CENX PROVIDES CLOSED-LOOP INTELLIGENCE ACROSS SERVICE PROVIDER'S NETWORK PLATFORMS

A fundamental shift is underway - networks are becoming software. The service provider examined in this case study was no exception as they were, and are, driving a major shift to network function virtualization (NFV).

The service provider had already selected much of their NFV technology, including their data center technology, their virtualization technology, and their NFV orchestrators (that were responsible for the fulfillment functions such as instantiating a virtual network function (VNF), scaling up a VNF, etc.). Their original plan to assure these services was "business as usual": integrate upwards into their existing operational support system (OSS) silos - their fault systems, performance systems, ticketing systems, testing systems, etc.

The Challenges of NFV Assurance

Complexity in the data center

NFV introduces a whole new domain that needs to be assured: the data center. It quickly became apparent that these are extremely complex. The data center delivers network services which may be composed of multiple VNFs, each of which can have multiple components running in virtual machines implemented on a complex mesh of compute, storage, and networking hardware. Given the complexity and scale, it became clear that an existing OSS strategy meant the need to hire a large team to keep this infrastructure alive.

Complexity in the network domains

The network services delivered by the NFV data center do not run in isolation. They essentially become network elements that connect into existing physical network domains (the IP VPN network, the Ethernet network, the mobile private network, etc.). Each of these combination physical/virtual network domains provide services to customers or other network domains. This results in additional complexity, and thus staff, to assure all of these services.

Dynamic Topology

Critically, in the world of NFV, the topology of these networks can be very dynamic. In physical networks, adding a new element, such as a firewall, required planning, truck rolls, and time. But with NFV, this could happen with the click of a mouse. The OSS were not designed to handle this. For example, how could they show you what the topology was yesterday in order to do root cause analysis?

SERVICE PROVIDER AT A GLANCE

- Tier 1 converged operator
- Undertaking a massive transformation to NFV
- More than 20% year-over-year growth in IoT revenue driving the need for opex reduction

Challenges

- Good progress on NFV fulfillment but big gap on NFV assurance technology
- Need to manage the transition to NFV while operating existing physical network without growing opex
- Scale issues with services growth (e.g. IoT), NFV complexity, and dynamic topology inherent in NFV driving need for a different approach than old OSS with legacy software technology

Solution

- CENX provides a unique, scalable solution for topology and assurance as part of service provider's closed-loop automation strategy

Benefits

- Enabling the transition to NFV while actually reducing overall opex
- Operations teams already experiencing a 50-75% reduction in average triage times in existing physical network

Breaking the OSS Paradigm: Closed-Loop Automation per Domain

A new approach is necessary as hiring the massive amount of staff to deal with the increased complexity would not be feasible. They brought in CENX as part of an overall approach to move away from their OSS silos, and shift towards a strategy of closed-loop automation. This is represented in the figure below. Instead of using centralized OSS providing a specific function across multiple domains, they would build a closed-loop per network domain. The goal was to implement an assurance solution per domain to monitor and analyze the health of that domain, evaluate the root cause of issues, and trigger actions in the orchestrators acting locally to address the issue - without human involvement.
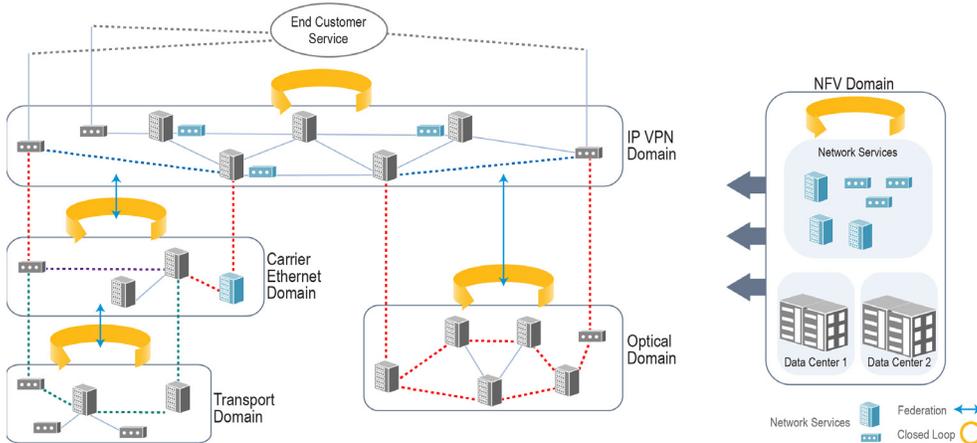
This is a fundamental shift. Rather than thinking primarily about functions (fault, performance, testing, etc.) across domains, this meant focusing first on a domain.

CENX Provides Foundation for Closed-Loop Automation

CENX technology was chosen primarily for the ability to rapidly adapt it to each unique network domain, to automatically discover and hold a dynamic topology, and to employ big data techniques to evaluate the status of the services provided by that domain in real time. An instance of CENX was implemented in the NFV domain, and nine other domains will be federated together since services provided by one domain are often resources used in another.

The results are already apparent, with a 50-75% reduction in average triage time per domain, the elimination of inter-domain trouble tickets, and proactive resolution of issues before they impact service.

"Virtualization promises significant opex savings. However, these savings depend on new operational methods and high degrees of automation; without them costs and complexity are likely to rise. The service provider and CENX have taken the first step toward the successful automation of service assurance by deploying an end-to-end, federated view of services across network domains."

Grant Lenahan, Partner and Principle Analyst, Appledore Research Group

About CENX
CENX fundamentally changes the way service providers view their networks. A leading provider of network and service operations software solutions, CENX ingests all of an operator's network data, across multiple domains and physical and virtual infrastructure. Harnessing the power of big data analytics, CENX visualizes network and service topology, inventory, fault, and performance in a single pane, in real time. CENX enables the world's largest and most innovative service providers to scale their operations as the network scales.

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