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The bridge to possible

Multilayer, Multivendor Automation with Cisco's Hierarchical Controller!

Steve Payne, Director – Regional Sales

PSOSPG-2009

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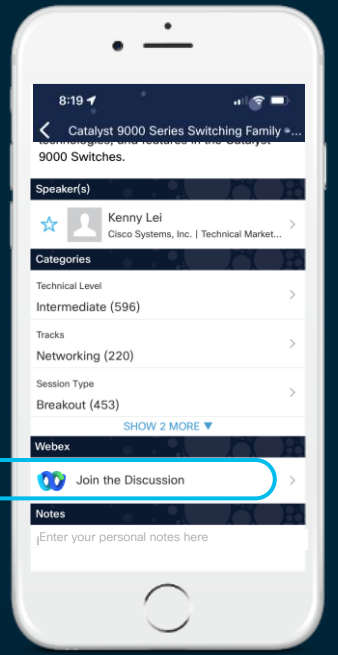

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Agenda

- Introduction
- Why do we need a Hierarchical controller?
- Introducing Crosswork HCO
- How does this fit with the industry?
- Differentiation
- Conclusion

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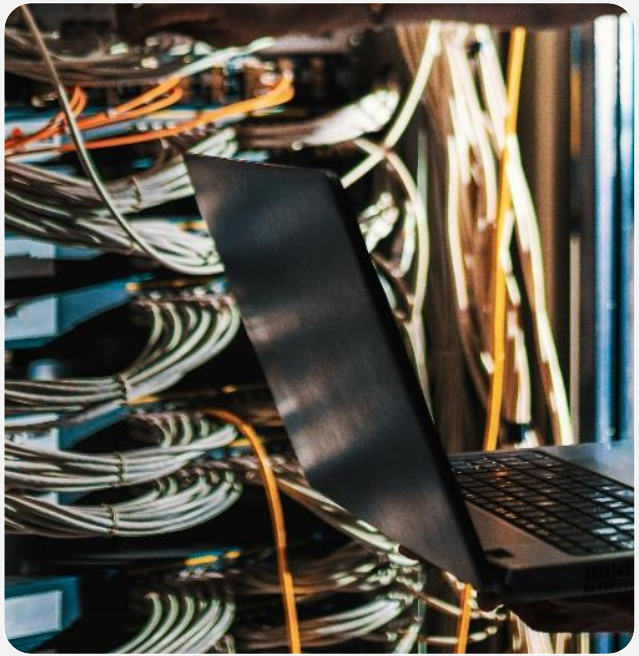
Why the need for hierarchical control?

- All service providers networks are complex
  - Multilayer
  - Multidomain
  - Multivendor
- Demands on the network are ever increasing
  - 5G services
  - On-demand expectations
  - Rapid data growth
  - Architecture shifts



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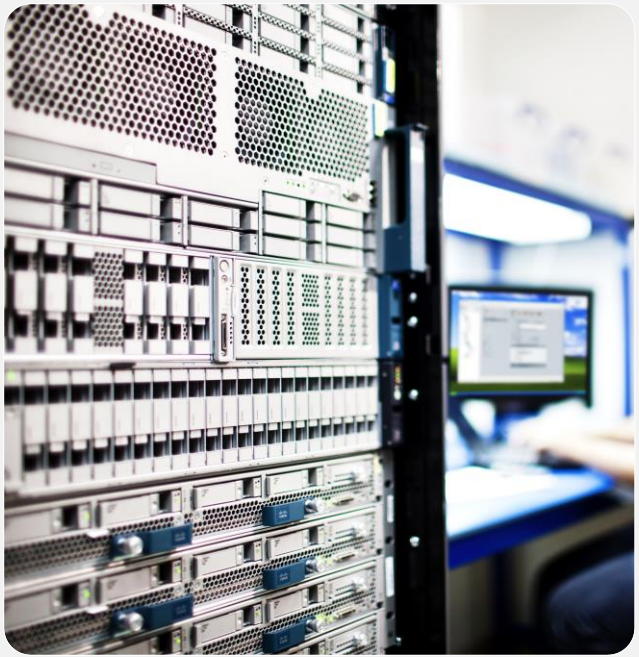
Bring order out of chaos!

- **Abstracting the complexity accelerates:**
  - Innovation
  - Time to market
  - Mean time to repair
- **Simplifying control of a network makes sense!**
  - Segment domains for expertise
  - Abstract when bringing it together
  - Allow for flattening the architecture
  - Routed Optical Networking



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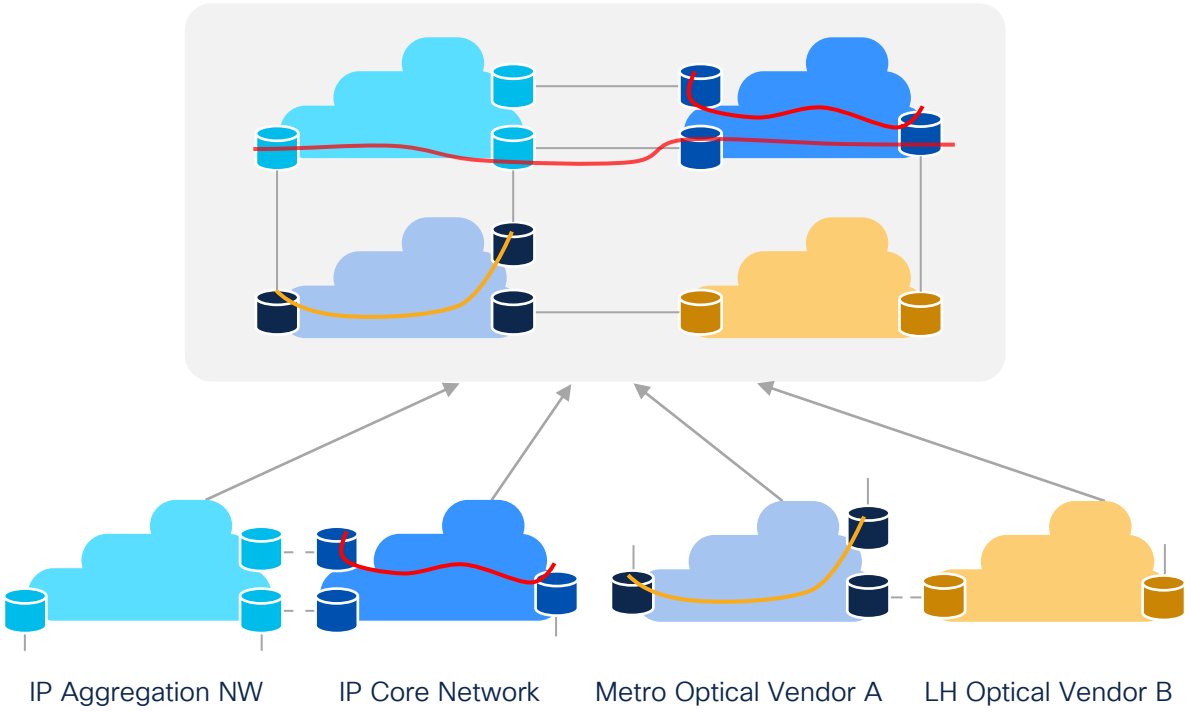
We put the network puzzle together

- **Acquire** domain-specific network data
- **Fill in gaps** using sophisticated algorithms
- **Normalize** into network structure
- Understand how **layers** are connected to each other
- **Analyze** the network to identify issues
- **Visualize** it
- **Control** it



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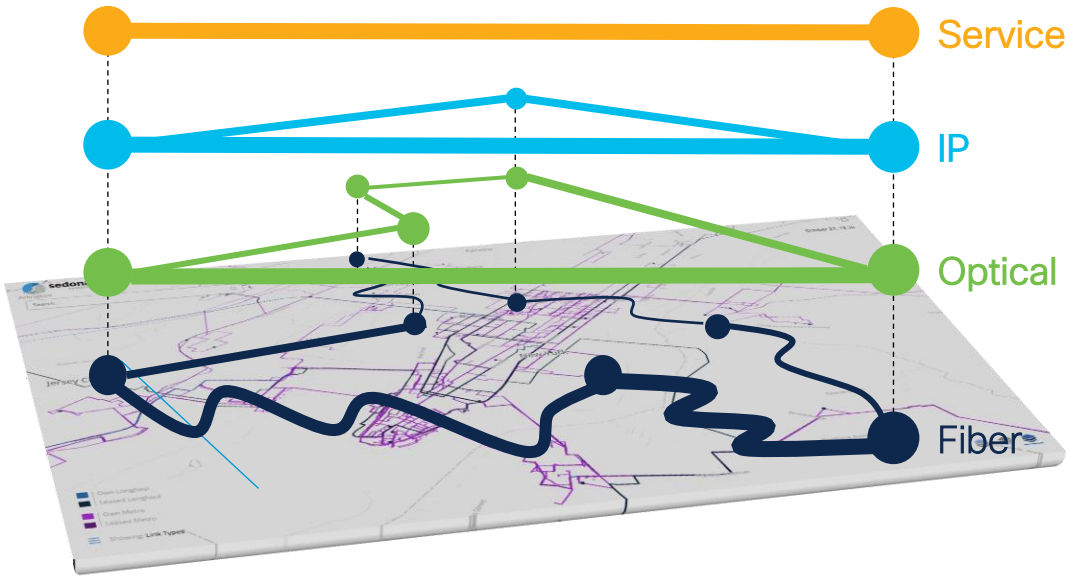
Creating the ultimate network data source: Fiber-to-service visibility



Complete

Multilayer, multivendor, and multidomain topology, traffic, and services (SDN and legacy)

Current

Automatically and ongoingly discovered – directly from the network

Correlated

Dynamically deducing cross-domain connectivity

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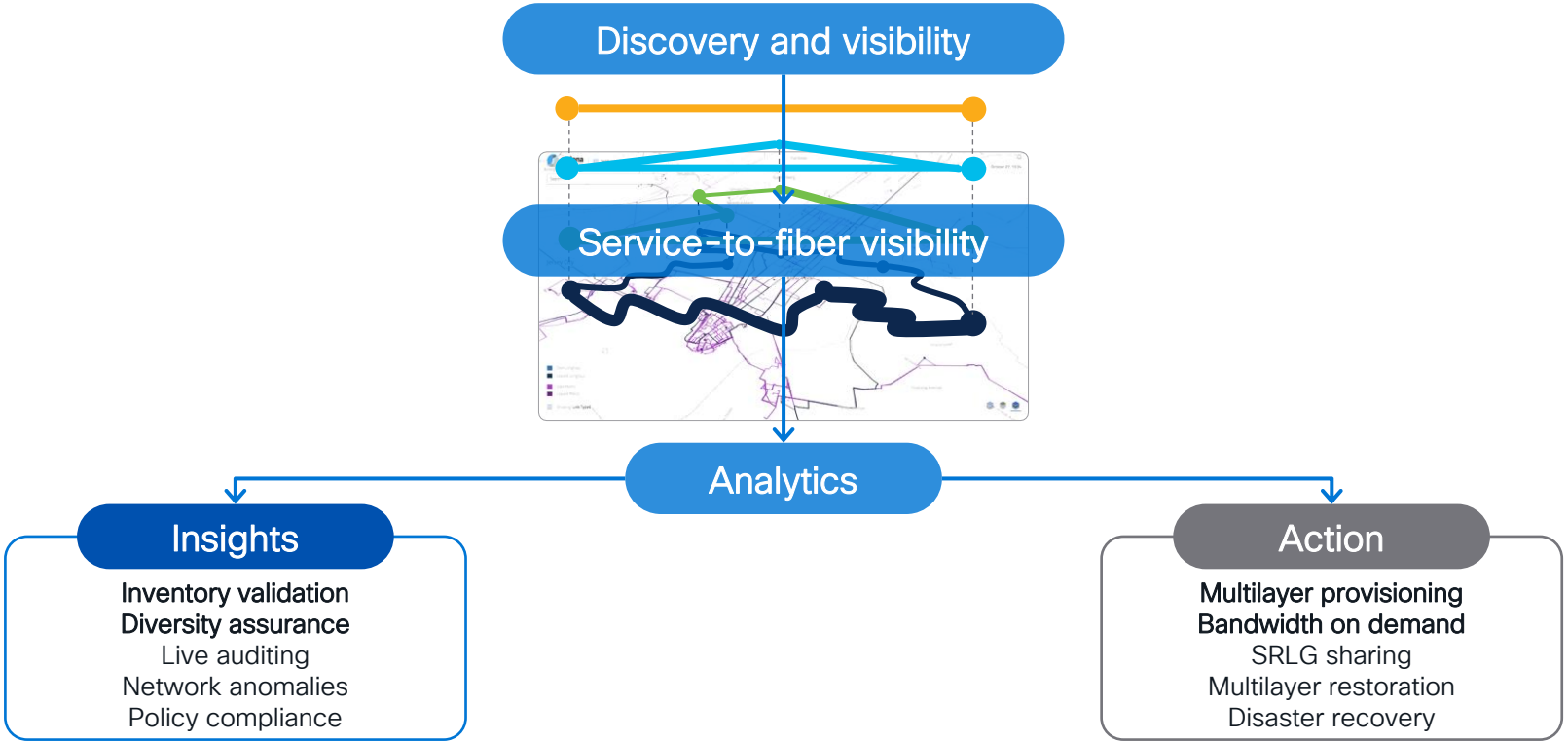
We apply the data to transform network operation



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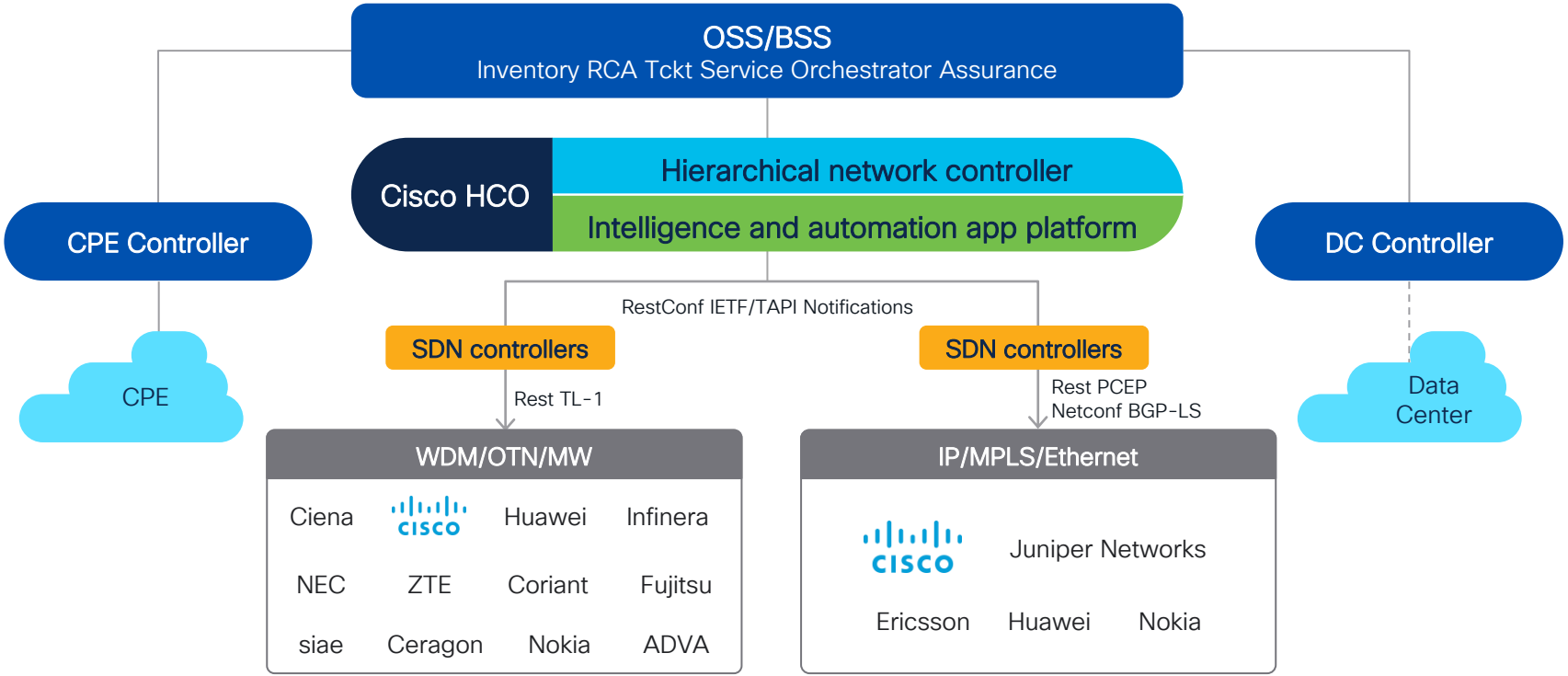
Use case #1a – CHCO's role in the SDN architecture



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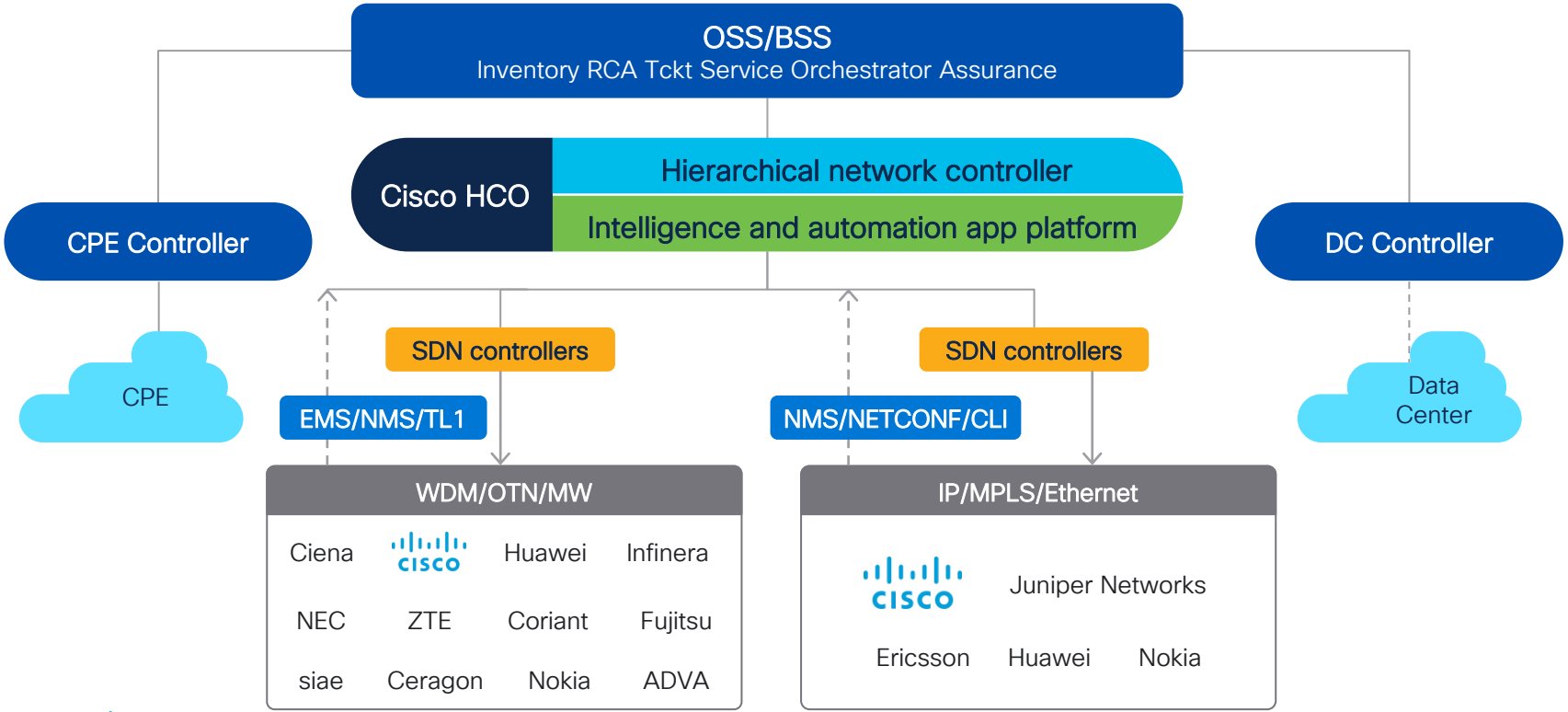
Use case #1b – Transition from legacy to SDN



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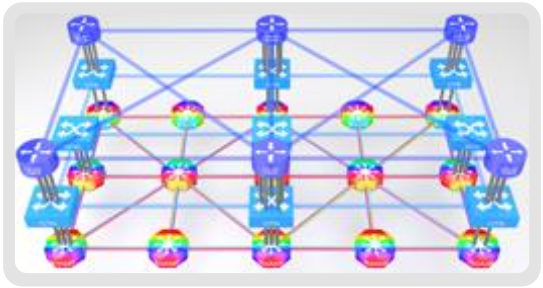
Use case – #2 – Routed optical networking

Today's Architecture

Complex Operations
Siloed Layers

IP NMS | Optical NMS

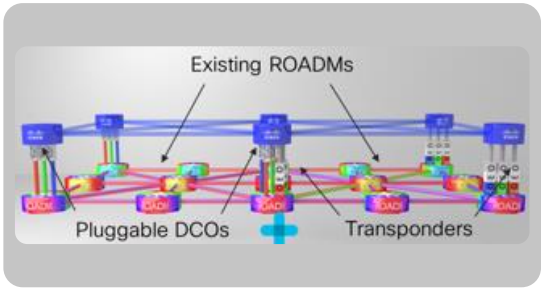


3 Control Planes
IP/MPLS + GMPLS + WSON/SSON

Transitional Architecture: ZR-Enabled Network

Crosswork HCO
Single Pane of Glass

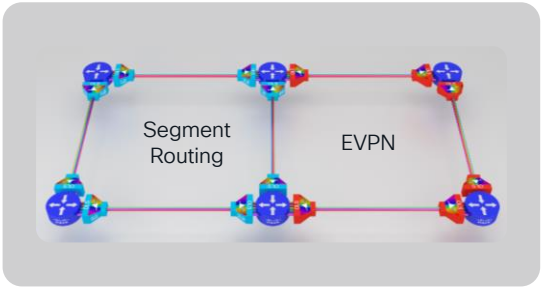
IP SDN Controller (CNC) | Optical Controller (ONC/Existing)



Routed Optical Networking Architecture

Crosswork HCO
Single Pane of Glass

IP SDN Controller (CNC) | Optical Controller (ONC/Existing)



Single Control Plane
Converged IP + Optical Architecture

Acacia
Transponder → Pluggable

leaba
Massive Scalable Silicon

Crosswork Automation | sedona systems
Industry Automation: Standardization

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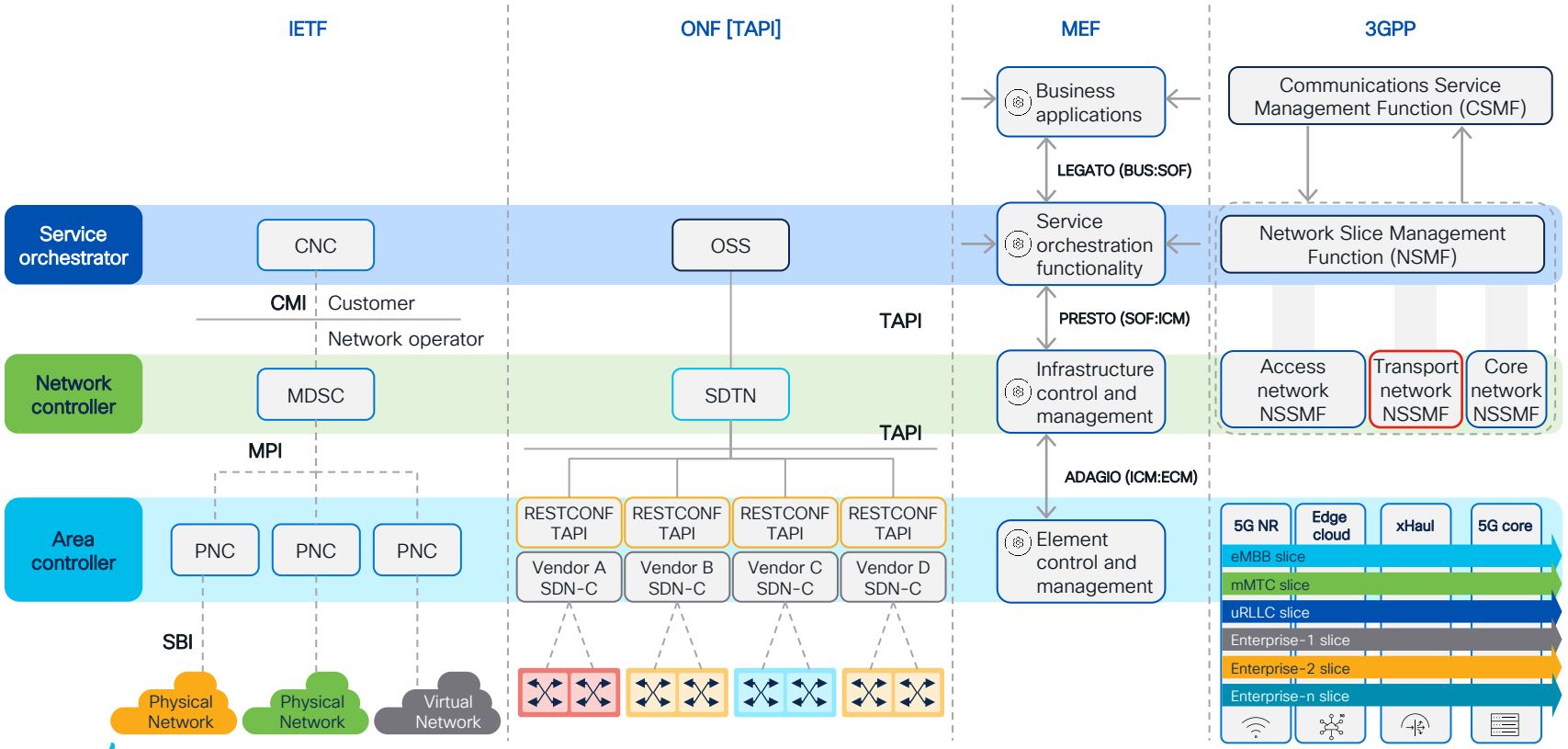
Aligned to standards



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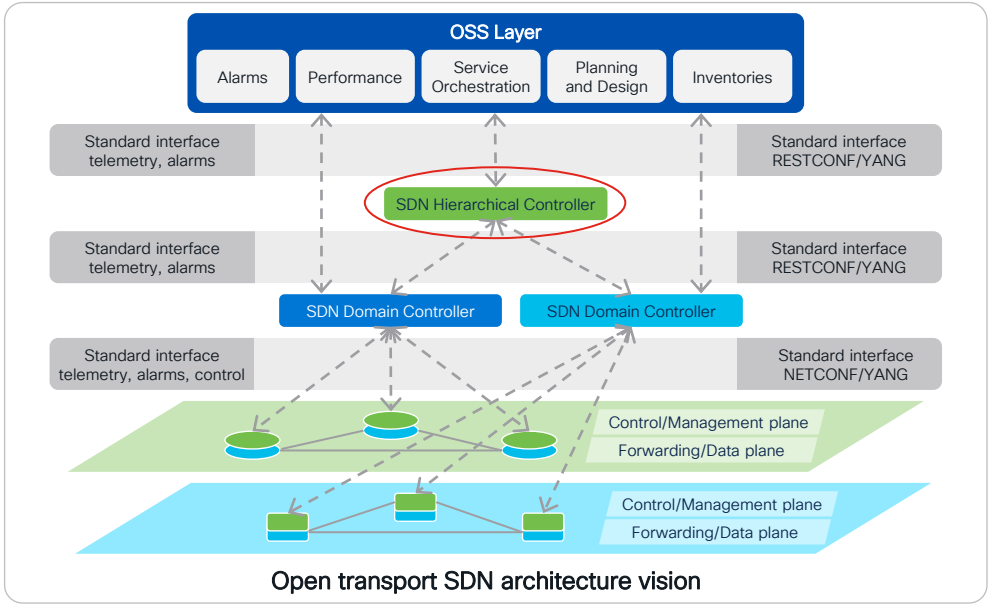
T-Mobile Telefónica TIM MTN
Vodafone Turkcell Orange
Telia Company China Mobile

...As well as by major telco groups

- Cisco Crosswork® HCO is the interface between the OSS world and the network.
- Crosswork HCO has complete network visibility.
- Crosswork HCO closes the loop for network functions (remediation, optimization).
- Crosswork HCO abstracts the network toward the OSS.

Telecom Infra Project Telefónica Vodafone MTN Orange Telia T-Mobile



Open transport SDN architecture vision

https://cdn.brandfolder.io/D8DI15S7/at/jh6nnbb6bjvn7w7t5jbgm5n/OpenTransportArchitecture-Whitepaper_TIP_Final.pdf

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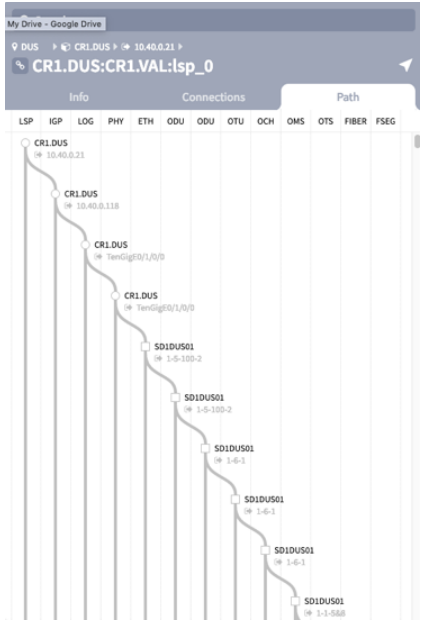
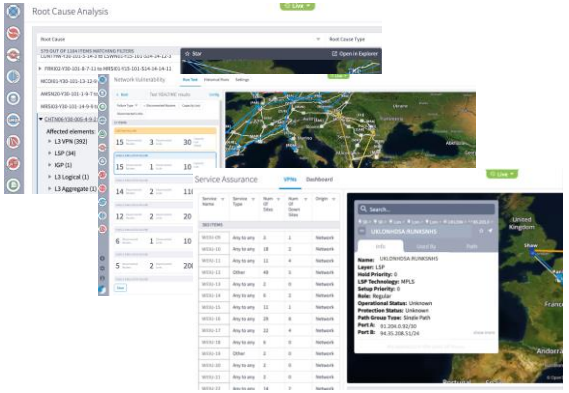
Cisco® Hierarchical Controller core functions

Multilayer paths

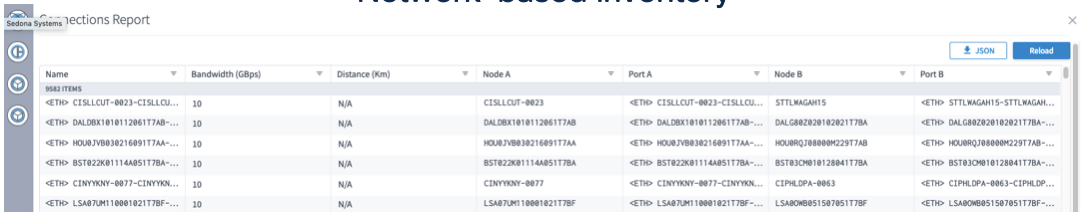


Service-to-fiber topology

Rich suite of applications



Network-based inventory



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Hierarchical Controller values

- Create single point of control for entire transport network
  - Network as a platform
- Enable new architectures and capabilities
  - Routed optical networking
  - 5G
  - On-demand services
- Digital twin of complex multivendor network
- Rationalize interlayer dependencies

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In action (Demo)

Tenets of Cisco Crosswork® automation

Software defined

API-centric, unlocking of operational data and simpler tool chain integration

Standards based

Architecture based on standard APIs and protocols giving customers the needed flexibility.

Autonomous

Real-time visibility, assurance, and analytics to support zero-touch operations

Multivendor + multidomain

Robust support for vendors across technologies for the entire service

Scalable + adaptive

Effortlessly adjust to changes in size, volume, and frequency of workflows

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For more information on Cisco's Crosswork Automation portfolio, please visit

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