

Use Case*Layer 2, IP, Cloud & Optical Services Orchestration in a Multi-Vendor Environment*

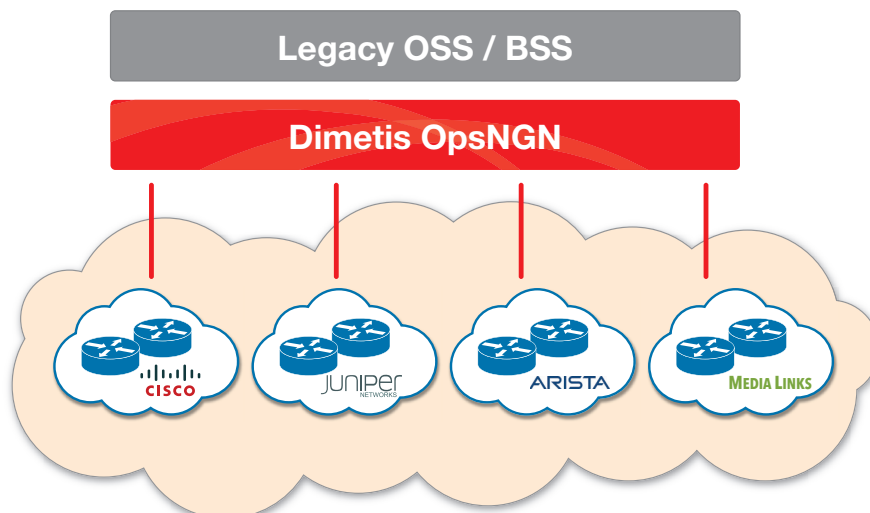
Virtualization, automation and orchestration of Communications Service Provider's (CSP's) networks hold the promise to dramatically change the fundamental economics while accelerating the delivering and breadth of services. This use case will outline the challenges and orchestration solution for a multi-vendor network for a North American Tier 1/2 CSP.

Communications Service Provider

- North American Tier 1/2
- Services - Dark fiber, wavelengths, SONET, Ethernet, IP services, colocation and wireless backhaul
- Customer segments - Data centers, wireless carriers, national carriers, ISPs, enterprises, and government agencies
- Network - Fiber network in North America and Europe

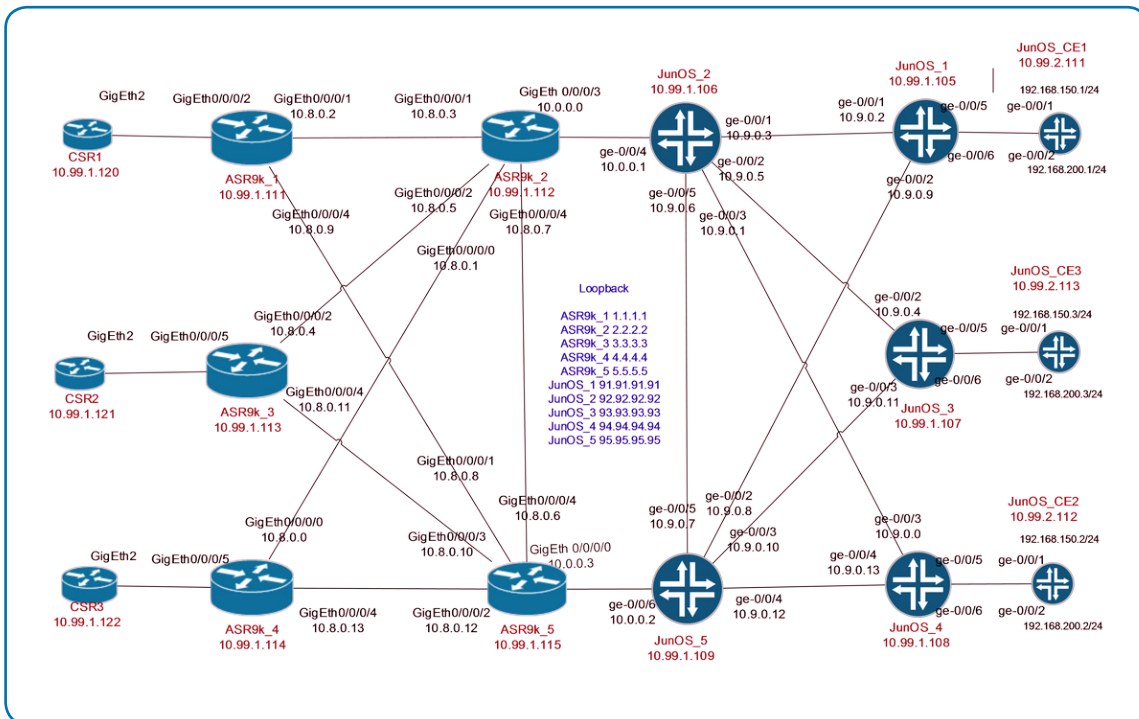
Challenges

- Complex multi-vendor router, switch and transport network - Cisco, Juniper, Arista (multi-layer network switches)
- Providing traditional telecom data services as well as complex video/content services in p2p and p2mp mode
- Cannot scale up effectively - mostly manual processes in service provisioning
- High-human touch and high error-rate
- Customer satisfaction declining due to error-rates and long provisioning cycles
- Customer splicing of the network and subsequently customer self-provisioning with restricted access to their networks
- Operational and capital expenses are too high (costly management process)
- Bandwidth Applications Bursting – OTT, Streaming (Netflix, Pandora, etc.)
- Faster time to market of complex services



Desired Provisioned Services

- L2 services
- IP services
- Cloud services
- Optical services
- Broadcast services such as HD-SDI, HD over IP
- Network update automation (firmware, IP addresses) solution process
- Safely transition the network from vendor A to vendor B, or from physical to virtualized mode
- Fully realize the benefit of the NFV promise by properly operationalizing the deployment



Lab Proof-of-Concept - Schematic

- Integrate virtualized network function into your existing OSS and IT environment
- Grow from simple virtualization use cases to very complex use cases
- Avoid creating new technical or organizational silos of management for NFV
- Fully benefit from a standard-based and multi-vendor approach
- Faster innovation and increased revenue through easier and quicker deployment
- Showing the upscale potential by distributing the SW across multiple domains

Solution

- Implement NFV automation/orchestration based on the ETSI-MANO reference architecture
- Automatic network/service discovery - Without an automated tool, network device population is a manual and time-consuming process that results in only a static list of devices
- As-built vs. as-designed network reconciliation – CSP's claim that their inventory is only 50-60% accurate at any given point in time.

- A large part of the overall solution is to use a tool that reconciles the differences between the designed network and the actual physical network in place
- Provide end-to-end management on orchestration – this includes application, service and network orchestration
- Provide management and automation of assurance of the systems and underlying infrastructure for services allowing the CSP more agile operations and the ability to meet market demands
- Service Lifecycle Management (SLM) - Making smarter decisions by analyzing service and product data in real-time, including pre-activation validation through device and network interrogation

Benefits

- Multi-Layer Orchestration
- Technology & Vendor Agnostic
- Highly Available, built to scale
- Open - User Customizable
- Overall OPEX costs can fall by 30% or more, while certain OPEX unit costs associated with service innovation, service instantiation and flow instantiation can be reduced even more drastically
- CAPEX unit costs may be cut by 30-50%, and in certain cases more (savings are highly dependent on the degree of underlying resource pooling and the degree that automated optimization is implemented)

Dimetis is a leading company in managing hybrid networks over the last 25 years with various projects in the telecom and broadcast OSS domains. Dimetis global installed base of customers include such operators as Deutsche Telekom, AT&T, A1 Telekom (former Telekom Austria), AboveNet, GlobeCast France, Hibernia (USA + Europe), Telstra Australia, and Telenor Norkring Norway.

Dimetis is a member of the TMF, IETF, ETSI NFV, EBU bodies, which are dedicated to defining functional requirements and standards for the next generation networks and emerging architectures.

The paradigm shift of digital transformation in the network is also dramatically transforming the OSS requirements for the management of these digital networks. The transformation of OSS into Service Orchestration creates new challenges for legacy management systems, which were focusing on configuration of static networks.

Dimetis OpsNGN provides a three-layered orchestration approach:

- Application Orchestration
- Service Orchestration
- Network Orchestration
- Network Adaptation / Activation

While the Network Orchestrator allows for bulk operations on maintaining network configurations, the Service Orchestrator enables a seamless end-to-end service deployment across multiple network technologies and vendors. The underlying service activation workflow empowers hybrid networks of legacy networks as well as new protocols based on NetConf/Yang, SNMP, Telnet, Corba, and TOSCA.

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