Live Intra Rede

Tecnologias emergentes aplicadas às redes

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Technology continuously evolving to address network provider challenges / requirements

Network Provider Requirements

- Scale
- Reduction in $/bit and W per km
- Operational Simplification
- Improved Service Agility
- Ability to innovate

Technology Evolution and Network Transformation Opportunities

NMS → Centralized, Multi-layer Domain Controller
Centralized Path Computation Engine, Multi-vendor support → SDN

Router → Monolithic, proprietary chassis-based (5-20RU) → Energy-efficient chipsets, purpose built for NG IP applications (1-2RU)
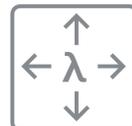
NETCONF YANG
gRPC
SW/HW → Disaggregated HW/SW

Converged Transport → Disaggregation

≈ → λ
← λ → ↕

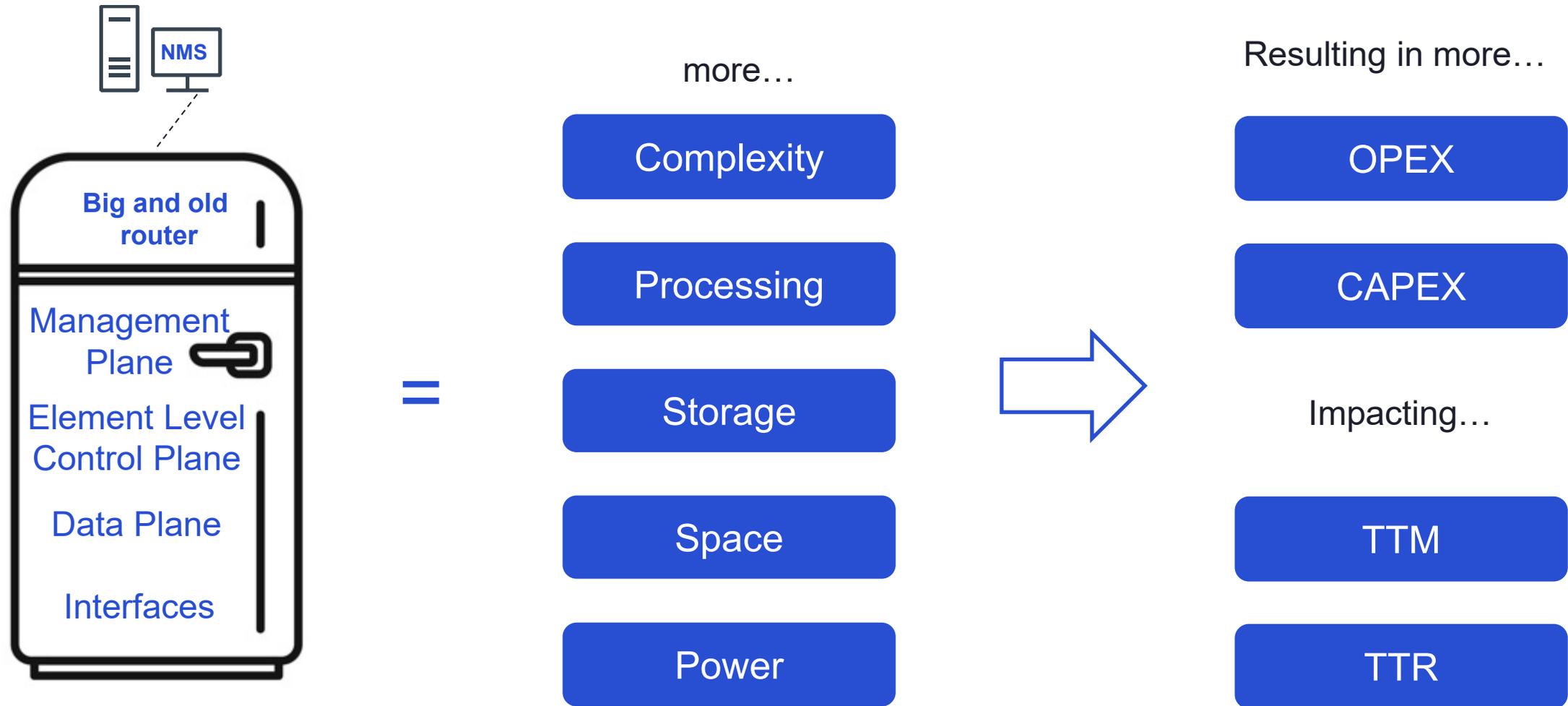100G → 800G

Real-time Visibility / Insight

C&L

Automation

Legacy IP approach will not support the new applications

There is a Better Way to Evolve IP-based Networks

Ciena's Adaptive IP™

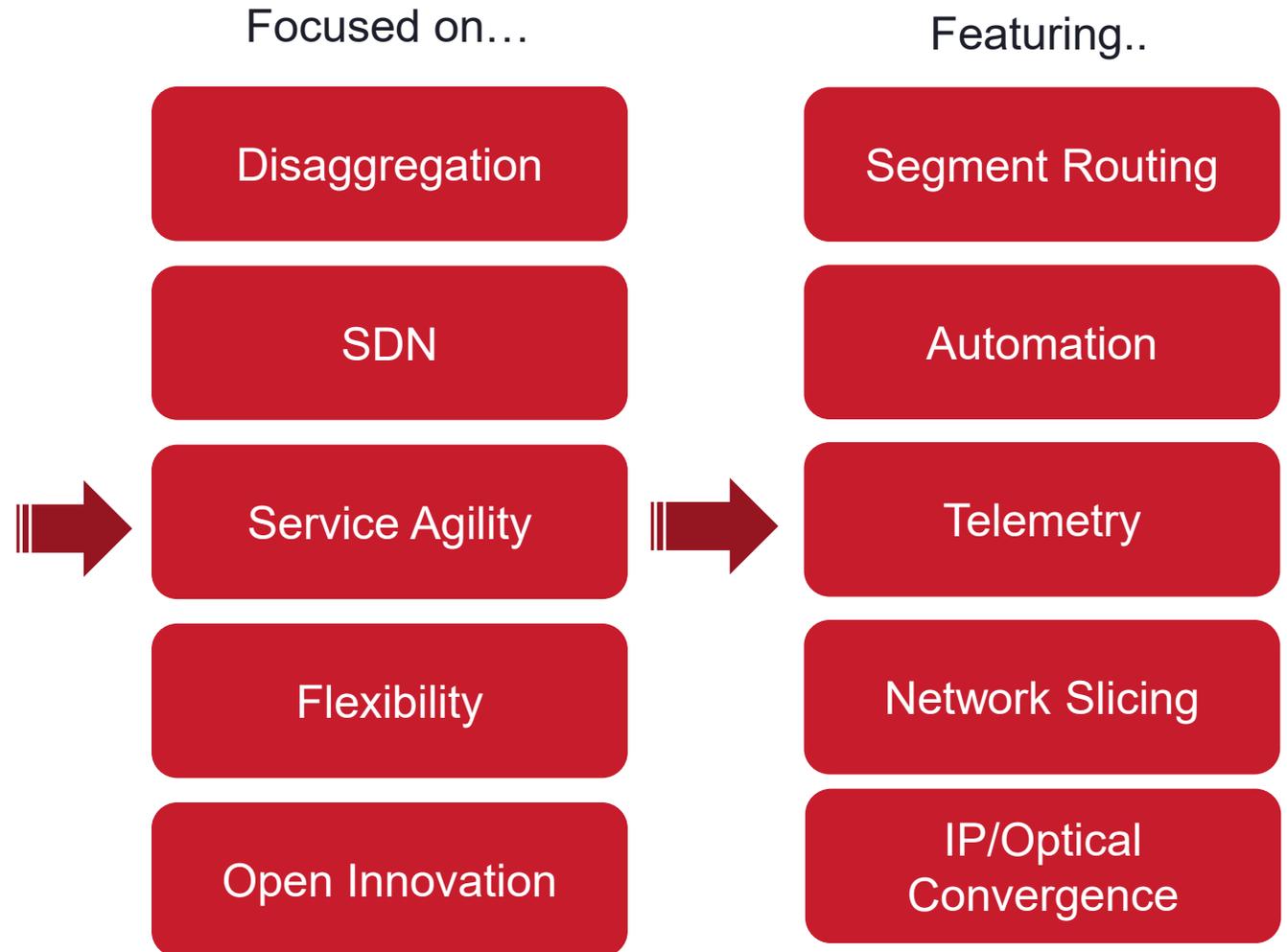Capable of scaling clients and resources on-demand

Fluid in topology and architecture

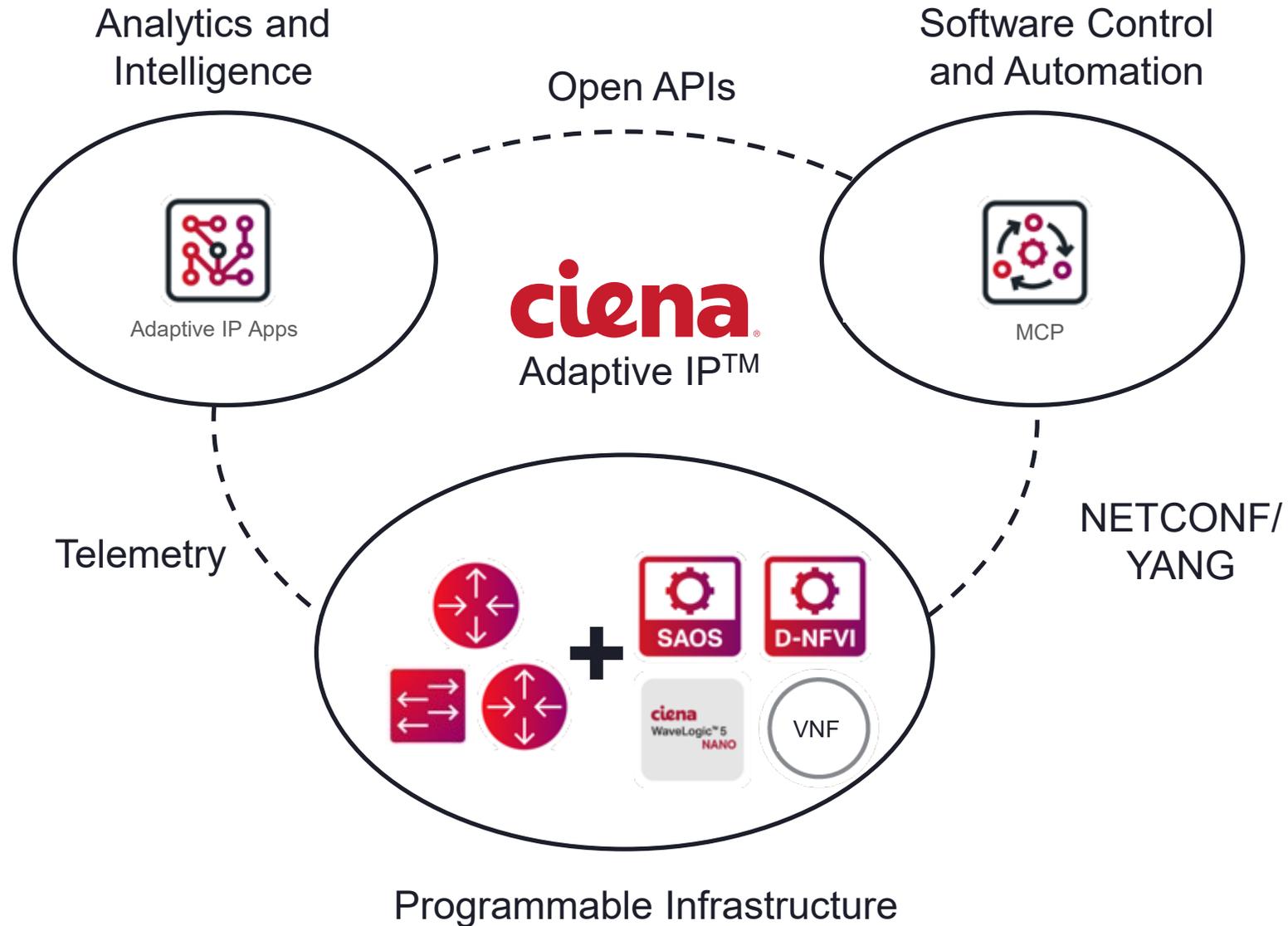Software-centric

Disaggregated control and data planes

Open hardware platform, enabling open-sourced software innovation

Success metrics → agility, simplicity, and usability

Focused on…

- Disaggregation
- SDN
- Service Agility
- Flexibility
- Open Innovation

Featuring..

- Segment Routing
- Automation
- Telemetry
- Network Slicing
- IP/Optical Convergence

https://www.ciena.com/insights/adaptive-ip

Ciena's Adaptive IP Approach

Analytics and Intelligence

Open APIs

Software Control and Automation

Adaptive IP Apps

MCP

ciena Adaptive IP™

Telemetry

NETCONF/ YANG

SAOS D-NFVI

ciena WaveLogic™ 5 NANO

VNF

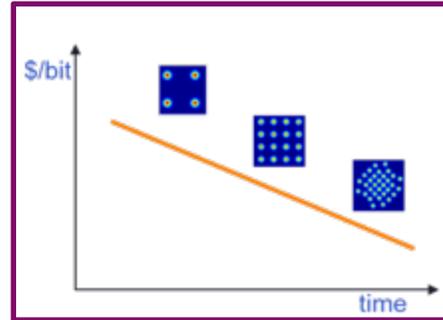Programmable Infrastructure

ciena

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Addressing the need for Massive Scale

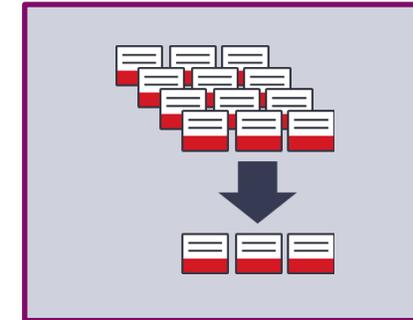Coherent technology is playing an increasingly critical role in solving networking business challenges

Network capacity
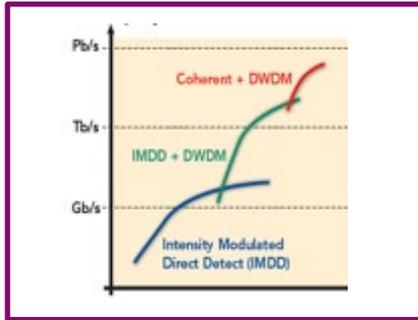
Cost Reduction

Competitiveness
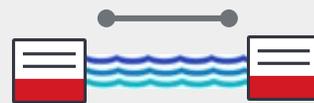

BECOMING PERVASIVE TECHNOLOGY ACROSS APPLICATIONS

Multi-Haul: Metro and Long Haul	Submarine	DCI	Fiber in Access (Fiber Deep, 5G)	Intra-DC?
100s to 1000s km	**10,000km**	**10s to 1000s km**	**10s km**	
Tier 2 City — Tier 1 Metro City		Data Center — Data Center		
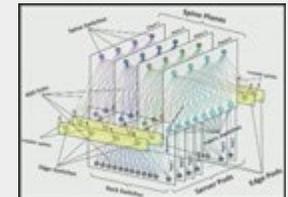
Ciena WaveLogic 5 Nano
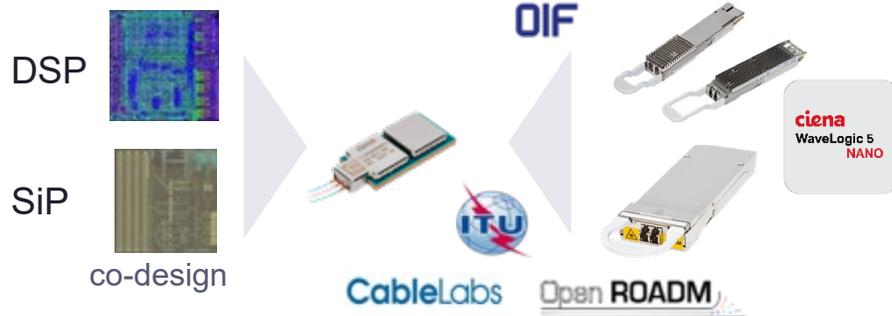
Use Case-Optimized Coherent Solutions - Reducing network complexity and cost while matching your network requirements

Lowest power, longest reach, simpler network

Full technology and design ownership

DSP

SiP

co-design

OIF

ITU

CableLabs   Open ROADM

Interop and high-performance pluggables

Unmatched coherent design and networking expertise for cost efficiencies and reliable deployments at scale

WaveLogic 5 Nano Offering

Transmission Groups	Standards	Line Rates (Gbps)	Symbol Rates (Gbd)
400ZR/ZR+	OIF 400ZR	400G	60
	MSA 400ZR+	400G	60
PKT-MAX	Ciena Proprietary	400G	70
		400G	65
OTN-STND	ITU-T / Open ROADM	400G	63
OTN-MAX	Ciena Proprietary	400G	70

(Lower speeds also supported)

Demo: OIF 400ZR multi-vendor interoperability demo
Ciena successfully demonstrated interoperability!
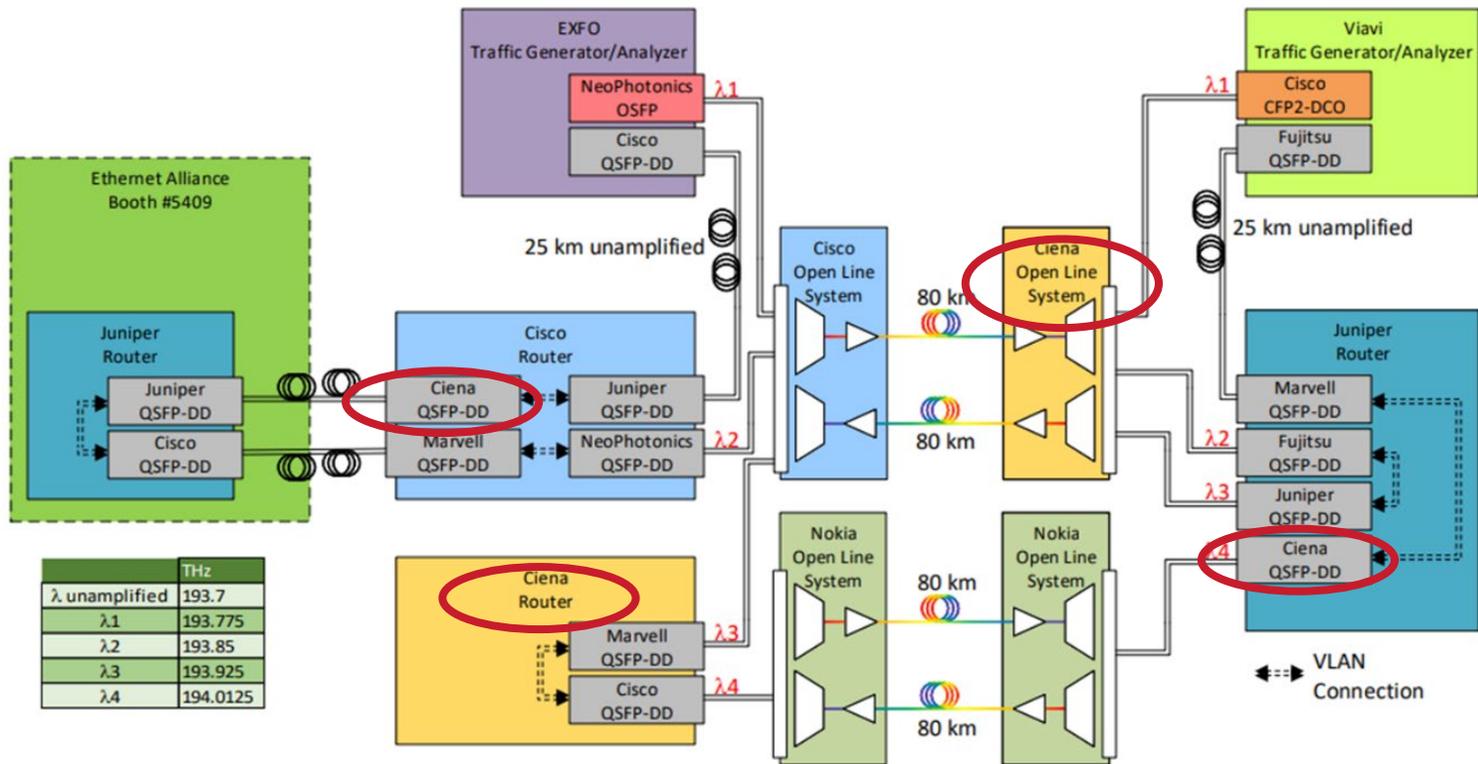
MCP Applications
Intelligent network control for automated multi-layer, multi-vendor operations and optimization

Multi-layer domain controller integrates full lifecycle of network and service operations

Open ecosystem accelerates integration and automation

Manage

Control

MCP Domain Controller

L3

L2

L1

L0

Plan

PlannerPlus

Enhanced Operations — Intuitive visualization of operational data to simplify and automate repetitive tasks and mitigate issues

Adaptive IP™ Apps — Multi-vendor IP/MPLS path- and service-aware performance analytics with automated SR-TE PCE to improve service assurance

ciena + CISCO JUNIPER NOKIA HUAWEI

Liquid Spectrum™ — Real-time analytics and visibility across programmable photonic layer to increase network capacity and service availability

MCP Advanced Apps

ECOC EXHIBITION INDUSTRY AWARDS 2021

GUI

APIs

Emulation Cloud

Advanced Apps simplify multi-layer network performance optimization

https://www.ciena.com/products/manage-control-plan

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Obrigada!

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