Cisco TechClub webinář

Cisco ACI – síťová platforma pro datová centra a aplikace zítřka

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Technology Solution Specialist – CCIE DC#59794
11.6.2020

Agenda

- Co je ACI?
- Jaké jsou možnosti ACI
  - **topologie**
  - **integrace**
- Jak lze provozovat ACI

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Co je ACI?

Application Centric Infrastructure – Intent Based Network for Apps

Cisco ACI

Simpler
Proactive Operations

Faster
Agile Multicloud

Powered by Nexus 9000*

Any Speed
(100M/1/10/25/40/50/100/400G)

Secure
Protect Anywhere

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* When using physical ACI version, not needed for Cloud ACI or virtual ACI

ACI: One Network, any location

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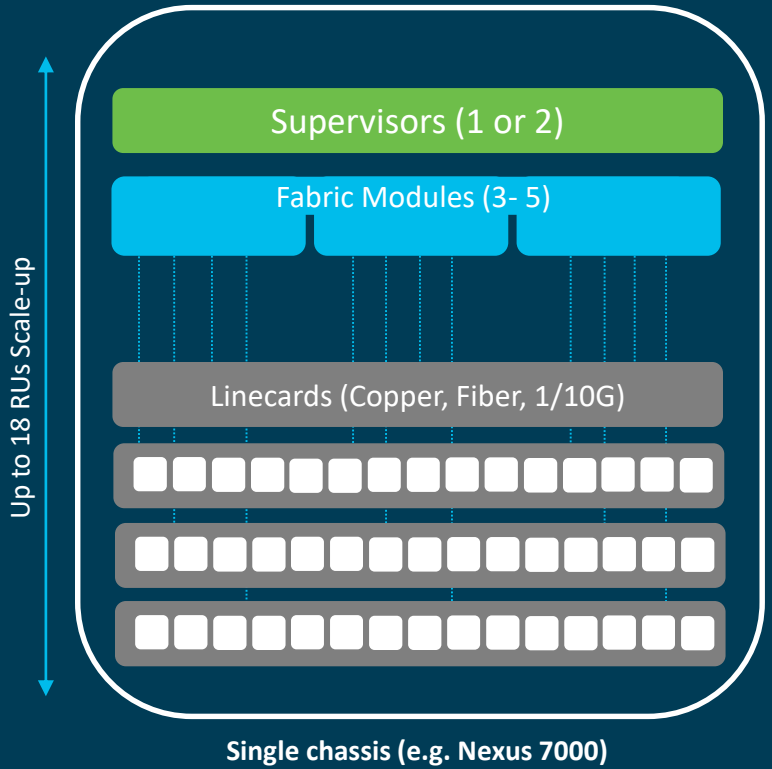
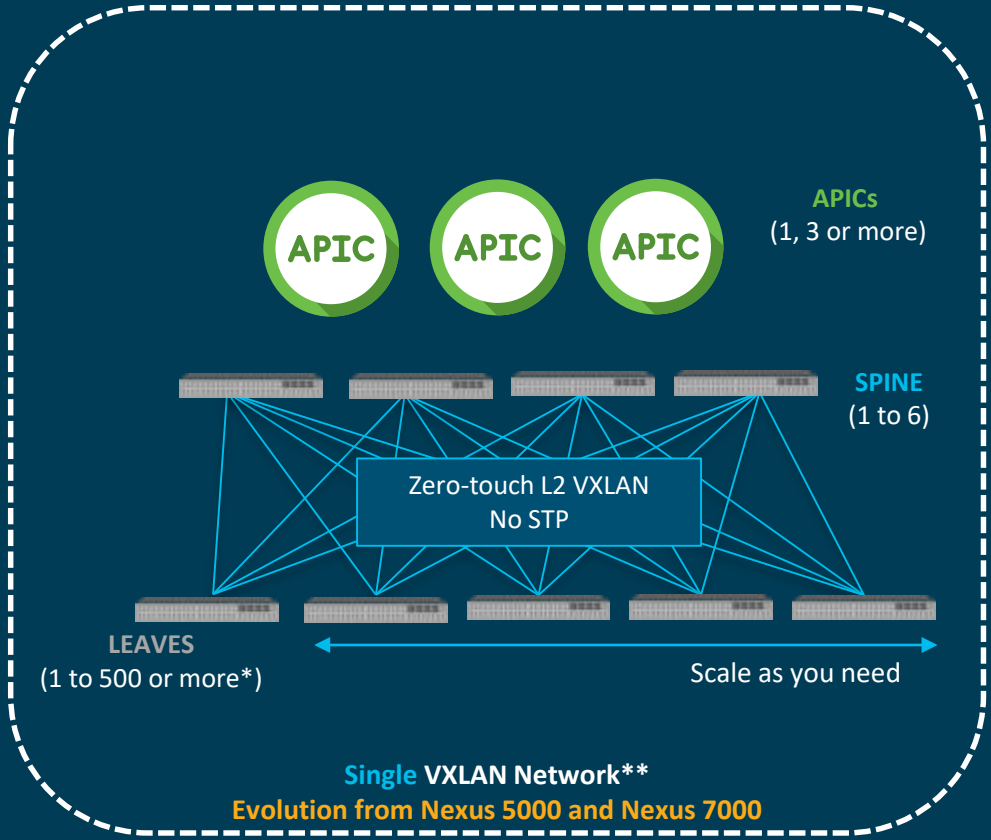
* Google Cloud in Roadmap

The DC network before
Classic modular switching



Single chassis (e.g. Nexus 7000)

The DC network NOW
ACI



Single VXLAN Network**
Evolution from Nexus 5000 and Nexus 7000

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* > 500 Leaves with MultiPod/Multi-Site

** Other topologies available (e.g. 3-tier, etc)

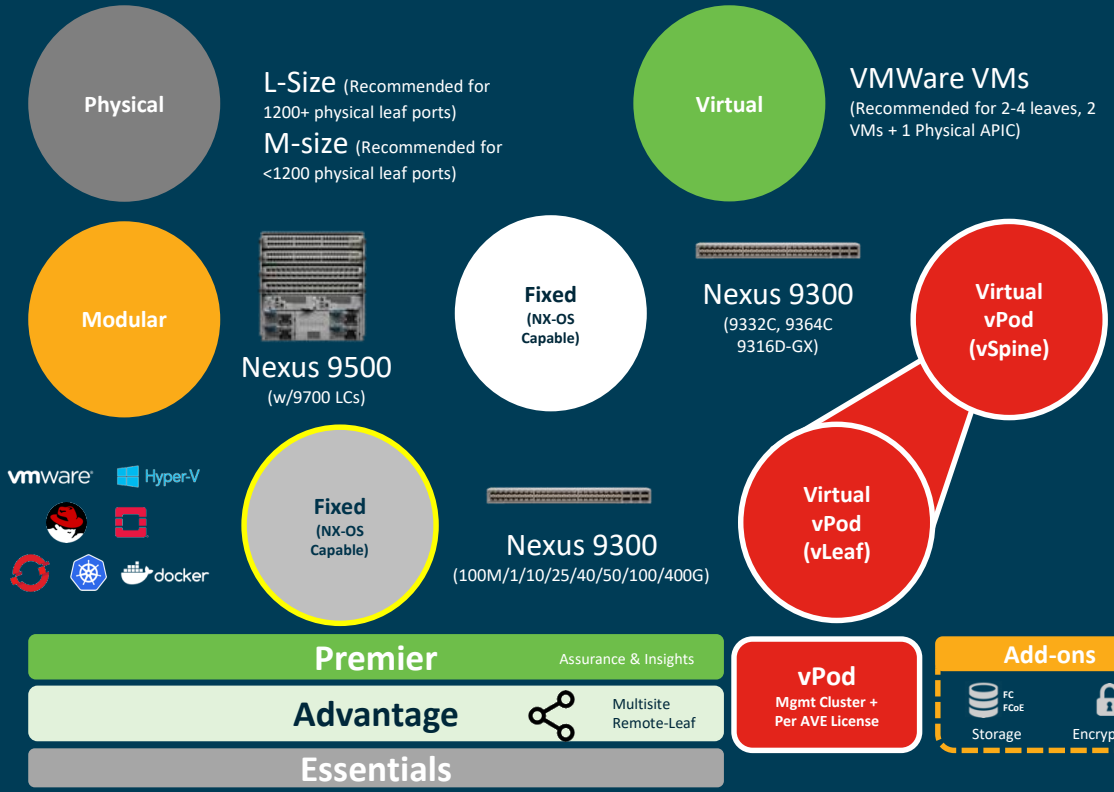
ACI: The on-prem elements

APICs
3 Recommended for **Production**
At least 1 **physical** APIC required

SPINES

LEAVES
Virtual/Container networking integration
included (except vPod mode)

LICENSING
Only applies to **Physical** Leaves
(no licensing on APICs nor Spines*)



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*Except for CloudSec Encryption

Topologické možnosti ACI

From on-prem, VMs, Containers to Cloud and back

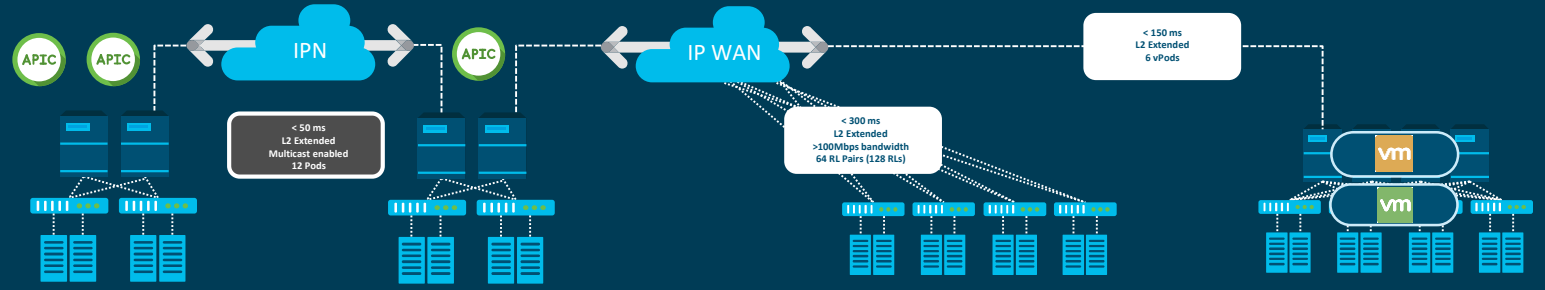
Single ACI Site

Single Management

Consistent deployment

Main Data Center

Branch , Brownfield and Co-Lo



ACI **Single Pod**

ACI **Multi Pod**

ACI **Remote Leaf**

Virtual ACI

The easiest Data Center and Cloud Interconnect Solution in the Market

* DHCP Relay and Jumbo Frames should be considered to accommodate VXLAN Header (50 bytes)

ACI Cloud Only

Single Management

Multi-Region

ACI
AWS

Consistent deployment

Cloud-Native

ACI
Azure

Enable Cloud Faster: Reduce the “Learning Curve” effect

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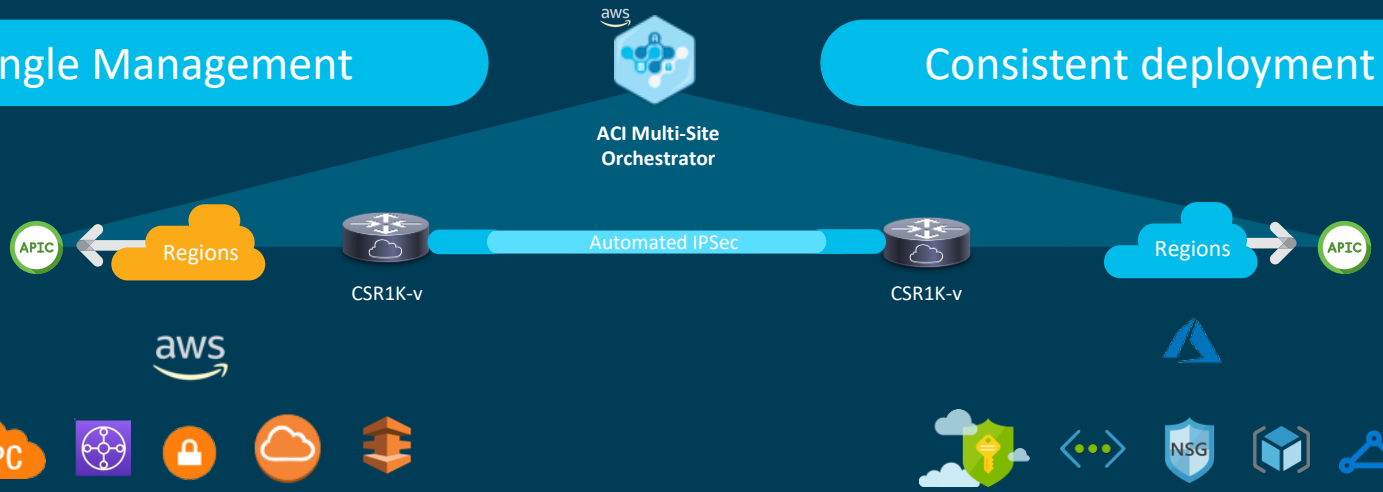
ACI Cloud Only

Single Management

Consistent deployment



ACI **AWS**

ACI **Azure**

Enable MultiCloud Faster: Learn One Network, Manage and Interconnect multiple

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cisco

ACI Anywhere

Edge / Remote

Core Data Centers

Hybrid Cloud & Multicloud

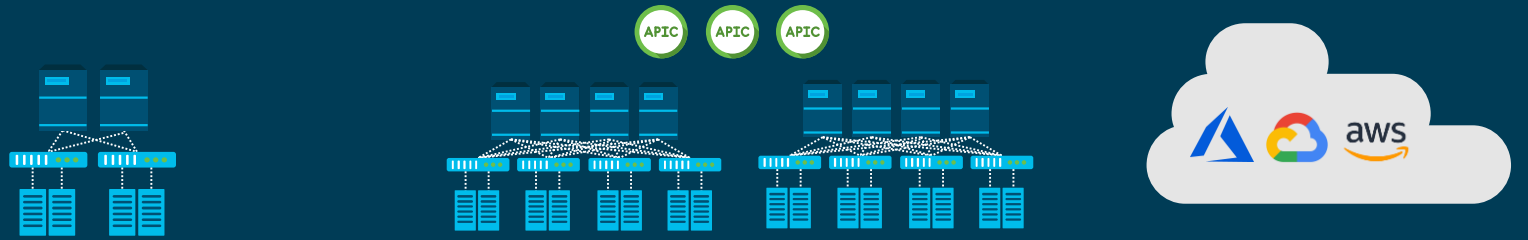
Virtual ACI

IP WAN

ACI

IP WAN

Cloud ACI



ACI Single-POD

ACI Multi-POD

ACI Remote Leaf

Virtual ACI

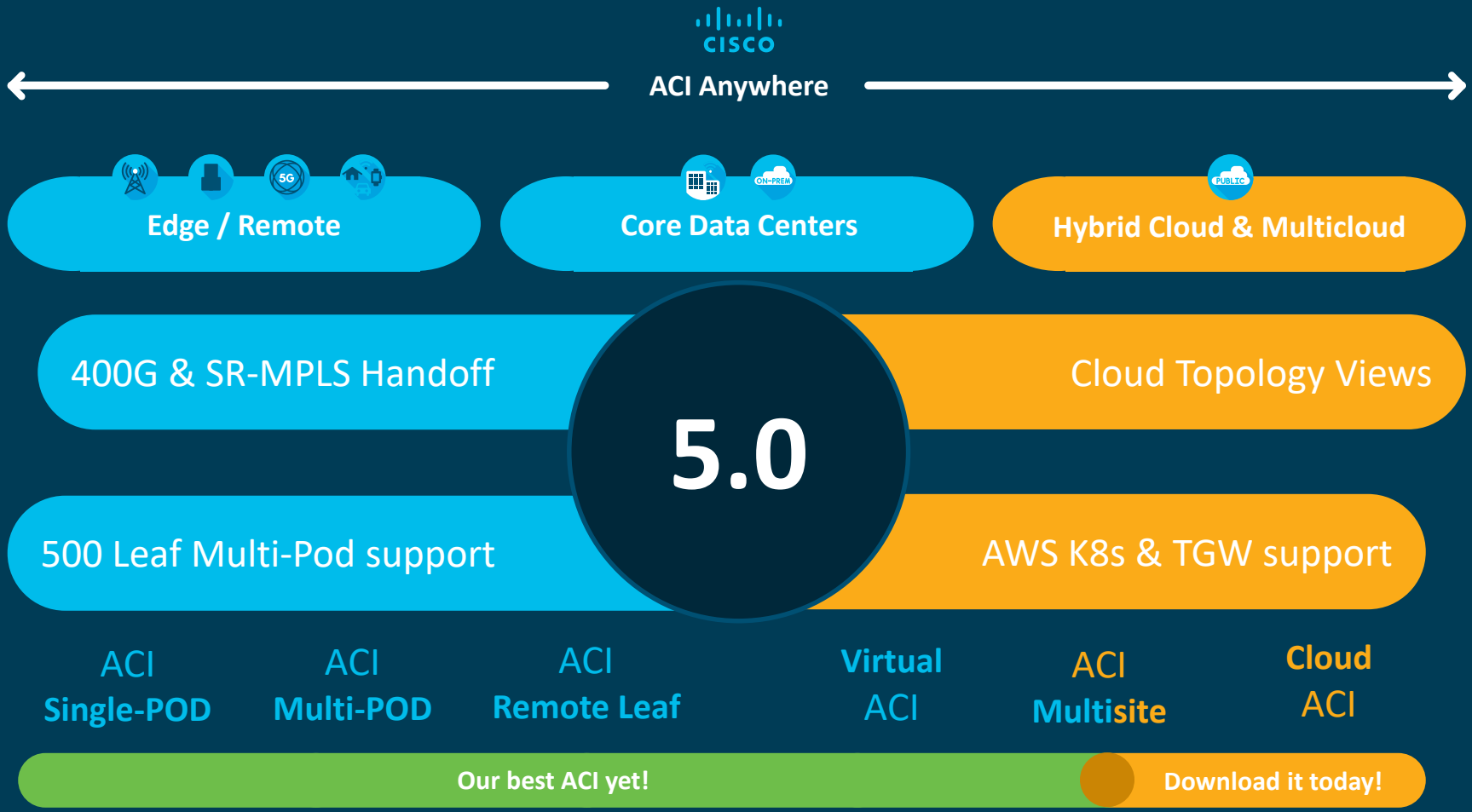
ACI Multisite

Cloud ACI

The easiest Data Center and Cloud Interconnect Solution in the Market

Try it today!

*Google Cloud in Roadmap

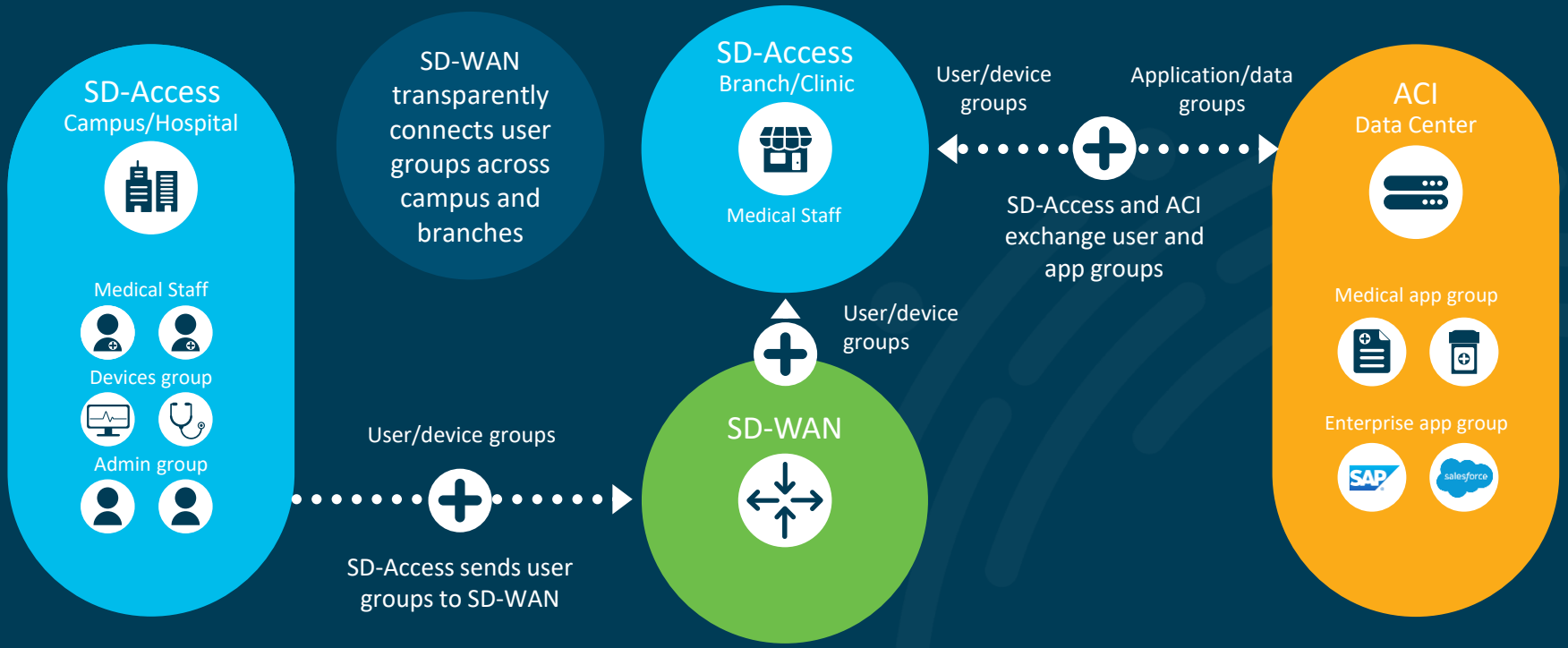

cisco
ACI Anywhere
5G
Edge / Remote
ON-PREM
Core Data Centers
PUBLIC
Hybrid Cloud & Multicloud
400G & SR-MPLS Handoff
5.0
Cloud Topology Views
500 Leaf Multi-Pod support
AWS K8s & TGW support
ACI Single-POD
ACI Multi-POD
ACI Remote Leaf
Virtual ACI
ACI Multisite
Cloud ACI
Our best ACI yet!
Download it today!

Integrace ACI

Every Network Location has it‘s needs, let‘s Integrate them Together

Segmentation Policy Follows the User

No Reconfiguration Required if User Moves



Segmentation maintained from user to app | No VLAN, VRFs, or ACLs required

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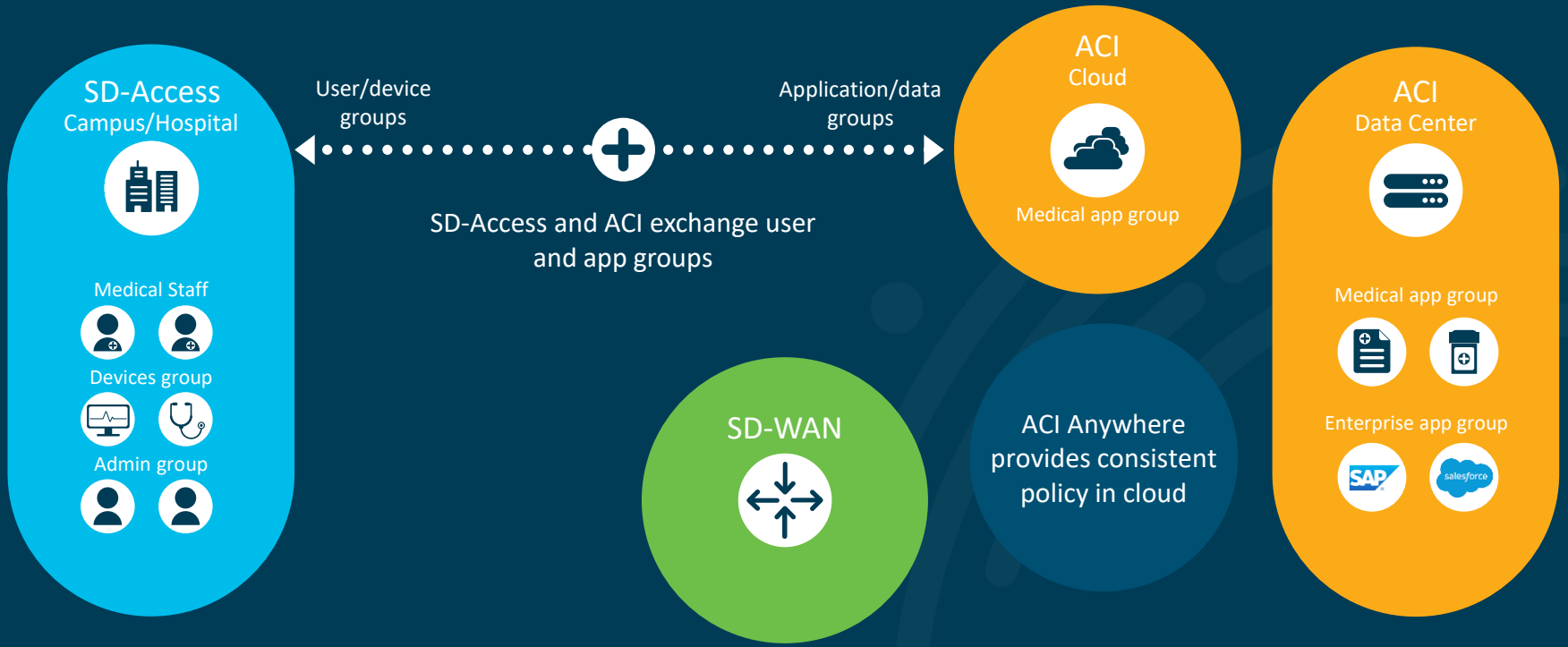
Segmentation Policy Follows the Application

No Reconfiguration Required if Application Moves



Segmentation maintained from app to user | No VLAN, VRFs, or ACLs required

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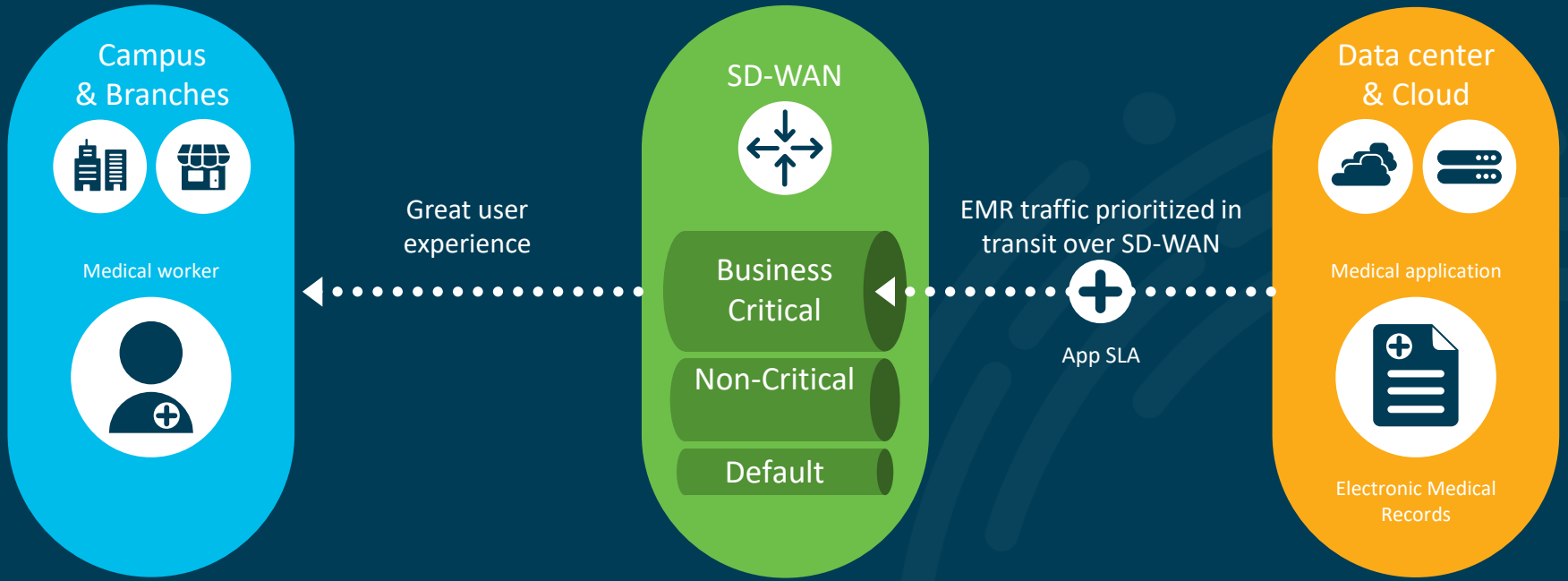
Experience Optimized via Automatic SLA Update

Application Traffic Priority Updated Across Domains



ACI sets SAP's SLA parameters in SD-WAN for a better user experience

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Cisco Multi Domain Integrations for IBN

Figure 1. Cisco ACI and AppDynamics integration

Figure 2. Cisco ACI and SD-Access integration

Figure 3. Cisco ACI and SD-WAN integration

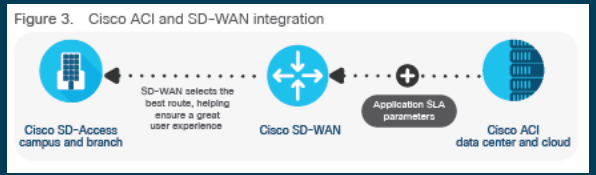


Figure 4. Cisco SD-Access and SD-WAN policy integration

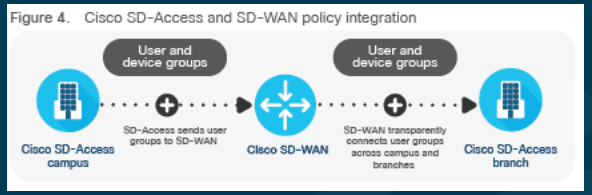
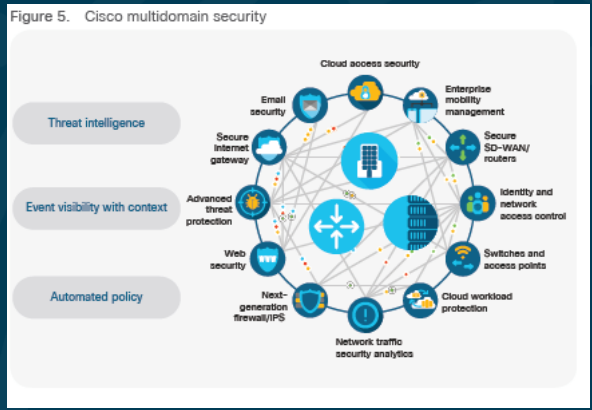


Figure 5. Cisco multidomain security



https://www.cisco.com/c/en/us/solutions/collateral/data-center-virtualization/application-centric-infrastructure/at-a-glance-c45-741877.pdf?_lrsc=a6e2aa5e-3ec0-4500-b566-3ad583b03306

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Jak lze provozovat ACI

Pro-Active Monitoring, Troubleshooting & Capacity Planning

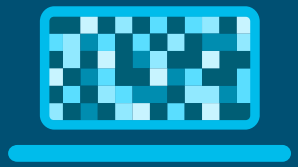
Biggest Consumer of IT Time:
43% Troubleshooting

4x

Network operators spend more time collecting data than analyzing while troubleshooting

Replication challenge

Troubleshooting an issue can be impossible if IT can't replicate the issue or see the issue as is it happening real time



Slow resolution

Downtime is expense; unplanned downtime cost Fortune 1000 $1.25-2.5B annually

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. [1] McKinsey Study of Network Operations for Cisco – 2016

Day 2 Operations Needs

Assure Network Intent and Policy

Ensure network meets business needs

Assure changes work as intended: policy, compliance, services, updates

Proactive advice for optimum deployment

Proactively analyze the network and solve problems before they affect network performance

Efficiently manage network resources

Intelligent Analytics for Troubleshooting

When problems arise, be able to identify the root cause and solve it quickly

Have full visibility on what is happening in the network and obtain actionable insights

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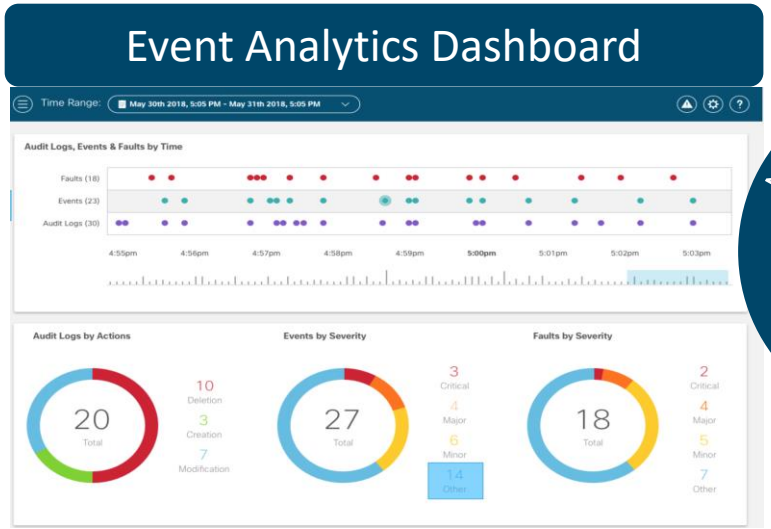
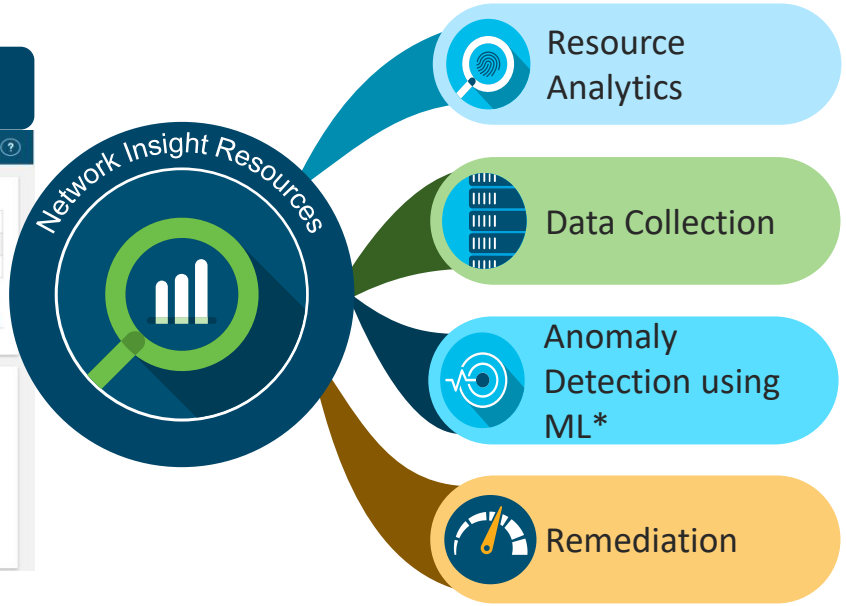
Network Insights – Resources

Pro-Active Monitoring, Troubleshooting & Capacity Planning

ACI: Network Insights-Resources

Understand What's Running In Your Network





* EWMA + linear regression; Hidden Markov models

Event Analytics Dashboard Displays Faults, Events, And Audit Logs In A Time Series Fashion.

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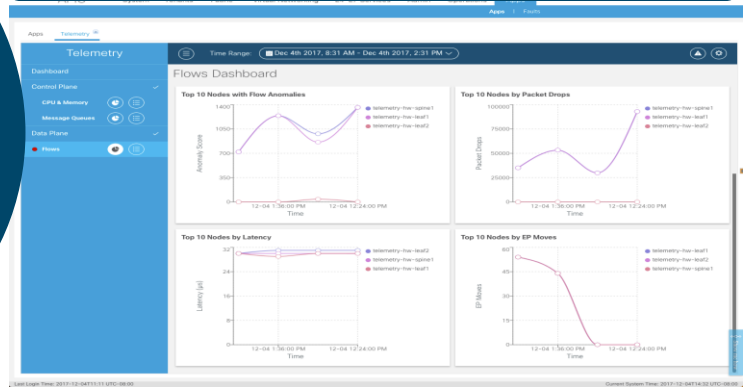
Network Insights-Resources

Understand What's Running In Your Network

- Flow Anomalies
- Packet Drops
- Latency
- End Point Move

Flow Analytics Dashboard



Flow Analytics Dashboard Displays Key Indicators Of Infrastructure Data Plane Health.

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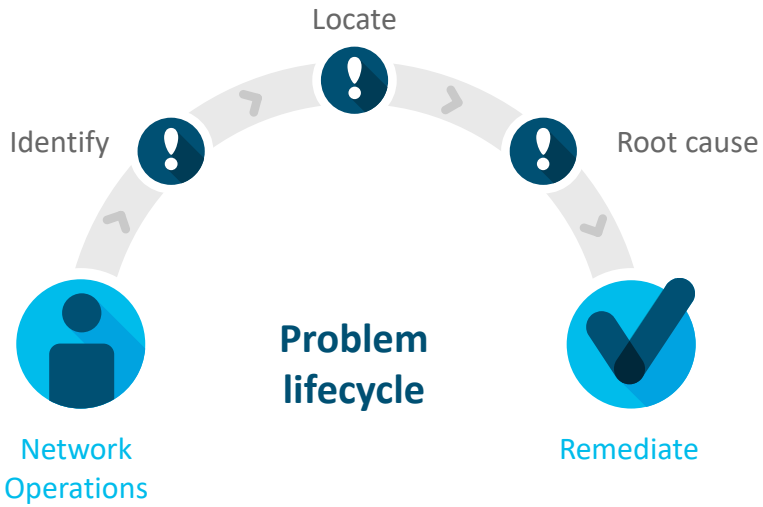
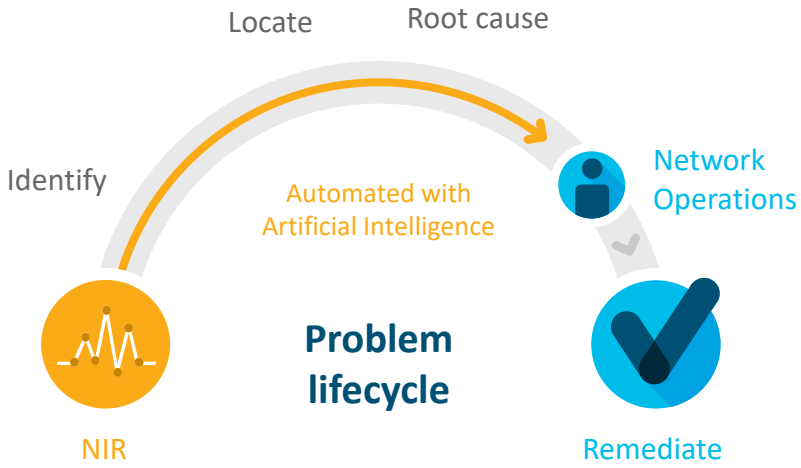
Shorten Time to Remediation for **Troubleshooting**

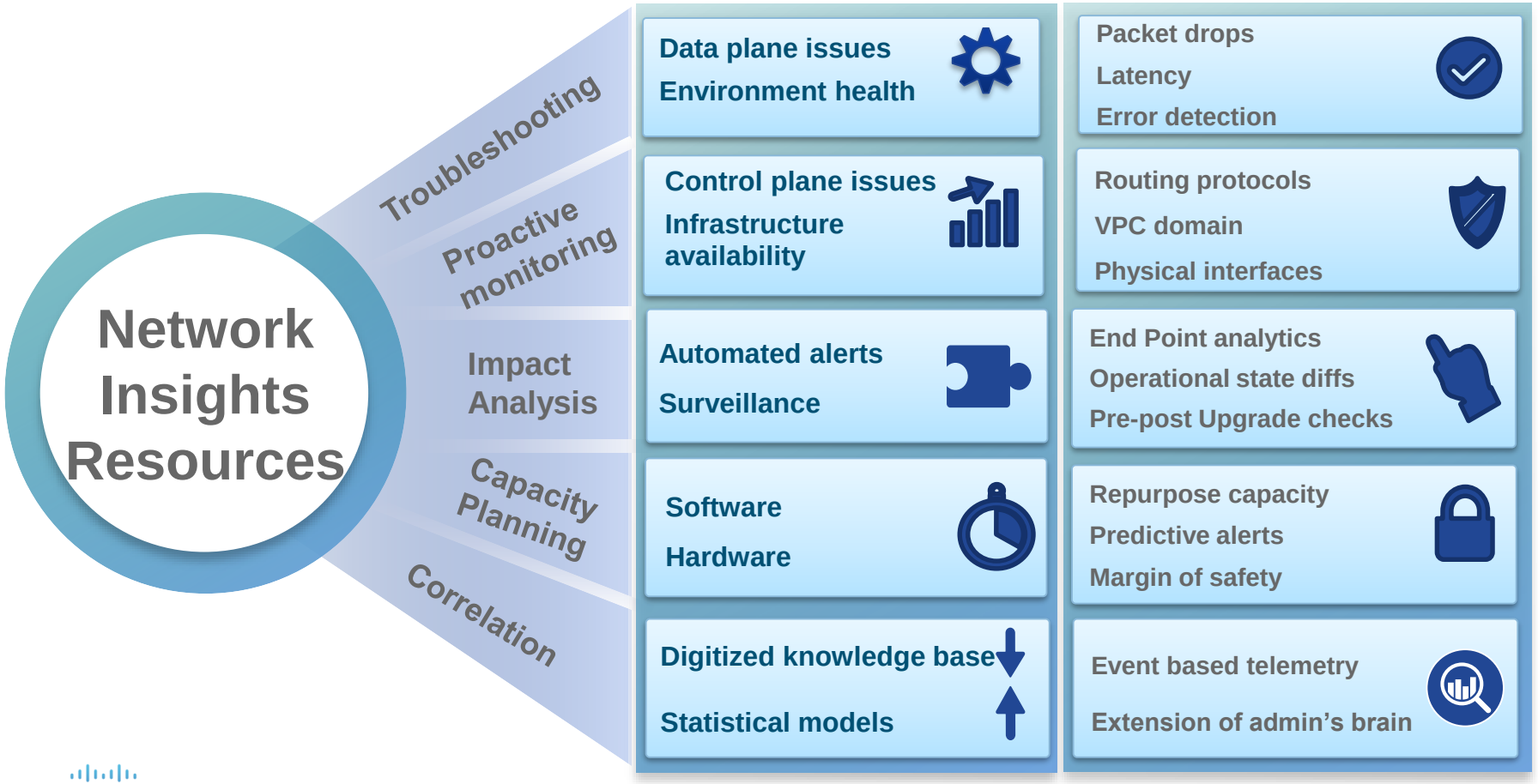




Network Insights:
Resources

Packet drops | Latency | Reachability | Routing | Micro Bursts

Network Insights Resources – Use Cases



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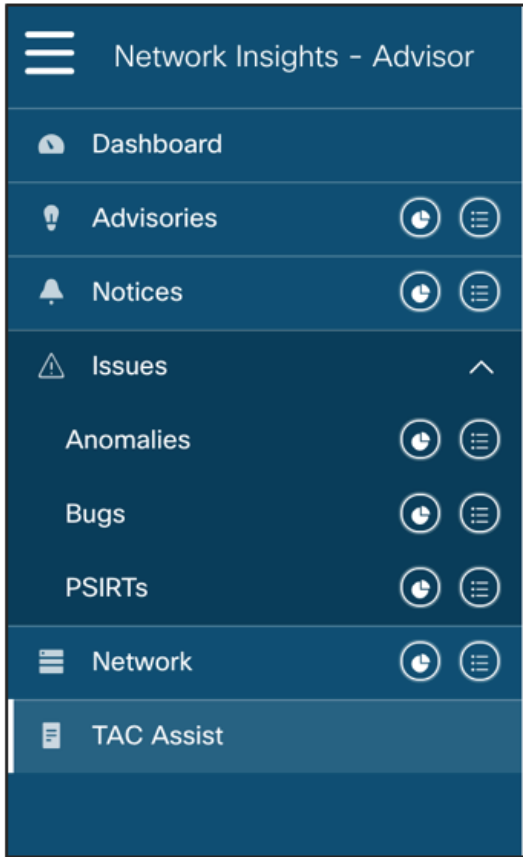
Network Insights Advisor

Pro-Active Analysis and Advice to Reduce Downtime and Optimize your Fabrics

Network Insights Advisor
proactive support for your fabric



Dashboard ”Give me a summary of issues”

Advisories, Notifications

- Provide Timely updates about your system
- Compliance, Consistency, unplanned events

Issues

- Track Bugs and PSIRTs

TAC Assist

- Help to collect logs for TAC SRs

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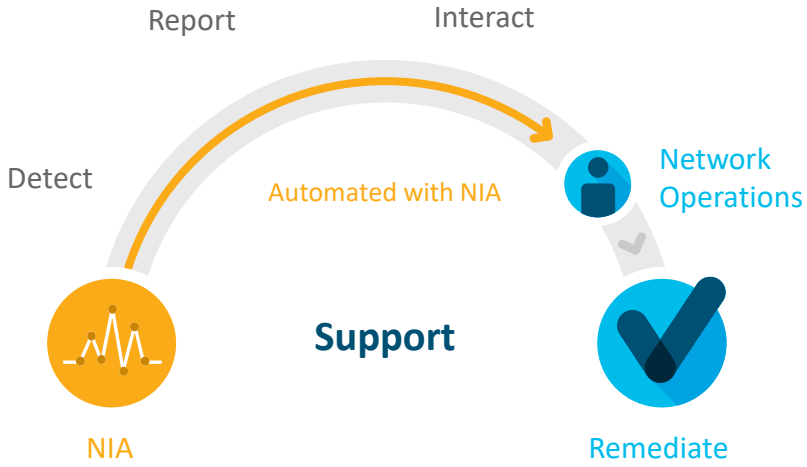
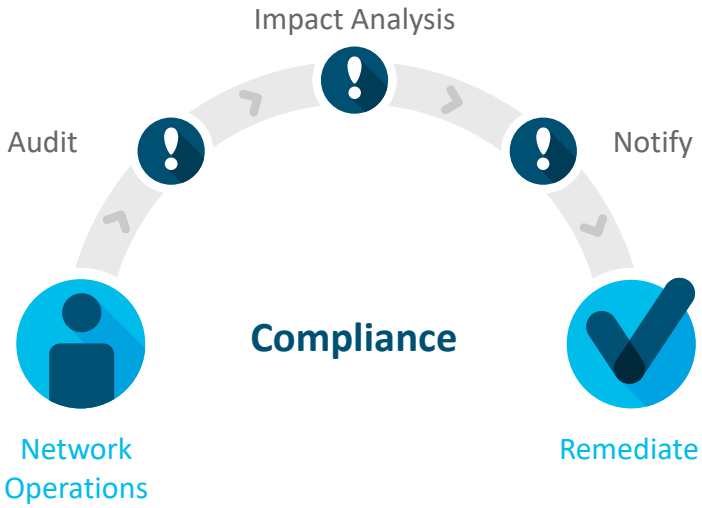
Optimize Your Infra with **Pro-active support**

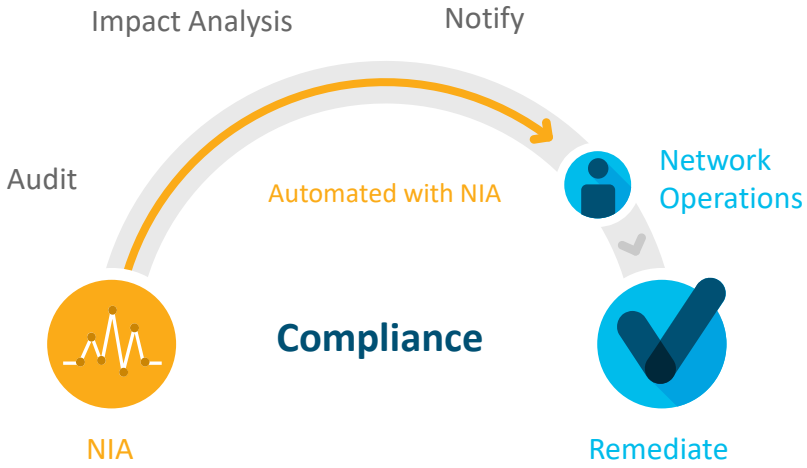


Network Insights:
Advisor

TAC SRs | Upgrade impact | Defect scans

Protect Your Infra with **Compliance**





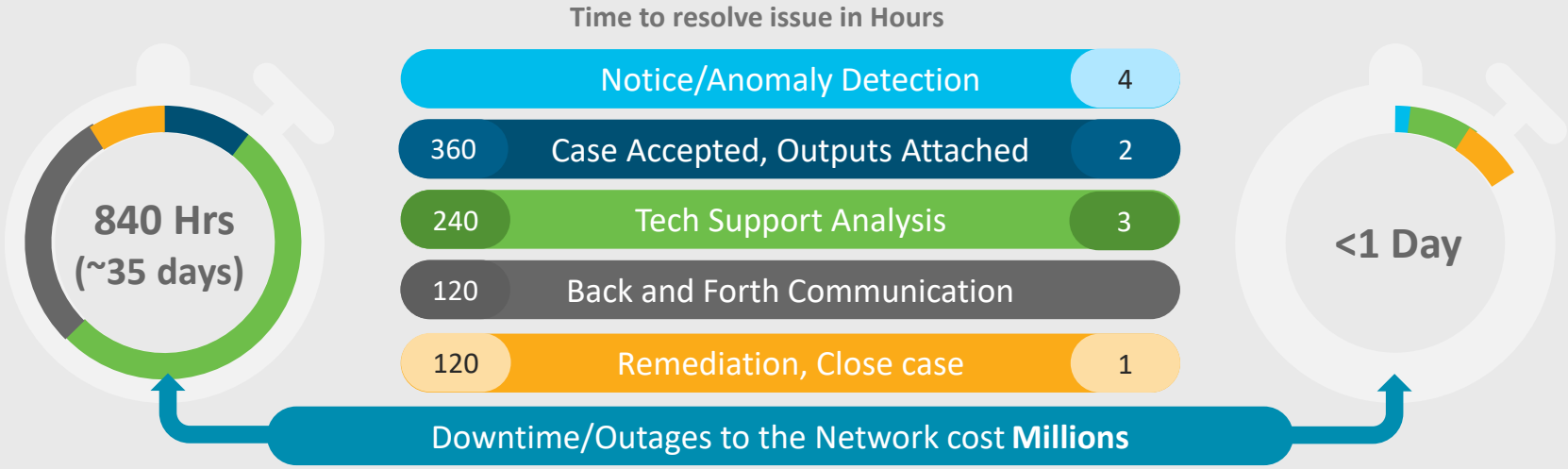
Network Insights:
Advisor

PSIRTS | Hardening Anomalies | Field notices

Network Insights Advisor – Reduce Downtime

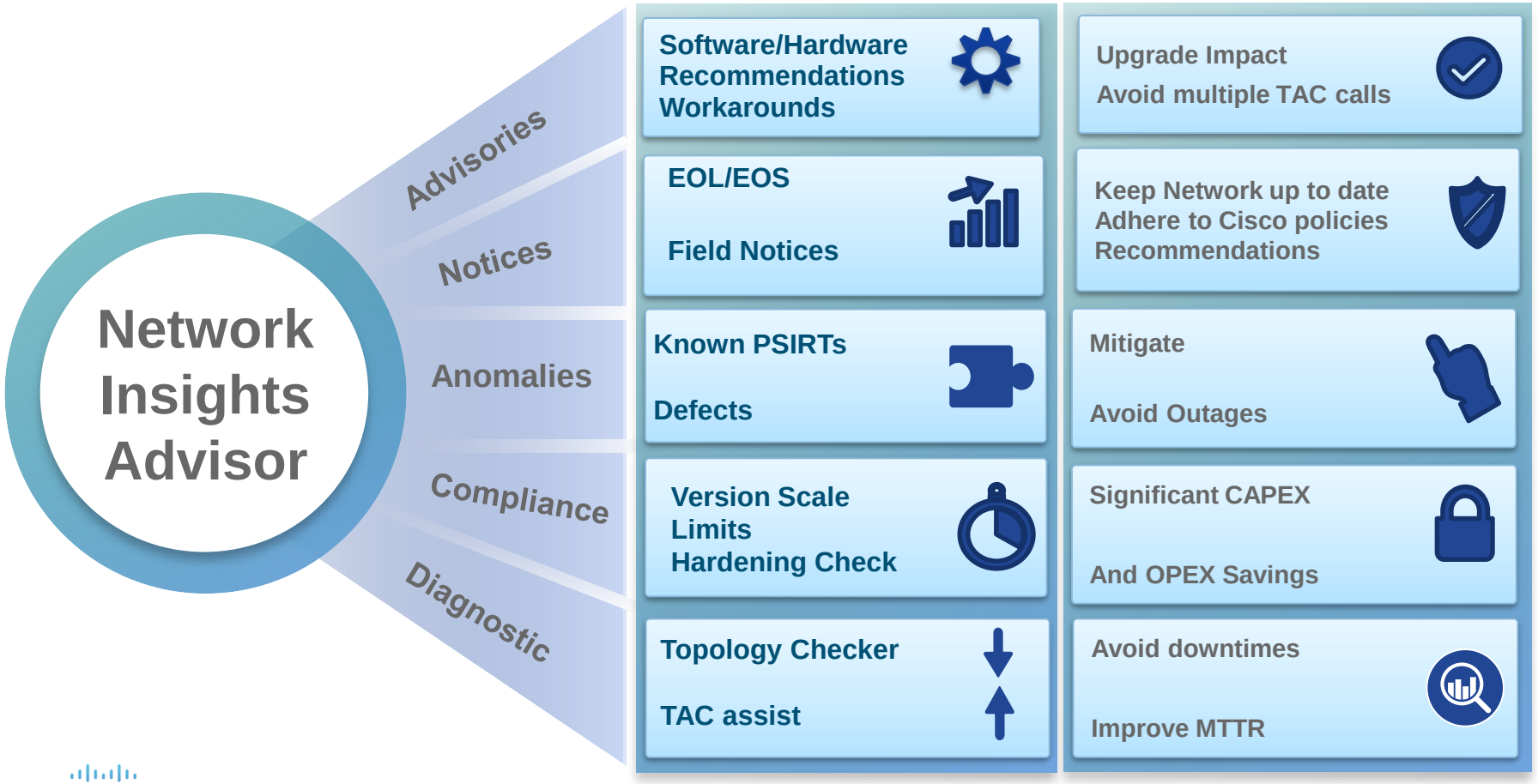
Before Network Insights Advisor

After Network Insights Advisor



Flag Anomalies | Prevent outages | OPEX, CAPEX savings

Network Insights Advisor – Use cases



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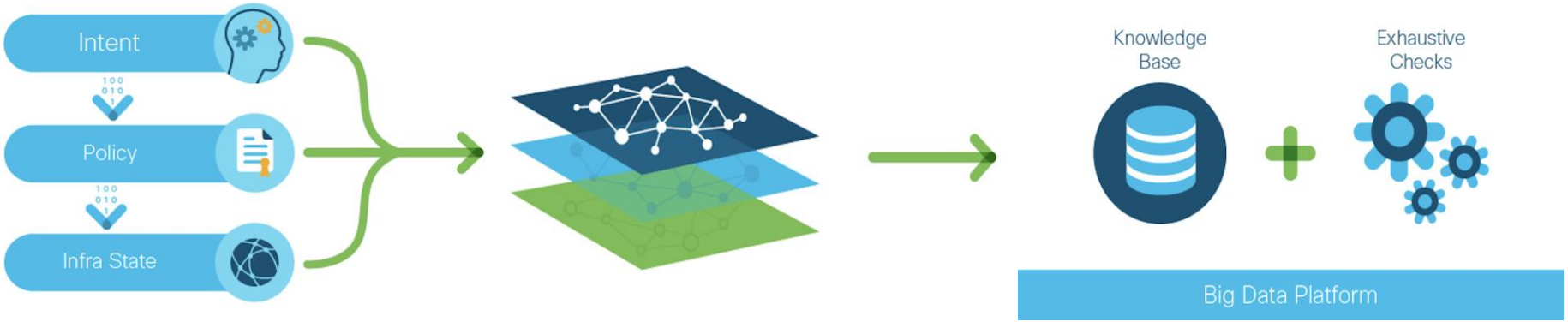
Network Assurange Engine

Cisco Networking Engineer Assuring your Network Intent 24x7

Network Assurance Engine: How it Works



Data Collection

Capture DC Wide Intent, Policy, Control/State across Forwarding & Security

Formal Modeling of Network

Precise Mathematical Models that codify Cisco's 30+ Years of Networking and Cross Customer Domain Knowledge

Continuous Analysis

Models verify that **Network operates per Intent** and accurately tell what is wrong, where, why, impact and how to fix

Reactive Troubleshooting to Proactive Operations - continuously, network wide

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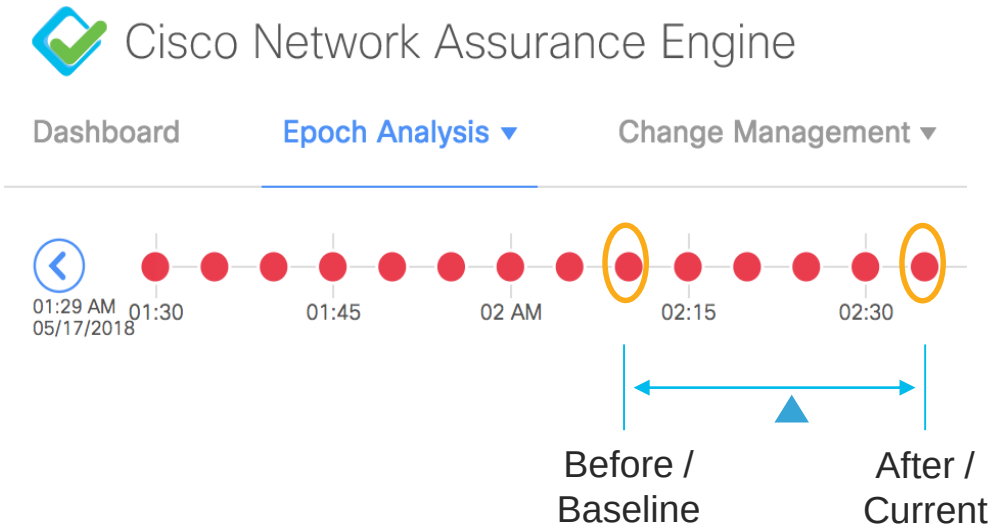
Epoch Delta Analysis

Correlated Ad hoc Analysis Workflow



4 Qs, correlated answers…

- What changed?
- Who was impacted?
- Was it due to config changes?
- What happened as a result?

Use Cases

- Change Management
- Root-cause analysis
- Migration
- Maintenance Upgrades
- Capacity Management

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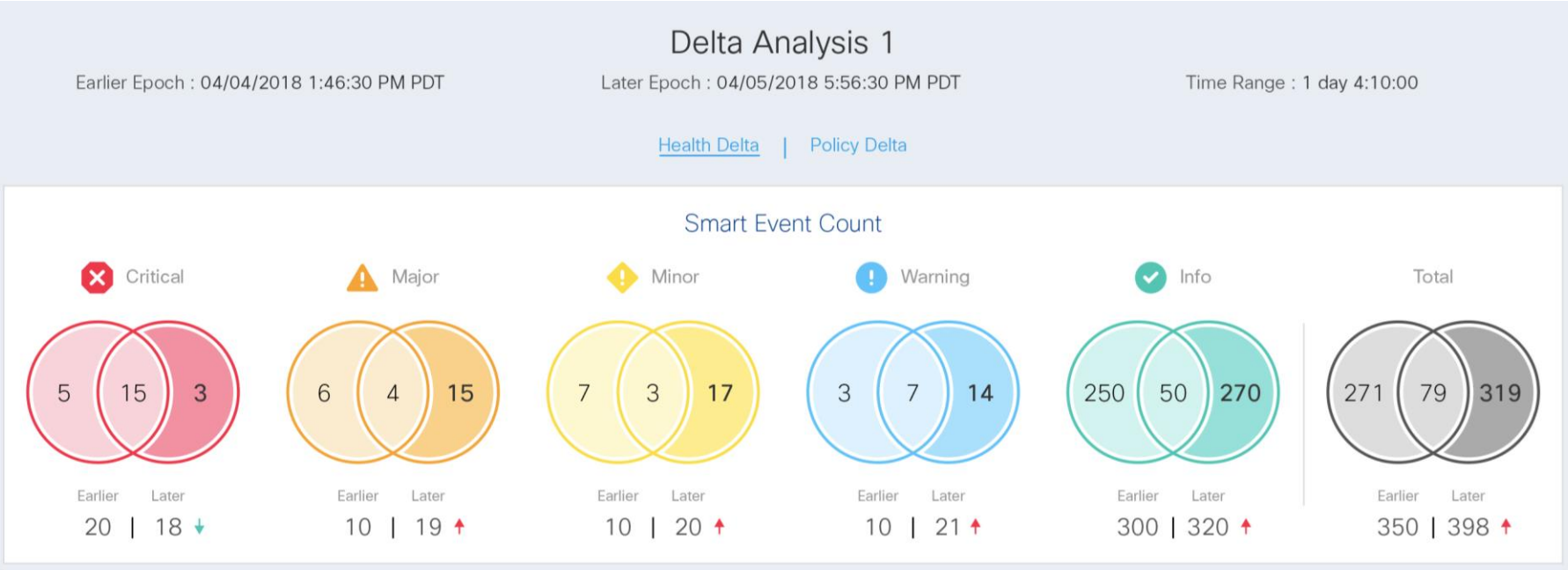
Health Delta - Summary
Change in the health of the Fabric



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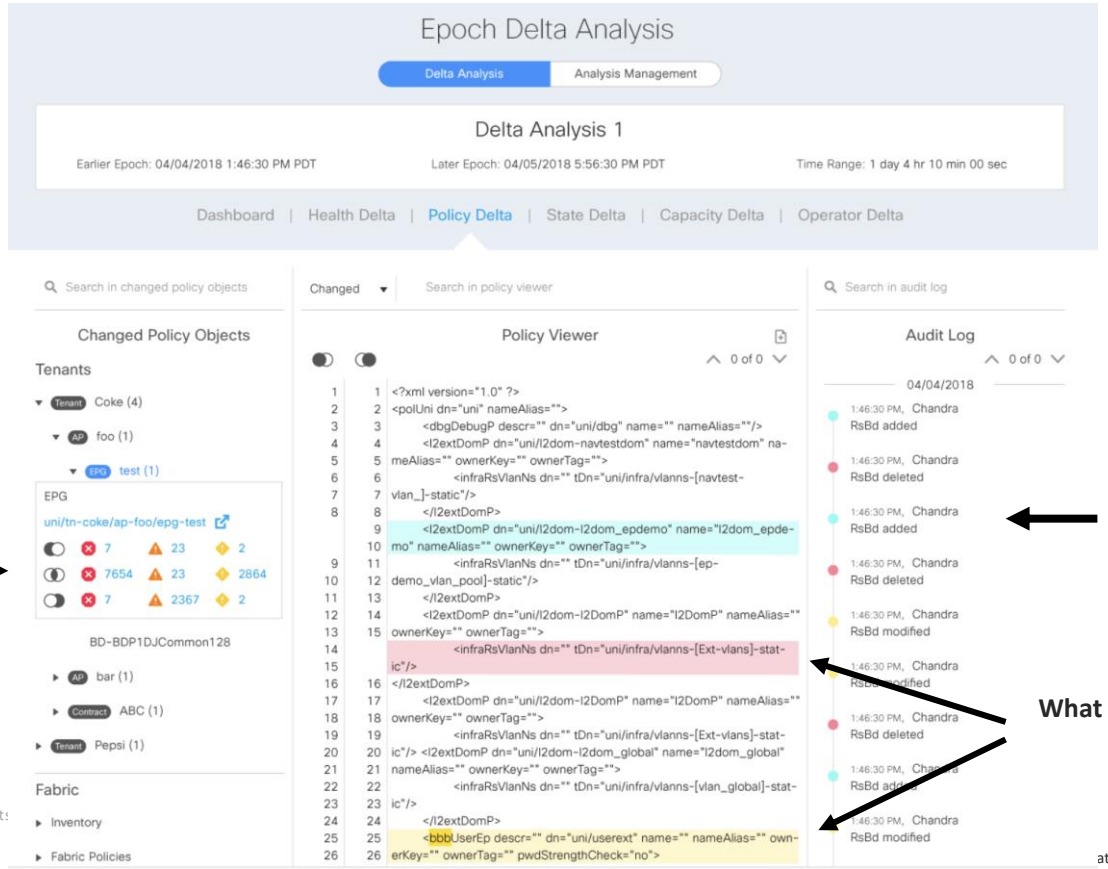
Epoch Delta Workflow – Policy Delta

Impact, Change, Operator



What got impacted ?

Details of impact, if any

Who made the changes ?

What has changed ?

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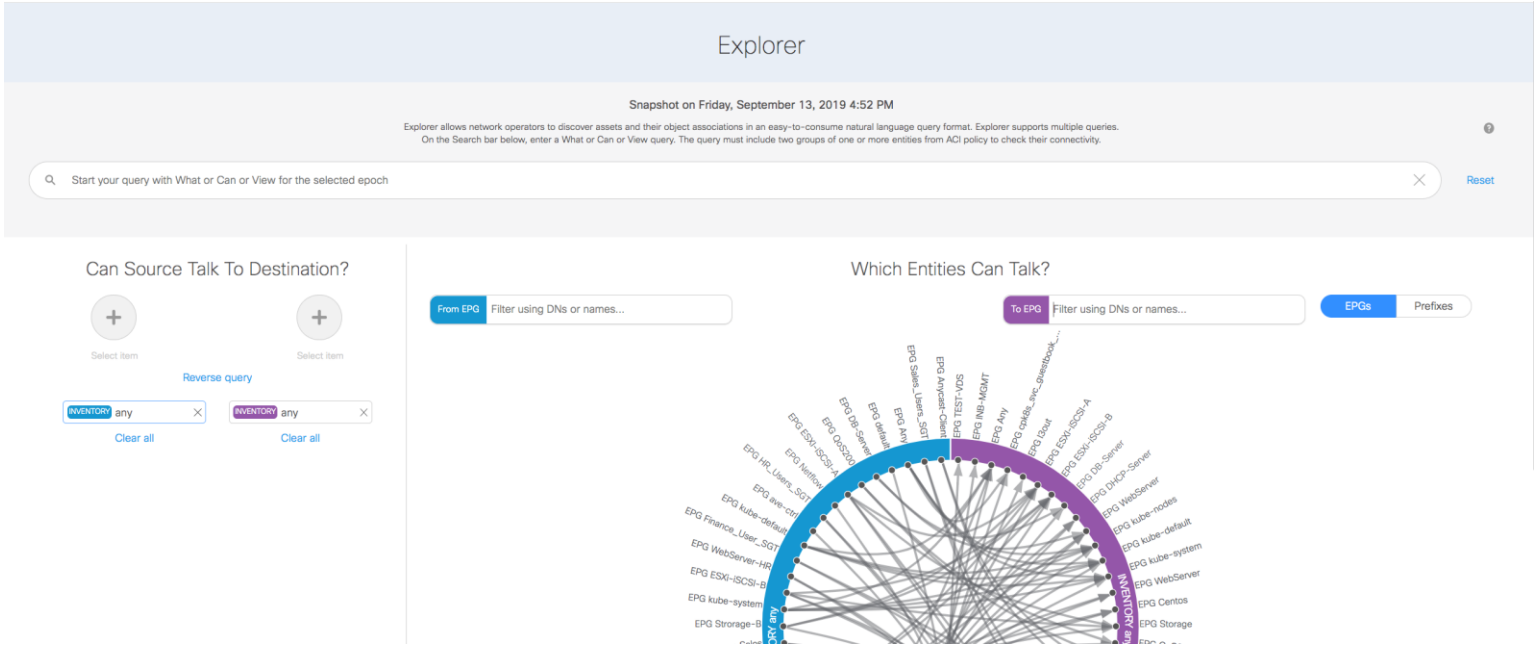
Policy Explorer



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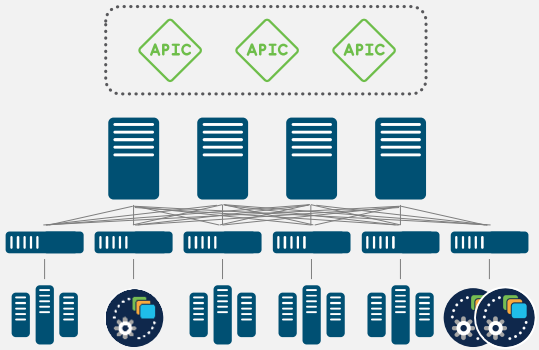
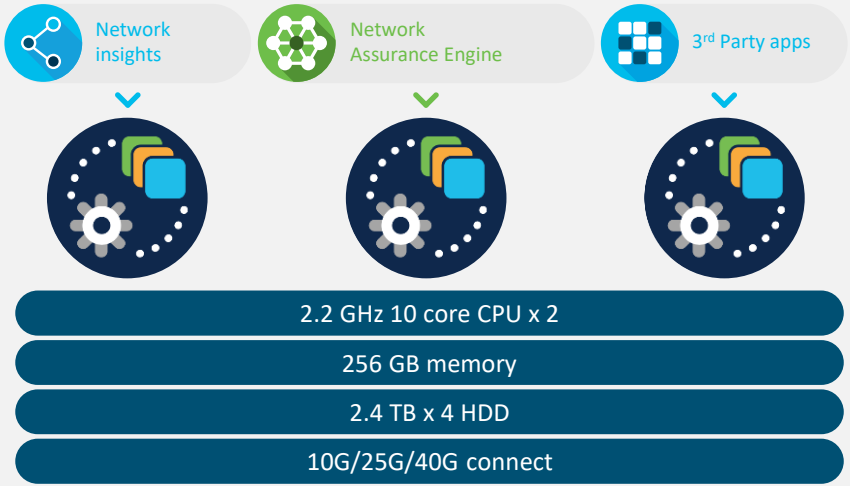
Application Services Engine

Run your Day-2 Operations Tools with Ease

Cisco Application Services Engine

Modern Scale-out application services stack to host Day-2 Operations applications





Network automation | Scale-out cluster | SE-CL-L3

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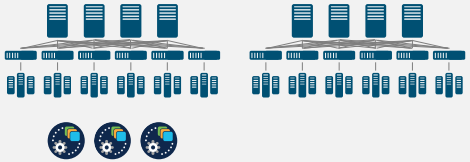
ACI 4.2

Cisco Application Services Engine - Architectures

Fabric internal mode



Fabric internal mode

Single fabric

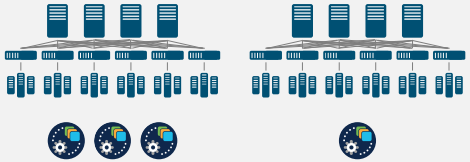
Multiple fabrics with a single cluster

Fabric external mode

SE not connected to ACI fabric

Primarily for MSO running out of band

Distributed Cluster**



Distributed cluster mode

Location aware workload placement

Mixed fabric version mode

Hybrid cluster mode to support fabric internal and external nodes

** Future

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Sumář

Cisco ACI

Simpler
Proactive Operations

Faster
Agile Multicloud

Powered by Nexus 9000*

Any Speed
(100M/1/10/25/40/50/100/400G)

Secure
Protect Anywhere

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* When using physical ACI version, not needed for Cloud ACI or virtual ACI

Thank you !