



Cisco TechClub webinarů



Cisco ACI – síťová platforma pro datová centra a aplikace zítřka

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Agenda

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

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)

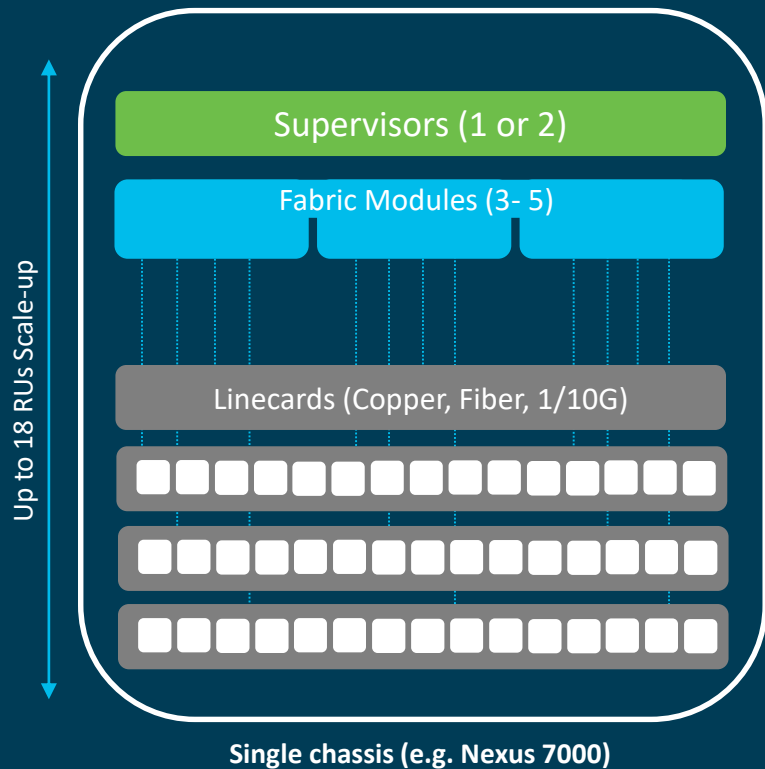


Secure
Protect Anywhere

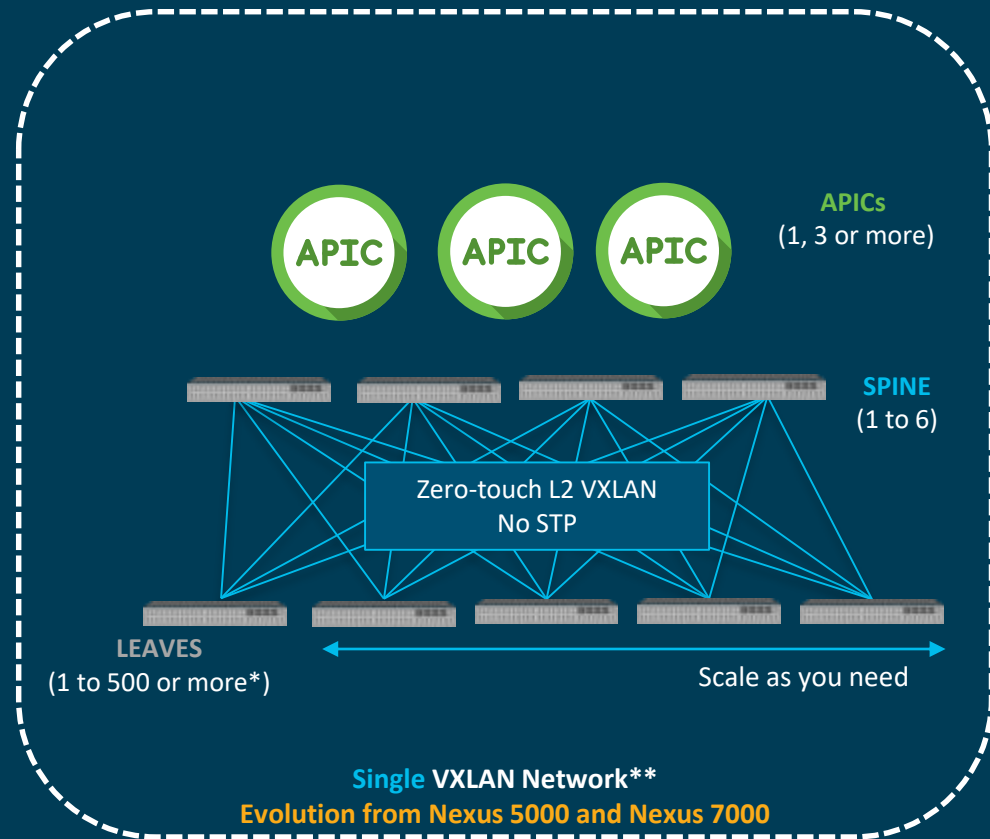
ACI: One Network, any location



The DC network **before** Classic modular switching



The DC network **NOW** **ACI**



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*)



Physical

L-Size (Recommended for 1200+ physical leaf ports)

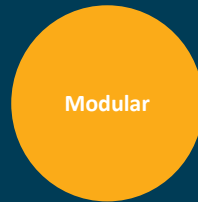
M-size (Recommended for <1200 physical leaf ports)



Virtual

VMWare VMs

(Recommended for 2-4 leaves, 2 VMs + 1 Physical APIC)



Modular



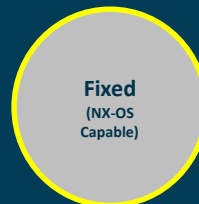
Nexus 9500
(w/9700 LCs)



Fixed
(NX-OS Capable)

Nexus 9300
(9332C, 9364C, 9316D-GX)

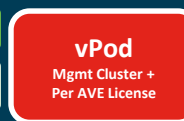
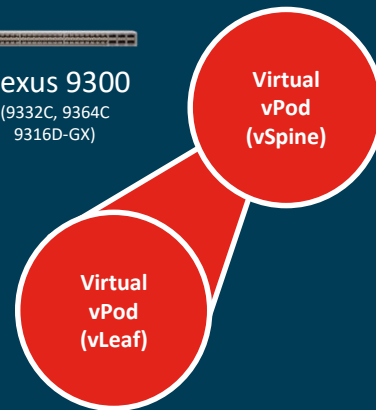
vmware Hyper-V



Fixed
(NX-OS Capable)



Nexus 9300
(100M/1/10/25/40/50/100/400G)

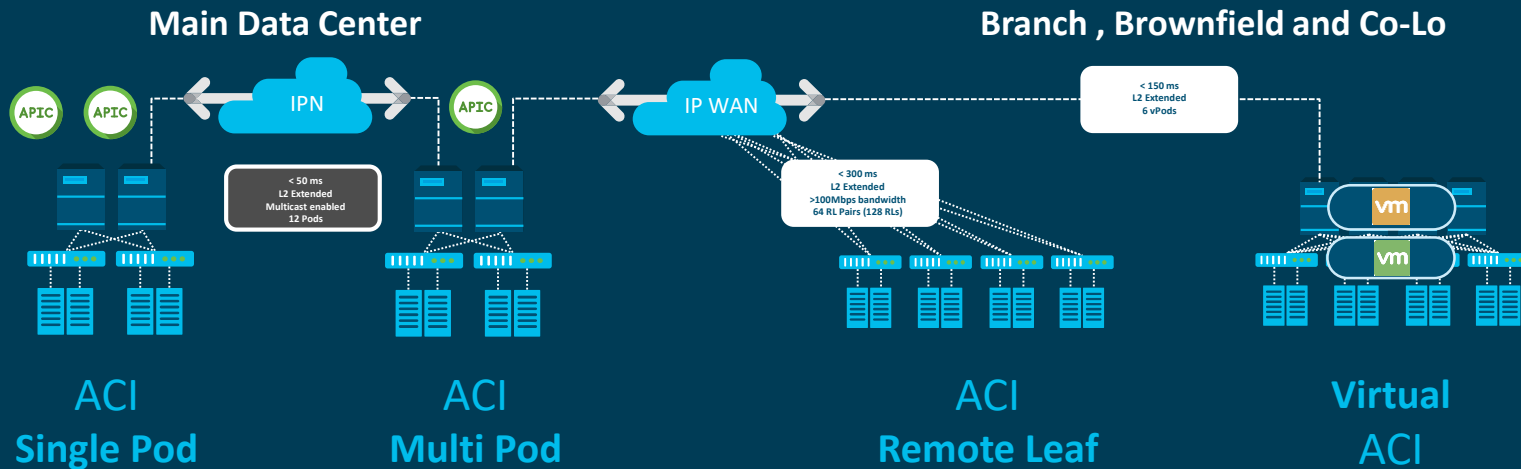


Topologické možnosti ACI

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

Single Management

Consistent deployment



The easiest Data Center and Cloud Interconnect Solution in the Market

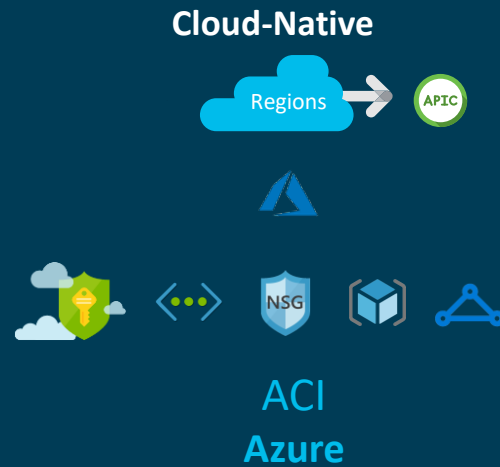


ACI Cloud Only

Single Management



Consistent deployment



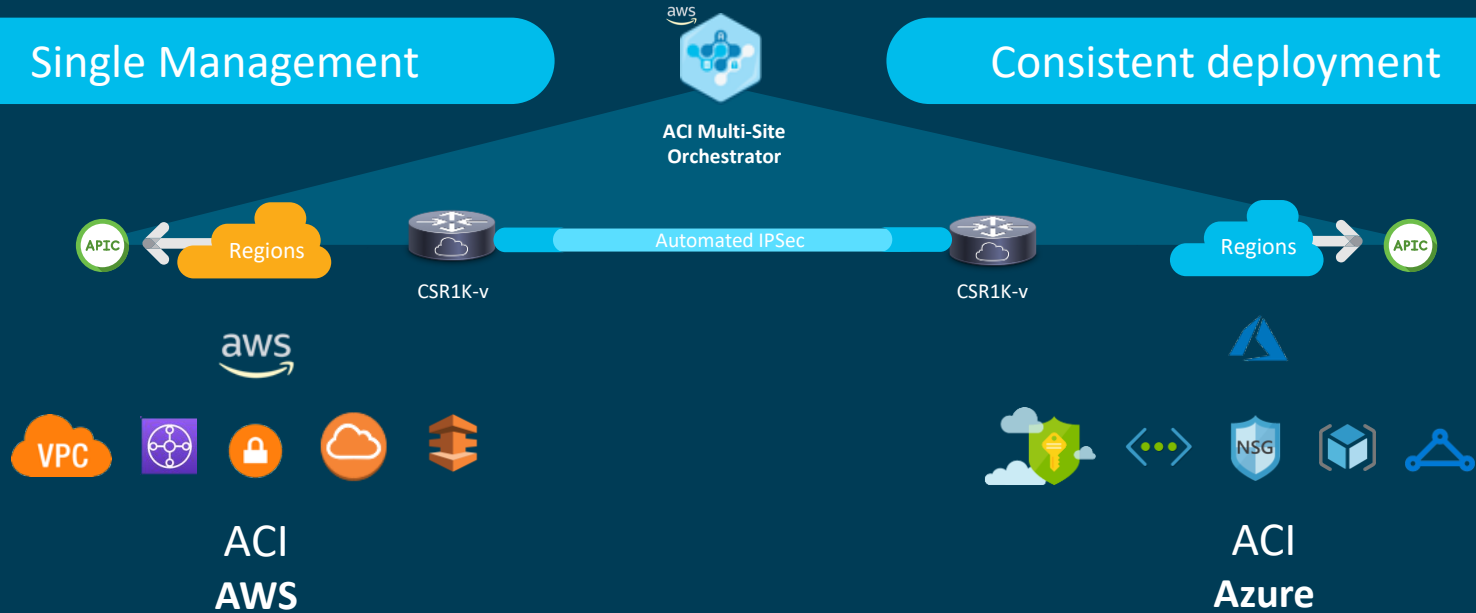
Enable Cloud Faster: Reduce the “Learning Curve” effect



ACI Cloud Only

Single Management

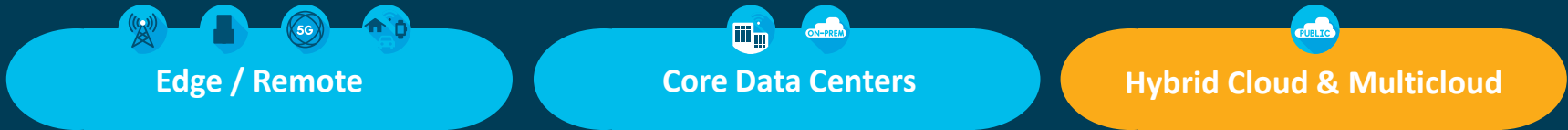
Consistent deployment



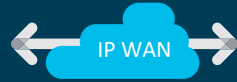
Enable MultiCloud Faster: Learn One Network, Manage and Interconnect multiple



ACI Anywhere



Virtual ACI



ACI



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



ACI Anywhere



Edge / Remote



Core Data Centers



Hybrid Cloud & Multicloud

400G & SR-MPLS Handoff

Cloud Topology Views

5.0

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!

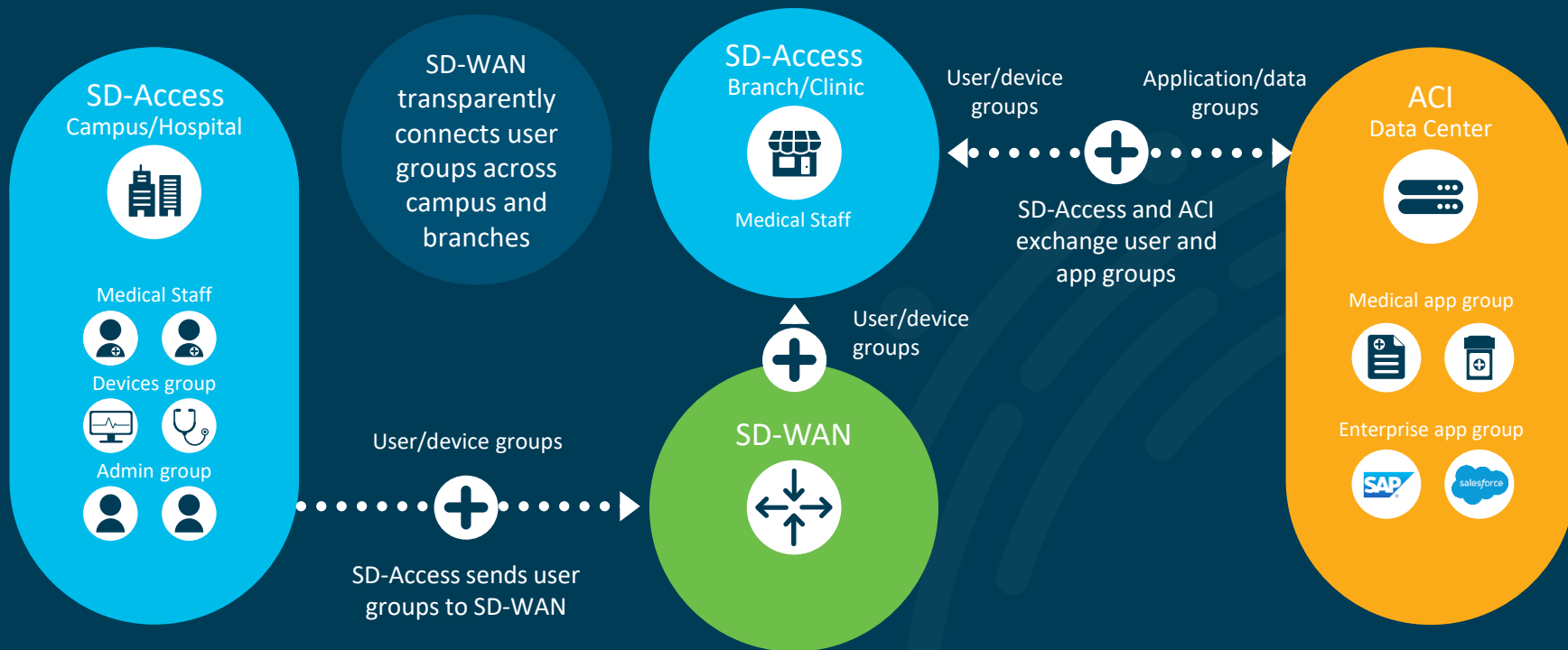
Download it today!

Integrace ACI

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

Segmentation Policy Follows the User

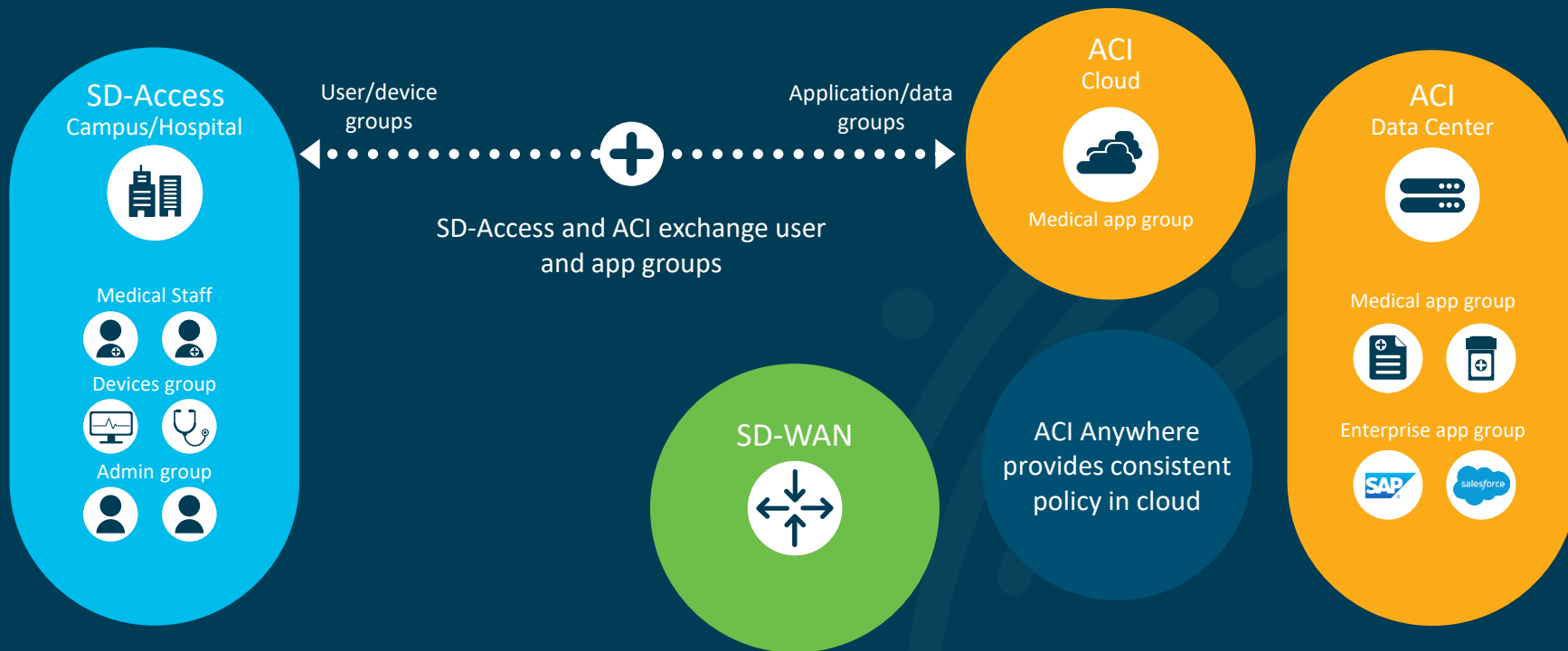
No Reconfiguration Required if User Moves



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

Segmentation Policy Follows the Application

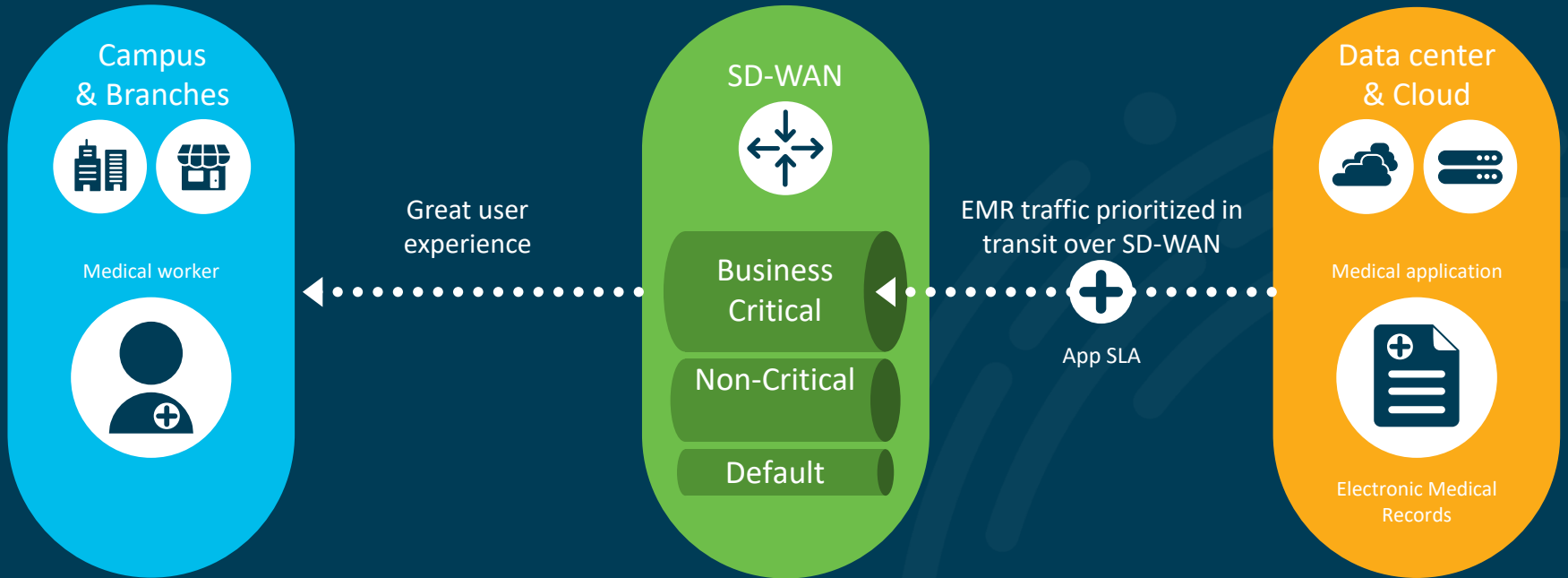
No Reconfiguration Required if Application Moves



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

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

Cisco Multi Domain Integrations for IBN

Figure 1. Cisco ACI and AppDynamics integration



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

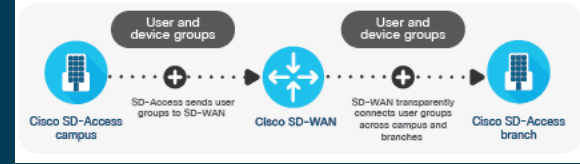


Figure 2. Cisco ACI and SD-Access integration

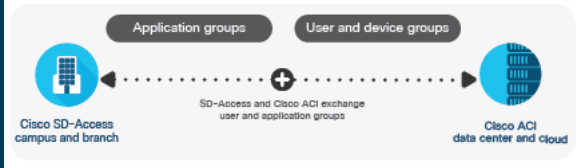


Figure 3. Cisco ACI and SD-WAN integration

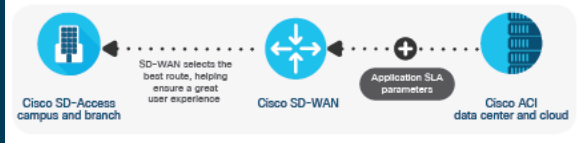
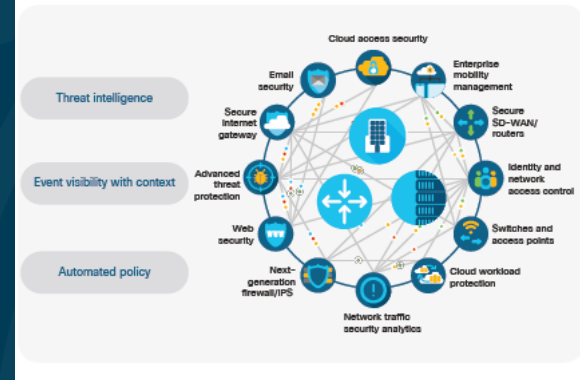


Figure 5. Cisco multidomain security



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

Jak lze provozovat ACI

Pro-Active Monitoring, Troubleshooting & Capacity Planning

Biggest Consumer of IT Time: 43% Troubleshooting



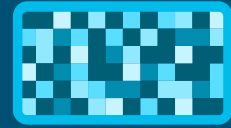
4x

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 it happening real time



Slow resolution

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

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

Network Insights – Resources

Pro-Active Monitoring, Troubleshooting & Capacity Planning

Presentation ID

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.

Presentation ID

Network Insights-Resources

Understand What's Running In Your Network

Flow Anomalies

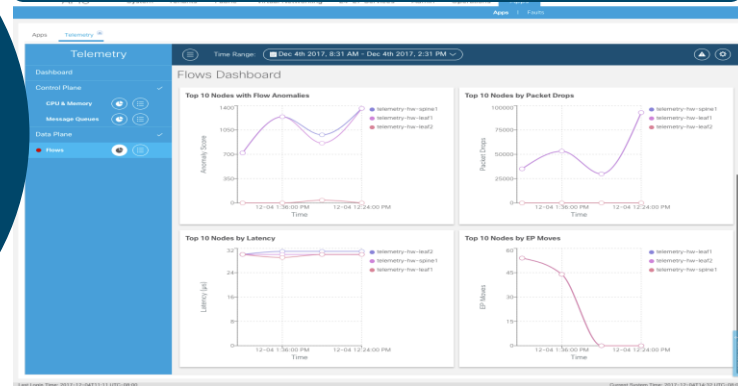
Packet Drops

Latency

End Point Move

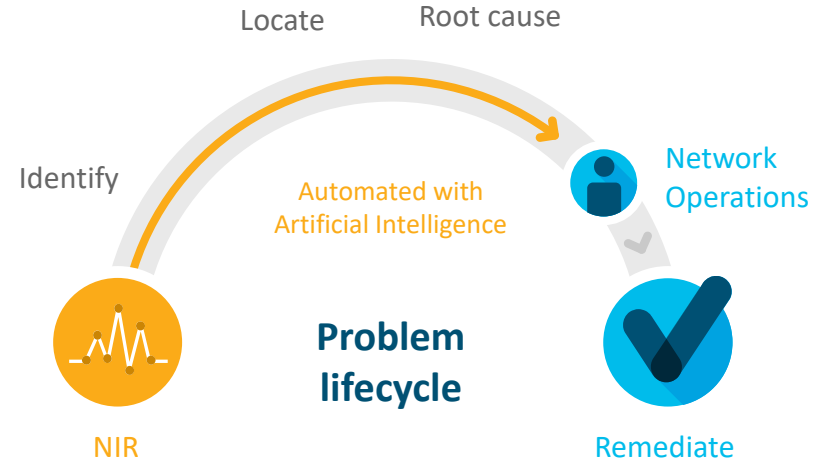
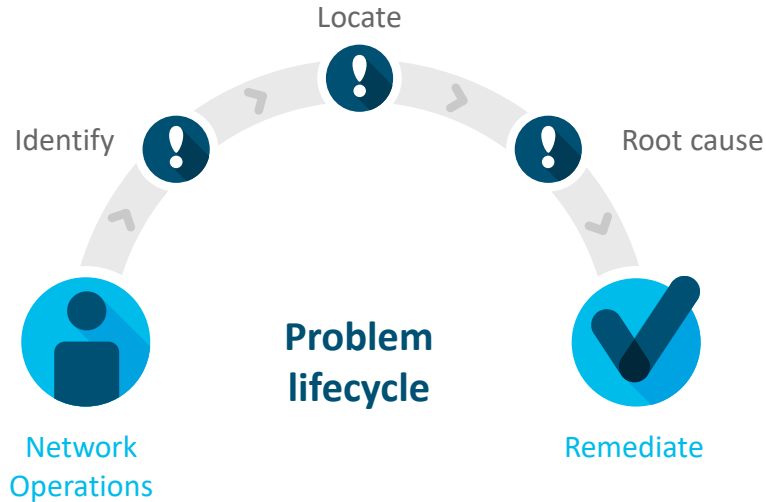


Flow Analytics Dashboard



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

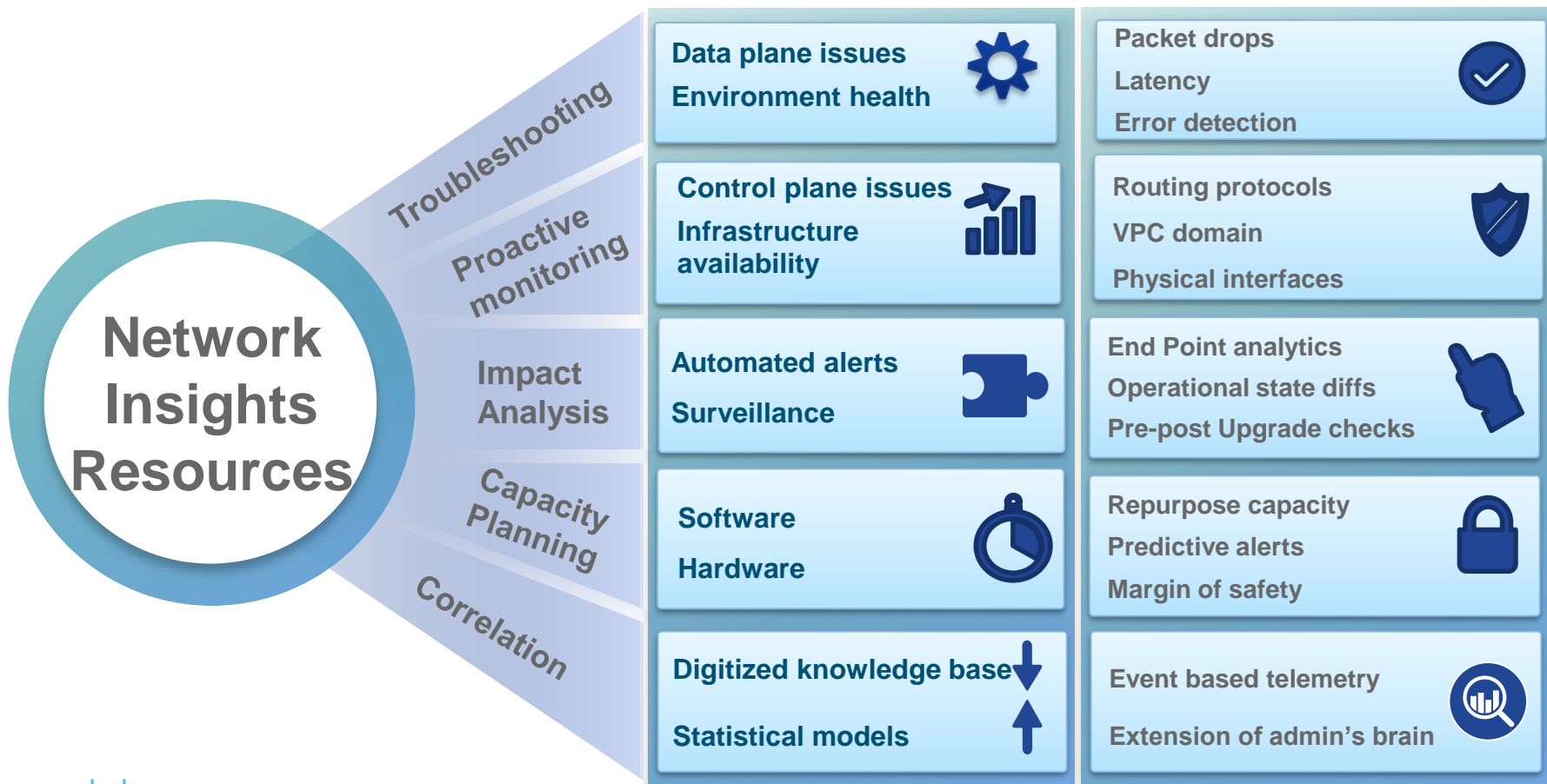
Shorten Time to Remediation for **Troubleshooting**



Network Insights:
Resources

Packet drops | Latency | Reachability | Routing | Micro Bursts

Network Insights Resources – Use Cases

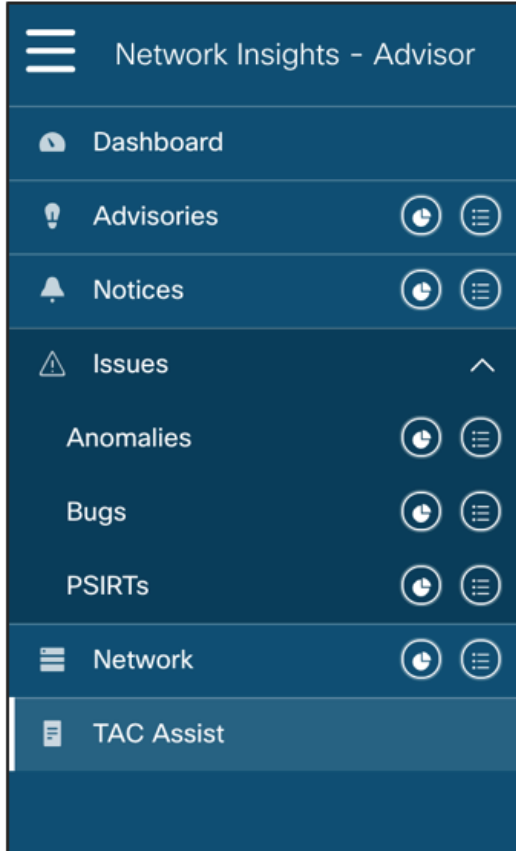


Network Insights Advisor

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

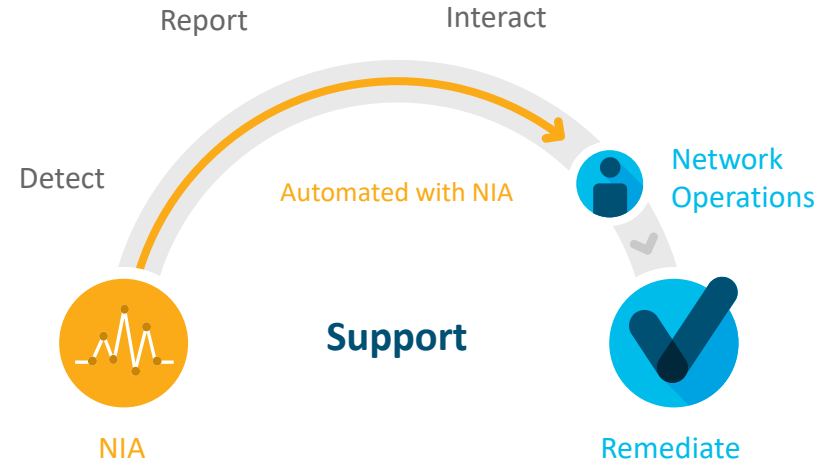
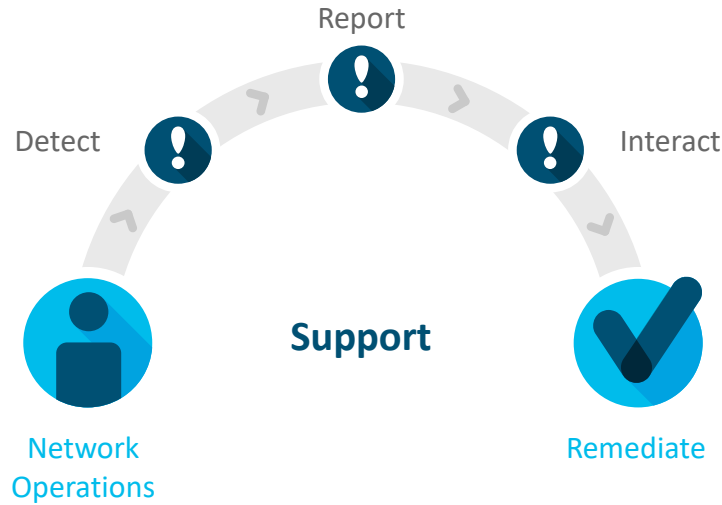
- Track Bugs and PSIRTs

TAC Assist

- Help to collect logs for TAC SRs



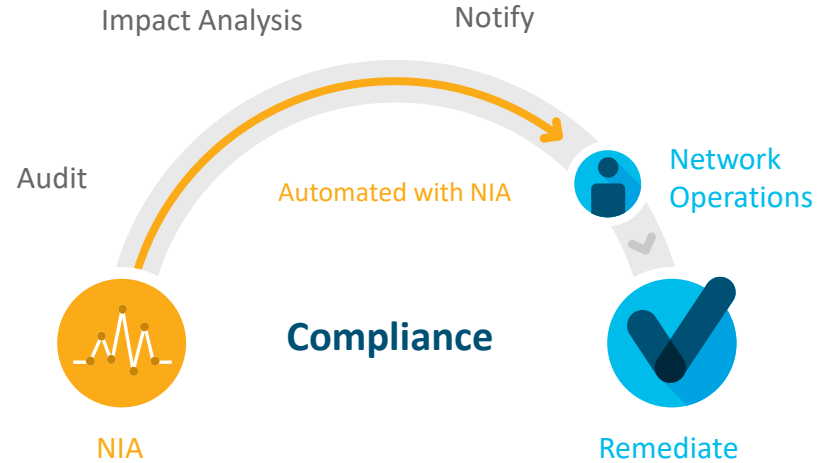
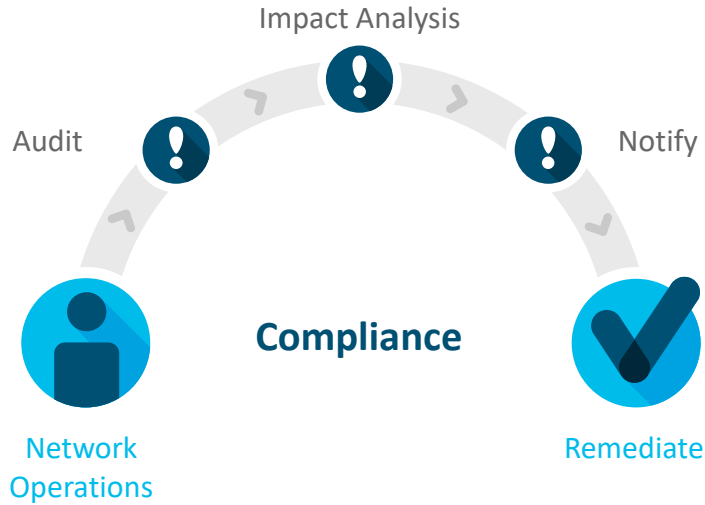
Optimize Your Infra with **Pro-active support**



Network Insights:
Advisor

TAC SRs | Upgrade impact | Defect scans

Protect Your Infra with **Compliance**



Network Insights:
Advisor

PSIRTS

| Hardening Anomalies

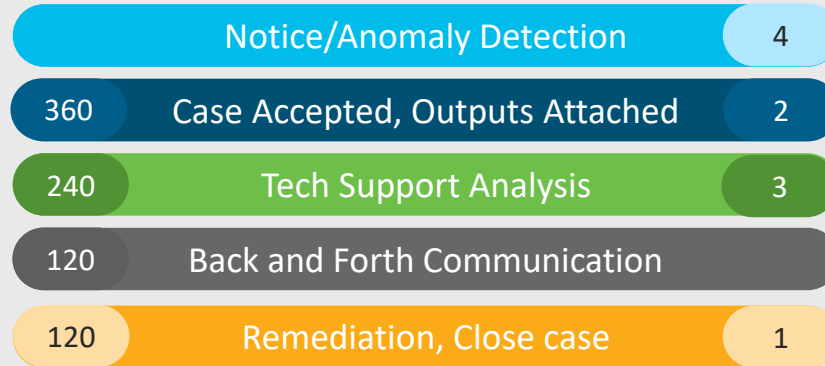
| Field notices

Network Insights Advisor – Reduce Downtime

Before Network Insights Advisor

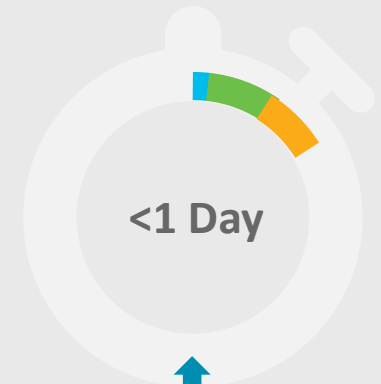


Time to resolve issue in Hours



Downtime/Outages to the Network cost Millions

After Network Insights Advisor

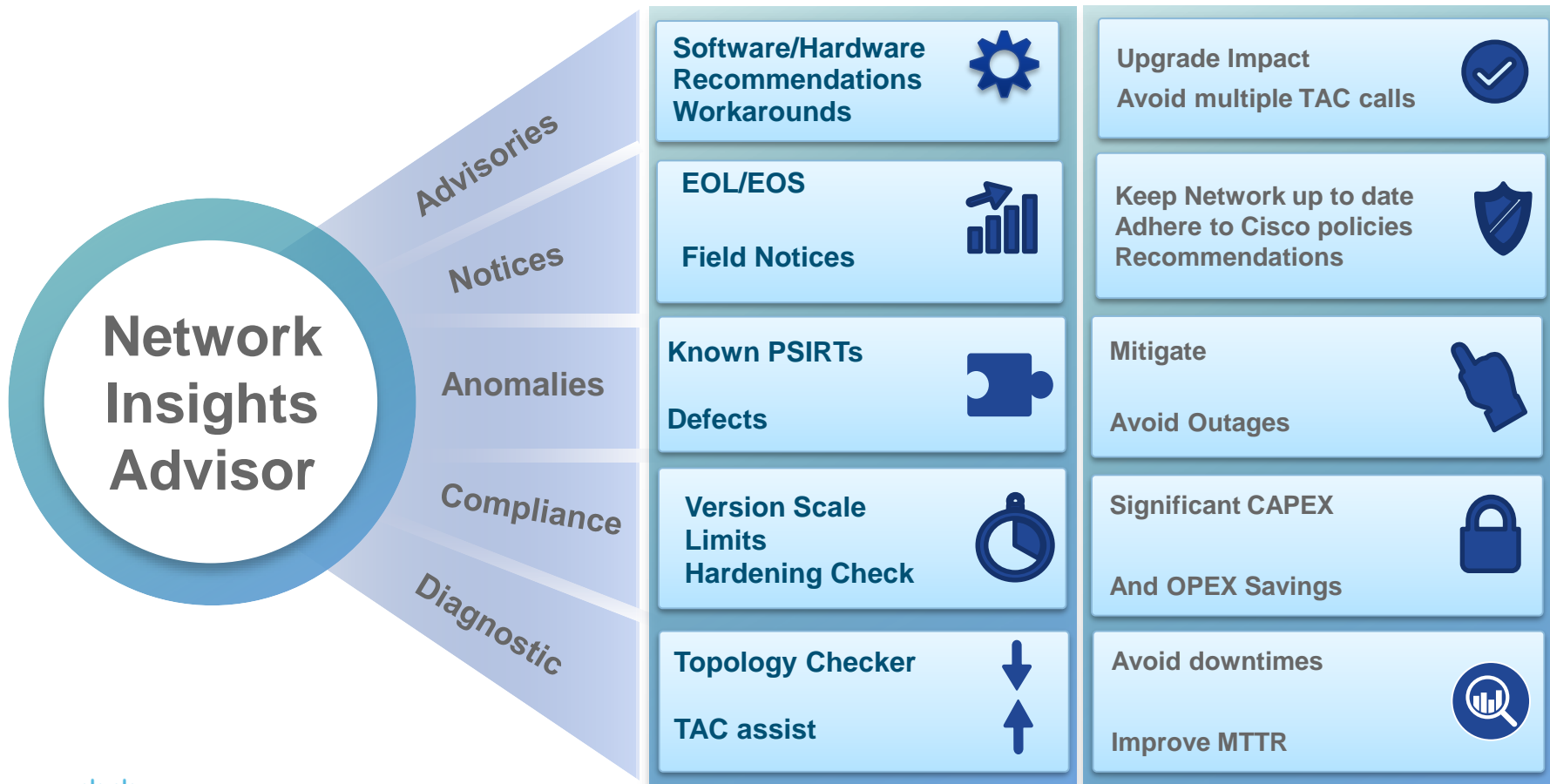


Flag Anomalies

Prevent outages

OPEX, CAPEX savings

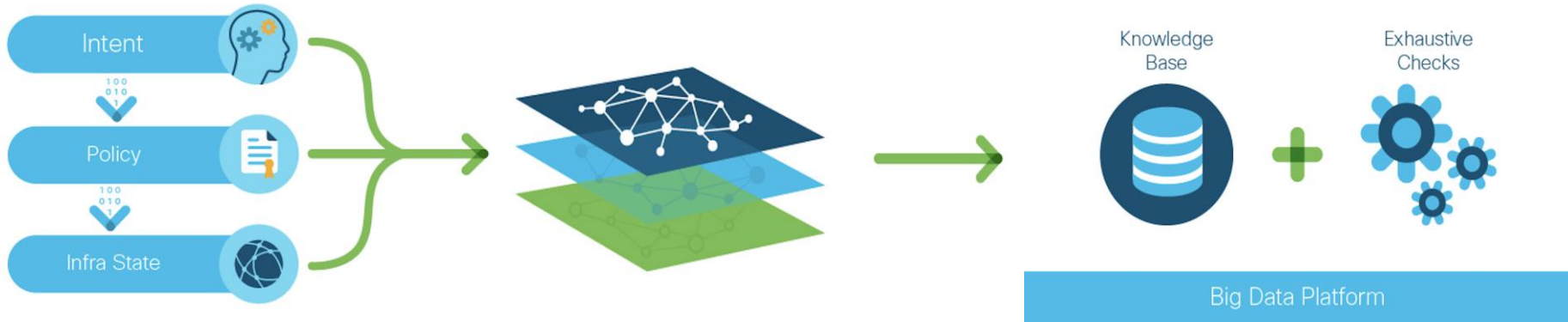
Network Insights Advisor – Use cases



Network Assurance 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

Epoch Delta Analysis

Correlated Ad hoc Analysis Workflow



Cisco Network Assurance Engine

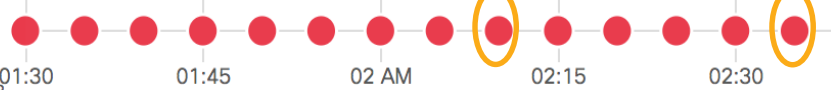
Dashboard

Epoch Analysis ▾

Change Management ▾



01:29 AM
05/17/2018



Before /
Baseline

After /
Current

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

Health Delta - Summary

Change in the health of the Fabric

Delta Analysis 1

Earlier Epoch : 04/04/2018 1:46:30 PM PDT

Later Epoch : 04/05/2018 5:56:30 PM PDT

Time Range : 1 day 4:10:00

[Health Delta](#) | [Policy Delta](#)

Smart Event Count



Epoch Delta Workflow – Policy Delta

Impact, Change, Operator

The screenshot displays the Epoch Delta Analysis interface. At the top, it shows 'Delta Analysis 1' with a time range of '1 day 4 hr 10 min 00 sec'. Below this, there are navigation tabs for 'Dashboard', 'Health Delta', 'Policy Delta', 'State Delta', 'Capacity Delta', and 'Operator Delta'. The main content area is divided into three panels:

- Changed Policy Objects:** Lists tenants (Coke, foo, test), EPGs (uni/tn-coke/ap-foo/epg-test), and fabric policies (BD-BDP1DJCommon128, bar, ABC, Pepsi).
- Policy Viewer:** Shows a detailed view of a policy configuration with line numbers 1 through 26. The configuration includes XML tags for various network objects like `<polUni>`, `<dbgDebugP>`, `<I2extDomP>`, `<infraRsVlanNs>`, and `<UserEp>`.
- Audit Log:** Shows a list of changes with timestamps and operators. For example, '1:46:30 PM, Chandra, RsBd added' and '1:46:30 PM, Chandra, RsBd deleted'.

Annotations with arrows point to specific elements:

- 'What got impacted?' points to the 'Changed Policy Objects' panel.
- 'Details of impact, if any' points to the EPG details for 'uni/tn-coke/ap-foo/epg-test'.
- 'Who made the changes?' points to the 'Audit Log' panel.
- 'What has changed?' points to the 'Policy Viewer' panel.

Policy Explorer

Explorer

Snapshot on Friday, September 13, 2019 4:52 PM

Explorer allows network operators to discover assets and their object associations in an easy-to-consume natural language query format. Explorer supports multiple queries. On the Search bar below, enter a What or Can or View query. The query must include two groups of one or more entities from ACI policy to check their connectivity.

Start your query with What or Can or View for the selected epoch Reset

Can Source Talk To Destination?

+
Select item

+
Select item

Reverse query

INVENTORY any ✕

INVENTORY any ✕

Clear allClear all

Which Entities Can Talk?

From EPG

Filter using DNs or names...

To EPG

Filter using DNs or names...

EPGs

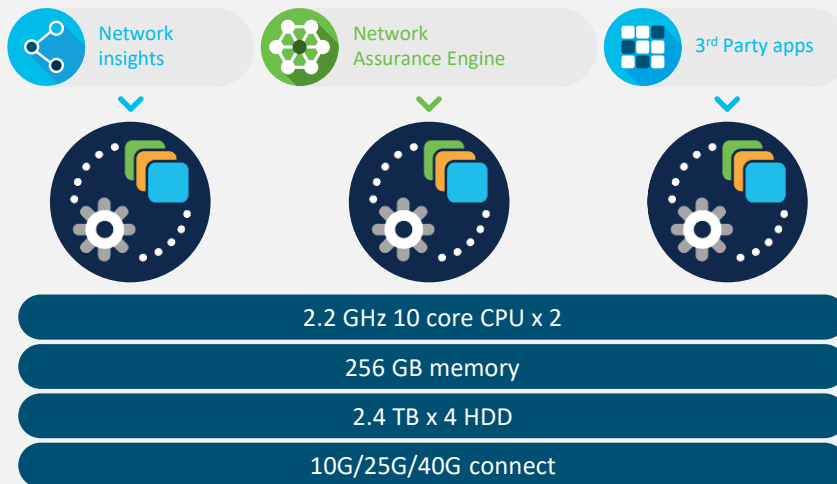
Prefixes

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



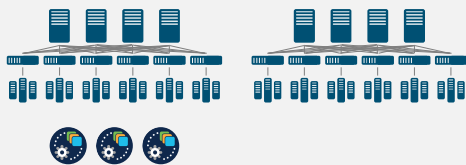
Network automation

Scale-out cluster

SE-CL-L3

Cisco Application Services Engine - Architectures

Fabric internal mode



Fabric internal mode

Single fabric

Multiple fabrics with a single cluster

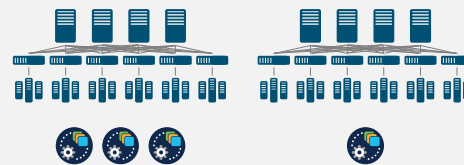
Fabric external mode



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

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

Thank you !