



Connecting Data Centers and Clouds in the AI Era

Leigh Wade
Sales Engineer, Internet & Mass-Scale Infrastructure

4th March 2026

Agenda

1. **Industry trends and impact of AI on WAN** (5 mins)
2. **Cisco hardware innovations** (20 mins)
3. **Cisco software innovations** (20 mins)
4. **AI connectivity use cases and solutions** (10 mins)
5. **Q&A, closing, next steps** (5 mins)

Industry Trends and impact of AI on WAN

AI is Rewriting the Network

Efficient creation and delivery of tokens will be a critical differentiator

33%

increase in demand for AI DC capacity through 2030¹

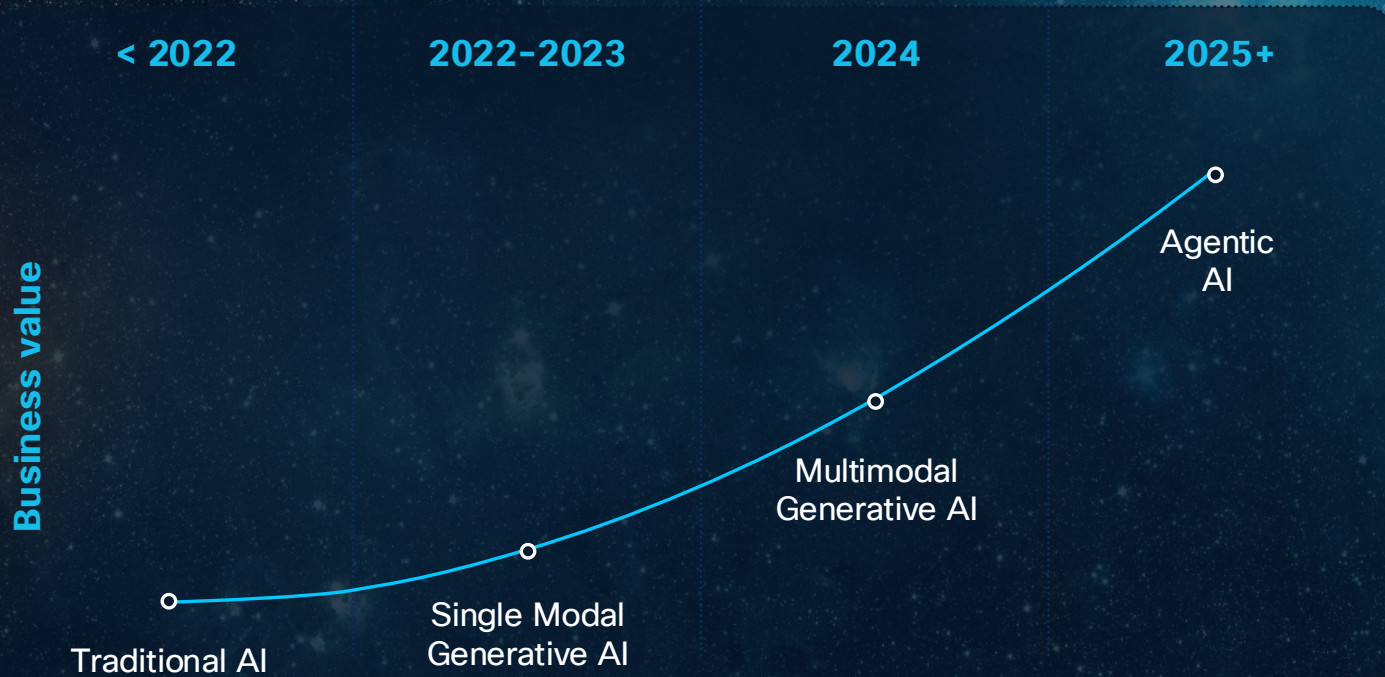
82%

CAGR for AI network traffic through 2029²

75%+

inference/processing moves to edge by 2030³

The Rise of Agentic AI



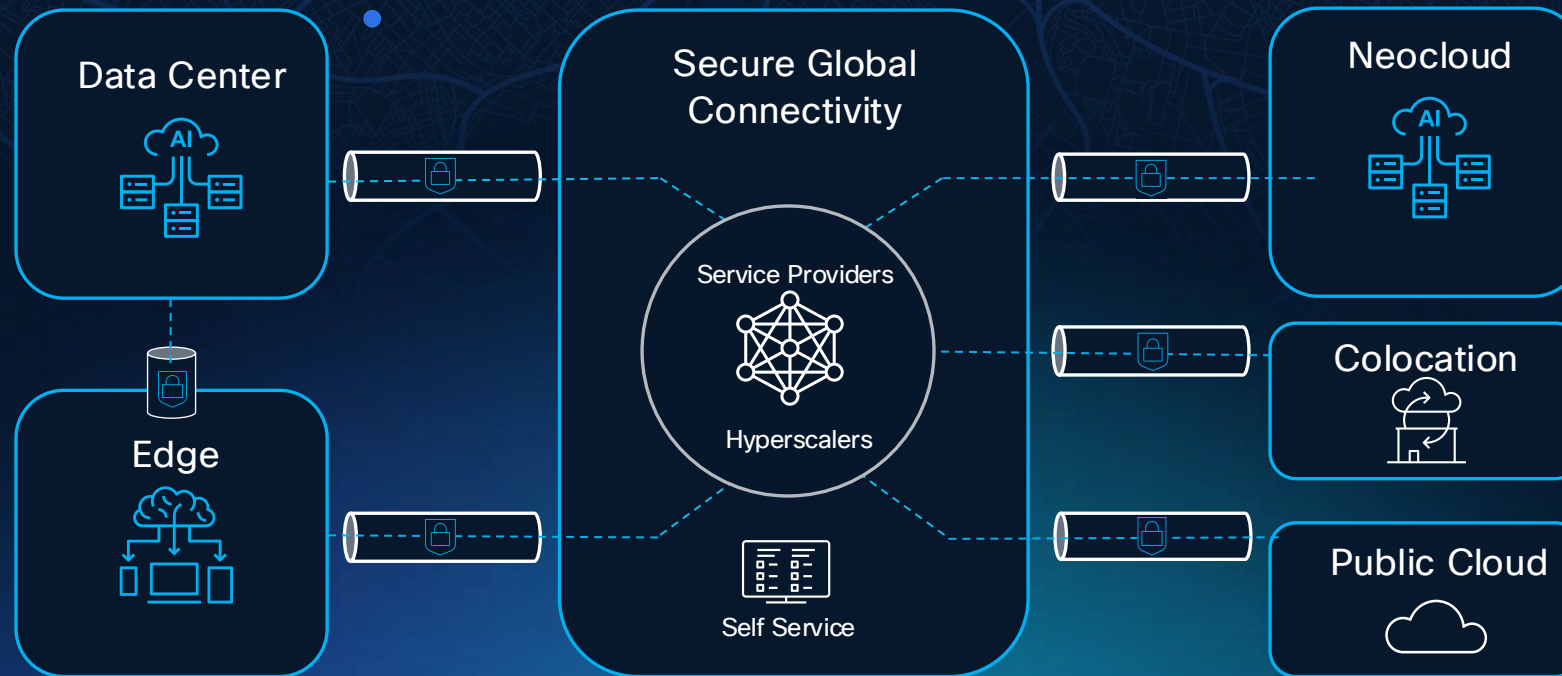
“33% of enterprise software applications will include agentic AI by 2028, up from less than 1% in 2024”

— Gartner

“By 2028, 68% of all customer service and support interactions with technology vendors are expected to be handled by agentic AI.”

— Cisco Report:
Race to an Agentic Future

AI will not live in one place
It will be everywhere a business operates



We need to re-architect networks for AI connectivity

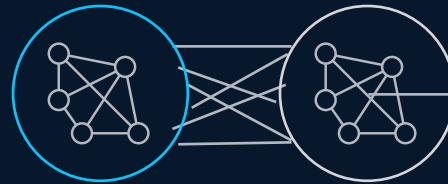
Flexible access

Increased data generation and consumption



Distributed functionality

Network investment closer to end-user demand to create new customer experiences



Data center connectivity

AI-training and inference workloads distributed between data centers



Cisco Hardware Innovations

Challenges in Secure Global Connectivity



Cost

How can I afford the increase in high-bandwidth low-latency connections?



Operations

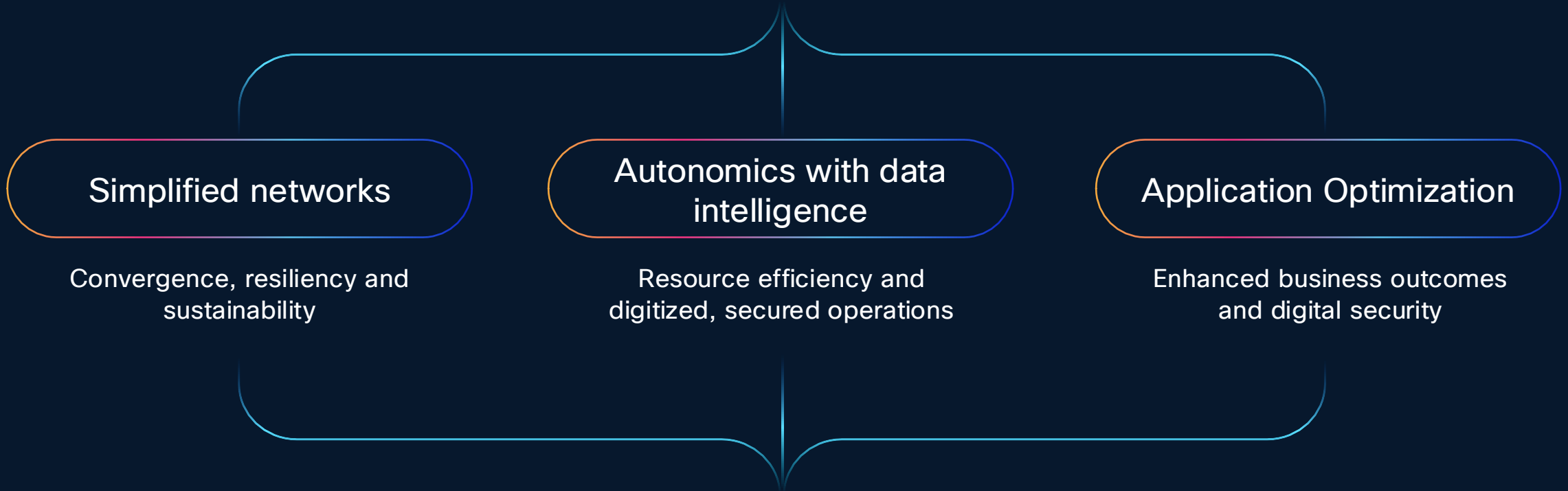
How do I manage new AI workloads without more networking engineers?



Performance

How do I assure and secure the performance of mission-critical applications?

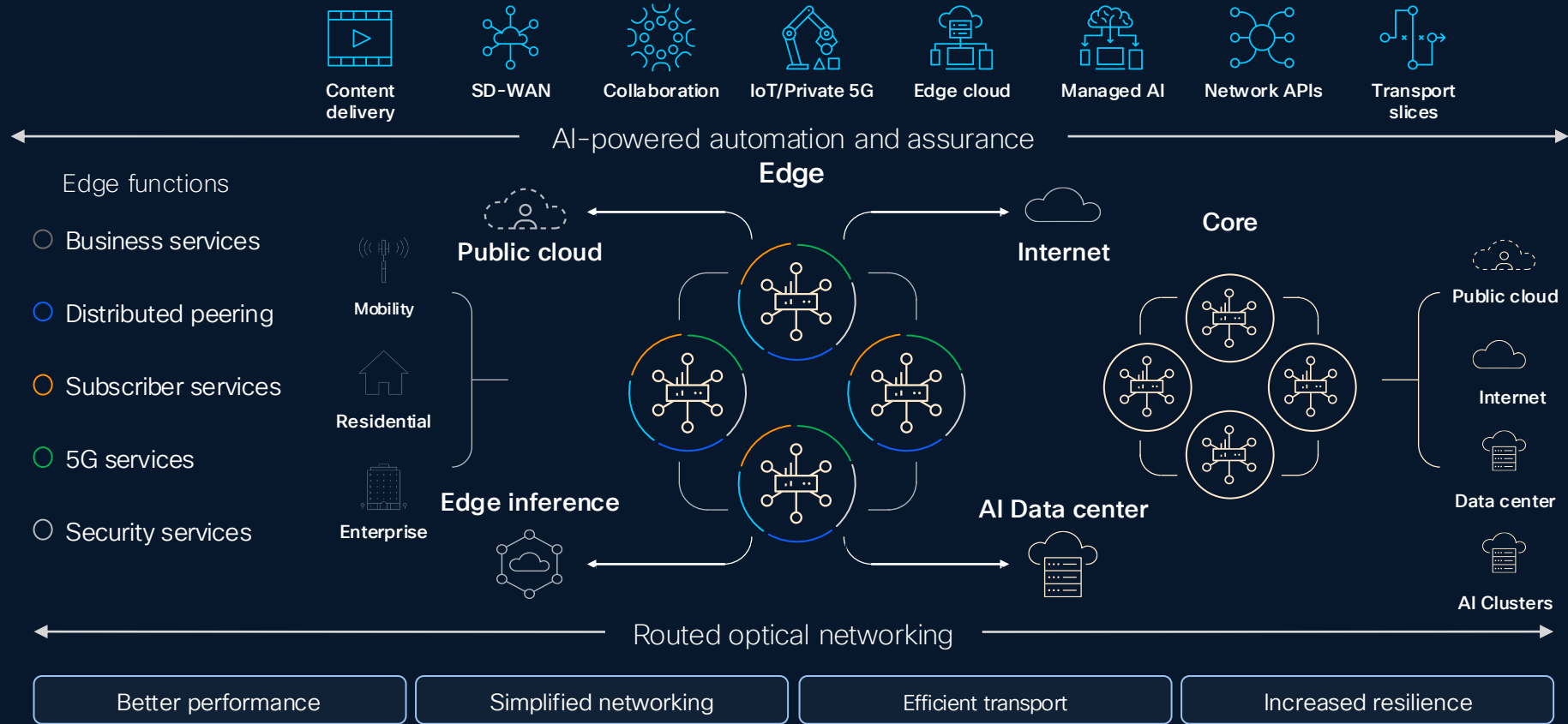
Our response



Agile Services Networking

Redesigning networks for AI

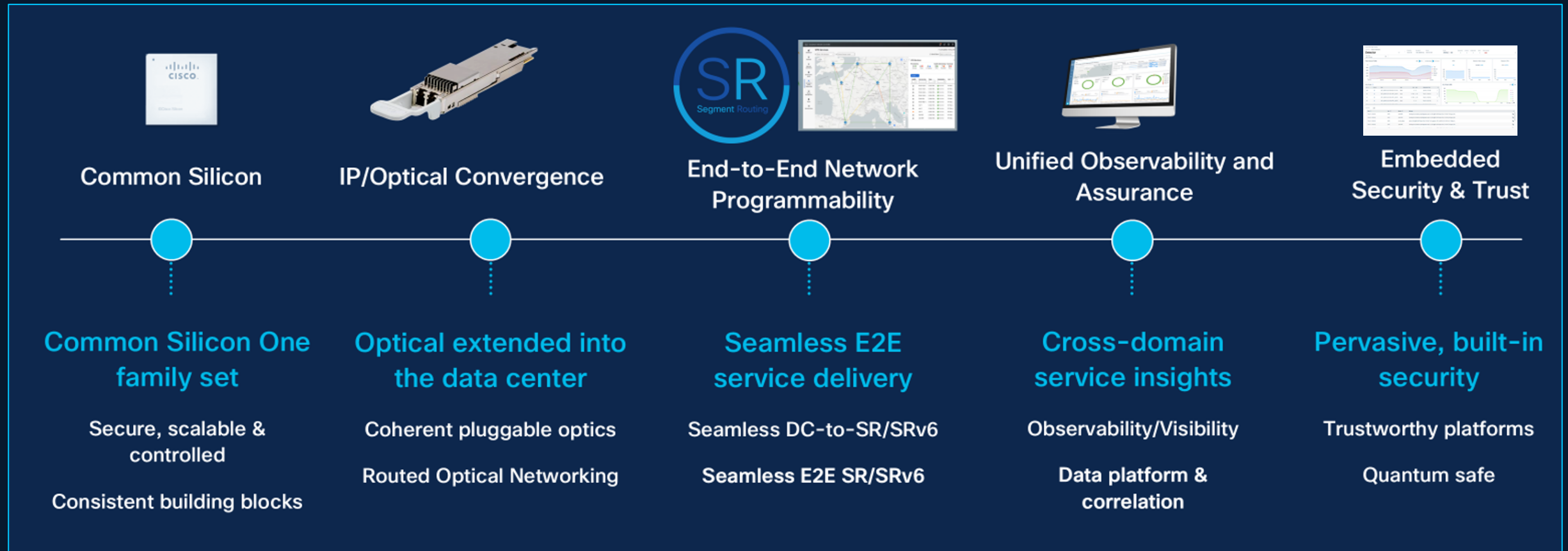
Agile Services Networking



Enterprise Use cases

- AI Interconnect
- Metro Access
- Private WAN
- Private 5G

Innovations in Agile Services Networking



Cisco Silicon One

Scalable and programmable solutions for metro and access networks.
Consistent control, sustainability, security, and manageability from the silicon level.



One architecture



Flexible interfaces



High capacity and scale



Traffic management and load balancing



Service convergence



Comprehensive security



Optimal network design



Programmable services



Fully shared packet buffer



Deep visibility and analytics



Cisco 8000 Routing Portfolio

One Family from Access to Core with IOS-XR

Distributed

12T; 88-LC1-12TH24FH-E



3.7T; 88-LC1-52Y8H-EM

9.6T; 88-LC1-16H16F-EM



4.8T; 88-LC1-48Y8H-EM



Cisco
8000
Series

14.4 T; 88-LC0-36FH
14.4 T; 88-LC0-36FH-M



9T; 88-LC0-34H14FH



28.8T; 88-LC1-36EH

Centralized



4.8T; 8404-SYS



12.8T; 8608

Fixed



1.6T; 8011-32Y8L2H2FH



1T; 8011-4G24Y4H-J



240G; 8011-12G12X4Y-A/D



12.8T; 8711-32FH-M



6.4T; 8712-MOD-M



5.6T; 8711-48Z-M

Powered By



Silicon
One
NPU

Cisco
IOS® XR



12.8T; 8202-32FH-M



12.8T; 8201-32FH



5.6T; 8201-24H8FH



19.2T; 8212-48FH-M



3rd Gen NPU



3rd Gen NPU



3rd Gen NPU



2nd Gen NPU



3rd Gen NPU

Access

Aggregation & Edge

Core & Peering

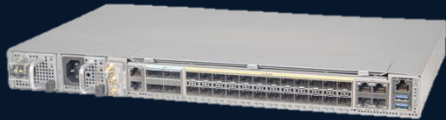
Powered by Cisco IOS XR

Cisco routing platforms for Enterprise and Public Sector

Consistent capabilities across devices and network architecture

Converged Access

Silicon One A100



8011-4G24Y4H-I
1T 1RU



8011-32Y8L2H2FH
1.6T 1RU

Services scale and feature set for access and aggregation: Class C Timing, MACsec and IPsec encryption, and QoS features

Distributed Edge

Silicon One K100



8712-MOD-M
6.4T 2RU



8404-SYS
4.8T 4RU

Combines the efficiency and simplicity of a fixed single processor system with redundancy and interface diversity from different MPAs

Building blocks

Device options for connecting data centers

Catalyst SDWAN



- IOS-XE
- Merchant Silicon
- Point to Point
- Gray optics to 100G
- No coherent optics
- Application aware
- Catalyst Center

Nexus Switch



- NX-OS
- Silicon One
- Point to Point, Low latency
- Coherent optics to 400G (80kms and up to 1,200 kms with amplification)
- Nexus dashboard

XR/SONiC Router



- IOS-XR or SONiC
- Silicon One
- Multisite connectivity
- Coherent optics to 400G
- Pluggable OLS
- Cisco Network Controller
- Segment Routing



Innovation in AI Scale-Across

Cisco 8223 Powered by Cisco Silicon One P200

Cisco 8223-64EF
51.2T, 3RU, 64 x 800G (OSFP800)



Cisco 8223-64E
51.2T, 3RU, 64 x 800G (QSFP-DD800)

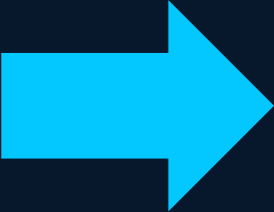
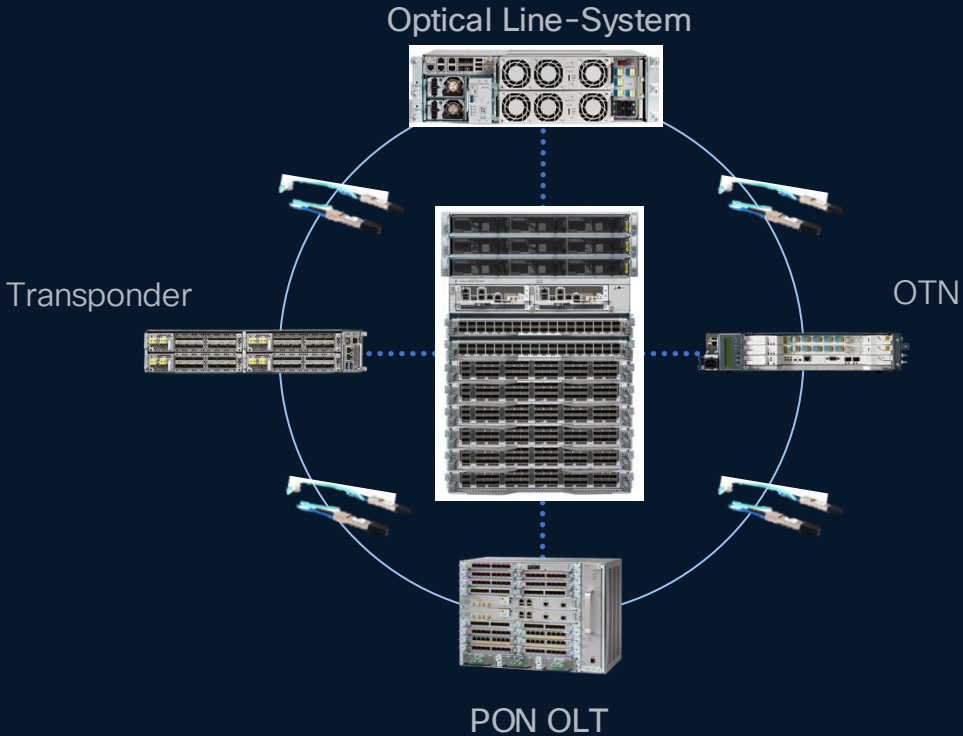


P200- 51.2T Router Chip
Power Efficient. Scalable.
Programmable. Secure.

8223 Routing Systems
Industry's most scalable, efficient, secure 51.2T
Routing System for Scale-Across

Innovation in Optical Systems

(Redundant) Classic infrastructure



Cisco Agile Services Networking



Application Hosting & Mgmt plane



Infrastructure Hosting & Mgmt plane



Transponder PON OLT OTN Line-System

Innovation in Digital Coherent Optics

Address 100% of network applications with
Cisco coherent pluggable optics



100G QSFP28

800G ZR/ZR+
400G ZR/ZR+

400G ULH



Campus



DCI



Metro



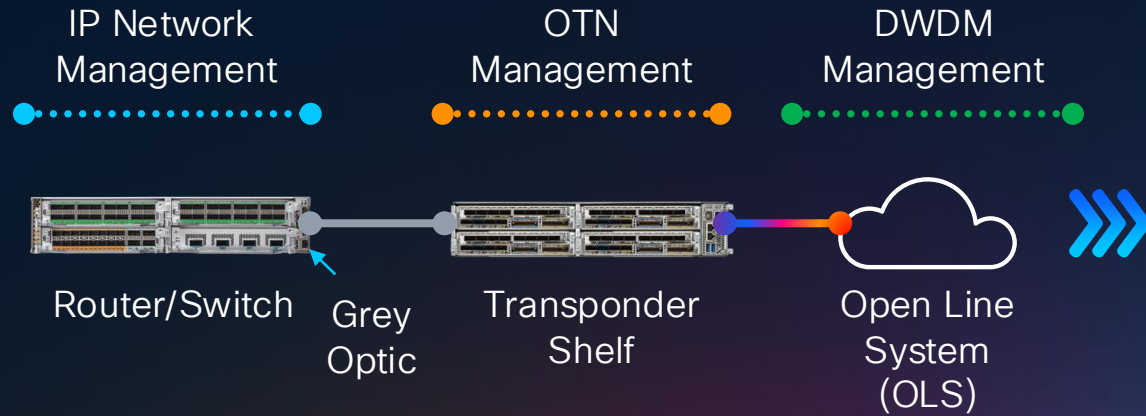
Regional



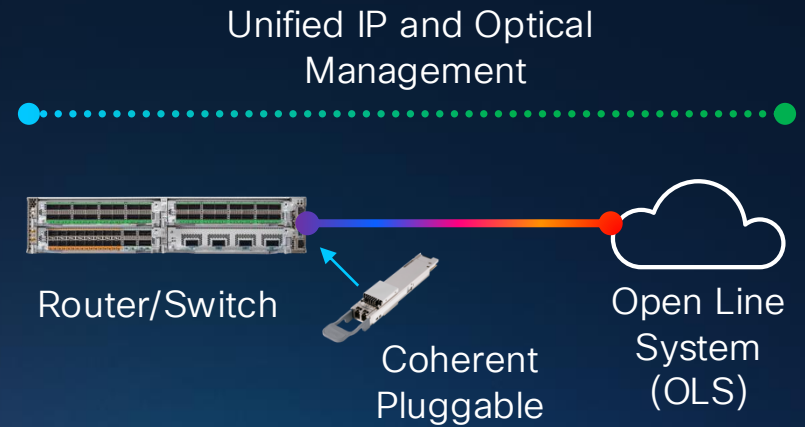
Ultra Long Haul

Eliminate layers. Slash costs.

Traditional Architecture (before RON)



With Routed Optical Networking



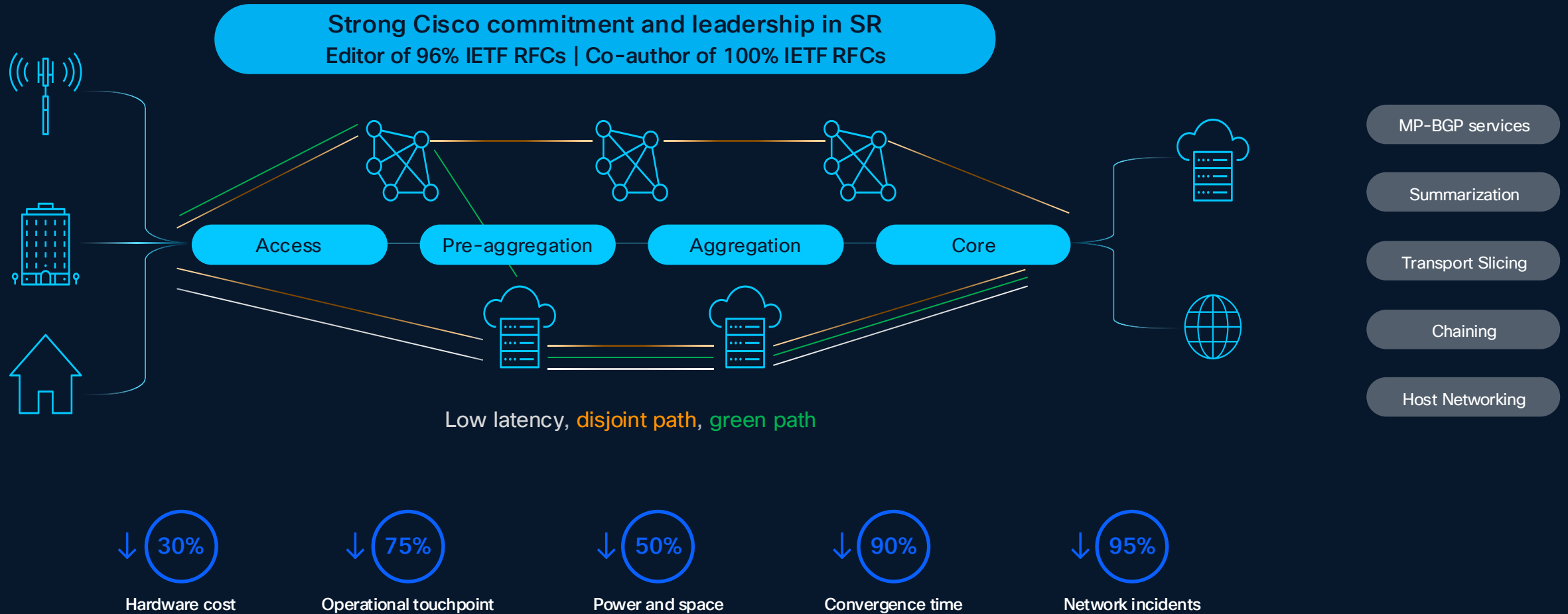
90%
Power reduction

66%
CapEx reduction

76%
OpEx reduction

Innovation in Segment Routing

A multi-domain programmable fabric for service creation

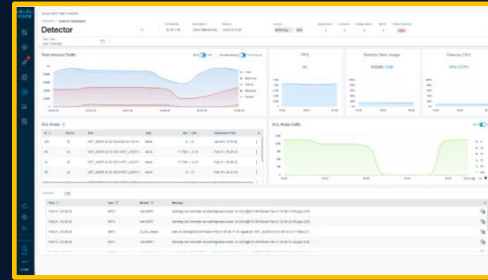


Secure Networking Innovations



1

Establish trust at the physical layer
Verify that HW and SW are unaltered, even in untrusted domains



2

Protect from threats in transport
Use routers as your first line of defense against DDoS attacks



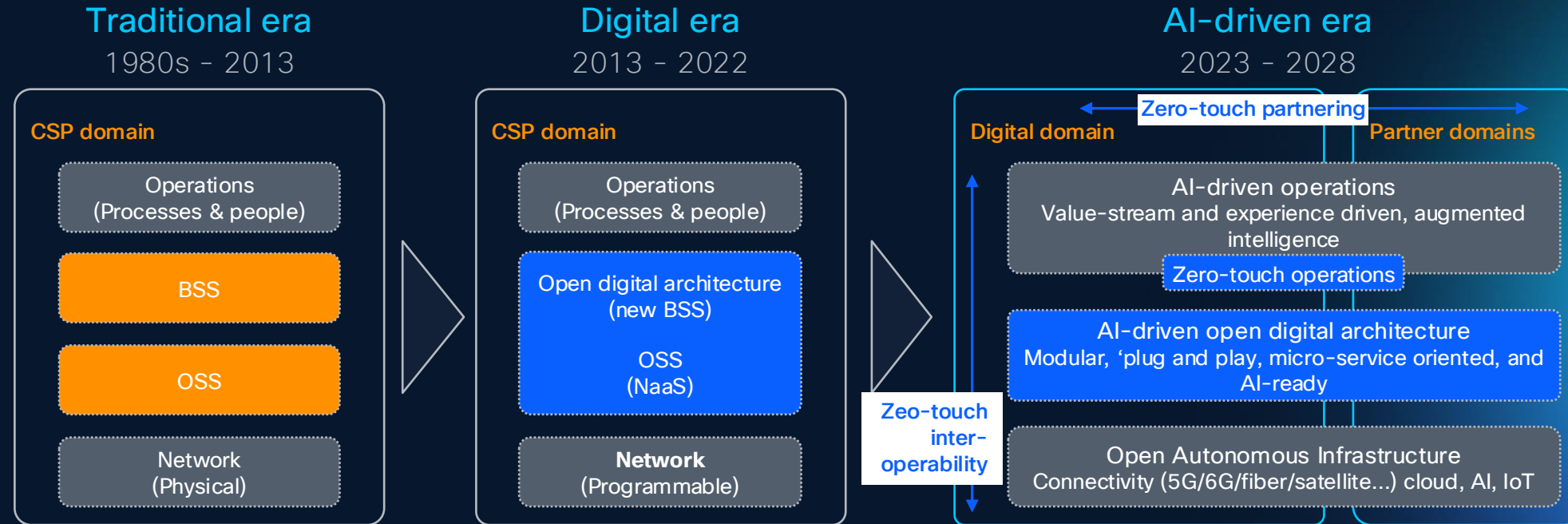
3

Protect from emerging threats
Implementing secure key distribution for post-quantum threats

Cisco Software Innovations

Networks towards “AI-Driven” 5th industrial revolution

Culture, Integrations and regulations are main barriers



[Source: - TMF Open Digital Architecture [LINK](#)]

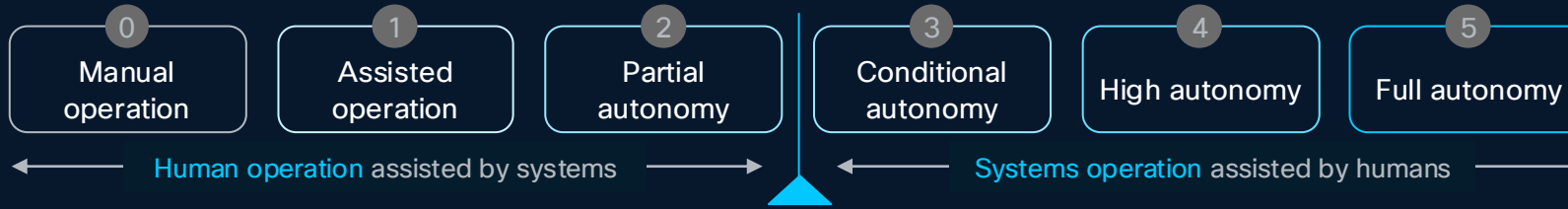
51% found Culture as the main barrier for adoption

48% found Integrations as the main barrier for adoption

[Source: CapGemini Research Jan 2024, 123 Telco surveyed - Transport Domain - [LINK](#)]

Journey and drivers for Autonomous Networking

tmforum Autonomous network levels



84%

of companies are currently at initial levels of autonomy

The big disruption

61%

aiming to achieve Level 3 or above by 2028



Network Monetization



Operational efficiency



Resource efficiency and energy savings



Experience excellence

The Path towards Autonomous Networking

Challenge

- 1 Networks are more critical than ever: Prevent operator outages due to human errors
- 2 Networks are more complex and scalable than ever
- 3 Expectations are higher than ever: performance, reliability, customer experience, time-to-market etc.
- 4 OpEx is more limited than ever

Goal

Achieve Level 4/5 autonomous networks leveraging a multi-agentic, multi-vendor and secure AI platform



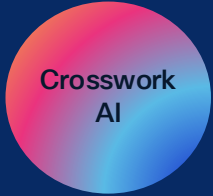
tmforum

L4 Autonomy blueprint

Phase 1 (2025-2027)
Autonomous Agent driven closed loop

Phase 2 (2028-2030)
Multi-agent collaboration for complex
and multi-domain closed loop

Scaling Operations with Intelligence & AI



- Multi-agentic framework for AI-ops and decision-making
- Delivered as features to existing Crosswork applications
- Future integration with Cisco AI Assistant and AI Canvas
- SDK for 3rd-party agent development

Reactive

Minimize impact of network incidents

- Time series anomaly detection
- Outlier detection
- Event correlation
- Config drift
- User as a Sensor
- Ticket fatigue
- Aggregate data

Preventive

Reduce the occurrence of network incidents

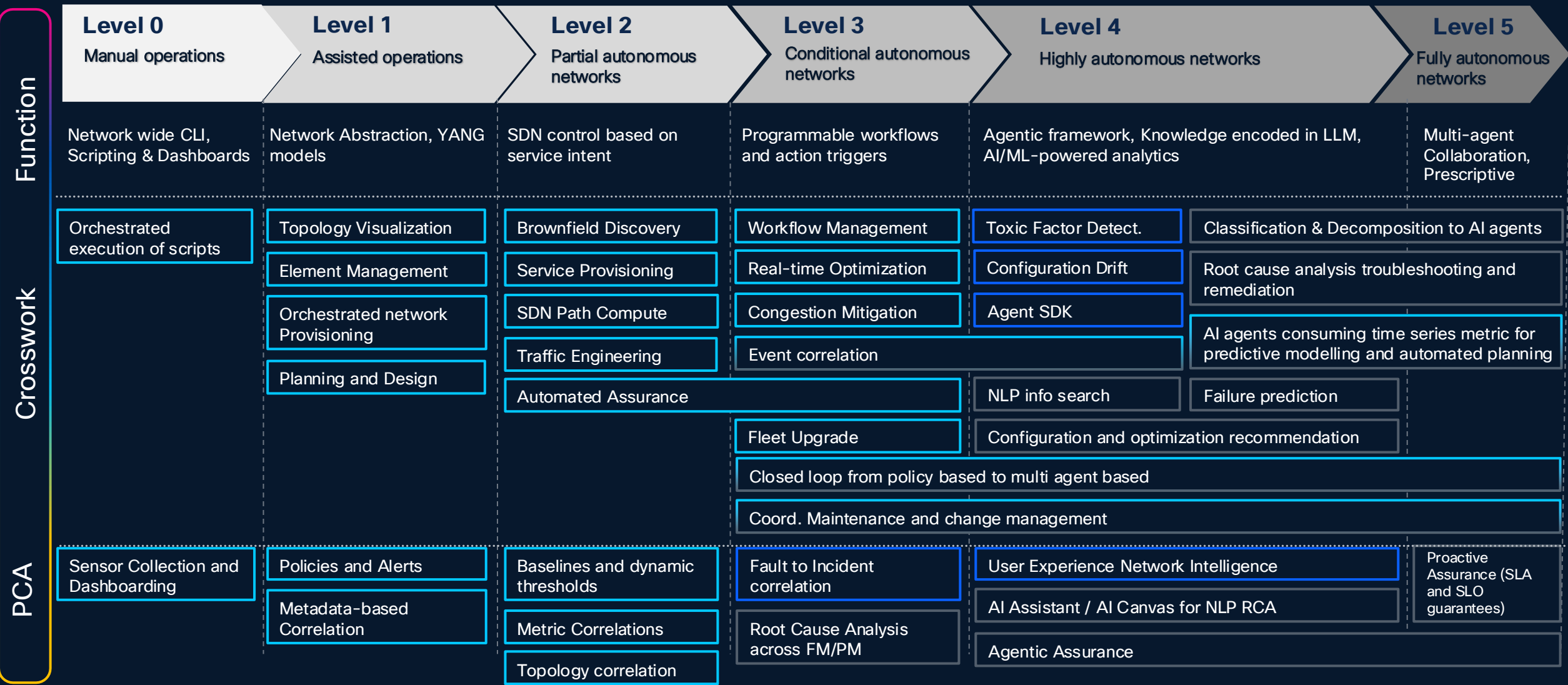
- Toxic Factor Identification
- Automated maintenance
- Forecasting
- Goal-based optimization
- Intent-based design guidance
- Root cause analysis

Prescriptive

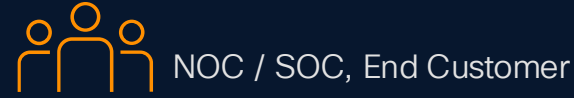
Automatically align network operations to policy/intent goals

- Configuration recommendations
- Operational recommendations
- Failure prediction
- Multi-layer plan
- Analytics based decisions
- Closed loop integration

Enabling the path towards Autonomous Networks



Automation & Assurance Portfolio



Cisco Crosswork Cloud

- Trust Insights** | Track integrity of infrastructure
- Network Insights** | Analyze and identify the source of routing anomalies
- Traffic Analysis** | Optimize network traffic at peering points

Crosswork Hierarchical Controller
Multi-layer, multi-domain IP and Optical hierarchical controller

- IPv6/SRv6 support
- Northbound notifications
- CONC, EPNM, Nokia, Ciena, Huawei optical adapters

Optical Network Controller
Optical Controller

Crosswork Network Controller
Multivendor IP SDN Controller

Provider Connectivity Assurance
Multivendor Service Assurance

Crosswork Workflow
Low-code automation workflow

- New CNC Platform
- Adaptive Forms

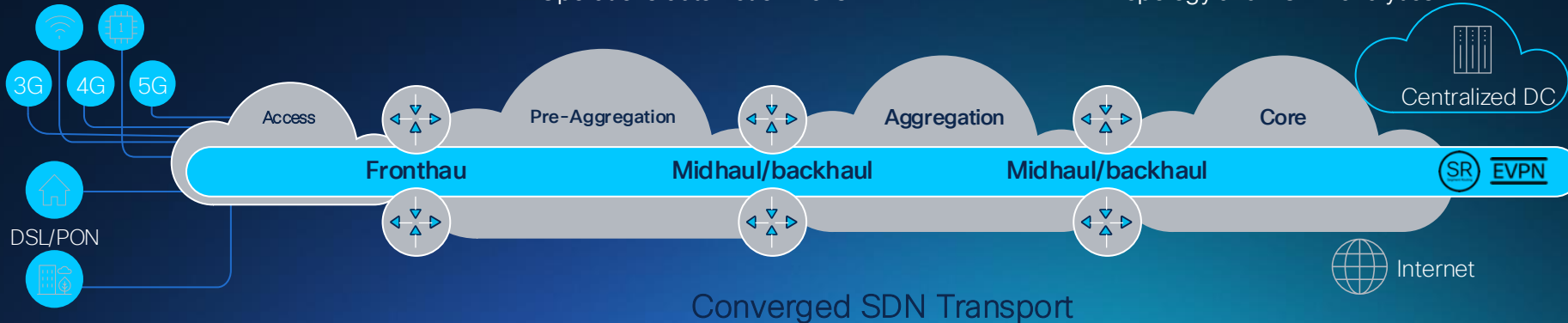
- Single-VM Optical EMS + Controller
- Optical Assurance & Orchestration

- Single-VM CNC and KVM support
- Geo-redundancy
- Multi-vendor EMS
- Operations automation via CWM

- Digital Experience Assurance
- Telemetry consumption
- Predicting Performance
- Topology and ECMP analytics

NSO
Service Orchestration

- AI Doc Chatbot
- Brownfield Scenarios
- NSO for Controllers
- Enhanced compliance reports



Converged SDN Transport

Crosswork Planning
Capacity planning tool

- Predictive-AI capacity planning
- Crosswork Planning Chatbot

use case

Toxic Factor Identification

description

Detection risk factors that may be influencing negatively the performance of the network

from automation

Manually analyze the impact of specific factors such as a certain software release or hardware in network event



to autonomy

AI Frequent Pattern detection algorithms are used to autonomously identify any combination of factors that have a negative impact in the occurrence of network failures

outcomes & benefits

- No need for manual analysis for each factor.
- Multivendor by architecture.
- Prevention of network failures due to identification of risk factors associated.
- Identification of unknown unknowns.
- Improved MTBF.

availability

Q1 CY26

compatibility

- Crosswork Multi-Agent Platform
- Crosswork Network Controller 7.2

The screenshot displays the Cisco Foresight Ai Agents interface. On the left, a sidebar lists agents: Config Drift Agent and Metric Forecasting Agent, both with green status indicators. The main panel shows the 'Toxic Factor Agent' with a 'Analysis completed' status. Below this, a table lists toxic factors for 'Daily Full Network' analysis on Dec 17, 2024. The table includes columns for Factor, Toxicity, and performance metrics for 24h, 48h, and 1w periods.

Factor	Toxicity	24h	48h	1w
SW version: 7.7.1 HW version: XYZ	Major	+1%	+15%	+37%
Location: Lexington Ave Device group: Lex-2	Severe	+1%	+15%	+37%
Factor1: XYZ Factor2: XYZ Factor3: XYZ	Low	-1%	-10%	-20%

Below the table, there are sections for 'Events per toxic factor' and 'Affected devices per toxic factor', both with expandable dropdowns. A 'Summary' section at the bottom provides a high-level overview of the analysis, including the period (1 week), inventory (Full network), and event types (BGP, INTERFACE).

use case

Deep Network Troubleshooting

description

Autonomous multi-agent solution to diagnose network failures using deep-research principles, knowledge graph and semantic resiliency

from automation

Troubleshooting based on manually defined workflows



to autonomy

Agent driven troubleshooting using deep-research principles

outcomes & benefits

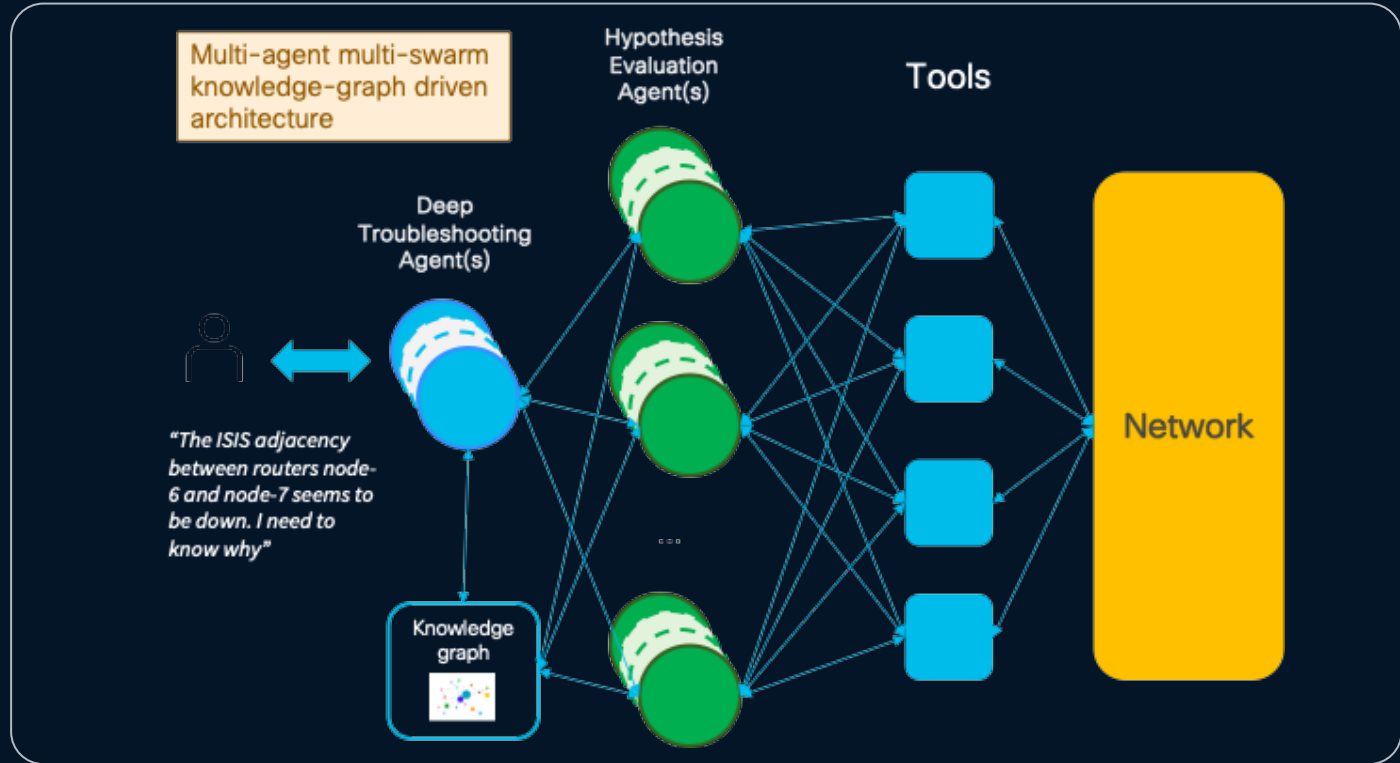
- Autonomous network incident troubleshooting
- Not dependency on manually configured rules.
- Improve MTTR.
- Enable autonomous operations

availability

Q2CY26

compatibility

- Crosswork Multi-Agent Platform
- CNC



use case

Configuration Drift Detection

description

Detection of anomalies in network device configurations

from automation

Build and maintain golden-configuration templates that are used to evaluate configuration correctness

to autonomy

AI Configuration Language Models (CLMs) are trained with network configurations such that they learn autonomously and can detect anomalies in configurations without manual maintenance

outcomes & benefits

- Zero-day detection of configuration anomalies.
- No need for human input in definition and/or maintenance of templates.
- Multivendor by architecture.
- Prevention of network outages due to misconfigurations.
- Prevention of security threats associated to configuration changes.

availability

Q1 CY26

compatibility

- Crosswork Multi-Agent Platform
- NSO

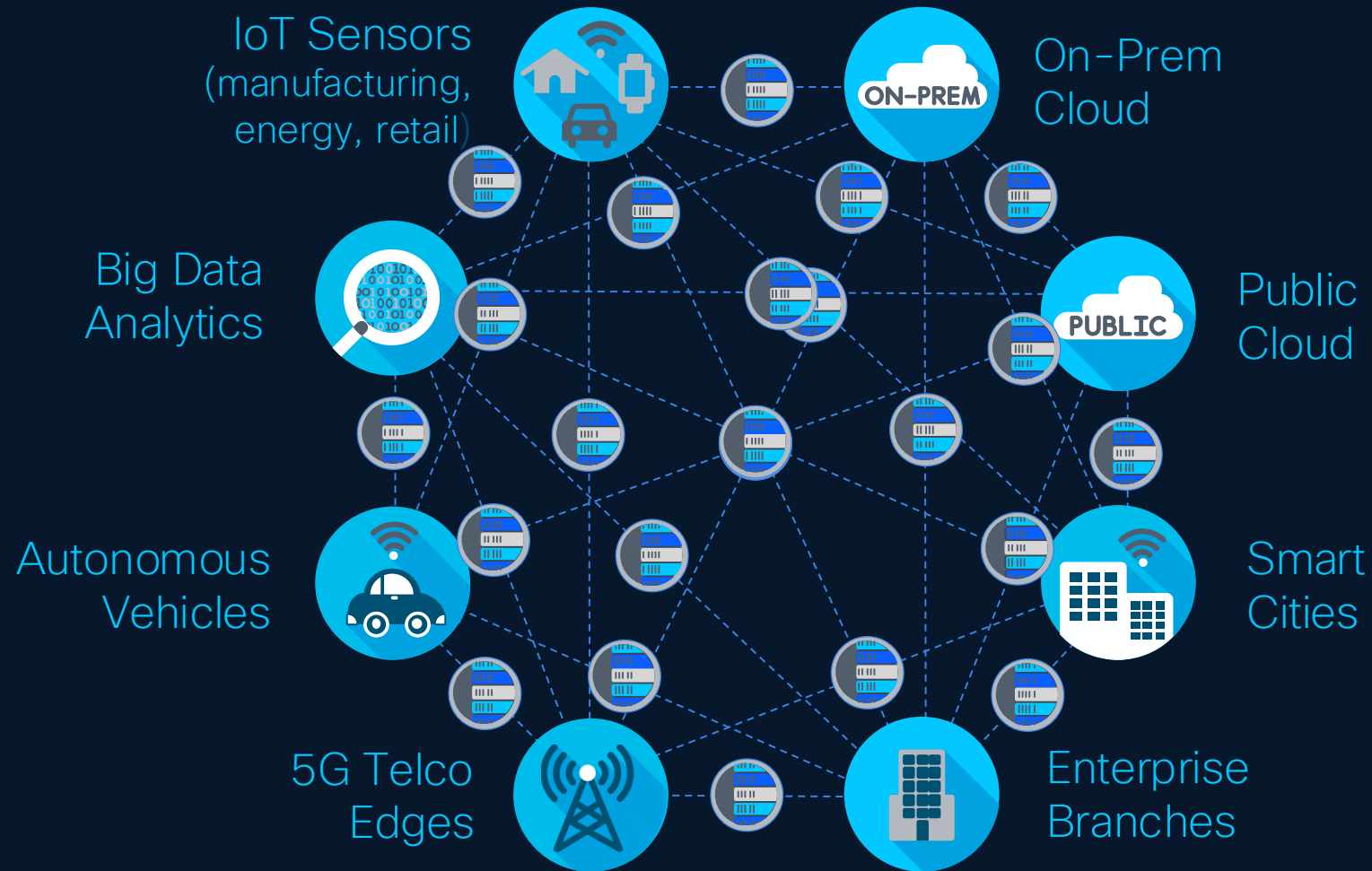


```
tacacs-server login host 10.15.1.11 vrf management seq-num 2 key 7 0x900c090a27201000a
aaa local authentication unlock-timeout 1
aaa authentication login default vrf management group tacacs+ local
snmp-server enable snmp vrf management
snmp-server view all .1 included vrf management
snmp-server community test group network-operator vrf management
snmp-server host 10.15.1.12 traps version 2c test udp-port 162 vrf management
snmp-server host 10.15.1.13 traps version 2c test udp-port 162 vrf management
feature ntp vrf management
ntp enable vrf management
ntp server 10.15.1.14 vrf management
username admin role network-admin password encr
username admin2 role network-admin password encr
(remove)
no username ios
feature rsyslog vrf management
logging server 10.15.1.15 5 facility local0 vrf
!
```

```
!
interface et-1-1-4
description core:400G:PE-1-et-1-1-4 C-4 et-1-1-1
load-interval 30
ip address 11.4.1.2/30
mtu 9000
port-channel load-balance prof1
port-channel min-links 2
ip ospf network point-to-point
!
(insert ip ospf cost 10000 before)

interface et-1-2-1
description edge:10G:PE-1-et-1-2-1 E-1-1 et-1-1-1
load-interval 30
```

Visibility and Assurance Needs to be Where Data Exists



Network Readiness, Observability & Assurance

Probes

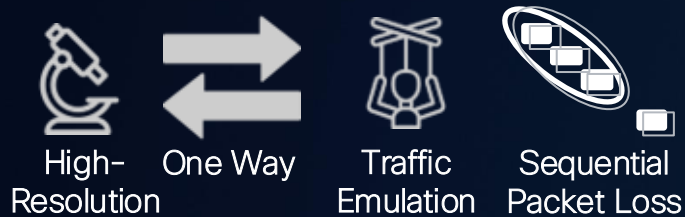
Packaging



Test Types

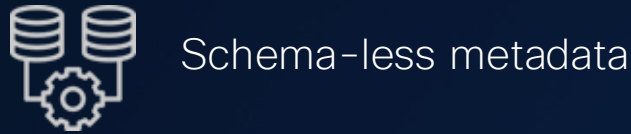


Some Unique Features



Analytics

- Cloud Native
- Infra Independent (airgap)
- Multi-tenant & RBAC



Alerting

- Dynamic thresholds
- Rich & flexible alert scripting
- Sent w/ metadata

Dashboards & APIs



Fully Customizable Dashboards



Open API

Data Bus

High Resolution Observability Everywhere

- Combination of native infrastructure probes & HW/ SW probe deployment: Frequency, Granularity, Type, Quality
- Synthetic & Real User Traffic Analysis

Ultra-deep Insight (Analytics)

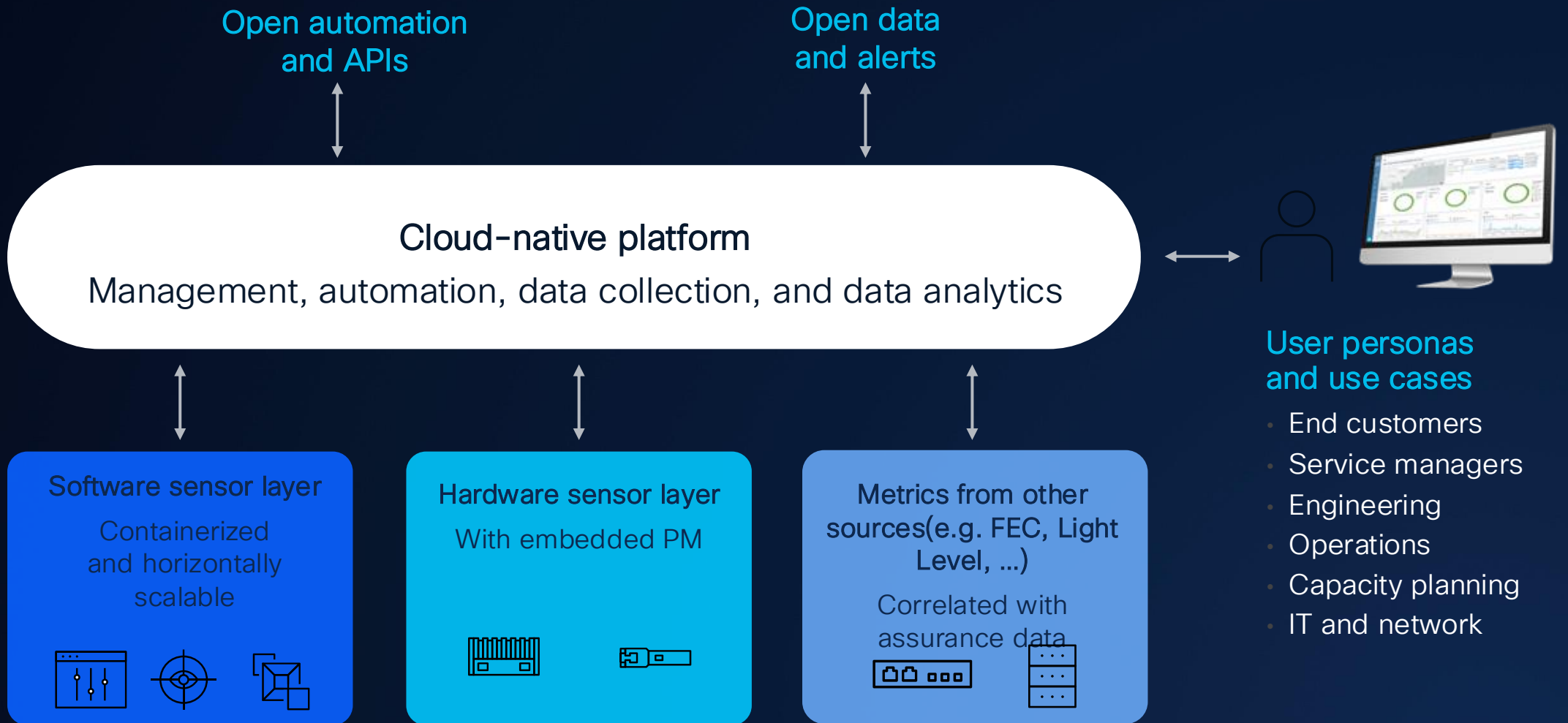
- Predict & Prevent
- Root Cause Analysis (RCA)
- Air Gap, SaaS, On-prem

Open & Flexible to snap Into Any Environment

- Open API for integrations
- 3rd party data ingest-advanced analytics
- Customizable Metadata Schema
- Data remains under customer control

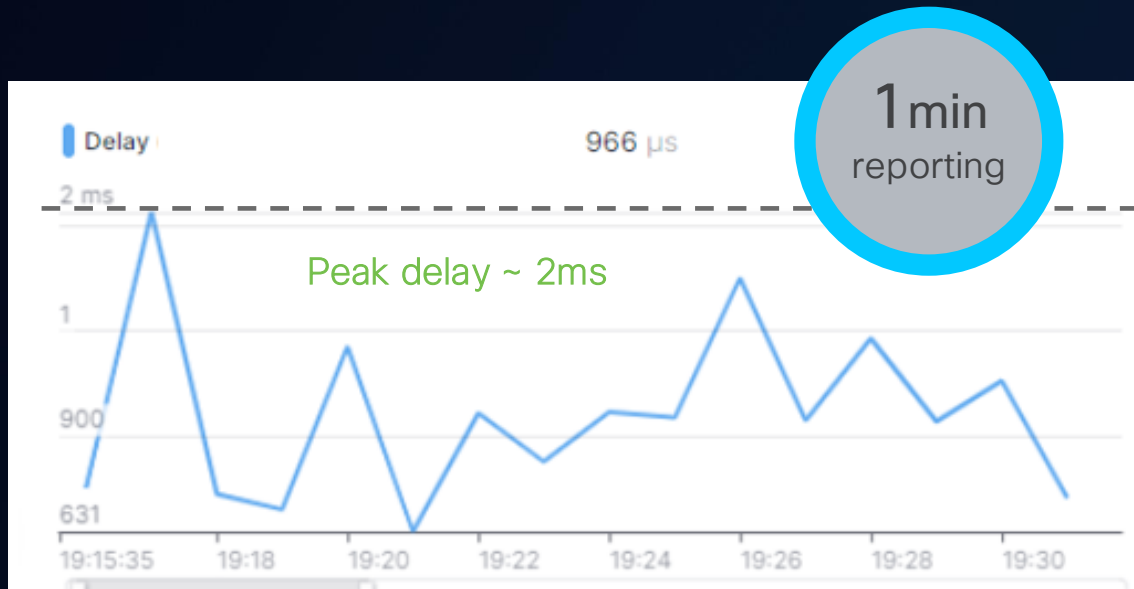
Provider Connectivity Assurance

Designed to ease of use



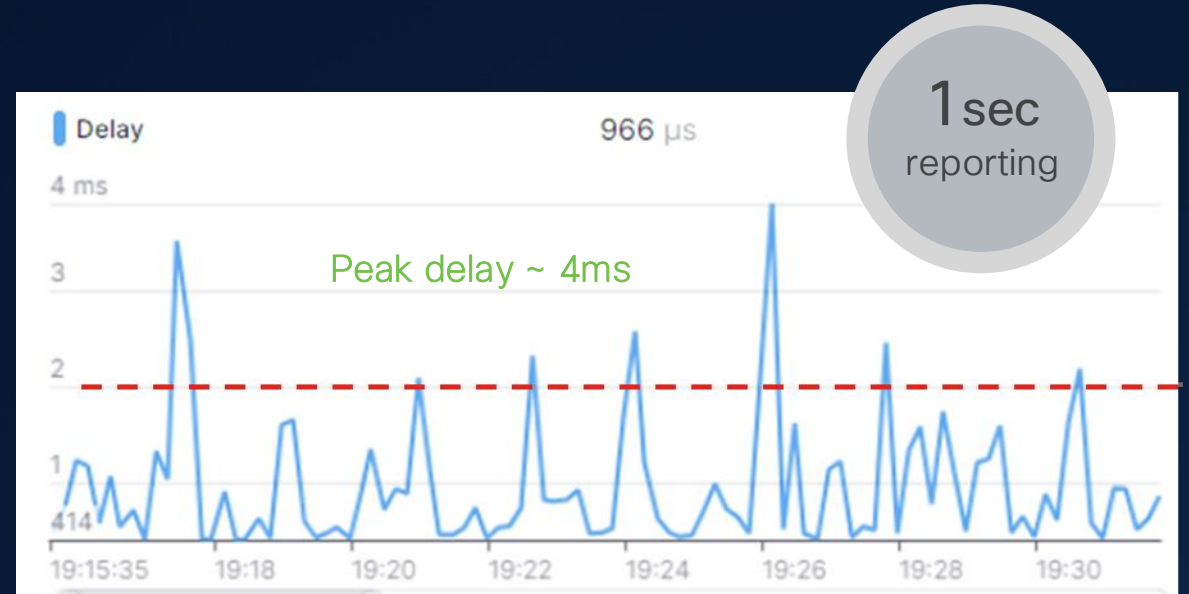
PCA observability

The power of high-resolution monitoring



Perception ✗

Latency is below threshold.
Service performing according to SLA/SLO.



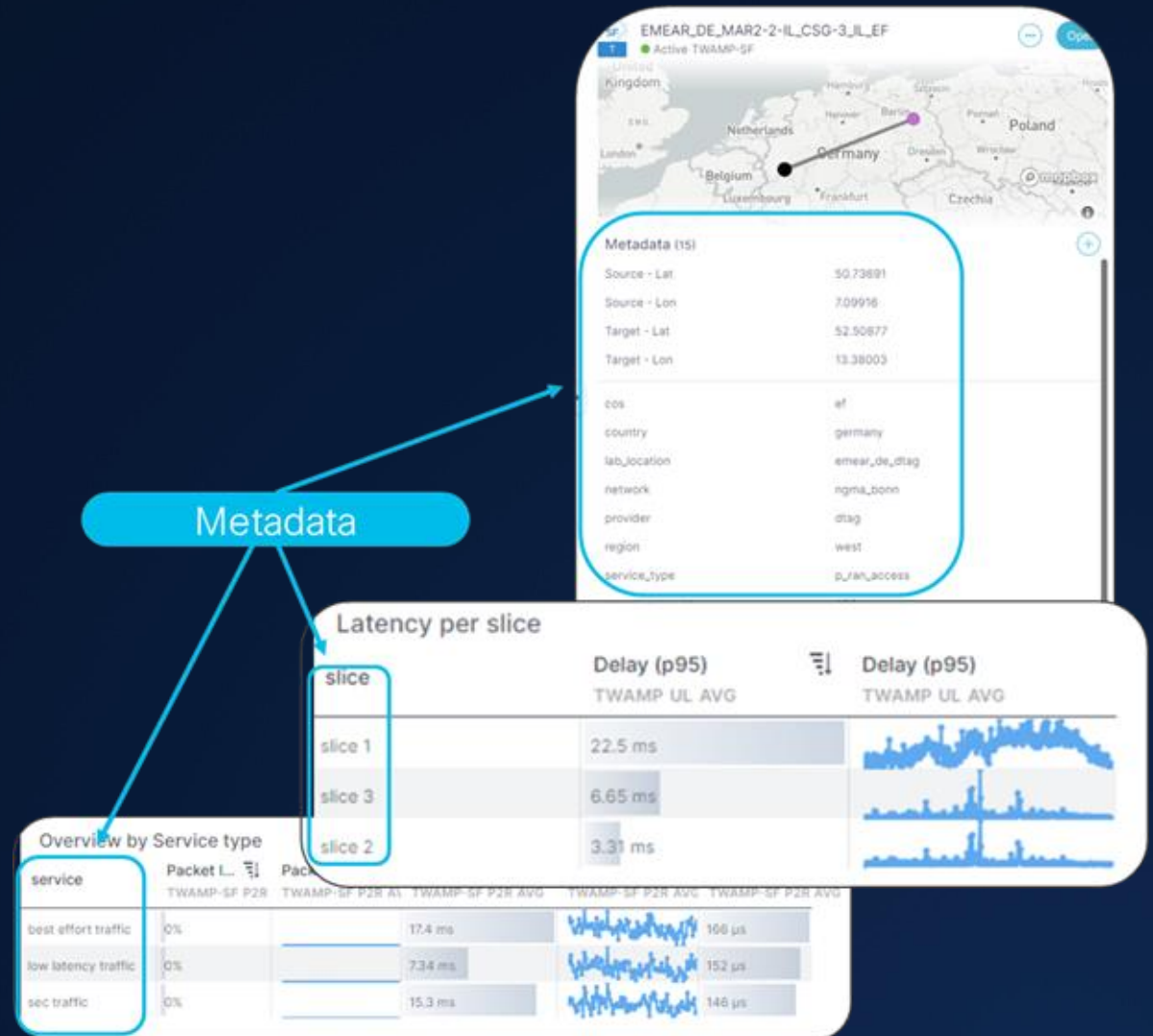
Reality ✓

Multiple latency threshold crossing alerts.
Service affected by latency issues.

Assurance reporting and analytics

Leveraging metadata

- All Cisco assurance and non-Cisco data can be enriched with metadata
- Metadata is user-defined contextual information
 - Examples: site, region, class of service, geo coordinates, topology, etc.
- How it is used:
 - Filtering, grouping, aggregating relevant data
 - Correlate and find commonalities for root cause analysis and troubleshooting
 - Adds flexibility to dashboards to suit multiple usage scenarios



Operations Enhanced Analysis

Operation enhanced analysis

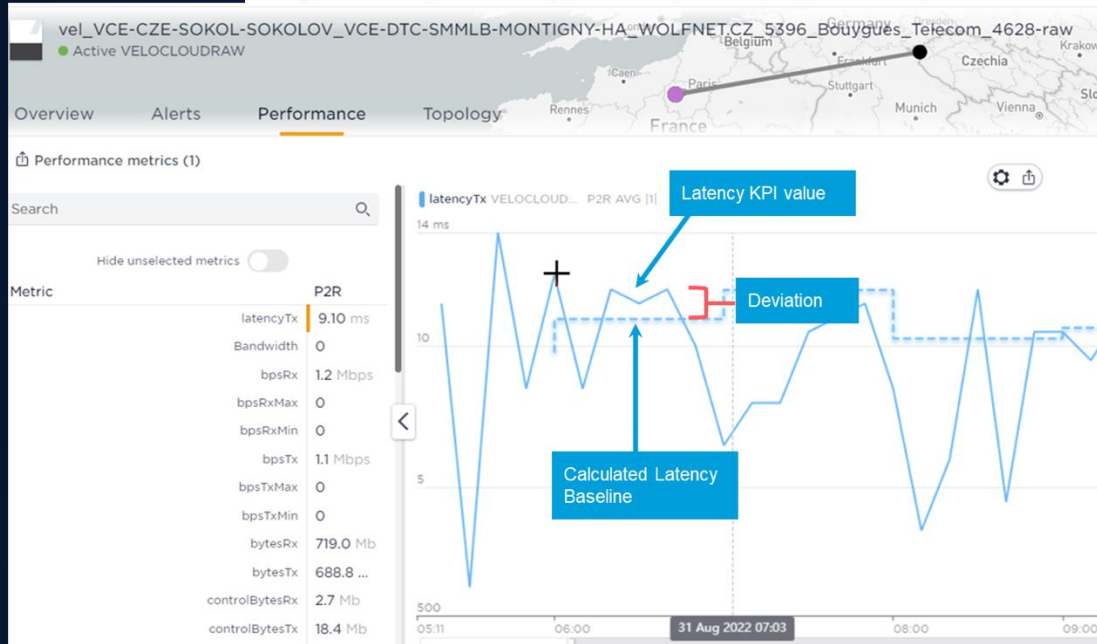
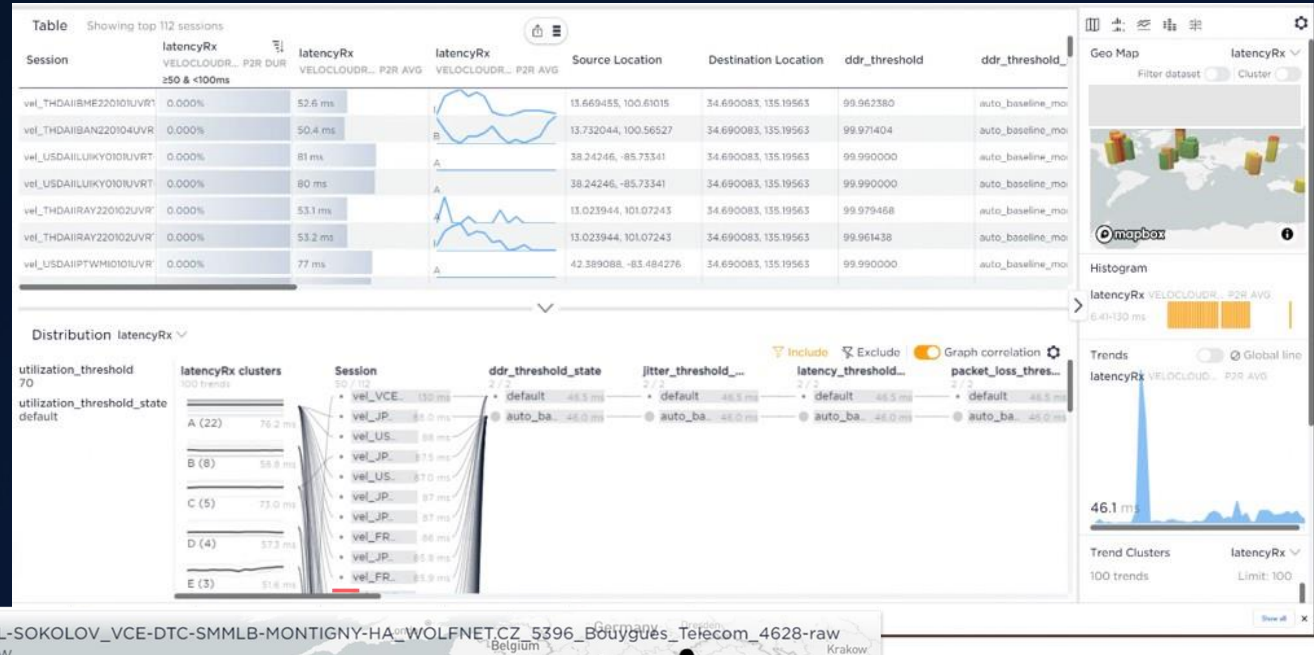
- Service performance Pattern Recognition and Clustering
- Service Relational Distribution
- Service performance trending

Machine Learning

- Time of Day, Day of week Baseline
- Ability to measure deviation from normal service performance baseline

Alerting

- Remove eyes from the glass
- Proactive monitoring
- Ties into AT&T systems and work flows



AI connectivity use cases and solutions

Data Center



Edge



AI increasing demand for local processing and networking

25%

2027

75%

DATA PROCESSING

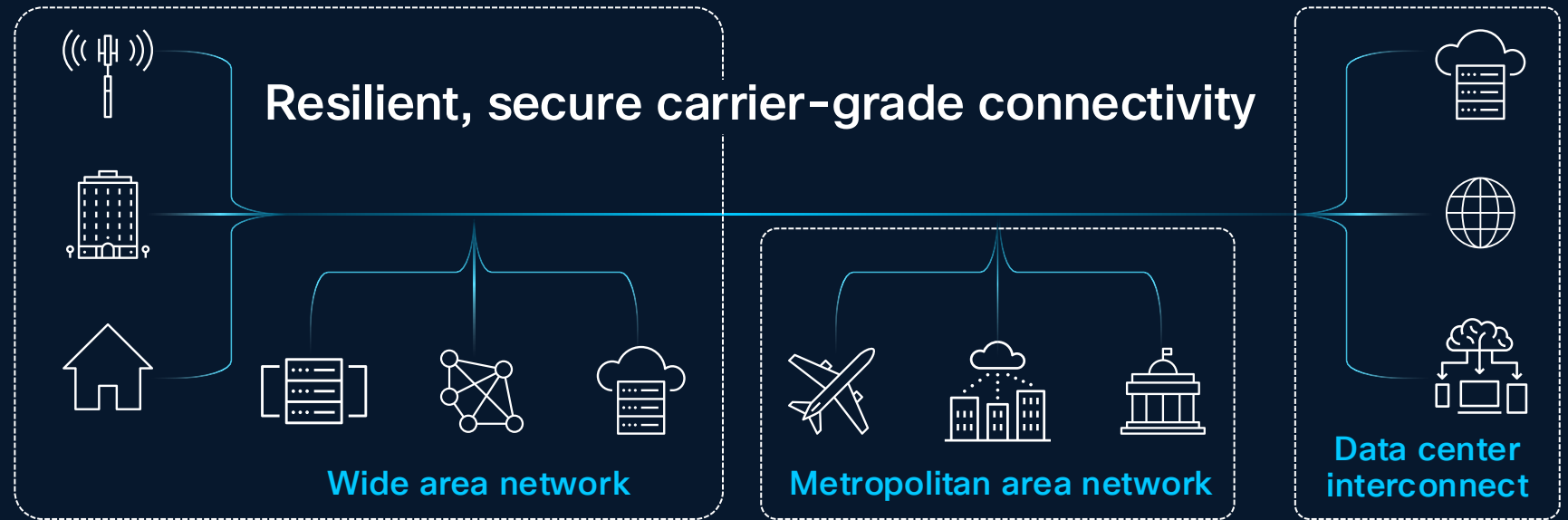
90%

2021

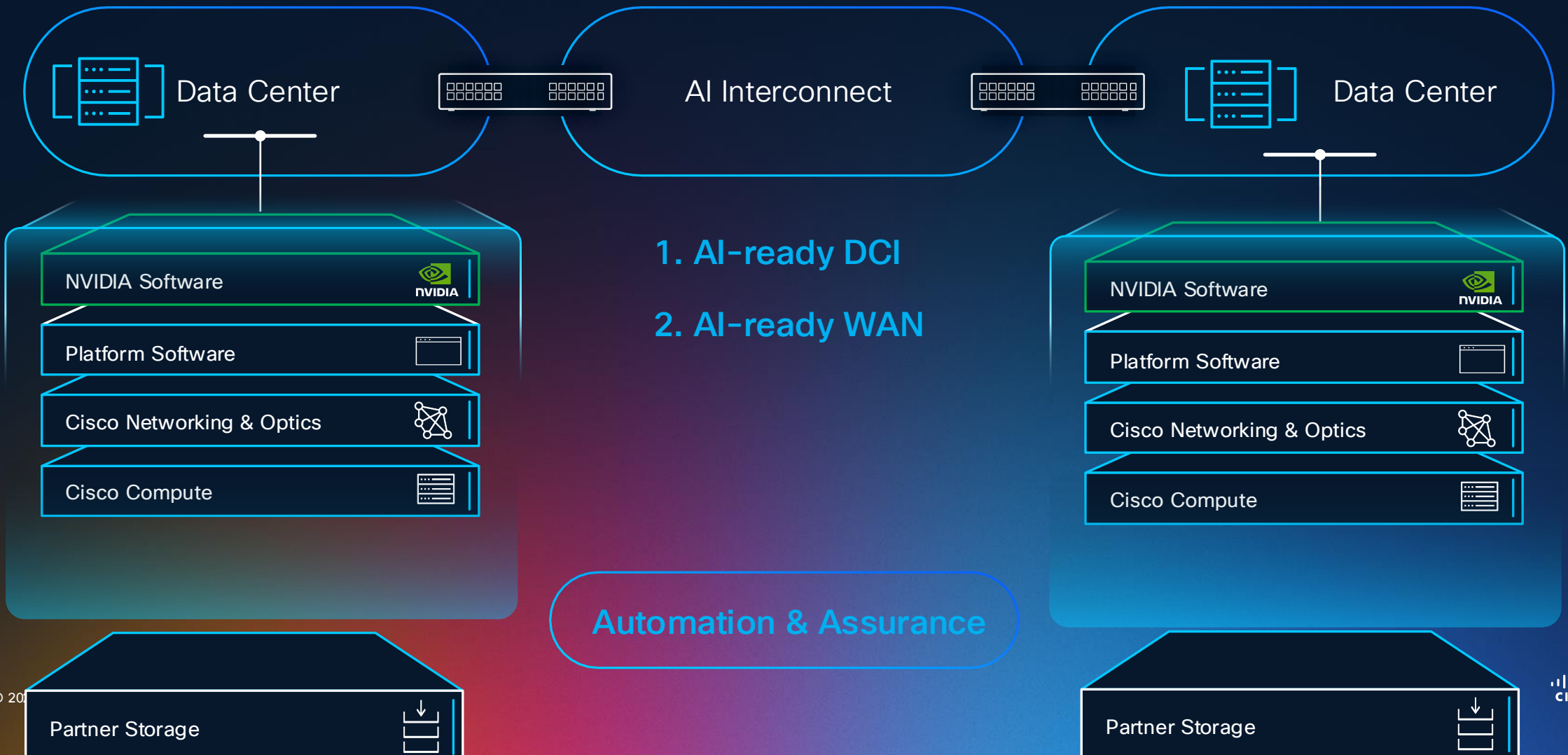
10%

Common AI connectivity needs across all sectors

- ▶ **Scale network capacity**
Distribute 100G to 800G data rates closer to user demand
- ▶ **Improve quality of service**
Migrate from internet and traditional MPLS to segment routing and SRv6
- ▶ **Protect assets**
Increase visibility and security across the network



AI Interconnect Use Cases

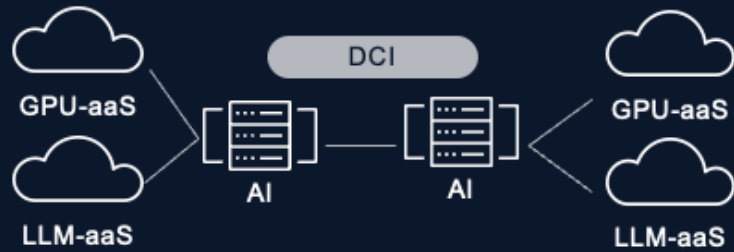


Phased connectivity demands

Infrastructure components including WAN and Data Center with automation/assurance and security

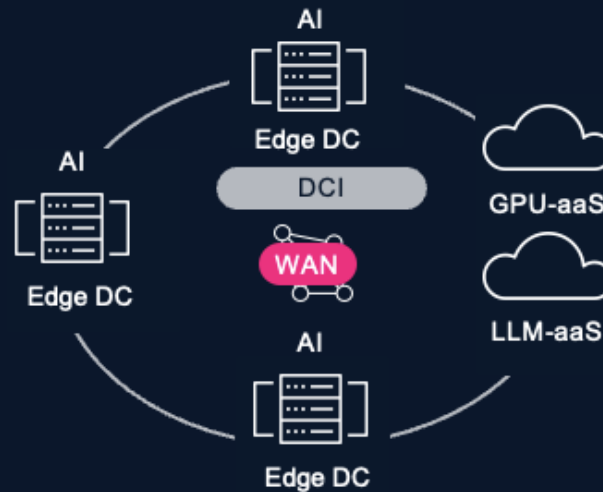
Infrastructure meeting the evolution of AI towards the edge

Experimentation
Centralized massive training



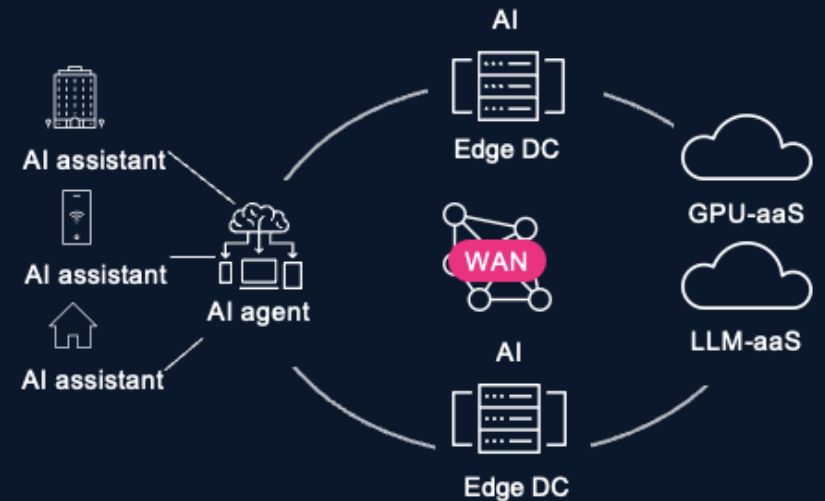
DCI Expansion
Today

Production
inference, finetuning



Any-to-Any DCI
Next 12 months

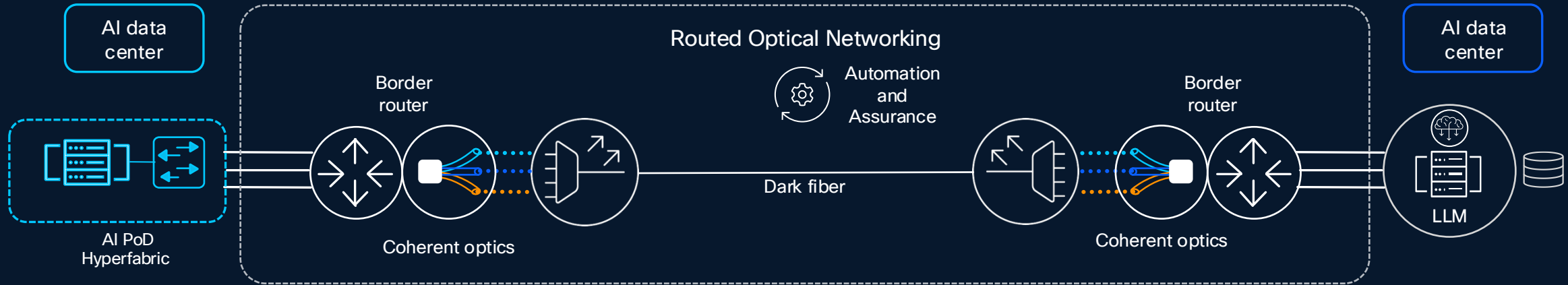
Multi-agent, multi-LLM,
multi-modal, reasoning



Intelligent AI Connectivity
36 Months +

AI-Ready data center interconnect

High-capacity point-to-point



Key benefits

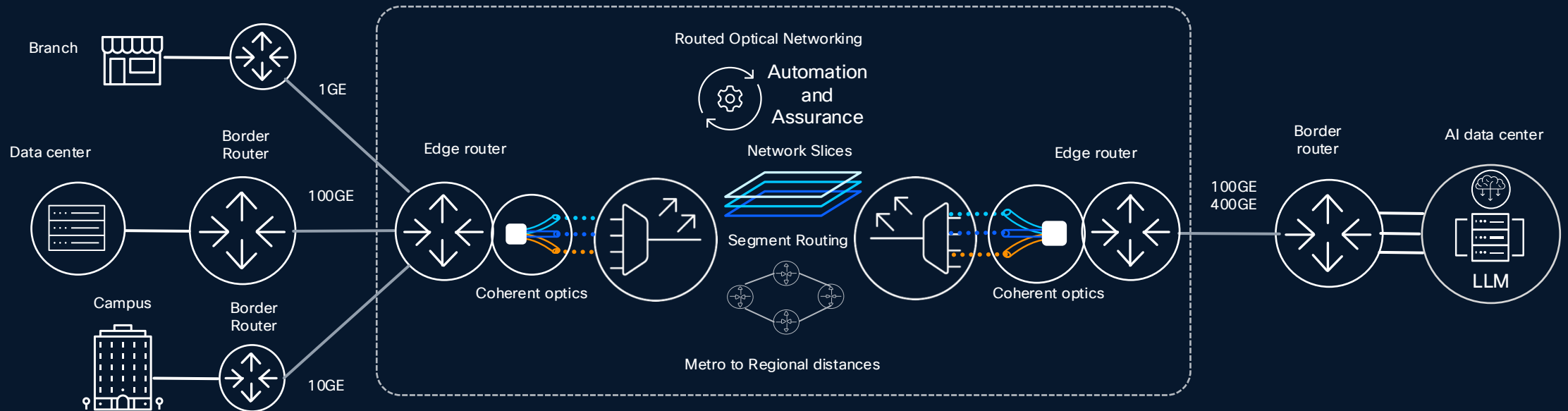
- Cisco Routed Optical Networking replaces power-hungry transponders with small pluggable optics (converge IP and optical layers)
- Suitable for any scale: from 100s of Gbps to 10s of Tbps to meet growing demands of AI
- Broad platform compatibility (e.g., Cisco 8000 and Nexus)
- Delivers up to 66% TCO savings, 95% power savings and requires no extra space

Why Cisco

- Industry leader in optics: largest number of ports shipped to the market and the most complete portfolio, with 100G, 400G, 800G, for different reaches and use cases
- Highest level of quality assurance on optics in the industry
- End-to-end solution: Routers, optics, optical, management/automation
- 500+ customers for Routed Optical Networking and optical customers—including the most demanding hyperscalers in the world

AI-ready Wide Area Network

High-capacity point-to-multipoint



Key benefits

- End-to-end programmable network to enable any service anywhere, with assured, secure, high-performance connectivity at scale and lower power
- Network controllers for easy service provisioning and management across IP and optical layers, and network APIs for full programmability

Why Cisco

- Industry pioneer in segment routing: network slicing and intent-based service policies for low latency, guaranteed bandwidth and secure paths. Segment routing has fewer protocols and is easier to manage
- End-to-end solution: Routers, optics, optical, management/automation and service assurance with embedded security

Cisco's blueprint for AI connectivity

Cisco Silicon One

New

G300- 102.4T Router Chip
SCALE OUT

P200- 51.2T Router Chip
SCALE ACROSS



Cisco Optics

New

Cisco 1.6T optics for AI data centers
Cisco 800G Linear Pluggable Optics
SCALE OUT



Cisco 400G/800G ZR/ZR+ Coherent Pluggable Optics
SCALE ACROSS

Cisco 8000

IOS XR & SONiC

New



Cisco 8132 / 8133
102.4T, 2RU/3RU
64 x 1.6TE OSFP



Cisco 8223
51.2T, 3RU, 64 x 800GE
(OSFP/QSFP-DD800)



Cisco Crosswork

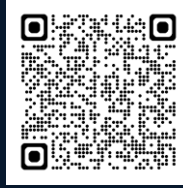
Simplify and scale with Agentic AI-ops

New



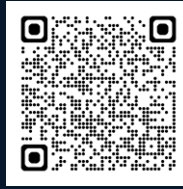
Multi-agentic AI framework |
Integrated Performance Measurement

Resources to learn more



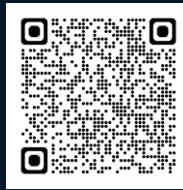
Cisco Agile Services Networking

View on [Cisco.com](https://www.cisco.com)



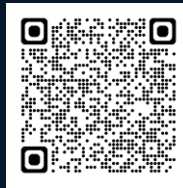
Cisco 8000

View on [Cisco.com](https://www.cisco.com)



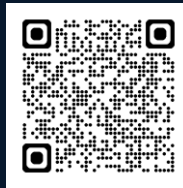
Cisco Crosswork Network Automation

View on [Cisco.com](https://www.cisco.com)



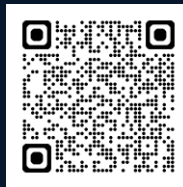
Cisco Provider Connectivity Assurance

Visit [Cisco.com](https://www.cisco.com)



Cisco Routed Optical Networking

Visit [Cisco.com](https://www.cisco.com)



Blogs

Visit blogs.cisco.com/sp360

