Using Multilayer Management for Packet and Optical Networks

Cisco Knowledge Webinar

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Today’s Presenters

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Today’s Session

Agenda

1. Operations life cycle management challenges
2. Automating the Network Operations Lifecycle
3. Cisco’s EPN Manager Solution, Demo and Use Cases
4. Questions
EPN Manager – EMS/NMS for Packet Routing and Optical Switching Infrastructure
Operation Baseline for Converged Routing & Optical Infrastructure

EMS/NMS across converged access, aggregation and core infrastructures that enables you to:

• know your network with greater precision
• reduce time to activate network capacity
• reduce time to know the state of your network
• reduce time to restore network capacity
Mature Element Management – Massive Scope

95 Optical Installation

253 IP/MPLS Installation

25 Device Families

115 Device Types

EPN Manager – the successful DEVICE and NETWORK MANAGEABILITY answer for 330 customers and counting.

Need an EMS for Cisco routing & optical infrastructure?

EPN Manager full-feature EMS answer for 100+ Cisco device types and counting.
Secure and intelligent network platform with Cisco XR routers/optical transport switches

Establish a trust relationship with Trust Insights

Plan and model network configuration scenarios with WAN Automation Engine Planning “WAE”

Build foundation for element/network management with Evolved Programmable Network Manager “EPNM”

Automate network configuration changes with Network Service Orchestrator “NSO”

Optimize your network bandwidth and launch new bandwidth on demand offers with Crosswork Network Controller

EPNM: Foundation for Transport SDN Automation Journey
# Automating the Network Operations Lifecycle

<table>
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<tr>
<th><strong>Day 0</strong></th>
<th><strong>Day 1</strong></th>
<th><strong>Day 2/N</strong></th>
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<tbody>
<tr>
<td>**Prepare</td>
<td>**Plan</td>
<td>**Integration</td>
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<td><strong>WAN Automation Engine</strong>&lt;br&gt;Planning and predictive modelling to analysis potential scenarios</td>
<td><strong>Network Insights</strong>&lt;br&gt;Provides routing data analytics to significantly reduce mean time to repair</td>
<td><strong>Evolved Programmable Network Manager</strong>&lt;br&gt;element and network management</td>
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<td><strong>Qualification Environment</strong>&lt;br&gt;Rapid qualification and integration to support new feature and software delivery into production</td>
<td><strong>Trust Insights</strong>&lt;br&gt;“always on monitoring” to determine the integrity of infrastructure</td>
<td><strong>Situation Manager</strong>&lt;br&gt;Connect events across multi domains and provide root cause analysis.</td>
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<td><strong>Network Service Orchestrator</strong>&lt;br&gt;mass scale intent-based configuration across multi-vendor</td>
<td><strong>Network Controller</strong>&lt;br&gt;turnkey solution to end-to-end provisioning and management intent-based networks</td>
<td><strong>Health Insights</strong>&lt;br&gt;learn and measure health of network elements.</td>
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<td><strong>Data Gateway</strong>&lt;br&gt;large scale distributed data collection</td>
<td><strong>Change Automation</strong>&lt;br&gt;safely execute operational tasks with structured workflows.</td>
<td><strong>Optimization Engine</strong>&lt;br&gt;optimize network paths to improve utilization &amp; efficiency (SR-PCE)</td>
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Cisco Automation Built from Proven Global Success
EPNM Customers: 330 and counting

- Optical: 95 Optical Customers
- Converged
- Routing: 235 Packet Customers
Inventory and Topology Management
- Detailed discovery of devices, topology (physical, circuit, virtual connectivity)
- ChassisView
- GUI and template configuration
- Image and config file management
**OUTCOME:** Know your network.

Fault Management
- Service status monitoring
- Circuit-based alarm correlation
- Troubleshooting in context
- Circuit troubleshooting tools
- Multi-layer traces
**OUTCOME:** Reduce time to know, time to restore service

Performance Management
- KPI Monitoring (device, interface, and circuit/virtual connection)
- Real-time and Historical PM
- Leverage network features and probes, e.g. IP SLA, Y.1731
**OUTCOME:** Reduce time to know, time to action

Configuration/Provisioning
- Discover circuits and virtual connections
- Edit or delete discovered circuits/virtual connections
- Device-level configuration
- UI and NBI driven Provisioning
- Centralized control plane for optical circuit provisioning and restoration
**OUTCOME:** Reduce time to value, increase provisioning accuracy

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Operation Baseline for Routing Infrastructure Solutions
Operation Baseline for Optical Infrastructure Solutions

Data Center Interconnect
- NCS 1000
- NCS 4000

Network Convergence
- NCS 4000
- Any MPLS vendor

TDM2IP Modernization
- NCS 4200
- NCS 2000 / NCS 1010

Pure Play DWDM
- NCS 2000 / NCS 1010
EPNM – Continuous Investment

EPNM 1.x 2015/2016
- EMS/NMS features
- Basic CarrierE
- Basic Optical
- MTOSI NBI
- ~15 device types

EPNM 2.x 2017/2018
- MEF 2.0 CarrierE
- Circuit Emulation Service
- MPLS/TE, FlexLSP
- L3VPN
- Complete Optical
- ~70 device types

EPNM 3.x 2019/2020
- Segment Routing
- SONET/SDH CEM
- Enhanced dashboards
- RESTConf NBI
- ~100 device types

EPNM 4.x 2020
- EVPN/VPWS
- Ethernet SLA extensions
- Optical PCE
- ~170 device types

EPNM 5.x 2020/2021 [in development]
- iPoEoF
- FlexAlgo
- Phase 1 scale architecture (double capacity)
- ~150 device types

EPNM 6.x 2021/2022 [planned]
- Phase 2 scale architecture (50% capacity increase)
- ~170 device types

EPNM 7.x 2022/2023 [planned]
- Phase 3 scale (cluster) architecture (3x capacity)
- ~170 device types
EPN Manager Landing Page

First view when logging in

Know your network at-a-glance

Customizable
Please download the EPNM Datasheet

Available on
cisco.com/go/epn-manager
For more information on Cisco’s Automation Portfolio please visit cisco.com/go/epn-manager and cisco.com/go/crosswork
Questions?