



MULTI-LAYER DATA CONNECTIVITY ORCHESTRATION

One of the main problems facing service providers around the world is that the multi-vendor legacy systems that make up their infrastructure inhibit the ability to remotely identify, diagnose, and resolve issues quickly and accurately. Disparate fault, performance and utilization operations support systems in the service providers network make it difficult to identify and faults and service degradation in real time. This project overview demonstrates a true end-to-end multi-layer SDN orchestration of an MPLS-based WAN over Optical infrastructure.

SDN PROJECT OVERVIEW

CHALLENGE

To get a comprehensive view of their network topology, many operators utilize different systems for each specific function, such as inventory or fault or performance. This leads to time-consuming “swivel-chair operations” and manual intervention. Operators need an automated solution to enable them to quickly and accurately correlate fault, service OAM, and utilization statistics in a single, end-to-end view of the network to quickly identify the root cause of network degradations and outages.

SOLUTION

This project overview demonstrates a true end-to-end multi-layer SDN orchestration of an MPLS-based WAN over Optical infrastructure. The CENX Cortx Service Orchestrator serves as a higher layer orchestrator that optimally synchronizes the MPLS and Optical layers. Upon notification of failures and policy violations, it dynamically adjusts the optical or packet layers via the SDN controllers to ensure optimal routing and policy conformance.

BENEFITS

- Enables real-time operations across multi-vendor platforms
- Provides superior flexibility and utilization of resources due to ability to dynamically provision and assure connectivity to Cloud Data Centers
- Drives revenue growth due to accelerated time-to-market
- Drives significant cost efficiencies due to faster and more accurate fault, performance, capacity and SLA management
- Increases user Quality of Experience due to optimization of route topology

Company	Device/Network
	Cortx Service Orchestrator for WAN orchestration and real-time operations enhancements
	Lab and testing environment for WAN with Optical and Layer 3 devices
	Optical devices for the WAN
	Layer 3 devices for the WAN
	Data Centre infrastructure for WAN controllers and Service Orchestrator

CENGN MEMBERS



SCENARIOS

The demo will consist of the following steps:

- Optical Domain Path Failure (Fujitsu)
- Optical network failure and packet reroute notifications sent to CENX Cortex Service Orchestrator (Fujitsu, CENX, Juniper)
- Update network topology and shared risk linked group (SRLG) validation; alert raised for policy violations (CENX)
- Optical and packet network adjustments (Fujitsu, Juniper)

STEP 1: FAILURE IN OPTICAL DOMAIN

- Optical link failure (via cable pull or manual port failure)
- Cortex Service Orchestrator receives link failure alarms from Fujitsu Virtuora, stores alarm and updates path status

STEP 2: PACKET REROUTE

- Cortex Service Orchestrator receives link failure alarms from Juniper MPLS, stores alarm
- Cortex Service Orchestrator receives updated topology information from SDN Controllers
- Juniper MPLS automatically re-routes blue label-switched path and notifies Cortex Service Orchestrator of link state changes

STEP 3: CORTX SRLG NOTIFICATION

- Cortex Service Orchestrator processes new topology and raises alert of network policy violation which will remain until situation is corrected
- Cortex Service Orchestrator notifies the operations user of policy violation

STEP 4: PACKET DOMAIN ADJUSTMENTS

- Virtuora turns up optical links and alerts Cortex Service Orchestrator of topology change
- Policy violation is cleared when condition corrected
- LSP is rerouted through new provisioned optical paths

