



Automating Operations in the Transport SDN

Cisco Knowledge Network Webinar

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Today's Presenters



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Systems





Introduction

- Sedona NetFusion complements and strengthens Cisco's **Automation** portfolio
- Enables **Cisco's RON architecture** as well as a transition from previous network states
- **Relevant for all networks**
 - Legacy
 - Basic and advanced automation
 - SDN & RON



Agenda

- Drivers & market reactions
- Sedona & NetFusion
- Impact & value



Cisco Strategy

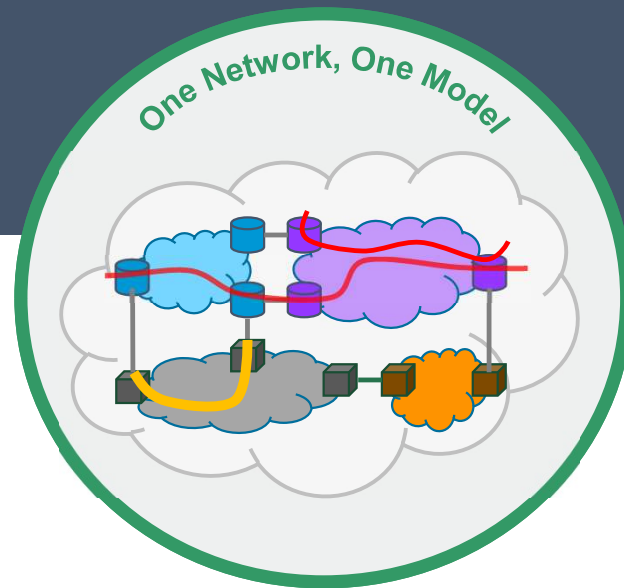
- Cisco leads **Internet for the Future** with silicon, routing, optical and automation
- Cisco Routed Optical Networking (RON) converges IP and optical networks with pluggable coherent optics and automation
- Simplified RON networks operate at mass-scale with 46% less cost
- Sedona NetFusion complements Cisco Crosswork Network Controller to help customers operate the Cisco Routed Optical Networking solution



What Drives Changing Present Mode of Operation

- Globally, 88% of enterprises encouraged employees to work remotely and many will continue to tele-commute*
- Internet traffic spiked by 25% to 45% across the globe** and will continue to grow 35% annually mostly due to video
- It costs \$5 to manage \$1 of network equipment
- IP and optical networks operate in silos and often in conflict
- Complexity drives cost
- Convergence can start now by discovering and controlling multi-layer, multi-vendor networks while phasing in pluggable coherent optics

Introduction to Sedona & NetFusion



Experts in Transport Network Analytics & Automation

Where We Help



Services automation,
SDN transformation

Unique Technology



Multi-layer discovery
& converged control

Independent



Multi-vendor,
100% CSP aligned

Proven Solution



Trusted by tier-1
CSPs worldwide

Partnerships



Primed by
industry leaders

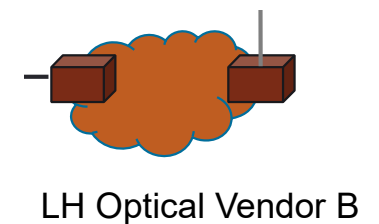
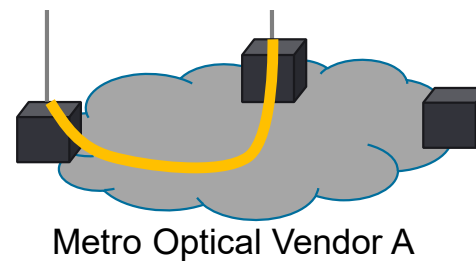
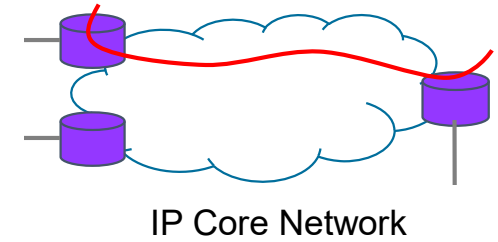
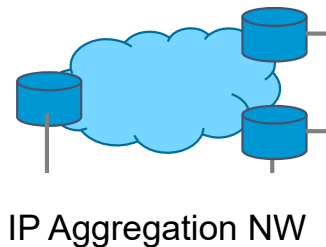


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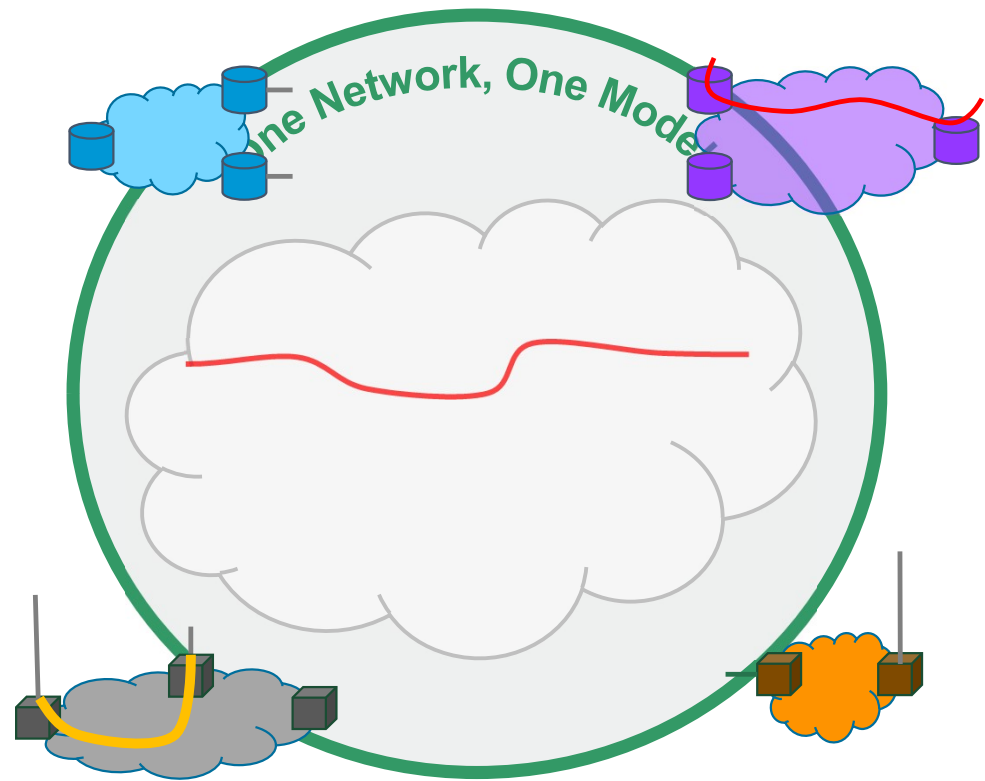
The Challenge: Rigid & Fragmented Networks

- Siloed operations
- No end-to-end view
- Different model per domain
- No idea how domains are connected
- Fragmented & missing data



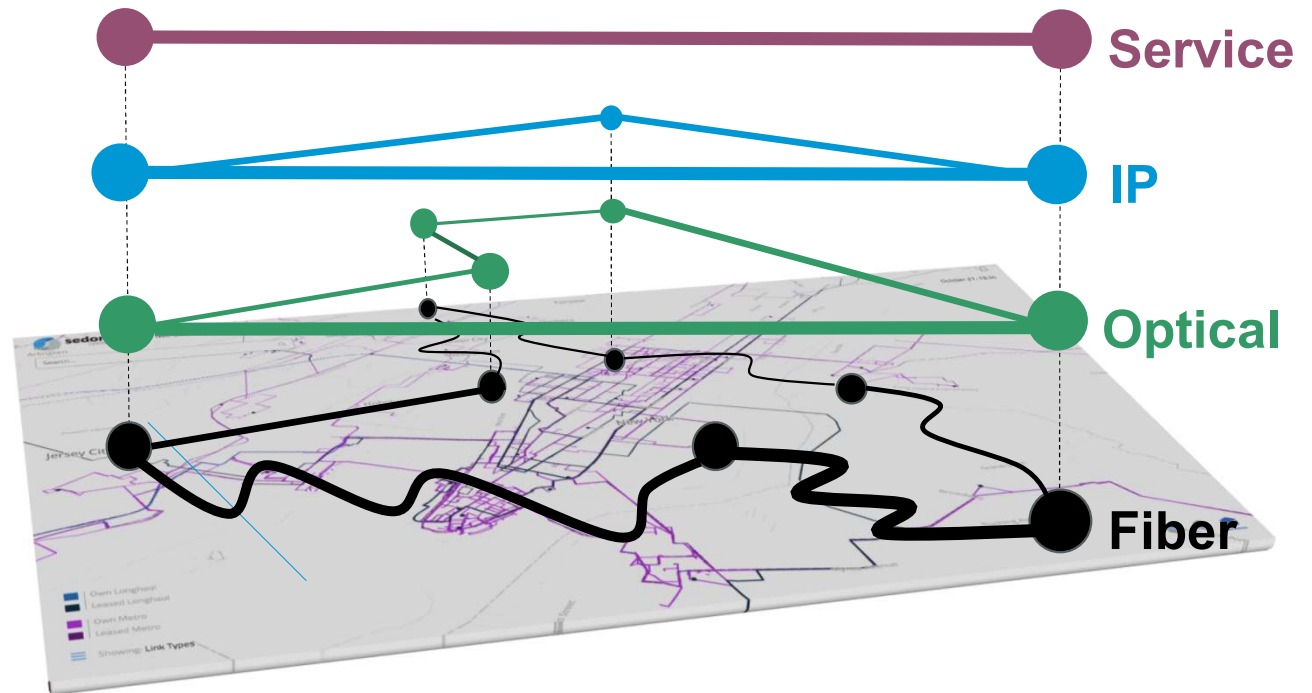
Sedona Puts this Puzzle Together

- Automatically acquire each domain data
- Understand how domains & layers are connected
- Normalize into a single model
- Continuously reconcile changes
- **Result: a digital twin of the network**

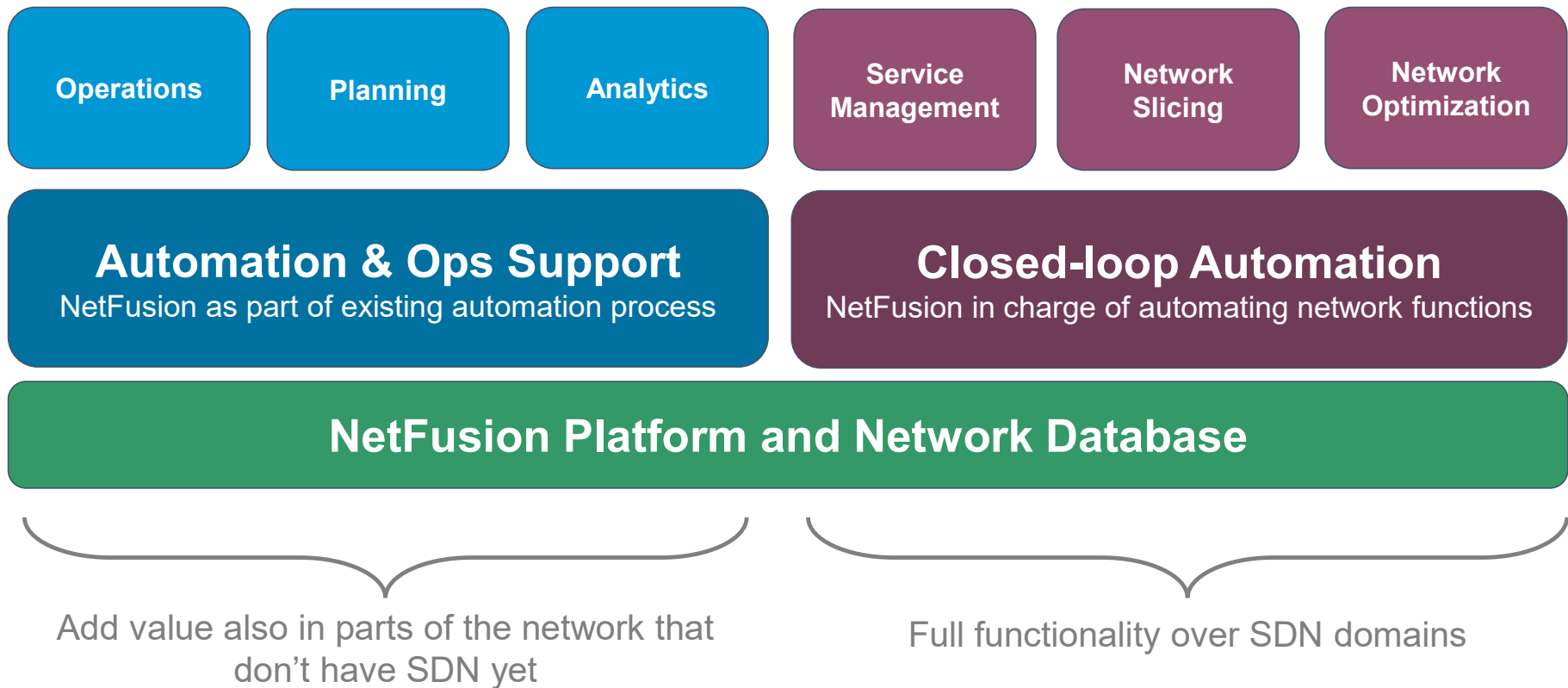


The Digital Twin Enables Automation

- Fiber-to-Service view
- Visualize the network
- Analyze it to find issues
- Automate NG services with strict SLAs
- Optimize the network



NetFusion High Level Solution



How NetFusion Automates CSP Transport Network

NF Automation & Ops Support

Legacy OSS

Visibility and analytics

EMS

EMS, TL1

EMS, CLI

Microwave

WDM/OTN

IP/MPLS/Ethernet

NF Closed-loop Automation

NG-OSS (orchestrators, assurance...)

Hierarchical Controller

SDN controllers

SDN controllers

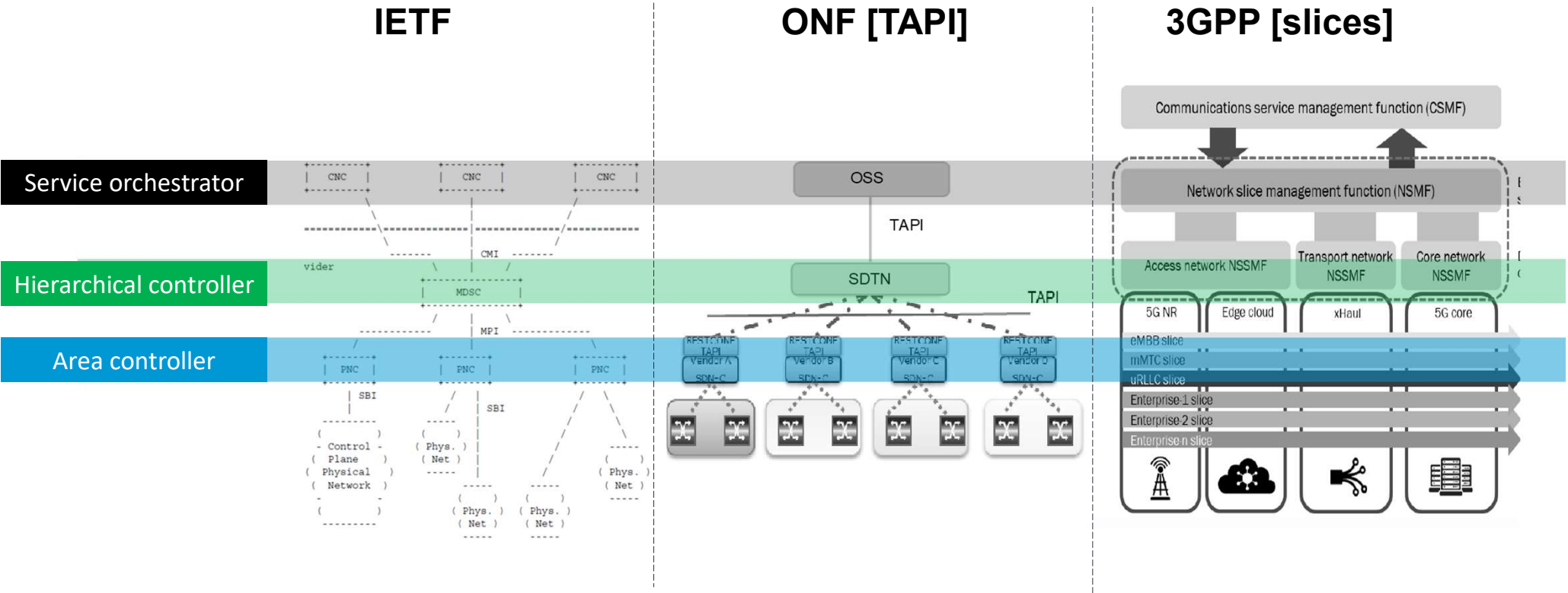
SDN controllers

Microwave

WDM/OTN

IP/MPLS/Ethernet

HCO Architecture Endorsed by Standard Bodies



...As Well as by Major CSP Groups

- HCO is the interface between the OSS world and the network
- HCO has complete network visibility
- HCO closes the loop for network functions (remediation, optimization)
- HCO abstracts the network towards the OSS

NetFusion uniqueness:

- Deployed
- Integrated with most SDN controllers
- Accurate multilayer model
- Sophisticated path computation

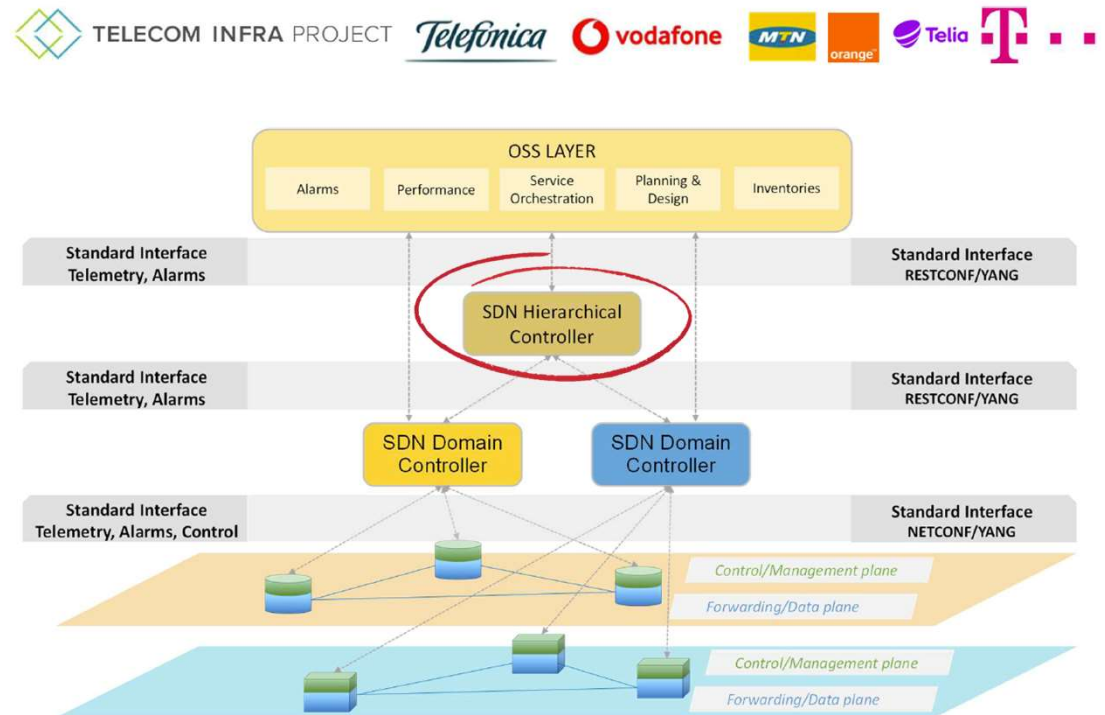
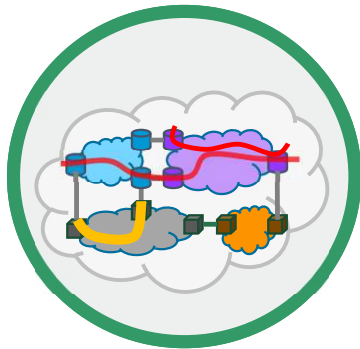
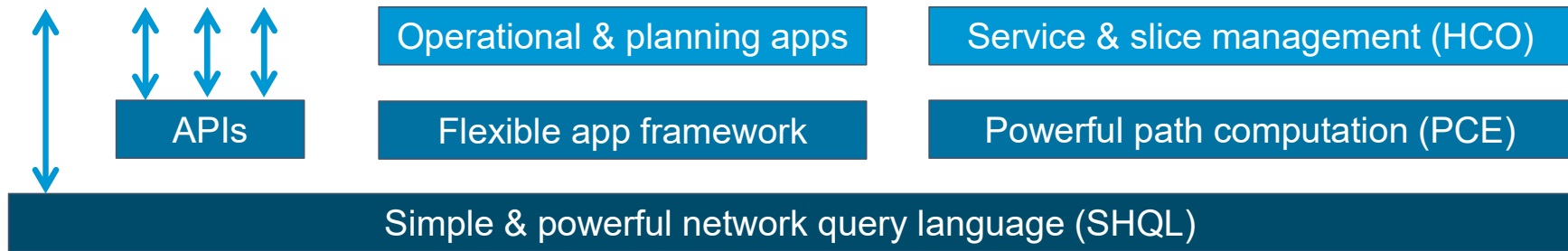
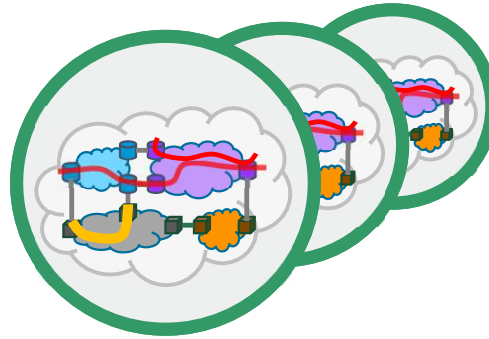


Figure 1: Open Transport SDN Architecture Vision

What is Unique About NetFusion?



Digital Twin:
real-time model of entire network



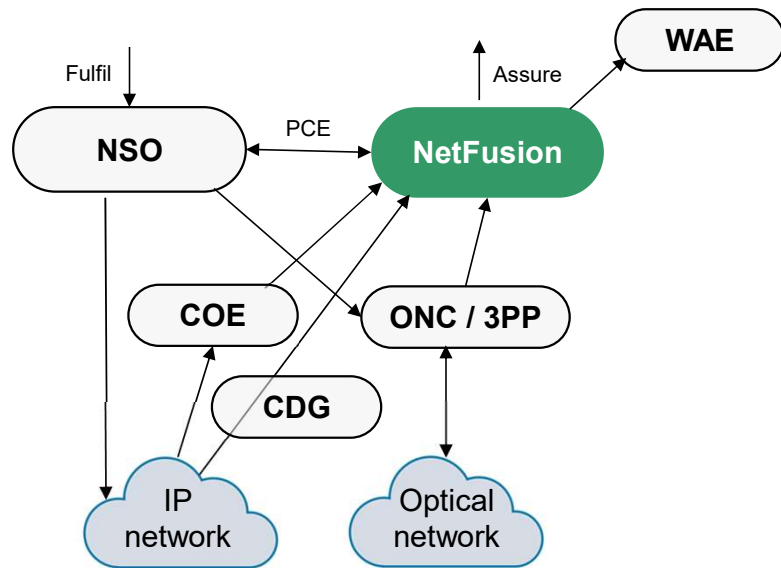
Network history



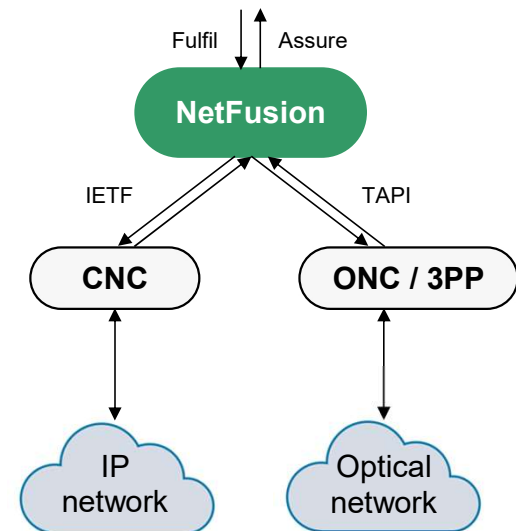
Performance & faults

NetFusion in Combined Cisco/Sedona Architectures

NF Automation & Ops Support



NF Closed-Loop Automation



Demo

- Understanding the network
- Troubleshooting
- Service health validation
- Service provisioning
- Network analysis

Summary

- NetFusion has two main roles:
 - Expanding existing automation & operations use cases
 - The focal point for closed-loop network automation in SDN use cases
- Joint Cisco & Sedona product offers exceptional solution in both use cases
- Key differential capabilities NetFusion delivers are:
 - Discovery and visibility of entire network (“Digital Twin”) – all layers/vendors
 - Integrated & intuitive operational insights and analytics
 - Simple integration with other Ops/Planning tools via innovative APIs
 - Leading hierarchical control solution: closed loop fulfillment and assurance

For more information on Cisco's Automation portfolio and Sedona NetFusion, please visit

cisco.com/go/crosswork

Cisco Crosswork Network Automation

Modernize network operations

Crosswork Network Automation helps your customers simplify operations so they can deliver services faster and improve their customers' experiences. Increase visibility of your infrastructure to derive valuable insights so you can take proactive actions.

[Watch overview \(3:19\)](#)

Simplify network automation

Economic benefits from Crosswork Network Automation

Metric	Value
Faster time to service	85%
OpEx savings	55%
TCO savings	46%

Expanding Crosswork Network Automation with partners

Cisco DevNet SolutionsPlus Partners extend automation use cases and offer the assurance of fully validated "Cisco Compatible" products. Purchase directly from Cisco sales teams and channel partners.

Sedona NetFusion for Cisco network automation

Sedona NetFusion enriches the Cisco automation portfolio by extending Routed Optical Networking into multi-layer and multi-vendor environments.

[Read solution overview](#) [Join webinar](#)

Questions?





The bridge to possible

Capacities and Solutions

Platform capabilities

- Real time topology and service database for entire network
- Real time up/down state for every resource
- History of the topology & state
- Performance data associated with the topology
- Query language integrating topology, performance and history
- Customer specific rule-based tagging of resources
- Sophisticated path computation engine
- Transaction based service management
- Modular apps platform to avail this data to the users

Solutions

Now:

- Hierarchical network controller
- Operational insights and analytics
- Tactical planning

Future:

- Network slice manager
- Self optimizing network

Value Prop per Solution

Product	Value Prop
Hierarchical network controller	<ul style="list-style-type: none">• Single pane of glass / API for service fulfilment and assurance• Standards based, less PS heavy, approach for service fulfillment• Evolution to closed loop proactive assurance
Operational insights and analytics	<ul style="list-style-type: none">• The only ops tool based on an accurate network model (“digital twin”)• Network model + history + performance data → the ultimate troubleshooting tool• Easy tailoring to customer specific needs via tags, SHQL• Enrich the legacy OSS stack (inventory, assurance, fulfillment, ticketing...)
Tactical planning	<ul style="list-style-type: none">• Online planning based on accurate network + traffic data• Use case based – easier to use than “full” planning tools• Adding trend-analysis to allow prediction and proactive usage

NetFusion's Value to the SP Software Ecosystem

Functionality	Examples	Contribution
Classical PM/FM assurance tool	NetCool, Infovista	NetFusion has the service and topology context of PMs – not just the raw data. It can be fed from such systems
Root cause analysis tool	SMARTS, CENX	NetFusion can feed RCA systems with an accurate topology model
Network planning tool	WAE, WANDL	NetFusion can feed planning tools with the topology / traffic
Inventory system	Cramer, EAI, DonRiver	NetFusion can feed inventory systems with accurate network inventory
Trouble ticketing	Remedy Incident	NetFusion can enrich a ticket with the network context Generate new tickets based on proactive insights
Maintenance	Remedy change	NetFusion can assess maintenance impact and enrich the ticket