
</ns4:response-message>
```

7.50.3 Get MLT Request for OPU Over ODU

```
https://<serverIp>/restconf/data/v1/cisco-resource-network:virtual-
connection-multi-layer-route?vcFdn=MD=CISCO_EPNM!VC=Restconfopuoverodu
```

7.50.4 Response

```
<ns4:response-message xmlns:ns27="urn:cisco:ns:yang:service:activation:v1"
      xmlns:ns26="urn:cisco:params:xml:ns:yang:resource:opt"
xmlns:ns25="urn:cisco:params:xml:ns:yang:resource:device"
      xmlns:ns24="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
      xmlns:ns23="urn:cisco:params:xml:ns:yang:xmpim:location"
xmlns:ns22="urn:cisco:params:xml:ns:yang:restconf:location"
      xmlns:ns21="urn:cisco:params:xml:ns:yang:restconf:foundation"
      xmlns:ns20="urn:cisco:params:xml:ns:yang:yang-push:v1"
```

```
xmlns:ns19="urn:cisco:params:xml:ns:yang:qos:v1"
      xmlns:ns18="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
      xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
      xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
      xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
      xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
      xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
      xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
      xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
      xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
      xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
      xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-yang-library"
xmlns:ns2="inet-uri">
      <ns4:header>
            <ns4:firstIndex>0</ns4:firstIndex>
            <ns4:lastIndex>5</ns4:lastIndex>
      </ns4:header>
      <ns4:data>
            <ns16:virtual-connection-multi-layer-route>
                  <ns16:topo-index>0</ns16:topo-index>
                  <ns16:topology-layer>ns16:ethernet-link-
layer</ns16:topology-layer>
                  <ns16:protection-role>ns4:working-path</ns16:protection-
role>
                  <ns16:protection-state>ns4:path-active</ns16:protection-
state>
                  <ns16:tl-list>
                        <ns16:topological-link>
                              <ns16:tl-index>0</ns16:tl-index>

      <ns16:fdn>MD=CISCO_EPNM!TL=Restconfopuoverodu</ns16:fdn>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-71!CTP=name=VFAC-2-1-1;lr=lr-dsr-
10gigabit-ethernet
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-72!CTP=name=VFAC-2-1-1;lr=lr-dsr-
10gigabit-ethernet
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
```

```
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>1</ns16:tl-index>
                              <ns16:fdn>MD=CISCO_EPNM!TL=VFAC-2-1-
1</ns16:fdn>
                              <ns16:is-cc>true</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-71!CTP=name=VFAC-2-1-1;lr=lr-dsr-
10gigabit-ethernet
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-71!CTP=name=VFAC-2-2-1_VFAC-2-1-1;lr=lr-
dsr-10gigabit-ethernet
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>2</ns16:tl-index>
                              <ns16:fdn>MD=CISCO_EPNM!TL=VFAC-2-1-
1</ns16:fdn>
                              <ns16:is-cc>true</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-72!CTP=name=VFAC-2-1-1;lr=lr-dsr-
10gigabit-ethernet
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-72!CTP=name=VFAC-2-2-1_VFAC-2-1-1;lr=lr-
dsr-10gigabit-ethernet
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>3</ns16:tl-index>
```

```
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-71!CTP=name=VFAC-2-1-1;lr=lr-dsr-
10gigabit-ethernet
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-71!CTP=name=CHAN-2-1-1;lr=lr-optical-
section
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>4</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-72!CTP=name=VFAC-2-1-1;lr=lr-dsr-
10gigabit-ethernet
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-72!CTP=name=CHAN-2-1-1;lr=lr-optical-
section
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>5</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-71!CTP=name=VFAC-2-2-1_VFAC-2-1-1;lr=lr-
dsr-10gigabit-ethernet
```

```
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-71!CTP=name=VFAC-2-2-1;lr=lr-och-data-
unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>6</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-72!CTP=name=VFAC-2-2-1_VFAC-2-1-1;lr=lr-
dsr-10gigabit-ethernet
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-72!CTP=name=VFAC-2-2-1;lr=lr-och-data-
unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                  </ns16:tl-list>
                  <ns16:carrying-toporef>odu-link-layer</ns16:carrying-
toporef>
            </ns16:virtual-connection-multi-layer-route>
            <ns16:virtual-connection-multi-layer-route>
                  <ns16:topo-index>1</ns16:topo-index>
                  <ns16:topology-layer>ns16:odu-link-layer</ns16:topology-
layer>
                  <ns16:protection-role>ns4:working-path</ns16:protection-
role>
                  <ns16:protection-state>ns4:path-active</ns16:protection-
state>
                  <ns16:tl-list>
                        <ns16:topological-link>
                              <ns16:tl-index>0</ns16:tl-index>
                              <ns16:fdn>MD=CISCO_EPNM!TL=Tunnel-
WaveNID_port_8</ns16:fdn>
                              <ns16:is-cc>false</ns16:is-cc>
```

```
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-223.cisco.com!CTP=name=Odu-Group-Te0;lr=lr-
och-data-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-225.cisco.com!CTP=name=Odu-Group-
Te64539;lr=lr-och-data-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>1</ns16:tl-index>
                              <ns16:fdn>MD=CISCO_EPNM!TL=Odu-Group-
Te0</ns16:fdn>
                              <ns16:is-cc>true</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-223.cisco.com!CTP=name=ODU20/0/0/8;lr=lr-
och-data-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-223.cisco.com!CTP=name=Odu-Group-Te0;lr=lr-
och-data-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>2</ns16:tl-index>
                              <ns16:fdn>MD=CISCO_EPNM!TL=Odu-Group-
Te64539</ns16:fdn>
                              <ns16:is-cc>true</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
```

```
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-225.cisco.com!CTP=name=ODU20/6/0/8;lr=lr-
och-data-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-225.cisco.com!CTP=name=Odu-Group-
Te64539;lr=lr-och-data-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>3</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-71!CTP=name=VFAC-2-2-1;lr=lr-och-data-
unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-71!CTP=name=VFAC-2-2-1;lr=lr-och-
transport-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>4</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-71!CTP=name=VFAC-2-2-1_VFAC-2-1-1;lr=lr-
dsr-10gigabit-ethernet
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
```

```
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-71!CTP=name=VFAC-2-2-1;lr=lr-och-data-
unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>5</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-72!CTP=name=VFAC-2-2-1;lr=lr-och-data-
unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-72!CTP=name=VFAC-2-2-1;lr=lr-och-
transport-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>6</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-72!CTP=name=VFAC-2-2-1_VFAC-2-1-1;lr=lr-
dsr-10gigabit-ethernet
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-72!CTP=name=VFAC-2-2-1;lr=lr-och-data-
unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
```

```
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>7</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-223.cisco.com!CTP=name=ODU20/0/0/8;lr=lr-
och-data-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-223.cisco.com!CTP=name=OTU20/0/0/8;lr=lr-
och-transport-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>8</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-223.cisco.com!CTP=name=ODU20/0/0/18;lr=lr-
och-data-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-223.cisco.com!CTP=name=OTU20/0/0/18;lr=lr-
och-transport-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>9</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
```

```
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-225.cisco.com!CTP=name=ODU20/6/0/8;lr=lr-
och-data-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-225.cisco.com!CTP=name=OTU20/6/0/8;lr=lr-
och-transport-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>10</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-225.cisco.com!CTP=name=ODU20/6/0/18;lr=lr-
och-data-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-225.cisco.com!CTP=name=OTU20/6/0/18;lr=lr-
och-transport-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                  </ns16:tl-list>
                  <ns16:carrying-toporef>otu-link-layer</ns16:carrying-
toporef>
                  <ns16:carried-by-toporef>ethernet-link-layer
                  </ns16:carried-by-toporef>
            </ns16:virtual-connection-multi-layer-route>
            <ns16:virtual-connection-multi-layer-route>
                  <ns16:topo-index>2</ns16:topo-index>
                  <ns16:topology-layer>ns16:otu-link-layer</ns16:topology-
layer>
                  <ns16:protection-role>ns4:working-path</ns16:protection-
role>
                  <ns16:protection-state>ns4:path-active</ns16:protection-
state>
                  <ns16:tl-list>
```

```
                        <ns16:topological-link>
                              <ns16:tl-index>0</ns16:tl-index>

      <ns16:fdn>MD=CISCO_EPNM!TL=WaveNID_port_8</ns16:fdn>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-223.cisco.com!CTP=name=OTU20/0/0/8;lr=lr-
och-transport-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-225.cisco.com!CTP=name=OTU20/6/0/8;lr=lr-
och-transport-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>1</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-71!CTP=name=VFAC-2-2-1;lr=lr-och-
transport-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-71!CTP=name=VFAC-2-2-1;lr=lr-optical-
channel
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>2</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
```

```
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-71!CTP=name=VFAC-2-2-1;lr=lr-och-data-
unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-71!CTP=name=VFAC-2-2-1;lr=lr-och-
transport-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>3</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-72!CTP=name=VFAC-2-2-1;lr=lr-och-
transport-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-72!CTP=name=VFAC-2-2-1;lr=lr-optical-
channel
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>4</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-72!CTP=name=VFAC-2-2-1;lr=lr-och-data-
unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
```

```
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-72!CTP=name=VFAC-2-2-1;lr=lr-och-
transport-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>5</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-223.cisco.com!CTP=name=OTU20/0/0/8;lr=lr-
och-transport-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-223.cisco.com!CTP=name=Optics0/0/0/8;lr=lr-
optical-section
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>6</ns16:tl-index>
                              <ns16:fdn>MD=CISCO_EPNM!TL=10.58.235.223:37-
-10.58.239.71:8247
                              </ns16:fdn>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-71!CTP=name=VFAC-2-2-1;lr=lr-och-
transport-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-223.cisco.com!CTP=name=OTU20/0/0/8;lr=lr-
och-transport-unit-2
                                          </ns16:endpoint-ref>
```

```
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>7</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-225.cisco.com!CTP=name=OTU20/6/0/8;lr=lr-
och-transport-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-225.cisco.com!CTP=name=Optics0/6/0/8;lr=lr-
optical-section
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>8</ns16:tl-index>

      <ns16:fdn>MD=CISCO_EPNM!TL=10.58.235.225:167--10.58.239.72:8247
                              </ns16:fdn>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-225.cisco.com!CTP=name=OTU20/6/0/8;lr=lr-
och-transport-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-72!CTP=name=VFAC-2-2-1;lr=lr-och-
transport-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
```

```
                        <ns16:topological-link>
                              <ns16:tl-index>9</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-223.cisco.com!CTP=name=ODU20/0/0/8;lr=lr-
och-data-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-223.cisco.com!CTP=name=OTU20/0/0/8;lr=lr-
och-transport-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>10</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-223.cisco.com!CTP=name=OTU20/0/0/18;lr=lr-
och-transport-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-
223.cisco.com!CTP=name=Optics0/0/0/18;lr=lr-optical-section
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>11</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
```

```
ref>MD=CISCO_EPNM!ND=cvg-scapa-223.cisco.com!CTP=name=ODU20/0/0/18;lr=lr-
och-data-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-223.cisco.com!CTP=name=OTU20/0/0/18;lr=lr-
och-transport-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>12</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-225.cisco.com!CTP=name=ODU20/6/0/8;lr=lr-
och-data-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-225.cisco.com!CTP=name=OTU20/6/0/8;lr=lr-
och-transport-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>13</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-225.cisco.com!CTP=name=OTU20/6/0/18;lr=lr-
och-transport-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
```

```
ref>MD=CISCO_EPNM!ND=cvg-scapa-
225.cisco.com!CTP=name=Optics0/6/0/18;lr=lr-optical-section
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>14</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-225.cisco.com!CTP=name=ODU20/6/0/18;lr=lr-
och-data-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-225.cisco.com!CTP=name=OTU20/6/0/18;lr=lr-
och-transport-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>15</ns16:tl-index>

      <ns16:fdn>MD=CISCO_EPNM!TL=10.58.235.223:[31]--10.58.235.225:[163]
                              </ns16:fdn>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-223.cisco.com!CTP=name=OTU20/0/0/18;lr=lr-
och-transport-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-225.cisco.com!CTP=name=OTU20/6/0/18;lr=lr-
och-transport-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
```

```
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                  </ns16:tl-list>
                  <ns16:carrying-toporef>och-link-layer</ns16:carrying-
toporef>
                  <ns16:carried-by-toporef>odu-link-layer</ns16:carried-
by-toporef>
            </ns16:virtual-connection-multi-layer-route>
            <ns16:virtual-connection-multi-layer-route>
                  <ns16:topo-index>3</ns16:topo-index>
                  <ns16:topology-layer>ns16:och-link-layer</ns16:topology-
layer>
                  <ns16:protection-role>ns4:working-path</ns16:protection-
role>
                  <ns16:protection-state>ns4:path-active</ns16:protection-
state>
                  <ns16:tl-list>
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                              <ns16:tl-index>0</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-71!CTP=name=VFAC-2-2-1;lr=lr-optical-
channel
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-71!CTP=name=VFAC-2-2-1;lr=lr-optical-
section
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>1</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-71!CTP=name=VFAC-2-2-1;lr=lr-och-
transport-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
```

```
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-71!CTP=name=VFAC-2-2-1;lr=lr-optical-
channel
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>2</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-72!CTP=name=VFAC-2-2-1;lr=lr-optical-
channel
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-72!CTP=name=VFAC-2-2-1;lr=lr-optical-
section
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>3</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-72!CTP=name=VFAC-2-2-1;lr=lr-och-
transport-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-72!CTP=name=VFAC-2-2-1;lr=lr-optical-
channel
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
```

```
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                  </ns16:tl-list>
                  <ns16:carrying-toporef>ops-link-layer</ns16:carrying-
toporef>
                  <ns16:carried-by-toporef>otu-link-layer</ns16:carried-
by-toporef>
            </ns16:virtual-connection-multi-layer-route>
            <ns16:virtual-connection-multi-layer-route>
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                  <ns16:topology-layer>ns16:ops-link-layer</ns16:topology-
layer>
                  <ns16:protection-role>ns4:working-path</ns16:protection-
role>
                  <ns16:protection-state>ns4:path-active</ns16:protection-
state>
                  <ns16:tl-list>
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                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-71!CTP=name=CHAN-2-1-1;lr=lr-optical-
section
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-71!PTP=name=CHAN-2-1-1;lr=lr-optical-
physical
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>1</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-71!CTP=name=VFAC-2-1-1;lr=lr-dsr-
10gigabit-ethernet
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
```

```
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-71!CTP=name=CHAN-2-1-1;lr=lr-optical-
section
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>2</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-72!CTP=name=CHAN-2-1-1;lr=lr-optical-
section
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-72!PTP=name=CHAN-2-1-1;lr=lr-optical-
physical
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>3</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-72!CTP=name=VFAC-2-1-1;lr=lr-dsr-
10gigabit-ethernet
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-72!CTP=name=CHAN-2-1-1;lr=lr-optical-
section
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
```

```
                        </ns16:topological-link>
                        <ns16:topological-link>
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                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-71!CTP=name=VFAC-2-2-1;lr=lr-optical-
section
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-71!PTP=name=VFAC-2-2-1;lr=lr-optical-
physical
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>5</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-71!CTP=name=VFAC-2-2-1;lr=lr-optical-
channel
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-71!CTP=name=VFAC-2-2-1;lr=lr-optical-
section
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>6</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
```

```
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-72!CTP=name=VFAC-2-2-1;lr=lr-optical-
section
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-72!PTP=name=VFAC-2-2-1;lr=lr-optical-
physical
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
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                        <ns16:topological-link>
                              <ns16:tl-index>7</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-72!CTP=name=VFAC-2-2-1;lr=lr-optical-
channel
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-72!CTP=name=VFAC-2-2-1;lr=lr-optical-
section
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
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                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-223.cisco.com!CTP=name=Optics0/0/0/8;lr=lr-
optical-section
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
```

```
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-223.cisco.com!PTP=name=Optics0/0/0/8;lr=lr-
optical-physical
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>9</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-223.cisco.com!CTP=name=OTU20/0/0/8;lr=lr-
och-transport-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-223.cisco.com!CTP=name=Optics0/0/0/8;lr=lr-
optical-section
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>10</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-225.cisco.com!CTP=name=Optics0/6/0/8;lr=lr-
optical-section
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-225.cisco.com!PTP=name=Optics0/6/0/8;lr=lr-
optical-physical
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
```

```
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>11</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-225.cisco.com!CTP=name=OTU20/6/0/8;lr=lr-
och-transport-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-225.cisco.com!CTP=name=Optics0/6/0/8;lr=lr-
optical-section
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>12</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-
223.cisco.com!CTP=name=Optics0/0/0/18;lr=lr-optical-section
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-
223.cisco.com!PTP=name=Optics0/0/0/18;lr=lr-optical-physical
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>13</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
```

```
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-223.cisco.com!CTP=name=OTU20/0/0/18;lr=lr-
och-transport-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-
223.cisco.com!CTP=name=Optics0/0/0/18;lr=lr-optical-section
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>14</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-
225.cisco.com!CTP=name=Optics0/6/0/18;lr=lr-optical-section
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-
225.cisco.com!PTP=name=Optics0/6/0/18;lr=lr-optical-physical
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>15</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-225.cisco.com!CTP=name=OTU20/6/0/18;lr=lr-
och-transport-unit-2
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
```

```
                                                <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-
225.cisco.com!CTP=name=Optics0/6/0/18;lr=lr-optical-section
                                                </ns16:endpoint-ref>
                                                <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                          </ns16:endpoint>
                                    </ns16:endpoint-list>
                              </ns16:topological-link>
                        </ns16:tl-list>
                        <ns16:carrying-toporef>physical-link-
layer</ns16:carrying-toporef>
                        <ns16:carried-by-toporef>och-link-layer</ns16:carried-
by-toporef>
                  </ns16:virtual-connection-multi-layer-route>
                  <ns16:virtual-connection-multi-layer-route>
                        <ns16:topo-index>5</ns16:topo-index>
                        <ns16:topology-layer>ns16:physical-link-
layer</ns16:topology-layer>
                        <ns16:protection-role>ns4:working-path</ns16:protection-
role>
                        <ns16:protection-state>ns4:path-active</ns16:protection-
state>
                        <ns16:tl-list>
                              <ns16:topological-link>
                                    <ns16:tl-index>0</ns16:tl-index>
                                    <ns16:is-cc>false</ns16:is-cc>
                                    <ns16:direction>ns4:bi-
direction</ns16:direction>
                                    <ns16:endpoint-list>
                                          <ns16:endpoint>
                                                <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-71!CTP=name=CHAN-2-1-1;lr=lr-optical-
section
                                                </ns16:endpoint-ref>
                                                <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                          </ns16:endpoint>
                                          <ns16:endpoint>
                                                <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-71!PTP=name=CHAN-2-1-1;lr=lr-optical-
physical
                                                </ns16:endpoint-ref>
                                                <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                          </ns16:endpoint>
                                    </ns16:endpoint-list>
                              </ns16:topological-link>
                              <ns16:topological-link>
                                    <ns16:tl-index>1</ns16:tl-index>
                                    <ns16:is-cc>false</ns16:is-cc>
                                    <ns16:direction>ns4:bi-
direction</ns16:direction>
                                    <ns16:endpoint-list>
                                          <ns16:endpoint>
                                                <ns16:endpoint-
```

```
ref>MD=CISCO_EPNM!ND=ncs2006-239-72!CTP=name=CHAN-2-1-1;lr=lr-optical-
section
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-72!PTP=name=CHAN-2-1-1;lr=lr-optical-
physical
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>2</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-71!CTP=name=VFAC-2-2-1;lr=lr-optical-
section
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-71!PTP=name=VFAC-2-2-1;lr=lr-optical-
physical
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>3</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=ncs2006-239-72!CTP=name=VFAC-2-2-1;lr=lr-optical-
section
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
```

```
ref>MD=CISCO_EPNM!ND=ncs2006-239-72!PTP=name=VFAC-2-2-1;lr=lr-optical-
physical
                                        </ns16:endpoint-ref>
                                        <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                  </ns16:endpoint>
                            </ns16:endpoint-list>
                      </ns16:topological-link>
                      <ns16:topological-link>
                            <ns16:tl-index>4</ns16:tl-index>
                            <ns16:is-cc>false</ns16:is-cc>
                            <ns16:direction>ns4:bi-
direction</ns16:direction>
                            <ns16:endpoint-list>
                                  <ns16:endpoint>
                                        <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-223.cisco.com!CTP=name=Optics0/0/0/8;lr=lr-
optical-section
                                        </ns16:endpoint-ref>
                                        <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                  </ns16:endpoint>
                                  <ns16:endpoint>
                                        <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-223.cisco.com!PTP=name=Optics0/0/0/8;lr=lr-
optical-physical
                                        </ns16:endpoint-ref>
                                        <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                  </ns16:endpoint>
                            </ns16:endpoint-list>
                      </ns16:topological-link>
                      <ns16:topological-link>
                            <ns16:tl-index>5</ns16:tl-index>
                            <ns16:is-cc>false</ns16:is-cc>
                            <ns16:direction>ns4:bi-
direction</ns16:direction>
                            <ns16:endpoint-list>
                                  <ns16:endpoint>
                                        <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-225.cisco.com!CTP=name=Optics0/6/0/8;lr=lr-
optical-section
                                        </ns16:endpoint-ref>
                                        <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                  </ns16:endpoint>
                                  <ns16:endpoint>
                                        <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-225.cisco.com!PTP=name=Optics0/6/0/8;lr=lr-
optical-physical
                                        </ns16:endpoint-ref>
                                        <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                  </ns16:endpoint>
                            </ns16:endpoint-list>
                      </ns16:topological-link>
```

```
                        <ns16:topological-link>
                              <ns16:tl-index>6</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-
223.cisco.com!CTP=name=Optics0/0/0/18;lr=lr-optical-section
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-
223.cisco.com!PTP=name=Optics0/0/0/18;lr=lr-optical-physical
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                        <ns16:topological-link>
                              <ns16:tl-index>7</ns16:tl-index>
                              <ns16:is-cc>false</ns16:is-cc>
                              <ns16:direction>ns4:bi-
direction</ns16:direction>
                              <ns16:endpoint-list>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-
225.cisco.com!CTP=name=Optics0/6/0/18;lr=lr-optical-section
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                                    <ns16:endpoint>
                                          <ns16:endpoint-
ref>MD=CISCO_EPNM!ND=cvg-scapa-
225.cisco.com!PTP=name=Optics0/6/0/18;lr=lr-optical-physical
                                          </ns16:endpoint-ref>
                                          <ns16:directionality>ns4:bi-
direction</ns16:directionality>
                                    </ns16:endpoint>
                              </ns16:endpoint-list>
                        </ns16:topological-link>
                  </ns16:tl-list>
                  <ns16:carried-by-toporef>ops-link-layer</ns16:carried-
by-toporef>
            </ns16:virtual-connection-multi-layer-route>
      </ns4:data>
</ns4:response-message>
```

7.50.5 Get MLT Request for ODUUNI Hairpin

```
https://172.25.122.179/restconf/data/v1/cisco-resource-network:virtual-
connection-multi-layer-route?vcFdn=MD=CISCO_EPNM!VC=ODUUNI_HP
```

7.50.6 Response

```
<ns4:response-message
xmlns:ns41="urn:cisco:params:xml:ns:yang:restconf:party"
xmlns:ns40="urn:cisco:params:xml:ns:yang:xmpim:events-alarms"
xmlns:ns39="urn:cisco:params:xml:ns:yang:restconf:alarms"
xmlns:ns38="urn:ietf:params:xml:ns:yang:ietf-restconf"
xmlns:ns37="urn:cisco:params:xml:ns:yang:service:activation:status:v1"
xmlns:ns36="urn:cisco:params:xml:ns:yang:restconf:resource:opt"
xmlns:ns35="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns34="urn:cisco:params:xml:ns:yang:restconf:location"
xmlns:ns33="urn:cisco:params:xml:ns:yang:restconf:foundation"
xmlns:ns32="urn:cisco:params:xml:ns:yang:resource:device"
xmlns:ns31="urn:cisco:params:xml:ns:yang:nrf-vc-path:v1"
xmlns:ns30="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns29="urn:cisco:params:xml:ns:yang:network-resource:oam:v1"
xmlns:ns28="urn:cisco:params:xml:ns:yang:service:action:v1"
xmlns:ns27="urn:cisco:params:xml:ns:yang:qos:v1"
xmlns:ns26="urn:cisco:params:xml:ns:yang:sb:customer:v1"
xmlns:ns25="urn:cisco:params:xml:ns:yang:sb:service-profile:v1"
xmlns:ns24="urn:cisco:params:xml:ns:yang:nrf:physical:ctrl:v1"
xmlns:ns23="urn:cisco:params:xml:ns:yang:nrf-physical:v1"
xmlns:ns22="urn:cisco:params:xml:ns:yang:nrf-physical-ops:v1"
xmlns:ns21="urn:cisco:params:xml:ns:yang:profile-protection:v1"
xmlns:ns20="urn:cisco:params:xml:ns:yang:nrf-ipsla:v1"
xmlns:ns19="urn:cisco:params:xml:ns:yang:sb:srrg:v1"
xmlns:ns18="urn:cisco:params:xml:ns:yang:nrp-perf:v1"
xmlns:ns17="urn:cisco:params:xml:ns:yang:nrf-topology:v1"
xmlns:ns16="urn:cisco:params:xml:ns:yang:nrf-mpls-te-extension:v1"
xmlns:ns15="urn:cisco:params:xml:ns:yang:service:oam:v1"
xmlns:ns14="urn:cisco:params:xml:ns:yang:service:activation:v1"
xmlns:ns13="urn:cisco:params:xml:ns:yang:ra:v1"
xmlns:ns12="urn:cisco:params:xml:ns:yang:si-service:v1"
xmlns:ns11="urn:cisco:params:xml:ns:yang:nrf-virtualforward:v1"
xmlns:ns10="urn:cisco:params:xml:ns:yang:sb:networkinterface:v1"
xmlns:ns9="urn:cisco:params:xml:ns:yang:nrf-virtualconnection:v1"
xmlns:ns8="urn:cisco:params:xml:ns:yang:alarms:v1"
xmlns:ns7="urn:cisco:params:xml:ns:yang:nrf-tp:v1"
xmlns:ns6="urn:cisco:params:xml:ns:yang:nrf-tdm-cem-extension:v1"
xmlns:ns5="urn:cisco:params:xml:ns:yang:nrf-ce-extension:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:nrf-common:v1"
xmlns:ns3="urn:ietf:params:xml:ns:yang:ietf-restconf-monitoring"
xmlns:ns2="urn:ietf:params:xml:ns:yang:ietf-yang-library">
    <ns4:header>
        <ns4:firstIndex>0</ns4:firstIndex>
        <ns4:lastIndex>0</ns4:lastIndex>
    </ns4:header>
    <ns4:data>
        <ns17:virtual-connection-multi-layer-route-list>
            <ns17:carrying_vc-
fdn>MD=CISCO_EPNM!VC=MD=CISCO_EPNM!VC=ODUUNI_HP</ns17:carrying_vc-fdn>
            <ns17:virtual-connection-multi-layer-route>
```

```
                <ns17:topo-index>0</ns17:topo-index>
                <ns17:topology-layer>ns17:odu-link-layer</ns17:topology-
layer>
                <ns17:protection-role>ns4:working-path</ns17:protection-
role>
                <ns17:protection-state>ns4:path-active</ns17:protection-
state>
                <ns17:tl-list>
                    <ns17:topological-link>
                        <ns17:tl-index>0</ns17:tl-index>
                        <ns17:fdn>MD=CISCO_EPNM!TL=1@NCS4K-146-
18</ns17:fdn>
                        <ns17:is-cc>true</ns17:is-cc>
                        <ns17:direction>ns4:bi-direction</ns17:direction>
                        <ns17:endpoint-list>
                            <ns17:endpoint>
                                <ns17:endpoint-ref>MD=CISCO_EPNM!ND=NCS4K-
146-18!CTP=name=ODU20/6/0/4;lr=lr-och-data-unit-2</ns17:endpoint-ref>
                                <ns17:directionality>ns4:bi-
direction</ns17:directionality>
                            </ns17:endpoint>
                            <ns17:endpoint>
                                <ns17:endpoint-ref>MD=CISCO_EPNM!ND=NCS4K-
146-18!CTP=name=ODU20/6/0/6;lr=lr-och-data-unit-2</ns17:endpoint-ref>
                                <ns17:directionality>ns4:bi-
direction</ns17:directionality>
                                <ns17:contained-endpoint-
ref>MD=CISCO_EPNM!ND=NCS4K-146-18!CTP=name=OTU20/6/0/6;lr=lr-och-
transport-unit-2</ns17:contained-endpoint-ref>
                            </ns17:endpoint>
                        </ns17:endpoint-list>
                    </ns17:topological-link>
                </ns17:tl-list>
                <ns17:carried-by-topo-layer>ns17:otu-link-
layer</ns17:carried-by-topo-layer>
            </ns17:virtual-connection-multi-layer-route>
            <ns17:virtual-connection-multi-layer-route>
                <ns17:topo-index>1</ns17:topo-index>
                <ns17:topology-layer>ns17:otu-link-layer</ns17:topology-
layer>
                <ns17:protection-role>ns4:working-path</ns17:protection-
role>
                <ns17:protection-state>ns4:path-active</ns17:protection-
state>
                <ns17:carrying-topo-layer>ns17:odu-link-
layer</ns17:carrying-topo-layer>
                <ns17:carried-by-topo-layer>ns17:ops-link-
layer</ns17:carried-by-topo-layer>
            </ns17:virtual-connection-multi-layer-route>
            <ns17:virtual-connection-multi-layer-route>
                <ns17:topo-index>2</ns17:topo-index>
                <ns17:topology-layer>ns17:ops-link-layer</ns17:topology-
layer>
                <ns17:protection-role>ns4:working-path</ns17:protection-
role>
                <ns17:protection-state>ns4:path-active</ns17:protection-
```

```
state>
                <ns17:carrying-topo-layer>ns17:otu-link-
layer</ns17:carrying-topo-layer>
            </ns17:virtual-connection-multi-layer-route>
        </ns17:virtual-connection-multi-layer-route-list>
    </ns4:data>
</ns4:response-message>
```

8 Notifications

Currently, notifications are supported using two different mechanisms:

- Connection-oriented notifications, using websockets
- Connectionless notifications

8.1 Supported notification types

- Inventory notifications - supported via both connection-oriented and connectionless mechanisms
- Service Activation notifications - supported via both connection-oriented and connectionless mechanisms
- Alarm notifications - supported via both connection-oriented and connectionless mechanisms
- High-Availability (HA) notifications - supported only via connectionless notifications since a persistent connection cannot be expected during the course of a failover or failback.

All the above notifications share the same schema.

8.2 Notifications Schema

```
module cisco-yang-push {
    namespace "urn:cisco:params:xml:ns:yang:yang-push:v1";
    prefix push;
    import ietf-yang-types { prefix yang; }
    organization
       "Cisco Systems, Inc.";
     contact
       "Cisco Systems, Inc.
        Customer Service
        Postal: 170 W Tasman Drive
                San Jose, CA 95134
        Tel: +1 1800 553-NETS
        E-mail: cs-yang@cisco.com";
   description
    "This module contains schema for YANG push notification.";
  revision 2016-03-21 {
    description
      "Initial Draft.";
    reference
    "YANG Datastore Push, draft-ietf-netconf-yang-push-02
     Yang Push through Restconf.
    ";
  }
  identity subscription-result {
    description
      "Base identity for responses to requests surrounding
       management (e.g. creation, modification) of
       subscriptions.";
  }
  identity ok {
    base subscription-result;
    description
      "OK - subscription was successful and was performed as requested.";
  }
  identity error {
    base subscription-result;
    description
```

```
      "subscription was not successful.
       Base identity for error return codes.";
  }
  identity error-no-such-subscription {
    base error;
    description
      "A subscription with the requested subscription ID
       does not exist.";
  }
  identity error-no-such-option {
    base error;
    description
      "A requested parameter setting is not supported.";
  }
  identity error-insufficient-resources {
    base error;
    description
      "The server has insufficient resources to support the
       subscription as requested.";
  }
  identity error-data-not-authorized {
    base error;
    description
     "No read authorization for a requested data.";
  }
  identity error-other {
    base error;
    description
      "An unspecified error has occurred (catch all).";
  }
  identity subscription-errors {
    description
      "Base identity for subscription error status.
       This identity is not to be confused with error return
       codes for RPCs";
      }
  identity internal-error {
    base subscription-errors;
    description
      "Subscription failures caused by server internal error.";
  }
  identity no-resources {
    base subscription-errors;
    description
      "Lack of resources, e.g. CPU, memory, bandwidth";
  }
  identity subscription-deleted {
    base subscription-errors;
    description
      "The subscription was terminated because the subscription
       was deleted.";
  }
  identity other {
    base subscription-errors;
    description
      "Fallback reason - any other reason";
```

```
  }

typedef subscription-id {
      type uint32;
      description
            "A type for subscription identifiers.";
      }

  /* Identity for update-change types */
  identity change-type {
      description "base Identity for change-update type ";
  }
  identity create {
      base change-type;
      description
          "A new managed object was created";
  }
  identity modify {
      base change-type;
      description
          "The value of a managed object has been changed";
  }
  identity delete {
      base change-type;
      description
          "A managed object was deleted";
  }
  identity configure {
      base change-type;
      description
                  "configuration or provisioning response";
  }
  identity ha {
      base change-type;
      description
                  "HA notification";
  }

   /* Define a holder for Create,  Attribute Value Change(AVC), delete
objects or configuration response*/
   grouping update-data {
        description "holderfor Create,  Attribute Value Change(AVC) or delete
objects";

        container update-data {
            description
            "Holder for any object Create, AVC object that are managed by the
controller.

            Also include configuration or provisioning responses  ";
        }
        container config-response {
            leaf request-id {
                  type string;
                  description "The request ID corresponding to the current
response";
```

```
            }
            leaf config-response {
                  type string;
                  description "configuration response";
            }
        }
        container update-fdn {
            leaf fdn {
                  type string;
                  description "Object represented by the Fully Distinguished
Name for delete or summary use cases";
            }
        }
        container update-message {
            leaf message {
                  type string;
                  description "Sending out abstract messages to the client";
            }
        }

        container ha-notification {
            leaf operation-type {
                  type string;
                  description "The type of operation that triggered this
event - Failover or Failback";
            }
            leaf host {
                  type string;
                  description "The host address of the currently active
machine";
            }
            leaf message {
                  type string;
                  description "Object represented by the Fully Distinguished
Name for delete or summary use cases";
            }
        }
   }

  container push-change-update {
    description
      "This notification contains an on-change push update.
       This notification shall only be sent to the receivers
       of a subscription; it does not constitute a general-purpose
       notification.";
    leaf subscription-id {
      type subscription-id;
      description
        "This references the subscription because of which the
         notification is sent.";
    }
    leaf request-id {
      type string;
      description
        "This references the service or configuration request identifier  .";
    }
```

```
    leaf topic {
      type string;
      mandatory true;
      description
        "This references the subscription topic for which the
         notification is sent.";
    }
    leaf time-of-update {
      type yang:date-and-time;
      description
       "This leaf contains the time of the update, i.e. the
         time at which the change was observed.";
    }
    leaf operation {
         type identityref {
            base change-type;
         }
         description
         "Create, Modify, Delete or Configuration";
    }
    uses update-data;   // includes object create, modify, delete or
configuration
  }

  container notification-subscription {
    description
      "This is the record of a subscriber in the database";
    leaf subscription-id {
      type subscription-id;
      mandatory true;
      description
        "This references the subscription because of which the
         notification is sent.";
    }
    leaf subscribed-user {
      type string;
      mandatory true;
      description
        "This references the user who has subscribed to the current topic";
    }
     leaf endpoint-url {
      type string;
      mandatory true;
      description
        "This references the subscription topic for which the
         notification is sent.";
    }
    leaf topic {
      type string;
      mandatory true;
      description
        "This references the subscription topic for which the
         notification is sent.";
    }
    leaf creation-time {
      type yang:date-and-time;
```

```
      description
       "This leaf contains the time of the creation, i.e. the
         time at which the change was observed.";
    }
    leaf time-of-update {
      type yang:date-and-time;
      description
       "This leaf contains the time of the update, i.e. the
         time at which the change was observed.";
    }
  }
}
```

8.3 Connection-oriented Notifications

The following is the workflow in the case of "connection-oriented" inventory notifications:

- The client subscribes to a predefined URL using a websocket client using basic authentication through a secure HTTPS channel.
  - **URL**: https://<epnm-server-fully-qualified-domain-name>/restconf/streams/v1/**{notification-type}{.xml | .json}**
    - where {notification-type} can be either "inventory" or "service-activation" or “alarm”or “template-execution”
    - and appending the url with ".xml" will result in notifications serialized to xml format and ".json" will result in notifications serialized to json
    - Filters are optional and may be provided as a query parameter:
      - https://<epnm-server-fully-qualified-domain-name>/restconf/streams/v1/{notification-type}{.xml | .json}**?{filterType1}={filterValue1}&{filterType2}={filterValue2}**
        - filter values should be URI encoded
        - productType=Cisco ASR 4000 should be encoded as: productType=Cisco%20ASR%204000
  - **Authentication**: Basic auth
- If the client has provided all required information and if the provided user passes the authorization phase, a secure connection channel is established between the Cisco EPN Manager server and the client.
- Once the connection is established, the same connection will be kept alive throughout the lifecycle of the application.
  - the lifecycle here is governed by the following cases:
    - until the client disconnects from the server
    - until the server goes down either for maintenance or during a failover.
- As long as the connection is kept alive, a notification of type push-change-update is sent from the Cisco EPN Manager server to all clients that are listening for notifications.
- The yang schema for the cisco-yang-push has been included above.

A sample client for subscribing and listening to connection-oriented notifications is provided in the next section. Connectionless notifications can be received by any REST service accepting an XML or JSON payload via a POST request.

8.4 Connectionless Notifications

The following is the workflow in the case of "connectionless" notifications:

- The user is expected to a REST webservice that is capable of accepting XML and/ or JSON payloads as a POST request. This REST service is the endpoint to which the Cisco EPN Manager restconf notifications framework publishes notifications to.
- User subscribes to notifications by providing the REST service endpoint along with the topic to subscribe to. In this case, the topic will be "inventory"
    - **URL**: https://{server}/restconf/data/v1/cisco-notifications:subscription
    - **Method**: POST
    - **Authentication**: Basic Authentication
    - **Example Payload**:

```
XML:

<ns1:notification-subscription xmlns:ns1="urn:cisco:params:xml:ns:yang:yang-push:v1">
    <ns1:endpoint-url>http://{server}:{port}/{context}</ns1:endpoint-url>
    <ns1:topic>{topic}</ns1:topic>
</ns1:notification-subscription>

JSON:

{
    "push.endpoint-url":"http://{server}:{port}/{context}",
    "push.topic":"inventory",
    "push.format": "json"
}
```

where,

- the endpoint-url is a REST service capable of accepting XML or JSON payloads as a POST request deployed in {server} at {port} using {context}. The notifications are then sent as POST payload to this endpoint-url. The REST service can then handle the notifications from the incoming POST message in any way that is desired.
- {topic} can be either "inventory", "service-activation", “alarm”, “template-execution” or "ha"

- There can be any number of subscriptions to the same type of notification.
- To get the list of notifications that the current user has access to, the following request can be used:
    - **URL**: https:// {server}/restconf/data/v1/cisco-notifications:subscription
    - **Method**: GET
    - **Authentication**: Basic Authentication
    - **NOTE**: "root" user can see subscriptions made by any user while any non-root user can see only notification details that they subscribed to.

```
<ns2:response-message xmlns:ns1="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns2="urn:cisco:params:xml:ns:yang:nrf-common:v1" >
    <ns2:header>
        <ns2:firstIndex>0</ns2:firstIndex>
        <ns2:lastIndex>1</ns2:lastIndex>
    </ns2:header>
    <ns2:data>
        <ns1:notification-subscription>
            <ns1:subscription-id>8728688067781288015</ns1:subscription-id>
            <ns1:subscribed-user>root</ns1:subscribed-user>
            <ns1:endpoint-url>http://{server}:{port}/{context}</ns1:endpoint-
url>
            <ns1:topic>inventory</ns1:topic>
            <ns1:creation-time>Tue May 31 13:46:57 PDT 2016</ns1:creation-
time>
            <ns1:time-of-update>Tue May 31 13:46:57 PDT 2016</ns1:time-of-
```

```
update>
        </ns1:notification-subscription>
        <ns1:notification-subscription>
            <ns1:subscription-id>-5126917137944732778</ns1:subscription-id>
            <ns1:subscribed-user>root</ns1:subscribed-user>
            <ns1:endpoint-url>http://{server}:{port}/{context}</ns1:endpoint-
url>
            <ns1:topic>service-activation</ns1:topic>
            <ns1:creation-time>Tue May 31 17:21:48 PDT 2016</ns1:creation-
time>
            <ns1:time-of-update>Tue May 31 17:21:48 PDT 2016</ns1:time-of-
update>
        </ns1:notification-subscription>
    </ns2:data>
</ns2:response-message>
```

- To get details of a single subscription:
  - **URL**: https://{server}/restconf/data/v1/cisco-notifications:subscription/{subscription-id}
  - **Method**: GET
  - **Authentication**: Basic Authentication

8.5 Notification Filters

8.5.1 Filter Support

Filters are supported for the following notification types:

- Inventory
- Alarms

8.5.2 Virtual Domain Filters

Notifications are filtered based on virtual domain users. This will happen automatically when you specify the user/password information when subscribing.

- **NOTE**: "root" user can see subscriptions made by any user while any non-root user can see only notification details that they subscribed to.

8.5.3 elementType Filters

Notifications of the provided elementType will only be sent when this filter is provided. The following are the current supported elementTypes:

- RC_Node
- Equipment
- PhysicalConnector

Subscribing with multiple elementType filters is supported. A subscription with the filters below will receive both RC_Node notifications AND Equipment notifications.

- elementType=RC_Node&elementType=Equipment

Sample Connection-less subscription

```
{
  "push.endpoint-url":"http://10.155.124.143:7081/notifications",
  "push.topic":"inventory",
  "push.format": "json",
  "push.filters": [
       {
                "push.key":"elementType",
```

```
                "push.value": "RC_Node"
        },
        {
                "push.key":"elementType",
                "push.value": "PhysicalConnector"
        }
  ]
}
```

Sample Connection-oriented subscription

https://{server}/restconf/streams/v1/inventory.json?elementType=RC_Node

8.5.4 Device Level Filters

Device level filters are applicable for the following notification types

- inventory
- alarms

The following filters may be used when looking for notifications that match a certain device property

- productType
- productFamily
- productSeries

A list of all supported product type/series/family may be found by accessing the “Supported Devices” page in EPNM. This page may be accessed with the URL:

- https://{server}/webacs/welcomeAction.do?commandType=abridgedShell#href=applications/swim/supported_devices/supportedDevices.html

Filters of the same key will be treated as an OR operation while filters with different keys will be treated as an AND operation when.

- productType=Cisco ASR 9000&productType=Cisco ASR 4000&productFamily=Routers
    - A subscription with the above filters will only send notifications that have a productFamily value of Routers AND a productType of either Cisco ASR 9000 OR Cisco ASR 4000

Sample Connection-less subscription

```
{
  "push.endpoint-url":"http://10.155.124.143:7081/notifications",
  "push.topic":"inventory",
  "push.format": "json",
  "push.filters": [
        {
                "push.key":"productType",
                "push.value": "Cisco ASR 4000"
        },
        {
                "push.key":"productFamily",
                "push.value": "Routers"
        },
        {
                “push.key”:”productSeries”,
                “push.value”:”Cisco ASR 900 Series Aggregation Services Routers”
        }
  ]
}
```

Sample Connection-oriented subscription

https://{server}/restconf/streams/v1/inventory.json?productType=Cisco ASR 4000&productFamily=Routers

8.5.5 Inverse Filters

Inverse filters are a way of applying the NOT operation on a specified filter. This lets you say you want notifications for everything that is NOT a specific topic. Inverse filters apply to all available filters.

Sample Inverse Filters – This will give you all notifications that are NOT Cisco ASR 4000 notifications.

```
{
   "push.endpoint-url":"http://10.155.124.143:7081/notifications",
   "push.topic":"inventory",
   "push.format": "json",
   "push.filters": [
        {
                "push.key":"productType",
                "push.value": "!Cisco ASR 4000"
        }
}
```

8.6 Inventory Notifications

Inventory notifications in Cisco EPN Manager restconf is supported for three types of operations:

- CREATE
  - when a device is added to Cisco EPN Manager
  - when a service was provisioned on one or more devices that created an object in the system.
  - In this case, the entire object that was created is sent as part of the notification.
- MODIFY/ UPDATE/ AVC (Attribute Value Change)
  - when a device or object that exists in the system is updated.
  - In this case, the object identified by its FDN (fully distinguished name) along with the properties that were changed are sent as part of the notification.
- DELETE
  - when a device or object is deleted from the system.
  - Only the FDN (fully distinguished name) of the object that was deleted is sent as part of the notification.

8.6.1 Inventory Notification - Examples

8.6.1.1 *Create notification*

```
<ns2:push-change-update xmlns:ns2="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns3="urn:cisco:params:xml:ns:yang:restconf:foundation">
    <ns2:subscription-id>4005270120319728171</ns2:subscription-id>
    <ns2:topic>/streams/v1/inventory</ns2:topic>
    <ns2:time-of-update>Wed May 18 01:13:25 PDT 2016</ns2:time-of-update>
    <ns2:operation>ns2:create</ns2:operation>
    <ns2:update-data>
        <ns4:equipment>
            <description>1000BASE-SX SFP</description>
            <name>GigabitEthernet 0/11</name>
            <containing-equipment>MD=CISCO_EPNM!ND= ASR-
212!EQ=GigabitEthernet 0/11 SFP
Container;partnumber=cevContainerSFP</containing-equipment>
            <ent-physical-index>34</ent-physical-index>
```

```
            <equipment-type>MODULE</equipment-type>
            <fdn>MD=CISCO_EPNM!ND=TEST-212!EQ=name=GigabitEthernet
0/11;partnumber=SFP-GE-S</fdn>
            <hardware-version>A</hardware-version>
            <instanceId>598604</instanceId>
            <is-field-replaceable-unit>TRUE</is-field-replaceable-unit>
            <is-physically-present>true</is-physically-present>
            <is-reporting-alarms-allowed>UNKNOWN</is-reporting-alarms-
allowed>
            <manufacturer>CISCO-FINISAR</manufacturer>
            <part-number>SFP-GE-S</part-number>
            <serial-number>FNS11520JEL</serial-number>
            <service-state>UNKNOWN</service-state>
            <vendor-equipment-type>cevSFP1000BaseSx</vendor-equipment-type>
        </ns4:equipment>
    </ns2:update-data>
</ns2:push-change-update>
```

8.6.1.2 *Update Notification*

```
<ns2:push-change-update xmlns:ns2="urn:cisco:params:xml:ns:yang:yang-push:v1"
xmlns:ns4="urn:cisco:params:xml:ns:yang:restconf:resource:physical"
xmlns:ns3="urn:cisco:params:xml:ns:yang:restconf:foundation">
    <ns2:subscription-id>3991909705905061087</ns2:subscription-id>
    <ns2:request-id>0</ns2:request-id>
    <ns2:topic>/streams/v1/inventory</ns2:topic>
    <ns2:time-of-update>Wed May 18 01:17:07 PDT 2016</ns2:time-of-update>
    <ns2:operation>ns2:modify</ns2:operation>
    <ns2:update-data>
        <ns4:equipment>
            <description>Updated description</description>
            <fdn>MD=CISCO_EPNM!ND=TEST-212!EQ=name=GigabitEthernet
0/11;partnumber=SFP-GE-S</fdn>
        </ns4:equipment>
    </ns2:update-data>
</ns2:push-change-update>
```

8.6.1.3 *Delete Notification*

```
<ns2:push-change-update xmlns:ns2="urn:cisco:params:xml:ns:yang:yang-
push:v1">
    <ns2:subscription-id>5597822757334727796</ns2:subscription-id>
    <ns2:topic>/streams/v1/inventory</ns2:topic>
    <ns2:time-of-update>Wed May 18 01:19:22 PDT 2016</ns2:time-of-update>
    <ns2:operation>ns2:delete</ns2:operation>
    <ns2:update-data>
        <deleted-element>
            <fdn>MD=CISCO_EPNM!ND=TEST-212!EQ=name=GigabitEthernet
0/11;partnumber=SFP-GE-S</fdn>
        </deleted-element>
    </ns2:update-data>
</ns2:push-change-update>
```

8.7 Service-Activation Notifications

When a call to provision a service is made, it is not possible to guarantee a timely response - this may be dependent on the load on the system currently among other factors. Due to this uncertainty, the Cisco EPN Manager server, upon receiving a request to provision a service, sends out a response to the user

immediately after submitting the task for provisioning. The actual completion/ failure status of the provisioning task is sent out as a notification to the subscribed clients.

The response obtained by the client is expected to contain the following information:

- The Service ID - a unique ID that was created for that particular request. Audit trails for this task can be done using this ID.
- The name of the service that was submitted
- The type of deploy-action (Preview or Deploy)
- The type of the operation (Provision, Modify, Terminate)
- The status of the operation (SUBMITTED if successfully submitted, FAILED otherwise)
- A generic notification URL (for connection-oriented notifications only) - to receive notifications on the status of any provisioning task. This URL is predefined and can be subscribed to even before submitting the provisioning task
    - **URL**: https://<epnm-server-fully-qualified-domain-name>/restconf/streams/v1/service-activation[.xml | .json]
        - where appending the url with .xml will result in notifications serialized to xml and .json will result in notifications serialized to json
    - **Authentication**: Basic auth

For connectionless notifications, the workflow of subscribing and receiving notifications is the same as that of inventory notifications, except the "topic" has to be "service-activation". The same endpoint that receives inventory notifications may be used to receive service-activation notifications.

A sample client for subscribing and listening to connection-oriented notifications is provided in the next section. Connectionless notifications can be received by any REST service accepting an XML or JSON payload via a POST request.

8.8 Alarm Notifications

Alarm notifications are sent out for the following events:

1. When an alarm is created.
2. When an alarm is assigned to a user.
3. When an alarm is acknowledged.
4. When a user adds notes to the alarm

For connectionless notifications, the workflow of subscribing and receiving notifications is the same as that of inventory notifications, except the "topic" has to be "alarm". The same endpoint that receives inventory notifications may be used to receive service-activation notifications.

A sample client for subscribing and listening to connection-oriented notifications is provided in the next section. Connectionless notifications can be received by any REST service accepting an XML or JSON payload via a POST request.

Alarms may be filtered by device properties as specified in section 8.5.3. You may specify filters in an alarm subscription the same way you would with an inventory subscription.

Sample Alarm Connection-less subscription with filters

```
{
  "push.endpoint-url":"http://10.155.124.143:7081/notifications",
  "push.topic":"alarm",
  "push.format": "json",
  "push.filters": [
        {
                "push.key":"productType",
                "push.value": "Cisco ASR 4000"
        },
        {
                "push.key":"productFamily",
```

```
                "push.value": "Routers"
        },
        {
                "push.key":"productSeries",
                "push.value":" Cisco ASR 900 Series Aggregation Services Routers"
        }
  ]
}
```

8.8.1 Alarm Specific Filters

Alarms also have 2 filters exclusively available to them:

- category
- severity

This filters are applied the same as device level filters.

Sample Alarm Connection-less subscription with filters

```
{
  "push.endpoint-url":"http://10.155.124.143:7081/notifications",
  "push.topic":"alarm",
  "push.format": "json",
  "push.filters": [
        {
                "push.key":"category",
                "push.value": "Optical Networking"
        },
        {
                "push.key":"severity",
                "push.value": "major"
        }
  ]
}
```

8.9 Template Execution Notifications

Notifications are also sent out to subscribed clients when a job that was executed through the Restconf NBI completes execution. Due to the asynchronous nature of these jobs, an immediate response is not guaranteed and users are encouraged to subscribe to template-execution notifications.

For connectionless notifications, the workflow of subscribing and receiving notifications is the same as that of inventory notifications, except the "topic" has to be "template-execution". The same endpoint that receives inventory notifications may be used to receive service-activation notifications.

8.10 High-Availability Notifications

HA notifications are sent for:

- Failover: when the secondary becomes active
- Failback: when the primary becomes active again.

8.10.1 Sample HA Notifications

8.10.1.1 *Failover*

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ns1:push-change-update xmlns:ns1="urn:cisco:params:xml:ns:yang:yang-
push:v1">
```

```
    <ns1:topic>ha</ns1:topic>
    <ns1:time-of-update>Thu Jun 23 05:31:50 UTC 2016</ns1:time-of-update>
    <ns1:operation>ns14:ha</ns1:operation>
    <ns1:ha-notification>
        <ns1:operation-type>failover</ns1:operation-type>
        <ns1:host>epnm-secondary</ns1:host>
        <ns1:message>The Cisco EPN-M server at epnm-secondary is now
ONLINE</ns1:message>
    </ns1:ha-notification>
</ns1:push-change-update>
```

8.10.1.2 *Failback*

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ns1:push-change-update xmlns:ns1="urn:cisco:params:xml:ns:yang:yang-
push:v1">
    <ns1:topic>ha</ns1:topic>
    <ns1:time-of-update>Thu Jun 24 05:31:50 UTC 2016</ns1:time-of-update>
    <ns1:operation>ns14:ha</ns1:operation>
    <ns1:ha-notification>
        <ns1:operation-type>failback</ns1:operation-type>
        <ns1:host>epnm-primary</ns1:host>
        <ns1:message>The Cisco EPN-M server at epnm-primary is now
ONLINE</ns1:message>
    </ns1:ha-notification>
</ns1:push-change-update>
```

8.11 Notifications Client

The notifications client that is supported by Cisco EPN Manager restconf should ideally be supporting web-sockets. The recommendation is to use a client that works with "Atmosphere framework".

8.11.1 Sample client code

```
import java.util.Scanner;
import org.atmosphere.wasync.ClientFactory;
import org.atmosphere.wasync.Event;
import org.atmosphere.wasync.Function;
import org.atmosphere.wasync.Request;
import org.atmosphere.wasync.RequestBuilder;
import org.atmosphere.wasync.Socket;
import org.atmosphere.wasync.impl.AtmosphereClient;


public class NotificationsClient {

      private static final org.slf4j.Logger LOG =
org.slf4j.LoggerFactory.getLogger(NotificationsClient.class);

      final static String NOTIFICATIONS_CONTEXT = "/restconf/streams/v1/";

      static String url = "https://";
      static String ip = "";

      public static void main(String[] args) throws Exception {

            System.out.println();
```

```
            System.out.println("\t\t#######################################");
            System.out.println("\t\t#            CISCO EPN-M              #");
            System.out.println("\t\t#    RESTCONF NOTIFICATIONS CLIENT    #");
            System.out.println("\t\t#######################################");
            System.out.println();

            try {

                  LOG.debug("Obtained {} arguments", args.length);

                  if (args.length == 0) {
                        LOG.debug("No arguments were passed to the
application. Prompting user for information");
                        url = promptUserForUrl();
                        args = new String[] { url };
                  } else if (args.length == 1) {
                        url = args[0];
                        LOG.debug("One argument was passed to the
application. Expecting it to be the entire subscription url");
                        LOG.debug("URL: {}" + url);
                  }

                  if (url.startsWith("https")) {
                        SslCertificateInstaller certificateInstaller = new
SslCertificateInstaller();
                        certificateInstaller.installCertificate(ip);
                  }

                  AtmosphereClient client =
ClientFactory.getDefault().newClient(AtmosphereClient.class);
                  if (client == null) {
                        throw new Exception("Atmosphere client could not be
initialized");
                  }

                  @SuppressWarnings("rawtypes")
                  RequestBuilder request =
client.newRequestBuilder().method(Request.METHOD.GET).uri(args[0] +
".xml").header("Authorization", "Basic
cm9vdDpQdWJsaWMxMjM=").trackMessageLength(true)

      .transport(Request.TRANSPORT.WEBSOCKET).transport(Request.TRANSPORT.SSE
).transport(Request.TRANSPORT.LONG_POLLING);

                  if (request == null) {
                        throw new Exception ("The required request object
could not be built");
                  } else {
                        LOG.debug ("request object built successfully with
the following options:");
                        LOG.debug("URL: "+ request.uri());
                        for (Object transport: request.transports()) {
                              LOG.debug(transport.toString());
                        }

                  }
```

```
                  Socket socket = client.create();

                  System.out.print("\nConnecting to " + url);
                  System.out.print(" ... ");

                  socket.on("message", new Function<String>() {
                        @Override
                        public void on(String notificationMessage) {
                              LOG.debug("Received notification: " +
notificationMessage);
                              System.out.println("Notification: \n\n" +
notificationMessage);
                        }
                  }).on(new Function<Throwable>() {

                        @Override
                        public void on(Throwable t) {
                              t.printStackTrace();
                              System.exit(1);
                        }

                  }).on(Event.CLOSE.name(), new Function<String>() {
                        @Override
                        public void on(String t) {
                              System.out.println("Connection closed");
                              System.exit(1);
                        }
                  }).on(Event.OPEN.name(), new Function<String>() {
                        @Override
                        public void on(String t) {
                              System.out.println("done");
                        }
                  }).open(request.build());

                  System.out.println("\nSubscription URL: " + url);
                  System.out.println("\nListening for notifications\n");
            } catch (Exception e) {
                  LOG.error(e.getMessage(), e);
                  e.printStackTrace();
            }
      }

      private static String promptUserForUrl() {
            Scanner reader = new Scanner(System.in);
            try {
                  System.out.println("The client can be run either
iteractively or supplying the subscription url as an argument");
                  System.out.println("For ex.");
                  System.out.println("1. java -jar epnm-restconf-nbi-
notifications-client-*.jar
https://<server_name>/restconf/streams/v1/inventory");
                  System.out.println("2. java -jar epnm-restconf-nbi-
notifications-client-*.jar https://<server_name>/restconf/streams/v1/service-
activation");
```

```
                  System.out.print("\nEnter the EPNM Server's FQDN (IP
address will not work): ");
                  ip = reader.next();
                  System.out.println();
                  System.out.println("The following types of notifications
are supported: ");
                  System.out.println("\t1. INVENTORY");
                  System.out.println("\t2. ALARM");
                  System.out.println("\t3. SERVICE ACTIVATION");
                  System.out.println("\t4. TEMPLATE EXECUTION");
                  System.out.println("\t5. All");
                  System.out.println();
                  System.out.print("Choose the type of notifications to
listen for: ");
                  int option = reader.nextInt();

                  if (option == 1) {
                        url =
url.concat(ip).concat(NOTIFICATIONS_CONTEXT).concat("inventory");
                  } else if (option == 2) {
                        url =
url.concat(ip).concat(NOTIFICATIONS_CONTEXT).concat("service-activation");
                  }
                  // Other options as required...
                  else {
                        System.err.println("Invalid option");
                        System.exit(-1);
                  }

                  System.out.println("(Optional Filters, press enter to
skip)");
                  System.out.println("Enter filters by following the
format:");

      System.out.println("\tFILTER_TYPE1=FILTER_VALUE1&FILTER_TYPE2=FILTER_VA
LUE2");
                  System.out.println("\tExample: productType=Cisco ASR
4000&productFamily=Routers");

                        if (!StringUtils.isEmpty(inputFilters)) {
                          if (!inputFilters.contains("=")) {
                              System.err.println("Invalid filter.");
                           System.err.println("Must be of format:
FILTERKEY=FILTERVALUE");
                              System.exit(-1);
                        } else {
                                 System.out.println();
                           System.out.println("Filters entered:");
                              System.out.println(inputFilters);
                              filters = "?" + inputFilters;
                     }
                          }
                  return url;
            } finally {
                  if (reader != null) {
                        reader.close();
```

```
                        }
                    }
                }
}
```

9 References

RESTCONF Specification
YANG Specification