Cisco Evolved Programmable Network (EPN) Manager

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Systems Engineer

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Agenda

- Industry Trends and Directions
- Network Infrastructure Convergence
- Network Transport Convergence
- Cisco Service Provider Strategy
- Cisco EPN Manager Stands Out
- Cisco EPN Manager At-A-Glance
  - Features
Industry Trends and Directions

Business Model Challenges
Find new revenue sources

Traffic Growth
Do more with less

CapEx & OpEx Pressures
Optimize operations

OTT entrants

Widening gap

Converging infrastructure

Revenue vs. Traffic Growth

Voice Era

Data Era

Traffic

Revenues

Revenues & Traffic Gap Widening

Source: http://www.radisys.com/tag/vas/
Market Trend: Network Infrastructure Convergence
Single Any-Service Network for Lower CapEx and OpEx

Service Decoupled from Infrastructure
- One efficiently utilized network → Consolidated NMS and EMS
- One operational model → Operational transformation
- All services on a single network

Cisco® Evolved Programmable Network (EPN) Convergence Benefits
- Up to 50% CapEx savings → Multilayer optimization
- Up to 75% management savings → Single EMS
- OpEx efficiency: One skill set → Operational transformation
- Revenue opportunities: One access, multiple services

- Multiple underutilized networks
  - Split operations teams
  - No integration between services
  - Multiple OSS/BSS
  - Impedance to business agility

Mobile Backhaul  Business and Private Cloud
Residential Triple Play  Optical Transport

Cisco EPN Converged Infrastructure
OpEx-Based Trends: Network Transport Convergence

- Today: Network architecture is viewed in layers
- Impact: Each layer addresses provisioning, protection, and resiliency differently. Optimization between layers is challenging.

IP + optical reduces OpEx and CapEx by 50%.
Cisco Service Provider Strategy
Business Transformation Through Innovation

Evolved Services Platform

Automation Management Orchestration Policy

Cross Domain Management/Orchestration
Cisco NSO enabled by Tail-f

Provision
Assure
Design & Plan
Optimize
Analyze

Provision: Cisco® EPN Manager
Assure: Cisco EPN Manager
Design & Plan: Cisco WAE
Optimize: Cisco WAE
Analyze: Cisco WAE

VNFs

Network
Compute
Storage

Physical And Virtual Infrastructure (NFVI)
Cisco EPN Manager Stands Out
Single, Converged, Multilayer Solution

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<thead>
<tr>
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<th>Cable</th>
<th>Video</th>
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<th>Simplicity</th>
<th>Agility</th>
<th>Efficiency</th>
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Cisco EPN Manager At-A-Glance

- Model Driven Architecture
- Modern UI
- Integrated Lifecycle
- Shared Repository

Integrated UX
- Carrier Ethernet Content
- Packet Optical Content
- Future Content

Common Core
- Network Provisioning
- Network Assurance
- Device Operations

Device Operations
- ASR9000
- ASR 901
- NCS 4016, 4009
- NCS 2015, 2006, 2002
- ME1200, ME4600
- ASR903
- ME3600X/3800X
- ASR 920
- ASR 901S
- ASR 902

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8
Objectives / Vision: What

“One” NMS/EMS product

• Initial focus on Carrier Ethernet and Optical Transport
• “Core” shared with Enterprise and Service Provider products
• “One” product with “simple” licensing
• “One” EMS/NMS covering network management lifecycle
• “One” GUI covering end-to-end task flows across provisioning, assurance, and device management
• Model-based framework allowing frequent network management content (device drivers, network feature support) updates and customization
Objectives / Vision: Why

• Assist customers through emerging network convergence and network unification transitions

• Provide simplified solution for Day 0/1 Support for Cisco network systems

• Simplify purchase, deployment and operations

• Serve large and small network operations

• Align with emerging network “controller” architectures

• Ease customer’s transition from Enterprise to Service Provider version of EMS/NMS
Customer Benefits

• Increased business agility
  - Cisco Advantage through timely release of device packs
  - Reduced time-to-market of network services
  - Reduced time from device introduction or features updates to actual network deployment
  - Agile, frequent delivery of content asynchronous from platform delivery

• Increased operational efficiencies
  - Quick and easy, automated provisioning of services
  - Situational awareness and faster resolution through identification of affected circuits and virtual connections

• Lower TCO
  - An integrated, end-to-end management product
  - Ease of deployment, maintenance and fast time-to-value
  - Pricing and system requirements aligned to the size of deployment
Objectives / Vision: How

- **Build convergence/transition solutions**
  - Become an integral part of upcoming Cisco network system offers
  - Adapt to network configuration variations found across customers

- **Next generation, evolved programmable network manager**
  - Scope to element management and network management functions
  - Modernize the user interface to task flow-based design

- **Focus on simplicity and usability**
  - Present “one” product appearance and behavior
  - Simplify licensing and pricing
Customer Benefits (continued)

• Enhanced customer satisfaction
  • “One product” / unified user experience (across multi-layer network management tasks) delivered through a simplified, visually appealing interface and end-to-end service lifecycle management—out of the box
  • Future phases: proactive service assurance (fault correlation and performance management)
• Ease of use
  - Easier customer installation
  - Task-flow based device management, provisioning and assurance
• Simple to purchase
Competitive Differentiation

• “One” product experience
  • Simplified, consistent and visually appealing user interface
  • End-to-end service lifecycle—out of the box
  • Common database and information model, enabling flow-through and synchronization between assurance and provisioning

• Reduce customer TCO
  • Increased operational efficiencies through automation
  • Simplified solution for day 0/1 support
  • Ease of deployment and fast time-to-value
  • Minimal system requirements aligned to the size of deployment
Device and Network discovery

- Manually adding Devices (controlled fashion)
  - IP Address/ DNS Name
  - SNMP v1, v2c and v3 information
  - Telnet/SSH credentials
  - Optionally HTTP

- Automatic Discovery of Devices
  - Ping Sweep of IP Address Range
  - CDP (Cisco only), LLDP (non Cisco)
  - Routing Table (ARP, BGP, OSPF)
  - Include or Exclude Filters
  - SNMP and Telnet/SSH credentials
  - Preferred Management IP (Loopback IP, SysName, DNS Reverse Lookup)

- Bulk Import from File or System's
Network Discovery and Topology Map

- Toolbar
  - contains functions such as filtering, viewing, changing zoom levels, layouts and creating objects.

- Group
  - is a collection of items. Users can create arbitrary groups. Groups can be displayed on the canvas.

- Filter
  - provides a set of filters for severity and link types. Filters filter out objects on the canvas.

- Background
  - Background images can be freely loaded
Topoogy, additional Information

- Accordions display information relatively to the selected group. Space can be increased using the horizontal splitter.
- Click the “Alarm Table” link to navigate to the full Alarm Table.
- Circuits lists all circuits in the selected Group.
- Circuits are created from the Circuit panel +.
- Links panel exposes a link to the Link Table.
Topology, Visualize Routes

- Link Styles for Route Types
- A link connects two nodes and uses visual treatments to indicate:
  - quality of connection
  - protected, working, restored state
  - aggregation (link bundles)
- Treatments may be turned on/off using the Show menu.
Circuit Provisioning

- Task flow driven procedure Point and Click
- Graphical and Textual selection of endpoints
- Graphical circuit route and constraints visualization
• The Device 360° View provides detailed device information including device status, interface status, and associated device information. You can see the device 360° view from nearly all pages in which device IP addresses are displayed.
Circuit Assurance “Circuit/VC 360” view
(Preliminary Design)

- From the circuits inventory, the user can open the “Circuit/VC 360” view
## Main Features and Benefits

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<tr>
<th>Features</th>
<th>Benefits</th>
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<tr>
<td>Point-and-click provisioning of circuits and services</td>
<td>Improved operational efficiency and increased business agility</td>
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<td>Event and fault management for optical transport circuits and Ethernet virtual connections (EVCs)</td>
<td>Increased customer satisfaction through fast, effective troubleshooting and correlation</td>
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<td>Network health monitoring, including fault and performance</td>
<td>Increased customer satisfaction through proactive assurance</td>
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<td>Modernized user interface, easy for operators</td>
<td>Simplicity and enhanced quality of experience</td>
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<td>NBIs for OSS integration</td>
<td>Lower TCO, operations effectiveness and efficiency</td>
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Summary

Main Points
Simple, converged, multilayer management result in significant OpEx reductions

Business Outcomes
Simplicity, Agility and Efficiency

Unique Value Proposition
Multilayer, Integrated Lifecycle Management, Multi-domain
Thank you