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Simplifying Operations with ACI

BRKACI-2602

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#clmel

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“ACI not only enhances existing tools but introduces new tools to simplify and improve the operation of the data centre infrastructure. In this session we will talk about how to operationalise ACI and bring self-healing network concept to life so customers can spend more time improving their business outcomes and less time on reactive day-to-day work…”

BRKACI-2602 ABSTRACT

Agenda

- Overview
- Life of an Operations Engineer
- Key Concepts
- How ACI simplifies it ?
- Demo
- Conclusion

Overview

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Operations at a Glance

- Centralised Operations – SOC and NOC with OCC (Operations Command Centre)
- NOC generally covers Infra, Unified and Apps however SOC is focused on Security
- There are levels / tiers in Operations – Level-1 / Tier-1, Level-2 / Tier-2 and so on before they escalate to vendors
- Follow standard based process. E.g. ITIL
  - Change management
  - Incident management owns services restoration
  - Problem management owns root cause and long term fix
  - Ops excellence team overseas service quality, metrics, SLAs for problems

Top Operational Challenges

- Provisioning and de-provisioning takes a lot of time
- No integration of end-to-end Infra with Application
- Hard to isolate if network is large or complex.
- Application performance issues
- Layer-2 problems
- Human errors
- How to co-related with Services (L4-7) devices
- Defects / device malfunctioning

Any more top of the minds ?

Life of an Operations Engineer

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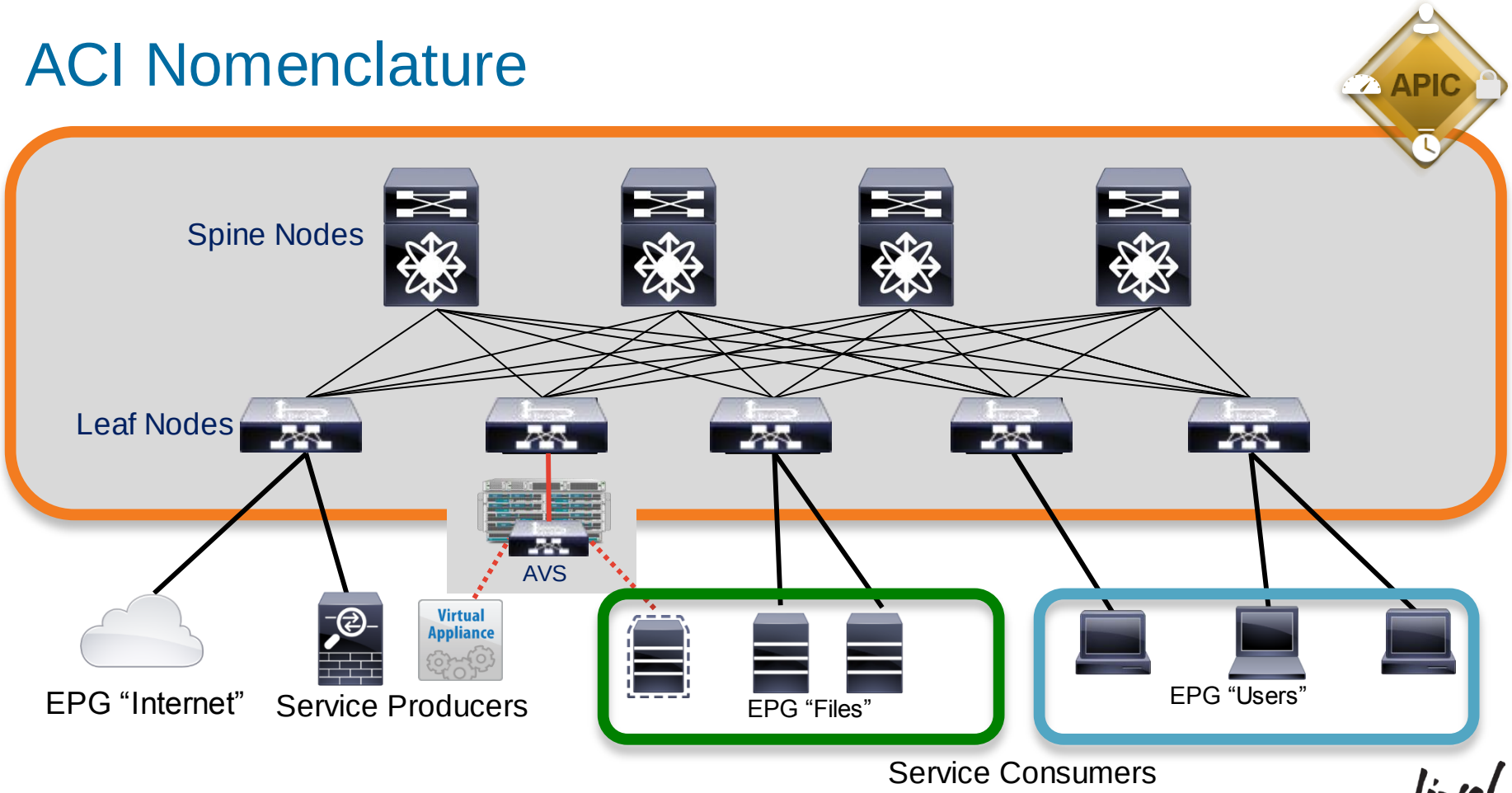
Life of an Operations Engineer

- Pre-deployment
  - Check to verify / validate what is configured exists on the ACI Fabric
  - Make sure ACI Fabric and integrated devices (L4-7) will do exactly what is expected
    - What I want when real app's come-up with no surprises
    - I should be able to validate policy before app's are powered on

- Post-deployment
  - Want to proactively know if something is wrong
    - Before incident happens or someone reports an issue
  - When things go wrong how easily can I troubleshoot the fabric as one system

Key Concepts

ACI Nomenclature



Access Methodology

- CLI (Command-line interface)
  - Means of interacting with a computer program where user issues commands to the program in the form of successive lines of text (command lines)
- GUI (Graphical user interface)
  - Interface that allows users to interact with devices through graphical icons and visuals
- Programmable interface
  - Software components / objects exposed to be called directly by other programs

Key Terms

- COOP (Council of Oracles Protocol)
  - Distributed runtime repository for the fabric. It is used to sync the end point database information amongst the switches. Global View
- EPM (Endpoint Manager)
  - Runs at each of the ToR (leaf) and provides input to the COOP. Local View
- ELAM (Embedded Logic Analyser Module)
  - Capability built into Cisco ASIC that can be used to monitor / trace a packet handling information for a specific packet.

How ACI Simplifies It?

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Proactive

- Health Score
- Heap Map
- Atomic Counter
- iTraceroute

Reactive

SNMP

Syslog

SPAN / ERSPAN

iPing

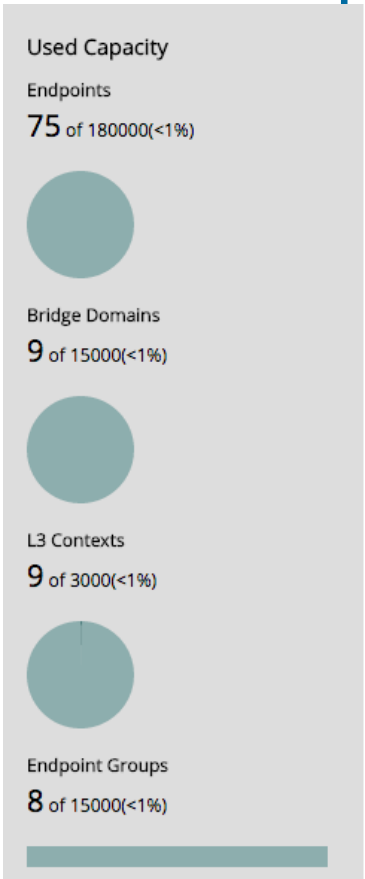
Fabric Trace

EP Tracker

Operations Lifecycle

- Monitoring
  - Health Score, Statistics, Faults, Events
- Management
  - Image Management, Config Export / Import, Fabric Inventory
- Troubleshooting
  - Wizard - Audit Logs, EP History

Fabric Capacity Dashboard

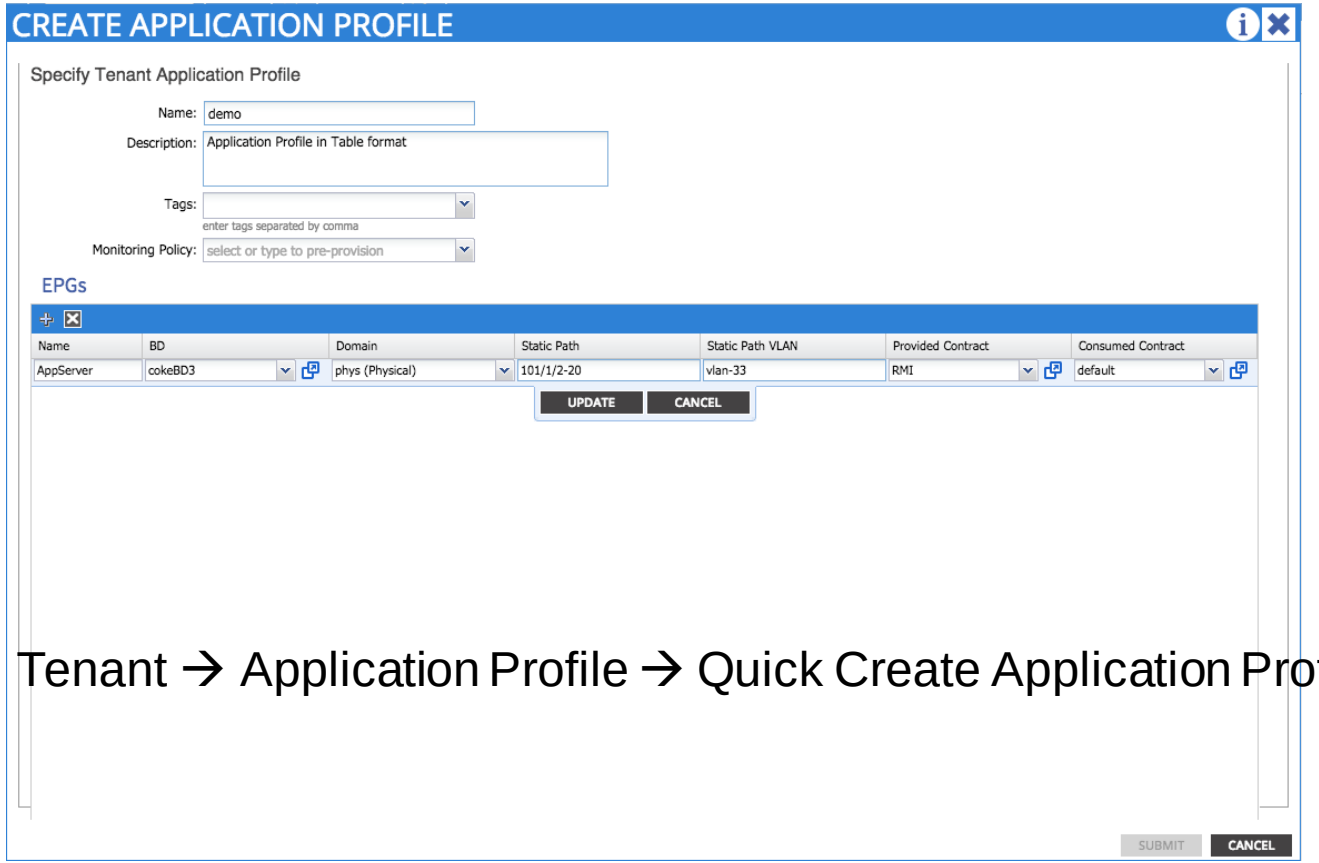


Usage Overview

Switch	L2	L3	MC	TCAM	BD
node-101	<1% 21 of 32768	<1% 21 of 32768	<1% 21 of 8192	<1% 21 of 4096	<1% 21 of 4096
node-102	<1% 24 of 32768	<1% 24 of 32768	<1% 24 of 8192	<1% 24 of 4096	<1% 24 of 4096
node-103	<1% 7 of 32768	<1% 7 of 32768	<1% 7 of 8192	<1% 7 of 4096	<1% 7 of 4096
node-104	<1% 34 of 32768	<1% 34 of 32768	<1% 34 of 8192	<1% 34 of 4096	<1% 34 of 4096
node-105	<1% 38 of 32768	<1% 38 of 32768	<1% 38 of 8192	<1% 38 of 4096	<1% 38 of 4096

- Fabric → Pod → Operational → Capacity Dashboard

Quick Application Profile

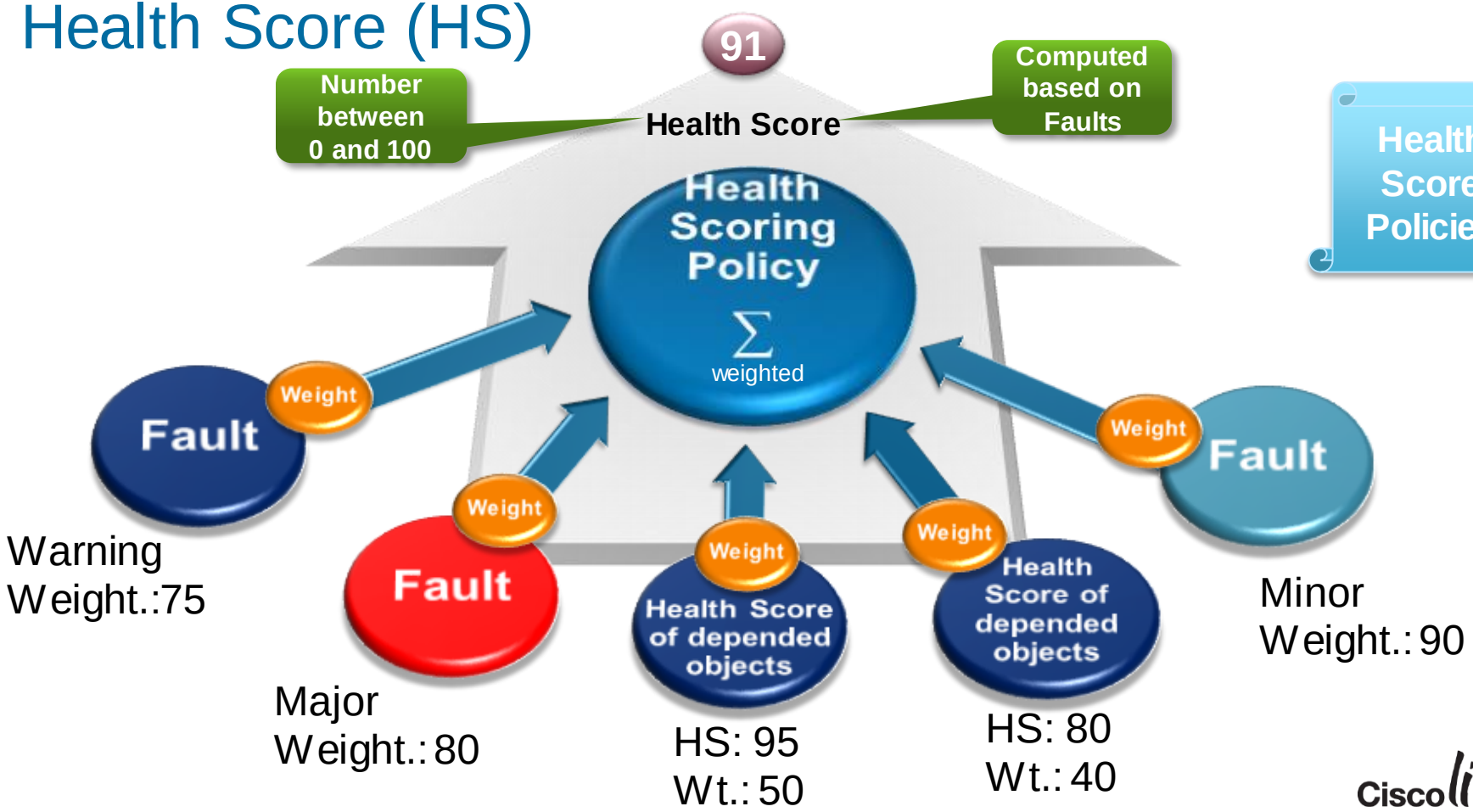


- Tenant → Application Profile → Quick Create Application Profile

Health Score

- Health Score provides a quick overview of the health of the system / module
- It is based on the faults generated in the fabric
- It ranges: 0 to 100
- Each fault reduces the health score based on the severity of the fault
- Health Score is propagated to container and related Mos
- Health Score policies can control the penalty values, propagation, health Records

Health Score (HS)

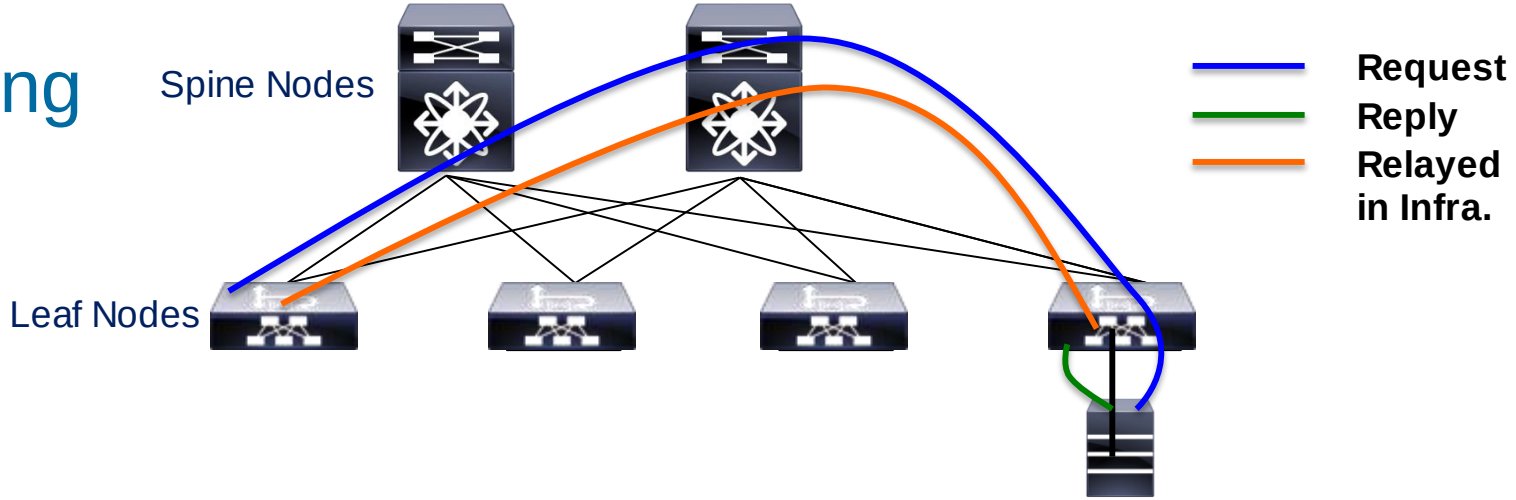


Ping Recap

- It uses series of Internet Control Message Protocol (ICMP) Echo message to determine:
  - Whether a remote host is active or inactive
  - The routine-trip delay in communicating with the host
  - Packet loss
- The ping command first sends an echo request packet to an address, then waits for a reply. The ping is successful only if:
  - The echo request gets to the destination and
  - The destination is able to get an echo reply to the source within a predetermined time called a timeout. The default value of this timeout its two seconds on Cisco routers

The TTL value of a ping packet cannot be changed

iPing



- ICMP echo request is originated from leaf1 and forwarded in hardware to the end host
  - Leaf1 inserts some Fabric
- Host replies to the ICMP echo
- If the source IP is a pervasive IP then the echo reply could be intercepted by a different leaf (leaf4) then the originating leaf (Leaf1)
- Leaf4 examines the fabric information in the payload and relays the packet to leaf1

Comparison

Traceroute

- Only find one path
- Potentially large number of probing packets. To explore one path, the number of packets = number of hops in path
- No detailed info (e.g. Incoming interface etc.) at each hop
- Not suitable for dense spine / leaf topology

iTraceroute

- Multiple path exploration in ACI Fabric
- High efficiency for each path, only need one probe packet, highly scalable with detailed node info at each hop.
- Can simulate tenant traffic, explore paths under applied policy

iTraceroute

- Information to be provided onsite at Cisco Live Melbourne

EP Tracker

- Information to be provided onsite at Cisco Live Melbourne

Troubleshooting Wizard

- Information to be provided onsite at Cisco Live Melbourne


Demo

Call to Action

- Visit the World of Solutions for
  - Cisco Campus – (speaker to add relevant demos/areas to visit)
  - Walk in Labs – (speaker to add relevant walk in labs)
  - Technical Solution Clinics
- Meet the Engineer (Speaker to specify when they will be available for meetings)
- Lunch time Table Topics
- DevNet zone related labs and sessions
- Recommended Reading: for reading material and further resources for this session, please visit www.pearson-books.com/CLMilan2015

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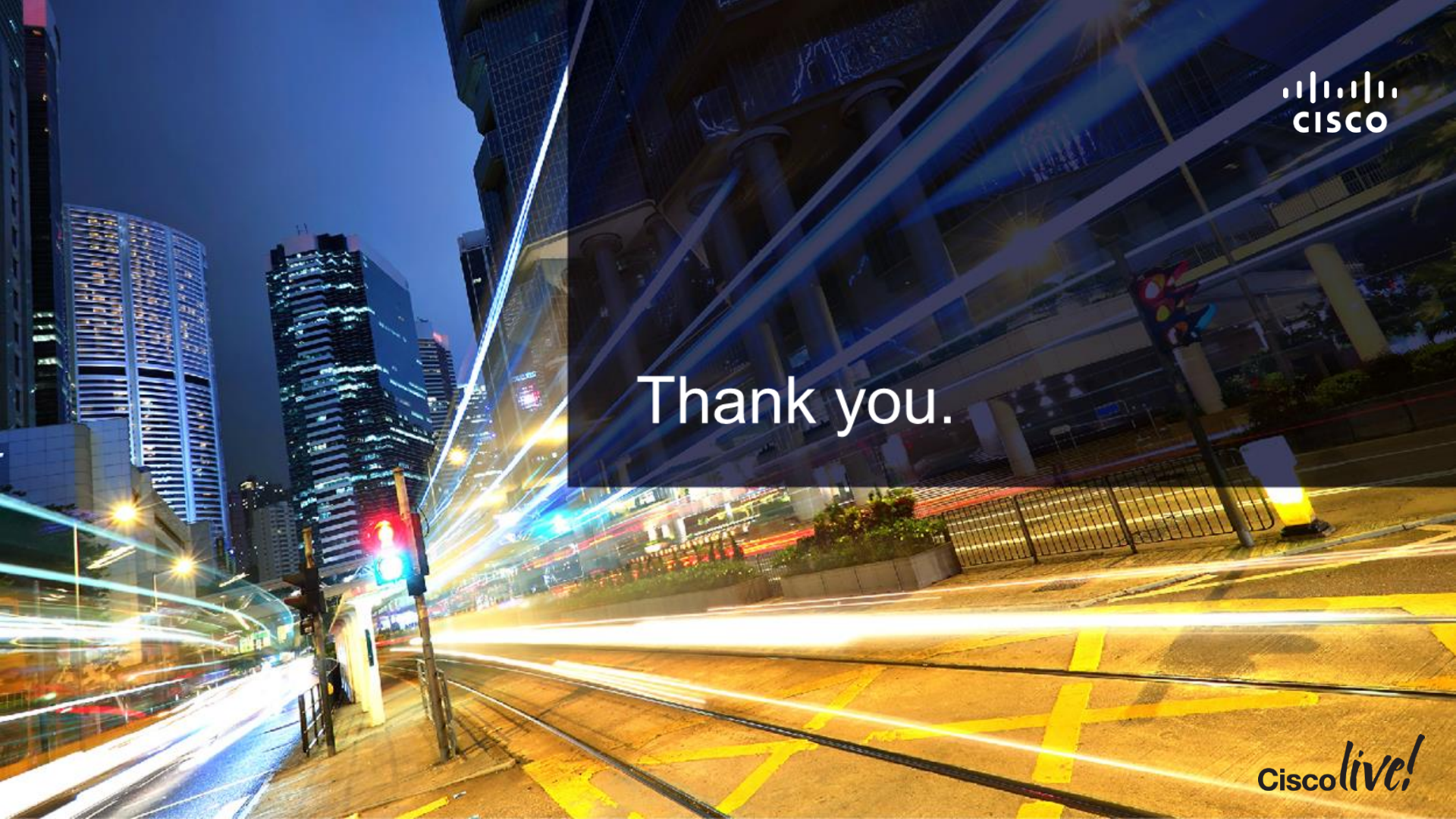
Thank you.


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