



# MPLS Transport Profile Provisioning

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This chapter describes the provisioning support for MPLS Transport Profile (MPLS-TP) provided in Cisco Prime Provisioning.

The MPLS-TP API solution provides provisioning, updating, and deletion of MPLS-TP objects.

More specifically, the chapter describes MPLS-TP service concepts and the steps required to provision MPLS-TP services using the Prime Provisioning API. A provisioning example lists all steps from creating the inventory to deploying the service.

For information on MPLS-TP provisioning using the Prime Provisioning GUI, see the [Cisco Prime Provisioning 6.6 User Guide](#).

This chapter contains the following sections:

- [Prerequisites and Limitations, page 12-1](#)
- [MPLS-TP Service Definitions, page 12-1](#)
- [MPLS-TP Discovery, page 12-5](#)
- [MPLS-TP Service Requests, page 12-7](#)
- [Provisioning Example, page 12-20.](#)

## Prerequisites and Limitations

Prior to provisioning MPLS-TP on your network, it is assumed that you have completed the necessary preconfiguration steps. They are listed in the MPLS-TP chapter of the [Cisco Prime Provisioning 6.6 User Guide](#).

The current release of Prime Provisioning involves certain prerequisites for MPLS-TP, which are described in the [MPLS-TP Discovery, page 12-5](#).

Other prerequisites, including general system recommendations and installation requirements, are described in the [Cisco Prime Provisioning 6.6 Installation Guide](#).

## MPLS-TP Service Definitions

To provision MPLS-TP using the Prime Provisioning API, you need a MPLS-TP service definition and a MPLS-TP service request (SR). This section lists the supported service definitions, service orders, and policies and includes corresponding examples.

When you deploy a MPLS-TP service request using a service order, the attributes specified in the service definition are applied to the devices and interfaces listed in the service request.

## Supported MPLS-TP Features

Prime Provisioning supports the following MPLS-TP features:

- MPLS-TP Discovery Tasks
  - Full Discovery
  - MPLS Label Sync
- MPLS-TP Policies
  - Create MPLS-TP Policy
  - Modify MPLS-TP Policy
  - Delete MPLS-TP Policy
- MPLS-TP Service Requests
  - Create MPLS-TP Tunnel
  - Modify MPLS-TP Tunnel
  - Delete MPLS-TP Tunnel.

API XML examples for the above operations are contained in the [Cisco Prime Provisioning 6.6 API Programmer Reference](#).



### Note

It is possible to include or exclude mutipe nodes through the API when modifying an MPLS-TP service request. See example under [Service Request Examples, page 12-8](#).

## Policy Example

The following is an example of how to create an MPLS-TP policy with path protection. Path protection for the MPLS-TP Tunnel is enabled by setting the **protectedTpTunnel** variable to **TRUE** and setting the **diversityOption** to any of the three options from valueMap below, in this example **Node Diversity Desired**.

Example: CreateMplsTpPolicy.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:ns0="http://www.cisco.com/cim-cx/2.0"
  xmlns:ns1="urn:CIM">
  <soapenv:Header>
    <ns0:message id="1" sessiontoken="0AA9445A4E6A044ADD8E393BA254715B"
      Wait="false" WaitTimeout="300" />
  </soapenv:Header>
  <soapenv:Body>
    <ns1:createInstance>
      <objectPath xsi:type="ns1:CIMObjectPath">
        <className xsi:type="xsd:string">ServiceDefinition</className>
```

```

<properties xsi:type="ns1:CIMPropertyList"
  soapenc:arrayType="ns1:CIMProperty[]">
  <item xsi:type="ns1:CIMProperty">
    <name xsi:type="xsd:string">Type</name>
    <value xsi:type="xsd:string">Flexible</value>
  </item>
  <item xsi:type="ns1:CIMProperty">
    <name xsi:type="xsd:string">Name</name>
    <value xsi:type="xsd:string">TPPolicy-New3</value>
  </item>
</properties>
<objectPath xsi:type="ns1:CIMObjectPath">
  <className xsi:type="xsd:string">ServiceDefinitionDetails</className>
  <properties xsi:type="ns1:CIMPropertyList"
    soapenc:arrayType="ns1:CIMProperty[]">
    <item xsi:type="ns1:CIMProperty">
      <name xsi:type="xsd:string">PolicyData</name>
      <value xsi:type="xsd:string"><![CDATA[
<service serviceType="MPLS-TP" serviceName="MPLS-TP">
  <section useFor="SR" name="Service Information " required="true" >
    <field name="serviceType" title="Service Type" type="text" disabled="true"
required="false" editable="true" value="MPLS-TP"/>
    <field name="serviceDescription" title="Service Description" type="textarea"
required="false"/>
  </section>

  <section useFor="Policy" name="Policy Information " required="true" >
    <field name="policyName" title="Policy Name" type="text" required="true"/>
    <field name="policyDescription" title="Description" type="textarea"
required="false"/>
  </section>

  <section useFor="Policy-SR" name="Tunnel Characteristics" required="true" >
    <group>
      <field name="tunnelName" title="Source Name" type="text" required="false" value=""
editable="true">
        <validators>
          <validator type="regexp" expression=".*" errorMessage="Tunnel name can be
any number of characters"/>
        </validators>
      </field>
      <field name="dstTunnelName" title="Destination Name(If different)" type="text"
required="false" value="" editable="true">
        <validators>
          <validator type="regexp" expression=".*" errorMessage="Tunnel name can be
any number of characters"/>
        </validators>
      </field>
    </group>
    <group>
      <field name="tunnelDescription" title="Source Description" type="textarea"
required="false"/>
      <field name="dstTunnelDescription" title="Destination Description (If
different)" type="textarea" required="false"/>
    </group>
    <group>
      <field name="bandwidth" title="Transmit Bandwidth" type="integer"
required="false" style="width:120px" metricOptions="Kbps, [Mbps], Gbps"/>
      <field name="rxBandwidth" title="Recieve Bandwidth(If different)"
type="integer" required="false" style="width:120px" metricOptions="Kbps, [Mbps], Gbps"/>
    </group>
  </section>
</service>
]]]></value>
    </item>
  </properties>
</objectPath>

```

```

        <field name="srcTunnelNumberAutoAllocate" title="Auto-Allocate Tunnel Number
At Source" type="boolean" required="false" value="true" visibility="Hidden"/>
        <field name="dstTunnelNumberAutoAllocate" title="Auto-Allocate Tunnel Number
At Destination" type="boolean" required="false" value="true" visibility="Hidden"/>
    </group>
    <field name="state" title="State" type="combo" required="false"
visibility="Hidden" value="Up">
        <valueMap>
            <value>Up</value>
            <value>Down</value>
        </valueMap>
    </field>
    <field name="protectedTpTunnel" title="Protection" type="boolean"
required="false" visibility="Hidden" value="true"/>
    <field name="diversityOption" title="Diversity Options" type="combo"
required="false" disabled="true" visibility="Hidden" value="Node Diversity Desired">
        <valueMap>
            <value>Node Diversity Desired</value>
            <value>Node Diversity Required</value>
            <value>Link Diversity Only</value>
        </valueMap>
    </field>
</section>

<section useFor="Policy-SR" name="Tunnel End-Points" required="true" >
    <field name="sourceDevice" title="Source Node" type="textpicker"
resource="devices" resourceToLoad="sourceBfdTemplate" required="true" editable="true" />
    <field name="sourceBfdTemplate" title="Source BFD" type="textpicker"
required="true"/>
    <field name="sourceBfdMinInterval" title="Source BFD min-interval (ms) (15 -
5000)" type="integer" required="false" visibility="Hidden"/>
    <field name="sourceBfdMinIntervalStandby" title="Source BFD min-interval Standby
(ms) (15 - 5000)" type="integer" required="false" visibility="Hidden"/>
    <field name="sourceBfdMultiplier" title="Source BFD Multiplier (2 - 10)"
type="integer" required="false" visibility="Hidden"/>
    <field name="sourceTunnelNumber" title="Source Tunnel Number" type="text"
required="false" visibility="Hidden" editable="true">
        <validators>
            <validator type="regexp" expression="\d*" errorMessage="Tunnel number must
be 0 - 65535"/>
        </validators>
    </field>
    <field name="sourceRouterId" title="Source Router ID" type="ip" required="false"
visibility="Hidden"/>
    <field name="sourceGlobalId" title="Source Global ID" type="integer"
required="false" visibility="Hidden"/>
    <field name="destinationDevice" title="Destination Node" type="textpicker"
resource="devices" resourceToLoad="destinationBfdTemplate" required="true"/>
    <field name="destinationBfdTemplate" title="Destination BFD" type="textpicker"
required="true"/>
    <field name="destinationBfdMinInterval" title="Destination BFD min-interval (ms)
(15 - 5000)" type="integer" required="false" visibility="Hidden"/>
    <field name="destinationBfdMinIntervalStandby" title="Destination BFD min-interval
Standby (ms) (15 - 5000)" type="integer" required="false" visibility="Hidden"/>
    <field name="destinationBfdMultiplier" title="Destination BFD Multiplier (2 - 10)"
type="integer" required="false" visibility="Hidden"/>
    <field name="destinationTunnelNumber" title="Destination Tunnel Number"
type="text" required="false" visibility="Hidden" editable="true">
        <validators>
            <validator type="regexp" expression="\d*" errorMessage="Tunnel number must
be 0 - 65535"/>
        </validators>
    </field>

```

```

        <field name="destinationRouterId" title="Destination Router ID" type="ip"
required="false" visibility="Hidden"/>
        <field name="destinationGlobalId" title="Destination Global ID" type="integer"
required="false" visibility="Hidden"/>
    </section>

    <section useFor="SR" name="Review Routing" required="true">
        <group id="pathOptionsGroup" cloneable="true">
            <field name="reqExOption" title="" type="combo" required="false"
value="Required NE/Link">
                <valueMap>
                    <value>Required NE/Link</value>
                    <value>Excluded NE/Link</value>
                </valueMap>
            </field>
            <field name="reqExElement" title="" type="textpicker"
resource="devicesAndTpLinks" width="400" required="true"/>
            <field name="pathType" title="" type="combo" required="false" value="Working
Path">
                <valueMap>
                    <value>Working Path</value>
                    <value>Protect Path</value>
                </valueMap>
            </field>
        </group>
    </section>
</service>

        ]]</value>
    </item>
</properties>
</objectPath>
</objectPath>
</ns1:createInstance>
</soapenv:Body>
</soapenv:Envelope>

```

### Related APIs

- [ModifyMplsTpPolicy.xml](#)

## MPLS-TP Discovery

After completing the preconfiguration process, you can discover the MPLS-TP network for a particular MPLS-TP provider. This populates the repository with the network topology.

Prime Provisioning supports MPLS-TP discovery from both IOS and IOS-XR devices when deployed together with Prime Network (or) in the IP-NGN suite. Prime Provisioning should be 'paired' with Prime Network by setting the Prime Network gateway detail in the Prime Provisioning DCPL property **Inventory Import**.

Prime Provisioning in standalone mode (without Prime Network integration) supports CDP-based MPLS-TP discovery from IOS devices but this is deprecated.

As a prerequisite for running MPLS-TP discovery, all devices must be present and a Collect Config task must be run. For further information about MPLS-TP Discovery, see the [Cisco Prime Provisioning 6.6 User Guide](#).

## MPLS-TP Discovery Example

The following is an example of how to create an MPLS-TP Discovery task.

The relevant attributes that need to be set for this policy are highlighted in bold in the example. In this case, it is the attribute **Subtype**, which in the example is set to **TP\_DISCOVERY**.

If the item **labelSyncOnly** is set to **true**, only the label information gets discovered. In the example below, it is set to **false**, in which case Prime Provisioning performs a complete MPLS-TP discovery.

Example: CreateTaskServiceOrderTpDiscovery.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<soapenv:Envelope
  xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:ns0="http://www.cisco.com/cim-cx/2.0"
  xmlns:ns1="urn:CIM">
  <soapenv:Header>
    <!-- WaitTimeout has a default set in system properties.-->
    <ns0:message id="87855" timestamp="2002-12-13T14:55:38.885Z"
      Wait="false" WaitTimeout="60"
      sessiontoken="E8AF7A658C78F46BFF4E33E4E4DB1B78"/>
  </soapenv:Header>
  <soapenv:Body>
    <ns1:performBatchOperation>
      <actions xsi:type="ns1:CIMActionList"
        soapenc:arrayType="ns1:CIMAction[]">
        <action>
          <actionName xsi:type="xsd:string">createInstance</actionName>
          <objectPath xsi:type="ns1:CIMObjectPath">
            <className xsi:type="xsd:string">ServiceOrder</className>
            <properties xsi:type="ns1:CIMPropertyList"
              soapenc:arrayType="ns1:CIMProperty[]">
              <item xsi:type="ns1:CIMProperty">
                <name xsi:type="xsd:string">ServiceName</name>
                <value xsi:type="xsd:string">ServiceOrderForTpDiscovery</value>
              </item>
              <item xsi:type="ns1:CIMProperty">
                <name xsi:type="xsd:string">CarrierId</name>
                <value xsi:type="xsd:string">1</value>
              </item>
              <item xsi:type="ns1:CIMProperty">
                <name xsi:type="xsd:string">DesiredDueDate</name>
                <value xsi:type="xsd:dateTime">2002-12-13T14:55:38.885Z</value>
              </item>
              <item xsi:type="ns1:CIMProperty">
                <name xsi:type="xsd:string">NumberOfRequests</name>
                <value xsi:type="xsd:string">1</value>
              </item>
              <item xsi:type="ns1:CIMProperty">
                <name xsi:type="xsd:string">Organization</name>
                <value xsi:type="xsd:string">Customer1</value>
              </item>
            </properties>
          </objectPath>
        </action>
        <action>
          <actionName xsi:type="xsd:string">createInstance</actionName>
          <objectPath xsi:type="ns1:CIMObjectPath">
            <className xsi:type="xsd:string">ServiceRequest</className>
```

```

<properties xsi:type="ns1:CIMPropertyList"
  soapenc:arrayType="ns1:CIMProperty[]">
  <item xsi:type="ns1:CIMProperty">
    <name xsi:type="xsd:string">RequestName</name>
    <value xsi:type="xsd:string">TP-DISCOVERY-NBI</value>
  </item>
  <item xsi:type="ns1:CIMProperty">
    <name xsi:type="xsd:string">Type</name>
    <value xsi:type="xsd:string">Task</value>
  </item>
</properties>
<objectPath xsi:type="ns1:CIMObjectPath">
<className xsi:type="xsd:string">ServiceRequestDetails</className>
<properties xsi:type="ns1:CIMPropertyList"
  soapenc:arrayType="ns1:CIMProperty[]">
  <item xsi:type="ns1:CIMProperty">
    <name xsi:type="xsd:string">SubType</name>
    <value xsi:type="xsd:string">TP_DISCOVERY</value>
  </item>
  <item xsi:type="ns1:CIMProperty">
    <name xsi:type="xsd:string">Device</name>
    <value xsi:type="xsd:string">ngxp-agg-lv</value>
  </item>
  <item xsi:type="ns1:CIMProperty">
    <name xsi:type="xsd:string">labelSyncOnly</name>
    <value xsi:type="xsd:string">false</value>
  </item>
</properties>
</objectPath>
</objectPath>
</action>
</actions>
</ns1:performBatchOperation>
</soapenv:Body>
</soapenv:Envelope>

```

## MPLS-TP Service Requests

Before creating a service request, a service policy has to be defined. Use a predefined policy template as is or with modifications to create a service request, and deploy the service. For information on MPLS-TP policies, see the [Cisco Prime Provisioning 6.6 User Guide](#).

A MPLS-TP service request defines the service definition to use and applies the needed policy information.

When deploying a MPLS-TP service request using a service order, the attributes specified in the service definition are applied to the devices and interfaces defined in the service request.

This section includes the following:

- [Typical Sequence of Calls, page 12-8](#)
- [Service Request Examples, page 12-8](#)

## Typical Sequence of Calls

Once you have run Collect Config and MPLS-TP Discovery, the typical sequence of calls for MPLS-TP would be:

1. Associate devices with corresponding roles
2. Create MPLS-TP Policy (CreateMplsTpPolicy.xml )
3. View MPLS-TP Policy Response
4. Create Mpls MPLS-TP service request  
using either
  - CreateMplsTpTunnelServiceRequestWithProtection.xml—creates an MPLS-TP tunnel between tp-device1 and tp-device2 with both working and protect LSPs
  - or
  - CreateMplsTpTunnelServiceRequestNoProtection.xml—creates an MPLS-TP tunnel with just a working LSP, no protect LSP
5. Create Mpls MPLS-TP service request Response
6. Deploy SR(Same XML as other service request types)
7. Modify MPLS-TP service request (ModifyMplsTpTunnelServiceRequest.xml).

## Service Request Examples

The following XML examples illustrate how you work with service requests for MPLS-TP APIs. They also demonstrate the kinds of properties (attributes) that need to be specified for each request.

This section contains the following examples:

- [Creating an MPLS-TP Service Request With Path Protection, page 12-8](#)
- [Modifying an MPLS-TP Service Request, page 12-11](#)
- [Modifying an MPLS-TP Protect Path Service Request, page 12-15](#)
- [Modifying an MPLS-TP Service Request with Include/Exclude Multiple Nodes, page 12-16](#)

### Creating an MPLS-TP Service Request With Path Protection

The following is an example of how to create an MPLS-TP service request with path protection. Protection path for TP Tunnel is enabled by setting the **protectedTpTunnel** variable to **TRUE** and selecting the **diversityOption** among any of the 3 options from valueMap below.

Example: CreateMplsTpTunnelServiceRequestWithProtection.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:ns0="http://www.cisco.com/cim-cx/2.0"
  xmlns:ns1="urn:CIM">
  <soapenv:Header>
    <ns0:message id="1" sessiontoken="E453ADAFF7319803C1E8E3C68E1850CD"
      Wait="false" WaitTimeout="300" />
  </soapenv:Header>
</soapenv:Envelope>
```



```

</soapenv:Header>
<soapenv:Body>
  <ns1:createInstance>
    <objectPath xsi:type="ns1:CIMObjectPath">
      <className xsi:type="xsd:string">ServiceRequest</className>
      <properties xsi:type="ns1:CIMPropertyList"
        soapenc:arrayType="ns1:CIMProperty[]">
        <item xsi:type="ns1:CIMProperty">
          <name xsi:type="xsd:string">Type</name>
          <value xsi:type="xsd:string">Flexible</value>
        </item>
        <item xsi:type="ns1:CIMProperty">
          <name xsi:type="xsd:string">RequestName</name>
          <value xsi:type="xsd:string">TP-3</value>
        </item>
      </properties>
    </objectPath xsi:type="ns1:CIMObjectPath">
      <className xsi:type="xsd:string">ServiceRequestDetails</className>
      <properties xsi:type="ns1:CIMPropertyList"
        soapenc:arrayType="ns1:CIMProperty[]">
        <item xsi:type="ns1:CIMProperty">
          <name xsi:type="xsd:string">ServiceDefinition</name>
          <value xsi:type="xsd:string">tp-policy</value>
        </item>
        <item xsi:type="ns1:CIMProperty">
          <name xsi:type="xsd:string">InstanceData</name>
          <value xsi:type="xsd:string"><![CDATA[
<service serviceType="MPLS-TP" serviceName="MPLS-TP">
  <section useFor="SR" name="Service Information " required="true" >
    <field name="serviceType" value="MPLS-TP" />
    <field name="serviceDescription" />
  </section>

  <section useFor="Policy" name="Policy Information " required="true" >
    <field name="policyName" title="Policy Name" type="text" required="true" />
    <field name="policyDescription" title="Description" type="textarea"
required="false" />
  </section>

  <section useFor="Policy-SR" name="Tunnel Characteristics" required="true" >
    <group>
      <field name="srcTunnelName" title="Source Name" type="text" required="false"
editable="true">
        <validators>
          <validator type="regexp" expression=".*" errorMessage="Tunnel name can be
any number of characters" />
        </validators>
      </field>
      <field name="dstTunnelName" title="Destination Name(If different)" type="text"
required="false" editable="true">
        <validators>
          <validator type="regexp" expression=".*" errorMessage="Tunnel name can be
any number of characters" />
        </validators>
      </field>
    </group>
    <group>
      <field name="srcTunnelDescription" title="Source Description" type="textarea"
required="false" />
      <field name="dstTunnelDescription" title="Destination Description(If
different)" type="textarea" required="false" />
    </group>
  </section>
</service>
]]></value>
        </item>
      </properties>
    </objectPath>
  </ns1:createInstance>
</soapenv:Body>

```

```

        <field name="bandwidth" title="Transmit Bandwidth" type="integer"
required="false" style="width:120px" metricOptions="Kbps, [Mbps], Gbps"/>
        <field name="rxBandwidth" title="Receive Bandwidth(If different)"
type="integer" required="false" style="width:120px" metricOptions="Kbps, [Mbps], Gbps"/>
    </group>

    <group>
        <field name="srcTunnelNumberAutoAllocate" title="Auto-Allocate Tunnel Number
At Source" type="boolean" required="false" value="true" visibility="Editable"/>
        <field name="dstTunnelNumberAutoAllocate" title="Auto-Allocate Tunnel Number
At Destination" type="boolean" required="false" value="true" visibility="Editable"/>
    </group>
    <field name="state" title="State" type="combo" required="false"
visibility="Editable" value="Up">
        <valueMap>
            <value>Up</value>
            <value>Down</value>
        </valueMap>
    </field>
    <field name="protectedTpTunnel" title="Protection" type="boolean"
required="false" visibility="Editable" value="true"/>
    <field name="diversityOption" title="Diversity Options" type="combo"
required="false" disabled="true" visibility="Editable" value="Node Diversity Desired">
        <valueMap>
            <value>Node Diversity Desired</value>
            <value>Node Diversity Required</value>
            <value>Link Diversity Only</value>
        </valueMap>
    </field>
</section>

<section useFor="Policy-SR" name="Tunnel End-Points" required="true" >
    <field name="sourceDevice" title="Source Node" type="textpicker"
resource="devices" resourceToLoad="sourceBfdTemplate" required="true" editable="true"
value="router-TP11"/>
    <field name="sourceBfdTemplate" title="Source BFD" type="textpicker"
required="true" value="BFDTemplate-SingleHopMilliSec-4"/>
    <field name="sourceBfdMinInterval" title="Source BFD min-interval (ms) (15 -
5000)" type="integer" required="false" visibility="Hidden"/>
    <field name="sourceBfdMinIntervalStandby" title="Source BFD min-interval Standby
(ms) (15 - 5000)" type="integer" required="false" visibility="Hidden"/>
    <field name="sourceBfdMultiplier" title="Source BFD Multiplier (2 - 10)"
type="integer" required="false" visibility="Hidden"/>
    <field name="sourceTunnelNumber" title="Source Tunnel Number" type="text"
required="false" visibility="Editable" editable="true">
        <validators>
            <validator type="regexp" expression="\d*" errorMessage="Tunnel number must
be 0 - 65535"/>
        </validators>
    </field>
    <field name="sourceRouterId" title="Source Router ID" type="ip" required="false"
visibility="Editable"/>
    <field name="sourceGlobalId" title="Source Global ID" type="integer"
required="false" visibility="Editable"/>
    <field name="destinationDevice" title="Destination Node" type="textpicker"
resource="devices" resourceToLoad="destinationBfdTemplate" required="true"
value="tp-device2/>
    <field name="destinationBfdTemplate" title="Destination BFD" type="textpicker"
required="true"/>
    <field name="destinationBfdMinInterval" title="Destination BFD min-interval (ms)
(15 - 5000)" type="integer" required="false" visibility="Hidden"/>
    <field name="destinationBfdMinIntervalStandby" title="Destination BFD min-interval
Standby (ms) (15 - 5000)" type="integer" required="false" visibility="Hidden"/>

```

```

        <field name="destinationBfdMultiplier" title="Destination BFD Multiplier (2 - 10)"
type="integer" required="false" visibility="Hidden"/>
        <field name="destinationTunnelNumber" title="Destination Tunnel Number"
type="text" required="false" visibility="Editable" editable="true">
            <validators>
                <validator type="regexp" expression="\d*" errorMessage="Tunnel number must
be 0 - 65535"/>
            </validators>
        </field>
        <field name="destinationRouterId" title="Destination Router ID" type="ip"
required="false" visibility="Editable"/>
        <field name="destinationGlobalId" title="Destination Global ID" type="integer"
required="false" visibility="Editable"/>
    </section>

    <section useFor="SR" name="Review Routing" required="true">
        <group id="pathOptionsGroup" cloneable="true">
            <field name="reqExOption" title="" type="combo" required="false"
value="Required NE/Link">
                <valueMap>
                    <value>Required NE/Link</value>
                    <value>Excluded NE/Link</value>
                </valueMap>
            </field>
            <field name="reqExElement" title="" type="textpicker"
resource="devicesAndTpLinks" width="400" required="true"/>
            <field name="pathType" title="" type="combo" required="false" value="Working
Path">
                <valueMap>
                    <value>Working Path</value>
                    <value>Protect Path</value>
                </valueMap>
            </field>
        </group>
    </section>
</service>]]</value>
        </item>
    </properties>
</objectPath>
</objectPath>
</ns1:createInstance>
</soapenv:Body>
</soapenv:Envelope>

```

## Modifying an MPLS-TP Service Request

The following is an example of how to modify an MPLS-TP service request. This is done by modifying the service data using the attribute **LocatorId**, which in the example is set to **194**.

Example: `ModifyMplsTpTunnelServiceRequest.xml`

```

<?xml version="1.0" encoding="UTF-8"?>
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:ns0="http://www.cisco.com/cim-cx/2.0"
xmlns:ns1="urn:CIM">
    <soapenv:Header>
        <ns0:message id="1" sessiontoken="E453ADAFF7319803C1E8E3C68E1850CD"
Wait="false" WaitTimeout="300" />
    </soapenv:Header>

```

```

</soapenv:Header>
<soapenv:Body>
  <ns1:modifyInstance>
    <objectPath subAction="modifyInstance" xsi:type="ns1:CIMObjectPath">
      <className xsi:type="xsd:string">ServiceRequest</className>

      <properties xsi:type="ns1:CIMPropertyList"
        soapenc:arrayType="ns1:CIMProperty[]">
        <item xsi:type="ns1:CIMProperty">
          <name xsi:type="xsd:string">Type</name>
          <value xsi:type="xsd:string">Flexible</value>
        </item>
        <item xsi:type="ns1:CIMProperty">
          <name xsi:type="xsd:string">RequestName</name>
          <value xsi:type="xsd:string">TP-3</value>
        </item>
      </properties>

      <objectPath subAction="modifyInstance" xsi:type="ns1:CIMObjectPath">
        <className xsi:type="xsd:string">ServiceRequestDetails</className>
      <keyProperties xsi:type="ns1:CIMKeyPropertyList"
        soapenc:arrayType="ns1:CIMKeyProperty[]">
        <item xsi:type="ns1:CIMProperty">
          <name xsi:type="xsd:string">LocatorId</name>
          <value xsi:type="xsd:string">194</value>
        </item>
      </keyProperties>
      <properties xsi:type="ns1:CIMPropertyList"
        soapenc:arrayType="ns1:CIMProperty[]">
        <item xsi:type="ns1:CIMProperty">
          <name xsi:type="xsd:string">ServiceDefinition</name>
          <value xsi:type="xsd:string">tp-policy</value>
        </item>
        <item xsi:type="ns1:CIMProperty">
          <name xsi:type="xsd:string">InstanceData</name>
          <value xsi:type="xsd:string"><<![CDATA[
<service serviceType="MPLS-TP" serviceName="MPLS-TP">
  <section useFor="SR" name="Service Information " required="true" >
    <field name="serviceType" title="Service Type" type="text" disabled="true"
required="false" editable="true" value="MPLS-TP"/>
    <field name="serviceDescription" title="Service Description" type="textarea"
required="false"/>
  </section>

  <section useFor="Policy" name="Policy Information " required="true" >
    <field name="policyName" title="Policy Name" type="text" required="true"/>
    <field name="policyDescription" title="Description" type="textarea"
required="false"/>
  </section>

  <section useFor="Policy-SR" name="Tunnel Characteristics" required="true" >
    <group>
      <field name="srcTunnelName" title="Source Name" type="text" required="false"
editable="true">
        <validators>
          <validator type="regexp" expression=".*" errorMessage="Tunnel name can be
any number of characters"/>
        </validators>
      </field>
      <field name="dstTunnelName" title="Destination Name(If different)" type="text"
required="false" editable="true">
        <validators>
          <validator type="regexp" expression=".*" errorMessage="Tunnel name can be
any number of characters"/>
        </validators>
      </field>
    </group>
  </section>
]]>>>

```

```

        </validators>
    </field>
</group>
<group>
    <field name="srcTunnelDescription" title="Source Description" type="textarea"
required="false"/>
    <field name="dstTunnelDescription" title="Destination Description(If
different)" type="textarea" required="false"/>
</group>
<group>
    <field name="bandwidth" title="Transmit Bandwidth" type="integer"
required="false" style="width:120px" metricOptions="Kbps,[Mbps],Gbps"/>
    <field name="rxBandwidth" title="Receive Bandwidth(If different)"
type="integer" required="false" style="width:120px" metricOptions="Kbps,[Mbps],Gbps"/>
</group>

<group>
    <field name="srcTunnelNumberAutoAllocate" title="Auto-Allocate Tunnel Number
At Source" type="boolean" required="false" value="true" visibility="Hidden"/>
    <field name="dstTunnelNumberAutoAllocate" title="Auto-Allocate Tunnel Number
At Destination" type="boolean" required="false" value="true" visibility="Hidden"/>
</group>
    <field name="state" title="State" type="combo" required="false"
visibility="Hidden" value="Up">
        <valueMap>
            <value>Up</value>
            <value>Down</value>
        </valueMap>
    </field>
    <field name="protectedTpTunnel" title="Protection" type="boolean"
required="false" visibility="Hidden" value="true"/>
    <field name="diversityOption" title="Diversity Options" type="combo"
required="false" disabled="true" visibility="Hidden" value="Node Diversity Desired">
        <valueMap>
            <value>Node Diversity Desired</value>
            <value>Node Diversity Required</value>
            <value>Link Diversity Only</value>
        </valueMap>
    </field>
</section>

<section useFor="Policy-SR" name="Tunnel End-Points" required="true" >
    <field name="sourceDevice" title="Source Node" type="textpicker"
resource="devices" resourceToLoad="sourceBfdTemplate" required="true" />
    <field name="sourceBfdTemplate" title="Source BFD" type="textpicker"
required="true"/>
    <field name="sourceBfdMinInterval" title="Source BFD min-interval (ms) (15 -
5000)" type="integer" required="false" visibility="Hidden"/>
    <field name="sourceBfdMinIntervalStandby" title="Source BFD min-interval Standby
(ms) (15 - 5000)" type="integer" required="false" visibility="Hidden"/>
    <field name="sourceBfdMultiplier" title="Source BFD Multiplier (2 - 10)"
type="integer" required="false" visibility="Hidden"/>
    <field name="sourceTunnelNumber" title="Source Tunnel Number" type="text"
required="false" visibility="Hidden" editable="true">
        <validators>
            <validator type="regexp" expression="\d*" errorMessage="Tunnel number must
be 0 - 65535"/>
        </validators>
    </field>
    <field name="sourceRouterId" title="Source Router ID" type="ip" required="false"
visibility="Hidden"/>
    <field name="sourceGlobalId" title="Source Global ID" type="integer"
required="false" visibility="Hidden"/>

```

```

        <field name="destinationDevice" title="Destination Node" type="textpicker"
resource="devices" resourceToLoad="destinationBfdTemplate" required="true"/>
        <field name="destinationBfdTemplate" title="Destination BFD" type="textpicker"
required="true"/>
        <field name="destinationBfdMinInterval" title="Destination BFD min-interval (ms)
(15 - 5000)" type="integer" required="false" visibility="Hidden"/>
        <field name="destinationBfdMinIntervalStandby" title="Destination BFD min-interval
Standby (ms) (15 - 5000)" type="integer" required="false" visibility="Hidden"/>
        <field name="destinationBfdMultiplier" title="Destination BFD Multiplier (2 - 10)"
type="integer" required="false" visibility="Hidden"/>
        <field name="destinationTunnelNumber" title="Destination Tunnel Number"
type="text" required="false" visibility="Hidden" editable="true">
            <validators>
                <validator type="regexp" expression="\d*" errorMessage="Tunnel number must
be 0 - 65535"/>
            </validators>
        </field>
        <field name="destinationRouterId" title="Destination Router ID" type="ip"
required="false" visibility="Hidden"/>
        <field name="destinationGlobalId" title="Destination Global ID" type="integer"
required="false" visibility="Hidden"/>
    </section>

    <section useFor="SR" name="Review Routing" required="true">
        <group id="pathOptionsGroup" cloneable="true">
            <field name="reqExOption" title="" type="combo" required="false"
value="Required NE/Link">
                <valueMap>
                    <value>Required NE/Link</value>
                    <value>Excluded NE/Link</value>
                </valueMap>
            </field>
            <field name="reqExElement" title="" type="textpicker"
resource="devicesAndTpLinks" width="400" required="true"/>
            <field name="pathType" title="" type="combo" required="false" value="Working
Path">
                <valueMap>
                    <value>Working Path</value>
                    <value>Protect Path</value>
                </valueMap>
            </field>
        </group>
    </section>
</service>

        ]]></value>
        </item>
    </properties>

</objectPath>

</objectPath>
</nsl:modifyInstance>
</soapenv:Body>
</soapenv:Envelope>

```

### Related APIs

- CreateMplsTpTunnelServiceRequestNoProtection.xml

- DecommisionMplsTpTunnelServiceRequest.xml

## Modifying an MPLS-TP Protect Path Service Request

In this example, an existing MPLS-TP protect path is modified without impacting the working path. The important attribute is **ModifyPath**, which needs to be set to **Protect**.

You can also do the opposite and modify the working path without impacting the protect path. In that case, the **ModifyPath** attribute needs to be set to **Working**. The **ModifyPath** attribute can also be set to **Both**.



### Note

The "ModifyPath" attribute is supported only when modifying MPLS-TP service requests, not when creating new MPLS-TP service requests.

### Example: ModifyMplsTpTunnelServiceRequest-ProtectPath.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:ns0="http://www.cisco.com/cim-cx/2.0"
  xmlns:ns1="urn:CIM">
  <soapenv:Header>
    <ns0:message id="1" sessiontoken="E453ADAFF7319803C1E8E3C68E1850CD"
      Wait="false" WaitTimeout="300" />
  </soapenv:Header>
  <soapenv:Body>
    <ns1:modifyInstance>
      <objectPath subAction="modifyInstance" xsi:type="ns1:CIMObjectPath">
        <className xsi:type="xsd:string">ServiceRequest</className>
        <properties xsi:type="ns1:CIMPropertyList"
          soapenc:arrayType="ns1:CIMProperty[]">
          <item xsi:type="ns1:CIMProperty">
            <name xsi:type="xsd:string">Type</name>
            <value xsi:type="xsd:string">Flexible</value>
          </item>
          <item xsi:type="ns1:CIMProperty">
            <name xsi:type="xsd:string">RequestName</name>
            <value xsi:type="xsd:string">TP-3</value>
          </item>
        </properties>
      <objectPath subAction="modifyInstance" xsi:type="ns1:CIMObjectPath">
        <className xsi:type="xsd:string">ServiceRequestDetails</className>
        <keyProperties xsi:type="ns1:CIMKeyPropertyList"
          soapenc:arrayType="ns1:CIMKeyProperty[]">
          <item xsi:type="ns1:CIMProperty">
            <name xsi:type="xsd:string">LocatorId</name>
            <value xsi:type="xsd:string">194</value>
          </item>
        </keyProperties>
        <properties xsi:type="ns1:CIMPropertyList"
          soapenc:arrayType="ns1:CIMProperty[]">
          <item xsi:type="ns1:CIMProperty">
            <name xsi:type="xsd:string">ServiceDefinition</name>
            <value xsi:type="xsd:string">tp-policy</value>
          </item>
          <item xsi:type="ns1:CIMProperty">
            <name xsi:type="xsd:string">ModifyPath</name>

```

```

        <value xsi:type="xsd:string">Protect</value>
      </item>
    ...
    ...
    ...
    ...
  </item>
</properties>
</objectPath>
</objectPath>
</ns1:modifyInstance>
</soapenv:Body>
</soapenv:Envelope>

```

## Modifying an MPLS-TP Service Request with Include/Exclude Multiple Nodes

In this example is shown how an existing MPLS-TP service request is modified to include or exclude multiple nodes.

The appropriate ID needs to be provided in the multiple group tags in the **Review Routing** section below (see XML example). The XML must have a unique ID in the group tag, for example pathOptionsGroup, pathOptionsGroup1, pathOptionsGroup2, etc. If you want to modify a few specific constraints amongst the ones originally provided, you need to provide the appropriate ID. For example, specify pathOptionsGroup to edit 1st constraint, pathOptionsGroup4 to edit 5th constraint and so on.

Make sure to set the **ModifyPath** attribute (**Working**, **Protect**, or **Both**).



### Note

The "ModifyPath" attribute is supported only when modifying MPLS-TP service requests, not when creating new MPLS-TP service requests.

Example: ModifyMplsTpServiceRequestWithIncludeExcludeNodes.xml

```

<?xml version="1.0" encoding="UTF-8"?>
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:ns0="http://www.cisco.com/cim-cx/2.0"
  xmlns:ns1="urn:CIM">
  <soapenv:Header>
    <ns0:message id="1" sessiontoken="2359F8E3E9C2DCD79BB4354830704C78"
      Wait="false" WaitTimeout="300" />
  </soapenv:Header>
  <soapenv:Body>
    <ns1:modifyInstance>
      <objectPath xsi:type="ns1:CIMObjectPath">
        <className xsi:type="xsd:string">ServiceOrder</className>
        <properties xsi:type="ns1:CIMPropertyList"
          soapenc:arrayType="ns1:CIMProperty[]">
          <item xsi:type="ns1:CIMProperty">
            <name xsi:type="xsd:string">ServiceName</name>
            <value xsi:type="xsd:string">ServiceOrder253</value>
          </item>
          <item xsi:type="ns1:CIMProperty">
            <name xsi:type="xsd:string">CarrierId</name>
            <value xsi:type="xsd:string">322</value>
          </item>
          <item xsi:type="ns1:CIMProperty">

```



```

        <name xsi:type="xsd:string">DesiredDueDate</name>
        <value xsi:type="xsd:dateTime">2002-12-13T14:55:38.000Z</value>
    </item>
    <item xsi:type="ns1:CIMProperty">
        <name xsi:type="xsd:string">NumberOfRequests</name>
        <value xsi:type="xsd:string">1</value>
    </item>
</properties>
</objectPath>

<objectPath subAction="modifyInstance" xsi:type="ns1:CIMObjectPath">
    <className xsi:type="xsd:string">ServiceRequest</className>

    <properties xsi:type="ns1:CIMPropertyList"
        soapenc:arrayType="ns1:CIMProperty[]">
        <item xsi:type="ns1:CIMProperty">
            <name xsi:type="xsd:string">Type</name>
            <value xsi:type="xsd:string">Flexible</value>
        </item>
        <item xsi:type="ns1:CIMProperty">
            <name xsi:type="xsd:string">RequestName</name>
            <value xsi:type="xsd:string">TP-3</value>
        </item>
    </properties>

    <objectPath subAction="modifyInstance" xsi:type="ns1:CIMObjectPath">
        <className xsi:type="xsd:string">ServiceRequestDetails</className>
    <keyProperties xsi:type="ns1:CIMKeyPropertyList"
        soapenc:arrayType="ns1:CIMKeyProperty[]">
        <item xsi:type="ns1:CIMProperty">
            <name xsi:type="xsd:string">LocatorId</name>
            <value xsi:type="xsd:string">10</value>
        </item>
    </keyProperties>
    <properties xsi:type="ns1:CIMPropertyList"
        soapenc:arrayType="ns1:CIMProperty[]">
        <item xsi:type="ns1:CIMProperty">
            <name xsi:type="xsd:string">ServiceDefinition</name>
            <value xsi:type="xsd:string">TP_Policy</value>
        </item>
        <item xsi:type="ns1:CIMProperty">
            <name xsi:type="xsd:string">ModifyPath</name>
            <value xsi:type="xsd:string">Both</value>
        </item>
        <item xsi:type="ns1:CIMProperty">
            <name xsi:type="xsd:string">InstanceData</name>
            <value xsi:type="xsd:string"><![CDATA[
<service serviceType="MPLS-TP" serviceName="MPLS-TP">
    <section useFor="SR" name="Service Information " required="true" >
        <field name="serviceType" title="Service Type" type="text" disabled="true"
required="false" editable="true" value="MPLS-TP"/>
        <field name="serviceDescription" title="Service Description" type="textarea"
required="false" value="NBI excluding protect path"/>
    </section>

    <section useFor="Policy" name="Policy Information " required="true" >
        <field name="policyName" title="Policy Name" type="text" required="true"/>
        <field name="policyDescription" title="Description" type="textarea"
required="false"/>
    </section>

    <section useFor="Policy-SR" name="Tunnel Characteristics" required="true" >

```

```

    <group>
      <field name="srcTunnelName" title="Source Name" type="text" required="false"
editable="true">
        <validators>
          <validator type="regexp" expression=".*" errorMessage="Tunnel name can be
any number of characters"/>
        </validators>
      </field>
      <field name="dstTunnelName" title="Destination Name(If different)" type="text"
required="false" editable="true">
        <validators>
          <validator type="regexp" expression=".*" errorMessage="Tunnel name can be
any number of characters"/>
        </validators>
      </field>
    </group>
    <group>
      <field name="srcTunnelDescription" title="Source Description" type="textarea"
required="false"/>
      <field name="dstTunnelDescription" title="Destination Description(If
different)" type="textarea" required="false"/>
    </group>
    <group>
      <field name="bandwidth" title="Transmit Bandwidth" type="integer"
required="false" style="width:120px" metricOptions="Kbps,[Mbps],Gbps" metric="Mbps"
value="1"/>
      <field name="rxBandwidth" title="Receive Bandwidth(If different)"
type="integer" required="false" style="width:120px" metricOptions="Kbps,[Mbps],Gbps"
metric="Mbps" value="2"/>
    </group>

    <group>
      <field name="srcTunnelNumberAutoAllocate" title="Auto-Allocate Tunnel Number
At Source" type="boolean" required="false" value="true" visibility="Hidden"/>
      <field name="dstTunnelNumberAutoAllocate" title="Auto-Allocate Tunnel Number
At Destination" type="boolean" required="false" value="true" visibility="Hidden"/>
    </group>
    <field name="state" title="State" type="combo" required="false"
visibility="Hidden" value="Up">
      <valueMap>
        <value>Up</value>
        <value>Down</value>
      </valueMap>
    </field>
    <field name="protectedTpTunnel" title="Protection" type="boolean"
required="false" visibility="Hidden" value="true"/>
    <field name="diversityOption" title="Diversity Options" type="combo"
required="false" disabled="true" visibility="Hidden" value="Node Diversity Desired">
      <valueMap>
        <value>Node Diversity Desired</value>
        <value>Node Diversity Required</value>
        <value>Link Diversity Only</value>
      </valueMap>
    </field>
  </section>

  <section useFor="Policy-SR" name="Tunnel End-Points" required="true" >
    <field name="sourceDevice" title="Source Node" type="textpicker"
resource="devices" resourceToLoad="sourceBfdTemplate" required="true" editable="true"
value="router203"/>
    <field name="sourceBfdTemplate" title="Source BFD" type="textpicker"
required="true" value="bfd-tp-template"/>
    <field name="sourceBfdMinInterval" title="Source BFD min-interval (ms) (15 -
5000)" type="integer" required="false" visibility="Hidden" value=""/>

```

```

        <field name="sourceBfdMinIntervalStandby" title="Source BFD min-interval Standby
(ms) (15 - 5000)" type="integer" required="false" visibility="Hidden" value="" />
        <field name="sourceBfdMultiplier" title="Source BFD Multiplier (2 - 10)"
type="integer" required="false" visibility="Hidden" value="" />
        <field name="sourceTunnelNumber" title="Source Tunnel Number" type="text"
required="false" visibility="Hidden" editable="true">
        <validators>
            <validator type="regexp" expression="\d*" errorMessage="Tunnel number must
be 0 - 65535" />
        </validators>
    </field>
    <field name="sourceRouterId" title="Source Router ID" type="ip" required="false"
visibility="Hidden" />
    <field name="sourceGlobalId" title="Source Global ID" type="integer"
required="false" visibility="Hidden" />
    <field name="destinationDevice" title="Destination Node" type="textpicker"
resource="devices" resourceToLoad="destinationBfdTemplate" required="true"
value="router204" />
    <field name="destinationBfdTemplate" title="Destination BFD" type="textpicker"
required="true" value="bfd-tp-template" />
    <field name="destinationBfdMinInterval" title="Destination BFD min-interval (ms)
(15 - 5000)" type="integer" required="false" visibility="Hidden" />
    <field name="destinationBfdMinIntervalStandby" title="Destination BFD min-interval
Standby (ms) (15 - 5000)" type="integer" required="false" visibility="Hidden" />
    <field name="destinationBfdMultiplier" title="Destination BFD Multiplier (2 - 10)"
type="integer" required="false" visibility="Hidden" />
    <field name="destinationTunnelNumber" title="Destination Tunnel Number"
type="text" required="false" visibility="Hidden" editable="true">
    <validators>
        <validator type="regexp" expression="\d*" errorMessage="Tunnel number must
be 0 - 65535" />
    </validators>
</field>
    <field name="destinationRouterId" title="Destination Router ID" type="ip"
required="false" visibility="Hidden" />
    <field name="destinationGlobalId" title="Destination Global ID" type="integer"
required="false" visibility="Hidden" />
</section>

<section useFor="SR" name="Review Routing" required="true">

    <group id="pathOptionsGroup" cloneable="true">
        <field name="reqExOption" title="" type="combo" required="false"
value="Excluded NE/Link">
            <valueMap>
                <value>Required NE/Link</value>
                <value>Excluded NE/Link</value>
            </valueMap>
        </field>
        <field name="reqExElement" title="" type="textpicker"
resource="devicesAndTpLinks" width="400" required="true" value="router202: Ethernet1/0
(1000) &lt;===&gt; router203: Ethernet1/0 (301)" />
        <field name="pathType" title="" type="combo" required="false" value="Protect
Path">
            <valueMap>
                <value>Working Path</value>
                <value>Protect Path</value>
            </valueMap>
        </field>
    </group>

    <group id="pathOptionsGroup1" cloneable="true">
        <field name="reqExOption" title="" type="combo" required="false"
value="Required NE/Link">

```

```

        <valueMap>
          <value>Required NE/Link</value>
          <value>Excluded NE/Link</value>
        </valueMap>
      </field>
      <field name="reqExElement" title="" type="textpicker"
resource="devicesAndTpLinks" width="400" required="true" value="router203: Ethernet0/2
(501) &lt;===&gt; router204: Ethernet0/2 (5)"/>
        <field name="pathType" title="" type="combo" required="false" value="Protect
Path">
          <valueMap>
            <value>Working Path</value>
            <value>Protect Path</value>
          </valueMap>
        </field>
      </group>

    </section>
  </service>

    ]]></value>
  </item>
</properties>

</objectPath>

</objectPath>
</ns1:modifyInstance>
</soapenv:Body>
</soapenv:Envelope>

```

## Provisioning Example

This section describes the process for using the API to provision MPLS-TP, and includes the required operation, object definition (className), and parameter definitions.

This section contains the following:

- [Process Summary, page 12-20](#)
- [Provisioning Process, page 12-21](#)
- [Auditing Service Requests, page 12-24.](#)

## Process Summary

This MPLS-TP provisioning example documents the following process:

1. Create provider.
2. Create region for provider.
3. Run Collect Config.
4. Create and run MPLS-TP Discovery task.
5. Create service definition (policy).

6. Create tunnel service request.

## Provisioning Process

To provision MPLS-TP using Prime Provisioning APIs, a MPLS-TP service definition (policy) and a MPLS-TP service request are required.

This section describes the process for provisioning MPLS-TP using XML examples.

The complete package of XML examples for MPLS-TP is available here:

[Cisco Prime Provisioning 6.6 API Programmer Reference](#)



### Note

For clarity, this provisioning process shows each step as a separate XML request. Many of these steps can be combined using **performBatchOperations**.

### Step 1 Create a provider.

The provider is the administrative domain of an ISP, with one BGP autonomous system (AS) number. The network owned by the provider is called the backbone network. If an ISP has two AS numbers, you must define it as two provider administrative domains.

**Table 12-1 Create a Provider**

Operation	className	Required Parameters
createInstance	Provider	<ul style="list-style-type: none"> <li>• Name</li> <li>• AsNumber</li> </ul>

#### XML Examples:

ISCProviderCreateRequest.xml

### Step 2 Create regions.

Each provider can contain multiple regions.

**Table 12-2 Create a Region**

Operation	className	Required Parameters
createInstance	Region	<ul style="list-style-type: none"> <li>• Name</li> <li>• Provider</li> </ul>

#### XML Examples:

ISCDefaultRegionCreateRequest.xml

### Step 3 Run a Collect Config task.

A device configuration collection is a task. This task uploads the current configuration from the device to the Prime Provisioning database. The collection task is executed through a service request, and the service request is scheduled through a service order.

**Note**

The service request name must be unique for each API.

**Table 12-3**      *Collect Device Configurations*

Operation	className	Required Parameters
createInstance	ServiceOrder	<ul style="list-style-type: none"> <li>• ServiceName</li> <li>• NumberOfRequests</li> <li>• ServiceRequest</li> </ul>
	ServiceRequest	<ul style="list-style-type: none"> <li>• RequestName</li> <li>• Type=Task</li> <li>• ServiceRequestDetails</li> </ul>
	ServiceRequestDetails	<ul style="list-style-type: none"> <li>• SubType=COLLECTION</li> <li>• Device (or DeviceGroup)</li> </ul> <p><b>Note</b> You must select at least one device or device group.</p> <ul style="list-style-type: none"> <li>• RetrieveVersion=true</li> <li>• RetrieveDeviceInterfaces=true</li> </ul>

**XML Examples:**

- CreateTaskServiceOrderCollection.xml

**Step 4** Run an MPLS-TP Discovery task.

This discovers the MPLS-TP topology and resources and populates the repository.

**Table 12-4** Create an MPLS-TP Discovery Task

Operation	className	Required Parameters
createInstance	ServiceOrder	<ul style="list-style-type: none"> <li>• ServiceName</li> <li>• CarrierId</li> <li>• DesiredDueDate</li> <li>• NumberofRequests</li> <li>• Organization</li> </ul>
	ServiceRequest	<ul style="list-style-type: none"> <li>• RequestName</li> <li>• Type=Task</li> </ul>
	ServiceRequestDetails	<ul style="list-style-type: none"> <li>• SubType=TP_DISCOVERY</li> <li>• Device</li> <li>• labelSyncOnly</li> </ul>

**XML Examples:**

CreateTaskServiceOrderTpDiscovery.xml

**Step 5** Create service definition (policy).

Service definitions or policies are used to define common tunnel attributes.

**Table 12-5** Create a MPLS-TP Service Definition (Policy)

Operation	className	Required Parameters
createInstance	ServiceDefinition	<ul style="list-style-type: none"> <li>• Name</li> <li>• Type</li> <li>• Provider</li> </ul>
	ServiceDefinitionDetails	[For a complete list of parameters, see <a href="#">Policy Example, page 12-2</a> ]

**XML Examples:**

CreateMplsTpPolicy.xml

**Step 6** Create service request.

An MPLS-TP service request applies the service definition and assigns interfaces and attributes.

**Table 12-6** Create an MPLS-TP Service Request

Operation	className	Required Parameters
createInstance	ServiceRequest	<ul style="list-style-type: none"> <li>RequestName=TP-3</li> <li>ServiceRequestDetails</li> </ul>
	ServiceRequestDetails	[For a complete list of parameters, see example <a href="#">Creating an MPLS-TP Service Request With Path Protection, page 12-8</a> ]

**Tip**

Record the **LocatorId** value from the XML response for the service request. The Locator ID is required for subsequent service request tasks.

**XML Example:**

CreateMplsTpTunnelServiceRequestWithProtection.xml

## Auditing Service Requests

There are currently two kinds of audit that can be applied to an MPLS-TP service request:

- [Config Audit, page 12-24](#)
- [Functional Audit, page 12-25](#)

### Config Audit

A configuration audit occurs automatically each time you deploy a service request. During this configuration audit, Prime Provisioning verifies that all Cisco IOS commands are present and that they have the correct syntax. An audit also verifies that there were no errors during deployment by examining the commands configured by the service request on the target devices. If the device configuration does not match what is defined in the service request, the audit flags a warning.

If you do not want the configuration audit to occur, change the value for the **Audit** parameter. The **Audit** parameter supports these values:

- **Audit**—This is the default. A successfully deployed service request is automatically audited unless this flag is changed.
- **NoAudit**—Do not perform a configuration audit when the service request is deployed.
- **ForceAudit**—Perform a configuration audit even if the service request deployment is not successful.

You can use the **Audit** parameter with a **Create**, **Modify**, or **Decommission** service request or a **Deployment** task. See the “[Service Decommission](#)” section on page 3-11 for more information. To perform a configuration audit as a separate task, see the “[Configuration Audit](#)” section on page 3-11.



## Functional Audit

In an MPLS-TP Functional Audit, information is retrieved from source and destination endpoints to provide tunnel audit information. A functional audit is then performed on service requests, which are not in one of the following states: Draft, Closed, Requested, Invalid, Failed Deploy.

The following is an example of how to create an MPLS-TP Functional Audit via the NBI.

The relevant attributes that need to be set for this service order is **RequestName**, **Type**, **SubType**, and **LocatorId**, which are highlighted with bold in the example below. In the example, they are set to **MplsTpFuncAudit-TASK**, **task**, **SubType**, and **13**.

Example: CreateTaskServiceOrderMplsTpFuncAudit.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<soapenv:Envelope
  xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:ns0="http://www.cisco.com/cim-cx/2.0"
  xmlns:ns1="urn:CIM">
  <soapenv:Header>
    <!-- WaitTimeout has a default set in system properties.-->
    <ns0:message id="87855" timestamp="2002-12-13T14:55:38.885Z"
      Wait="false" WaitTimeout="60"
      sessiontoken="26384AD0F199088FAA9F8989C4040DDA" />
  </soapenv:Header>
  <soapenv:Body>
    <ns1:performBatchOperation>
      <actions xsi:type="ns1:CIMActionList"
        soapenc:arrayType="ns1:CIMAction[]">
        <action>
          <actionName xsi:type="xsd:string">createInstance</actionName>
          <objectPath xsi:type="ns1:CIMObjectPath">
            <className xsi:type="xsd:string">ServiceOrder</className>
            <properties xsi:type="ns1:CIMPropertyList"
              soapenc:arrayType="ns1:CIMProperty[]">
              <item xsi:type="ns1:CIMProperty">
                <name xsi:type="xsd:string">ServiceName</name>
                <value xsi:type="xsd:string">ServiceOrder-MplsTpFuncAudit</value>
              </item>
              <item xsi:type="ns1:CIMProperty">
                <name xsi:type="xsd:string">CarrierId</name>
                <value xsi:type="xsd:string">234</value>
              </item>
              <item xsi:type="ns1:CIMProperty">
                <name xsi:type="xsd:string">DesiredDueDate</name>
                <value xsi:type="xsd:dateTime">2002-12-14T14:55:38.885Z</value>
              </item>
              <item xsi:type="ns1:CIMProperty">
                <name xsi:type="xsd:string">NumberOfRequests</name>
                <value xsi:type="xsd:string">1</value>
              </item>
            </properties>
          </objectPath>
        </action>
        <action>
          <actionName xsi:type="xsd:string">createInstance</actionName>
          <objectPath xsi:type="ns1:CIMObjectPath">
            <className xsi:type="xsd:string">ServiceRequest</className>
            <properties xsi:type="ns1:CIMPropertyList"
```

```

        soapenc:arrayType="ns1:CIMProperty[]">
<item xsi:type="ns1:CIMProperty">
  <name xsi:type="xsd:string">RequestName</name>
  <value xsi:type="xsd:string">MplsTpFuncAudit-TASK</value>
</item>
<item xsi:type="ns1:CIMProperty">
  <name xsi:type="xsd:string">Type</name>
  <value xsi:type="xsd:string">Task</value>
</item>
</properties>
<objectPath xsi:type="ns1:CIMObjectPath">
<className xsi:type="xsd:string">ServiceRequestDetails</className>
<properties xsi:type="ns1:CIMPropertyList"
  soapenc:arrayType="ns1:CIMProperty[]">
  <item xsi:type="ns1:CIMProperty">
    <name xsi:type="xsd:string">SubType</name>
    <value xsi:type="xsd:string">MPLS-TP.FUNCTIONAL_AUDIT</value> </item>
  <item xsi:type="ns1:CIMProperty">
    <name xsi:type="xsd:string">LocatorId</name>
    <value xsi:type="xsd:string">13</value>
  </item>
  </properties>
</objectPath>
</objectPath>
</action>
</actions>
</ns1:performBatchOperation>
</soapenv:Body>
</soapenv:Envelope>

```