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Let's go
#CiscoLive

The bridge to possible

Customer Deployments with SD-Access

Fiona Stanley Hospital and TOYOTA Motors

Kanu Gupta, SD-Access Product Manager
Ashley Burton, Technical Solutions Architect
Max Hernandez, Toyota Motors North America

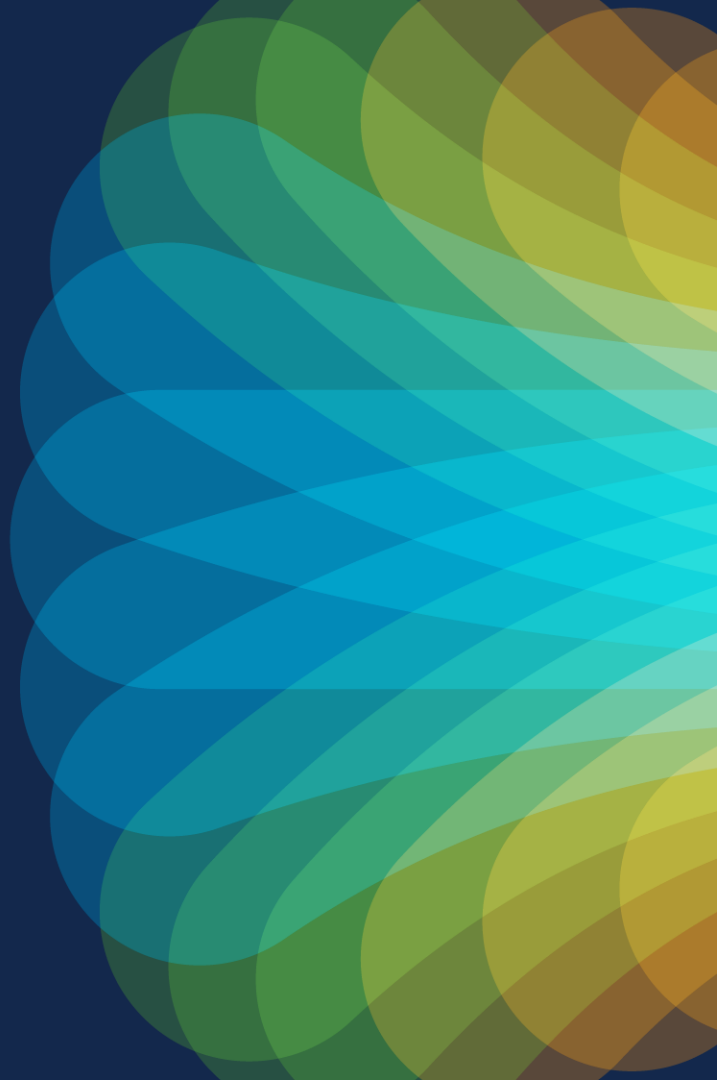
BRKENS-1852

Agenda

- SD-Access: Driving Relevance and Adoption
- SD-Access in Action: Fiona Stanley Hospital's Success Story
- Unleashing Potential: Toyota Motors, North America's SD-Access Journey

SD-Access: Driving Relevance and Adoption

Kanu Gupta: Product Manager, Cisco Systems



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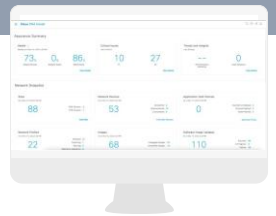
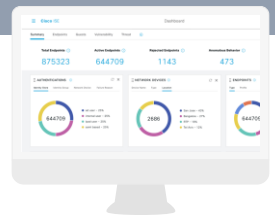
Zero Trust Security for Network and Cloud



Endpoint Visibility

Segmentation

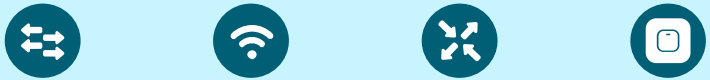
Trust Assessment



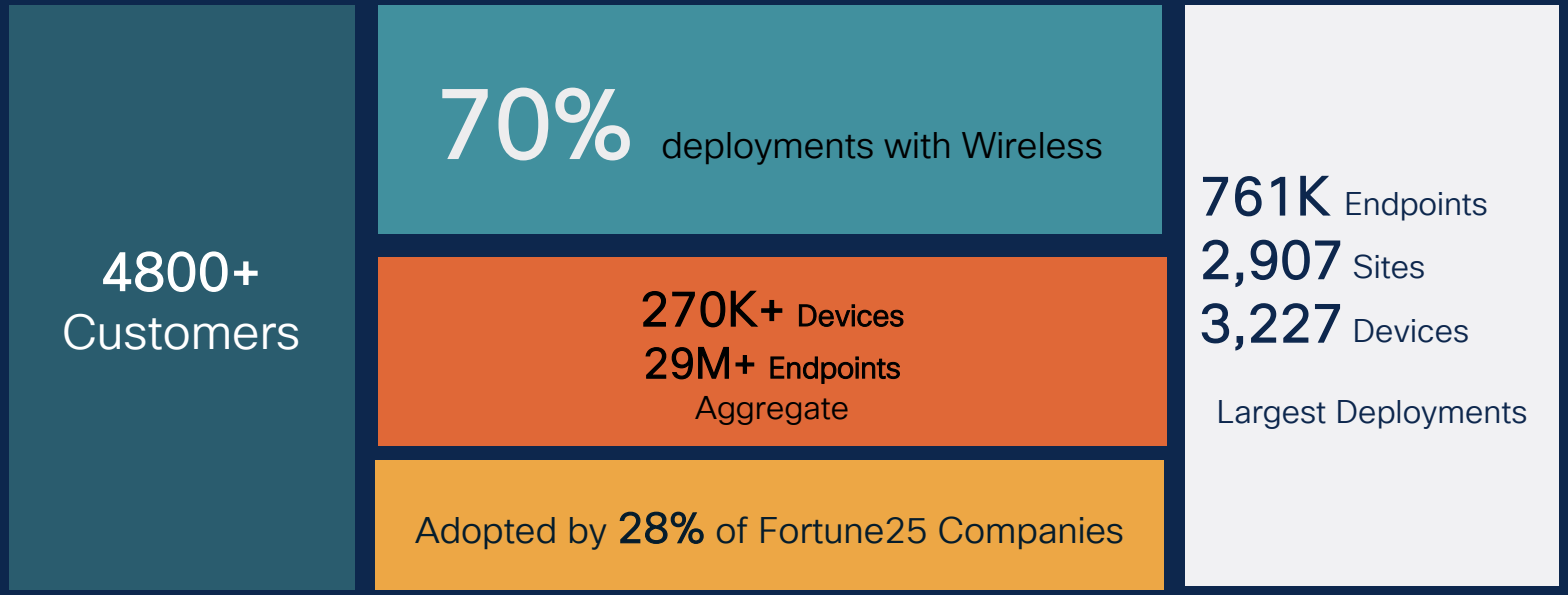
Controller Agnostic
Controller Aware

Cisco ISE

Enabled on Cisco Catalyst 9K Infrastructure



Zero-Trust Momentum Accelerates



SD-Access Provides *Industry Leading Campus Architecture*

SD-Access Driving Customer Business Outcomes

Network *Simplification*

Unified Wired/Wireless **Policy**

Seamless L2 **Mobility**

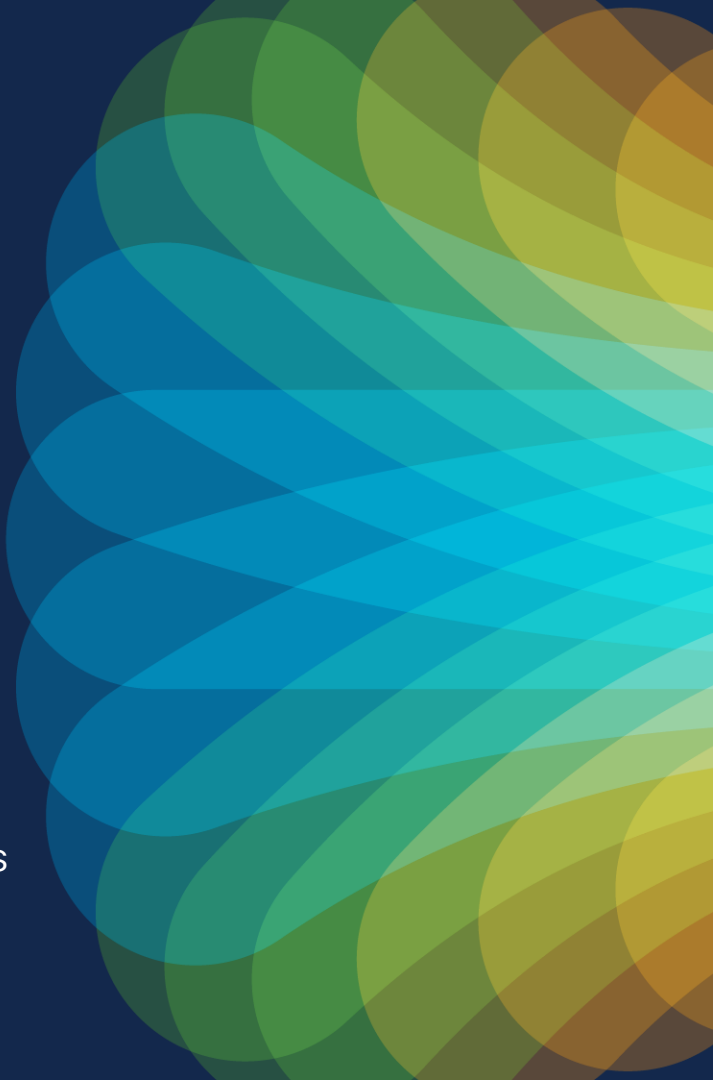
Integrated **Zero Trust**

IT/OT *Integration*

Fiona Stanley Hospital

Journey with SD-Access

Ashley Burton: Technical Solutions Architect, Cisco Systems



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Fiona Stanley Hospital

Fiona Stanley Hospital

7
Major Buildings

783
Beds

37,000
Patients per Year

110,000
ER Patients per Year

30,000
Ambulance Visits

Fiona Stanley Hospital

Beacons
15K Wi-Fi Location Tags

Call Centers
(Multiple)

Robots
Linen Deliveries

AVC
Lecture Theaters

Video
Clinical Surveillance

Records
Digital Medical

Patient
Entertainment
50 Channels

Imaging
Medical

Monitoring
Patient Wearables

Food
Automated Menu

Messaging
Wi-Fi Clinical Codes

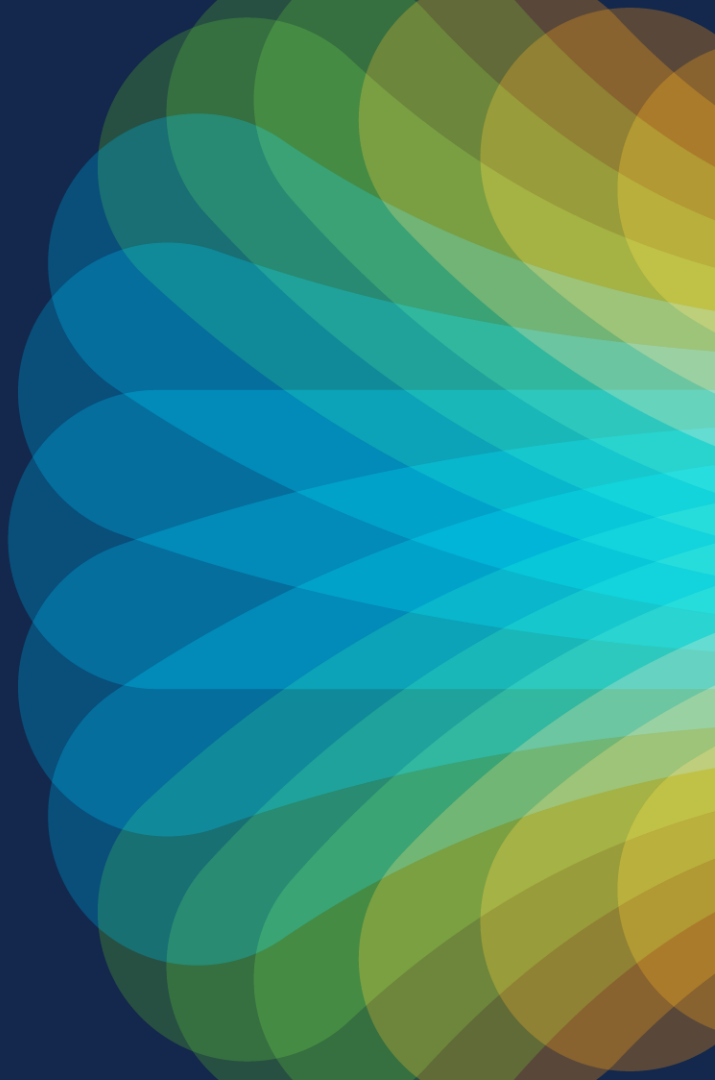
Pathology
Test Results

Fiona Stanley Hospital

Agenda

- The OLD Network
- The SD-Access Network
- Migration – How did we do it?
- The Results

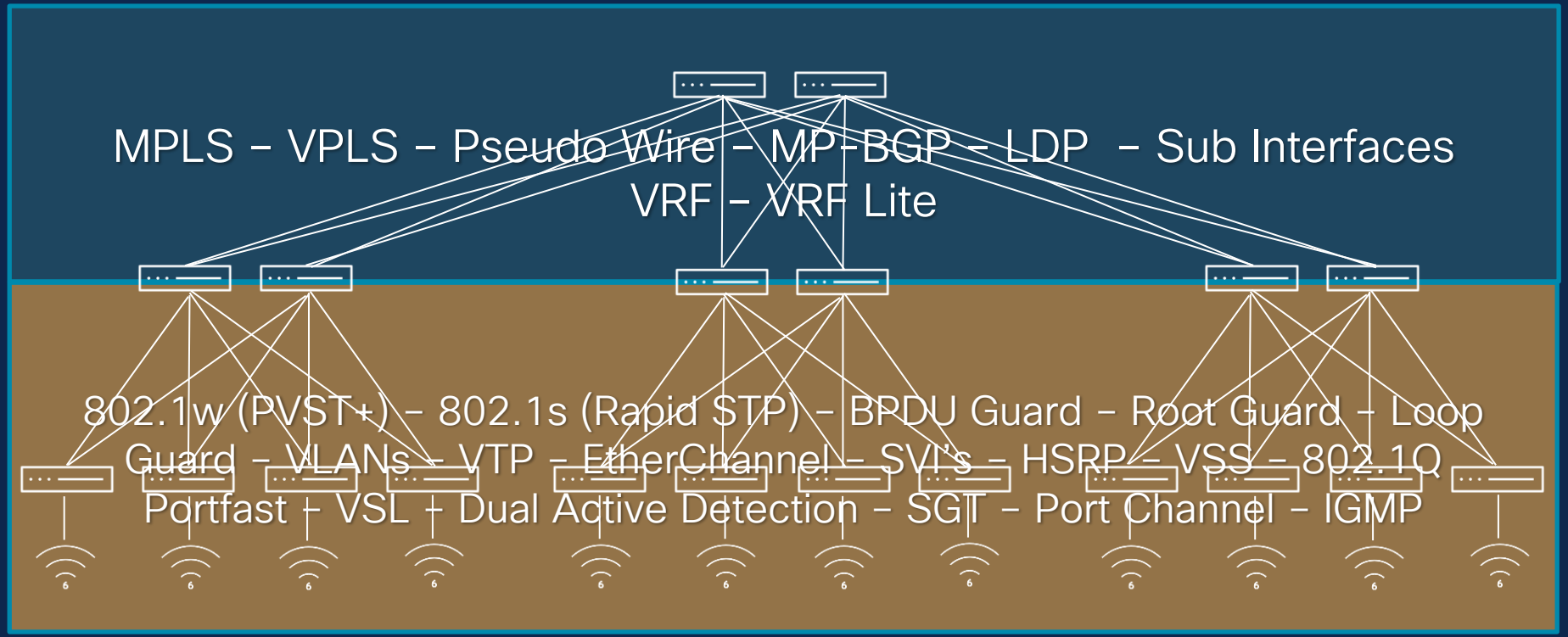
The OLD Network and Challenges



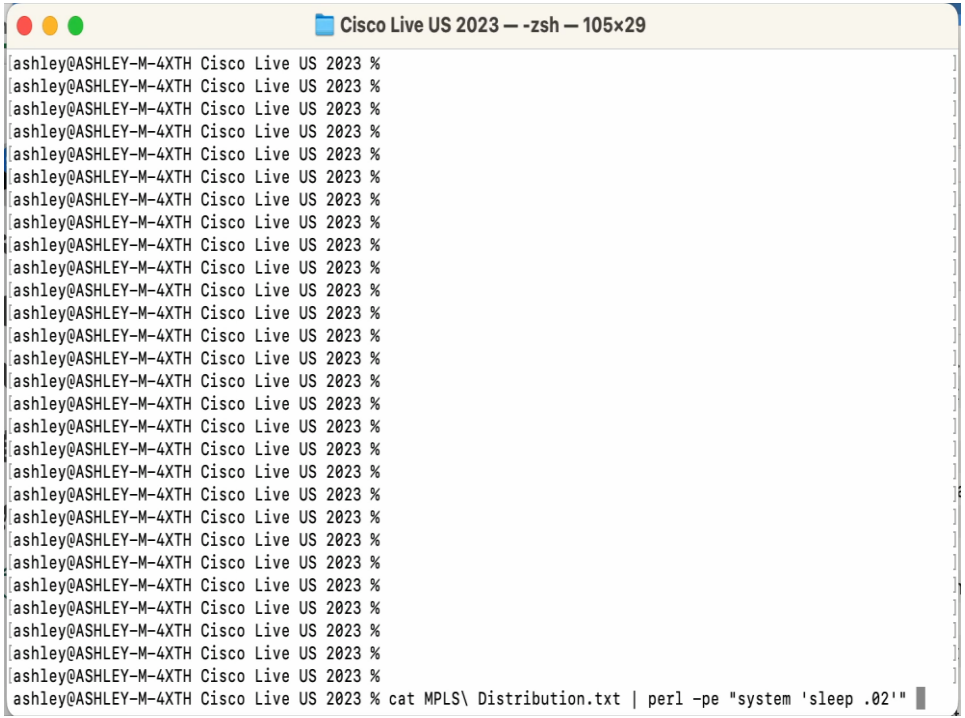
3 Separate Networks

- Normal Operation Access – Campus Production Network (15000+ switch ports and 700 AP's)
- Critical Essential Network – Wireless (1500 AP's) for the Main Building
- 3rd party Building Management Network – Swipe Cards, Building Security, Lifts etc

The OLD Network



Old Distribution Config – thousands of lines of CLI

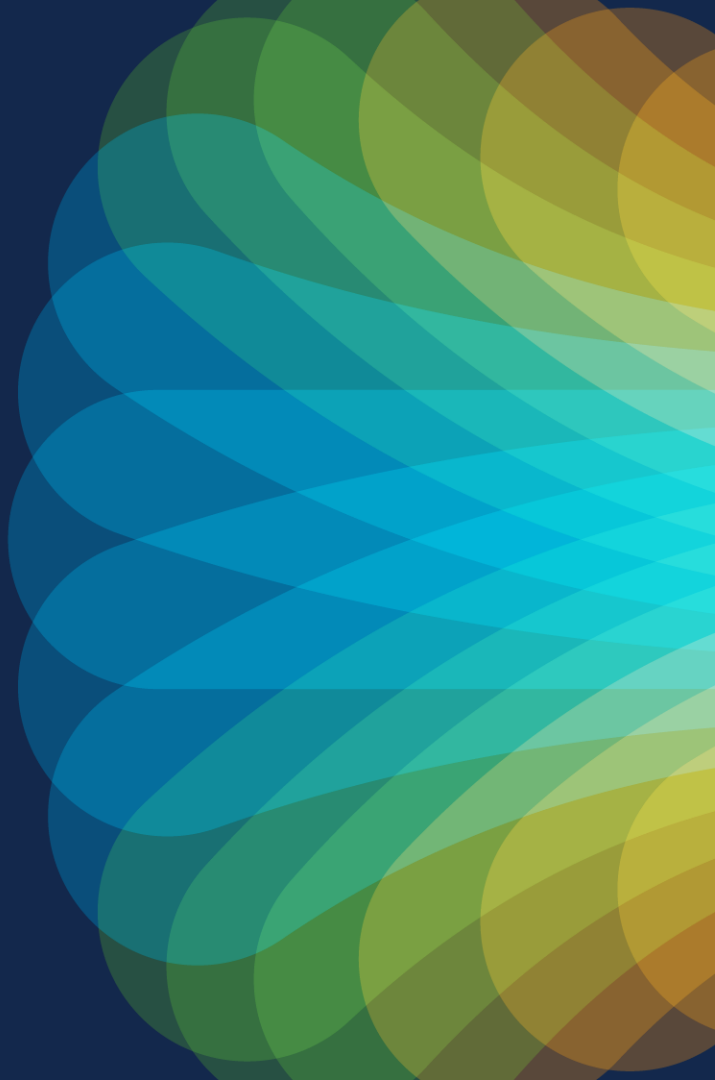


- Over 700 Subnets
- Extremely complex configuration
- IOS upgrade – 14 months planning
- Low network availability
- Difficult to change and modify
- Unique / non-standard switchport configurations
- L2 stretch complexity
- Complex config deemed “FRAGILE”

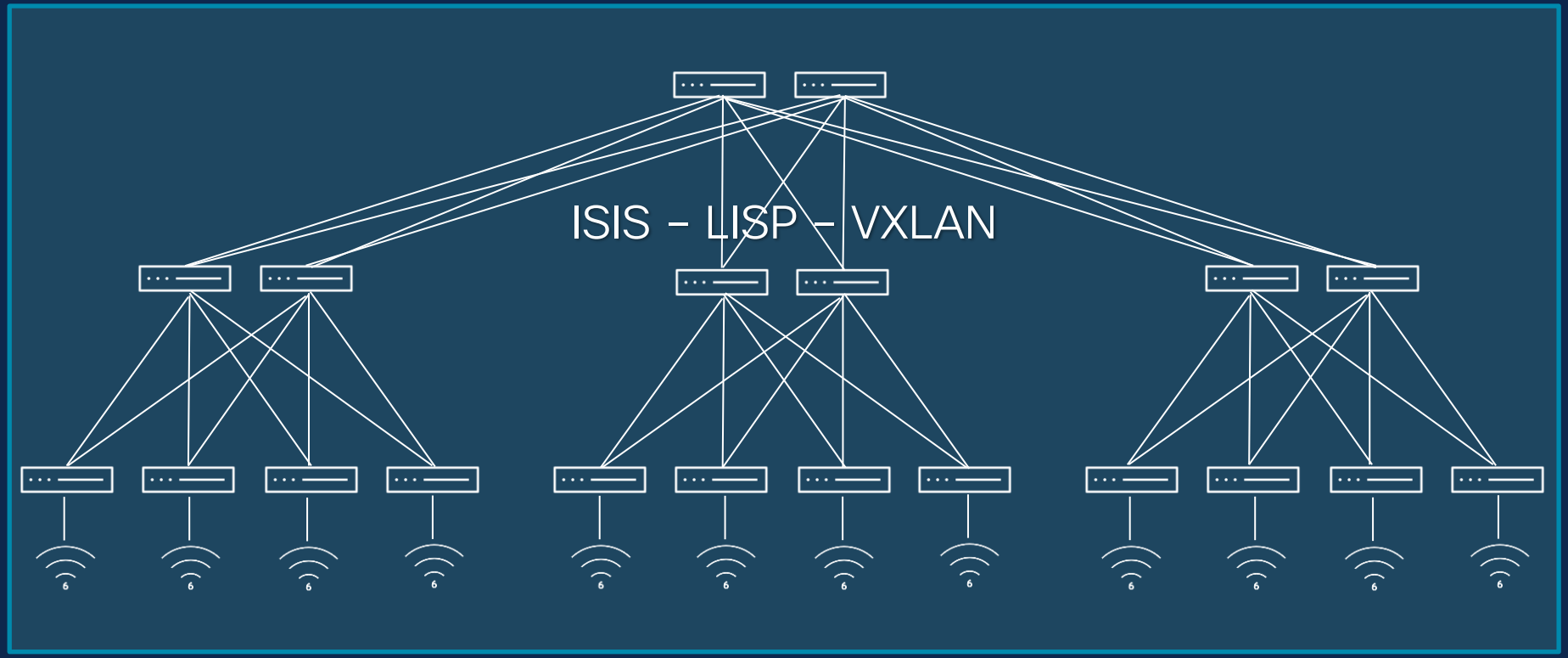
Fiona Stanley Hospital Chief Architect

“we found complexity and availability contradictory”

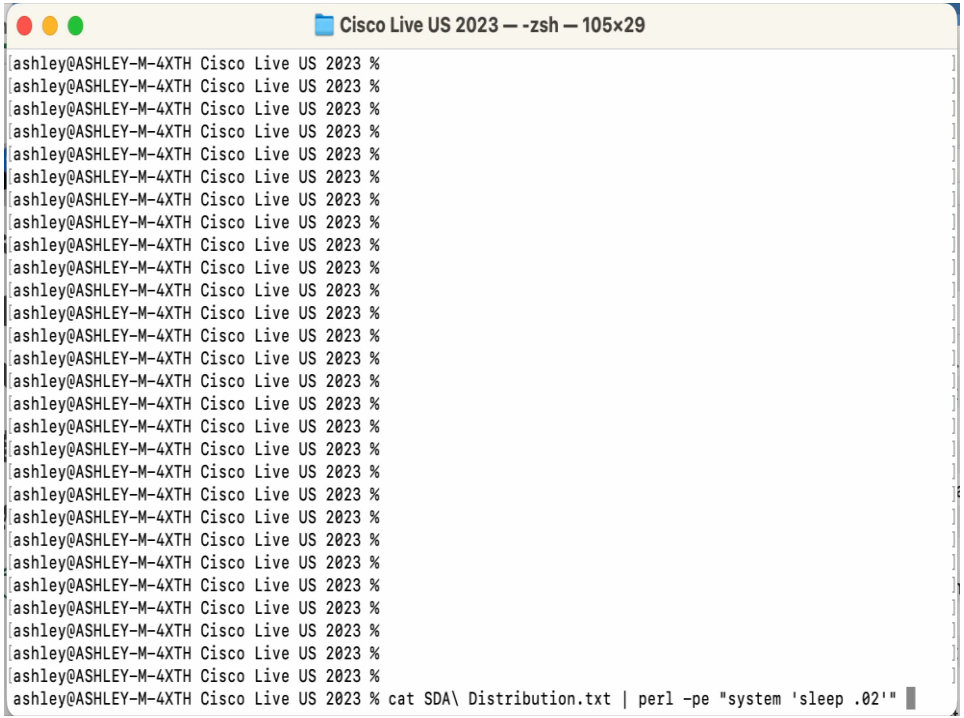
The SD-Access Network



SD-Access at Fiona Stanley Hospital

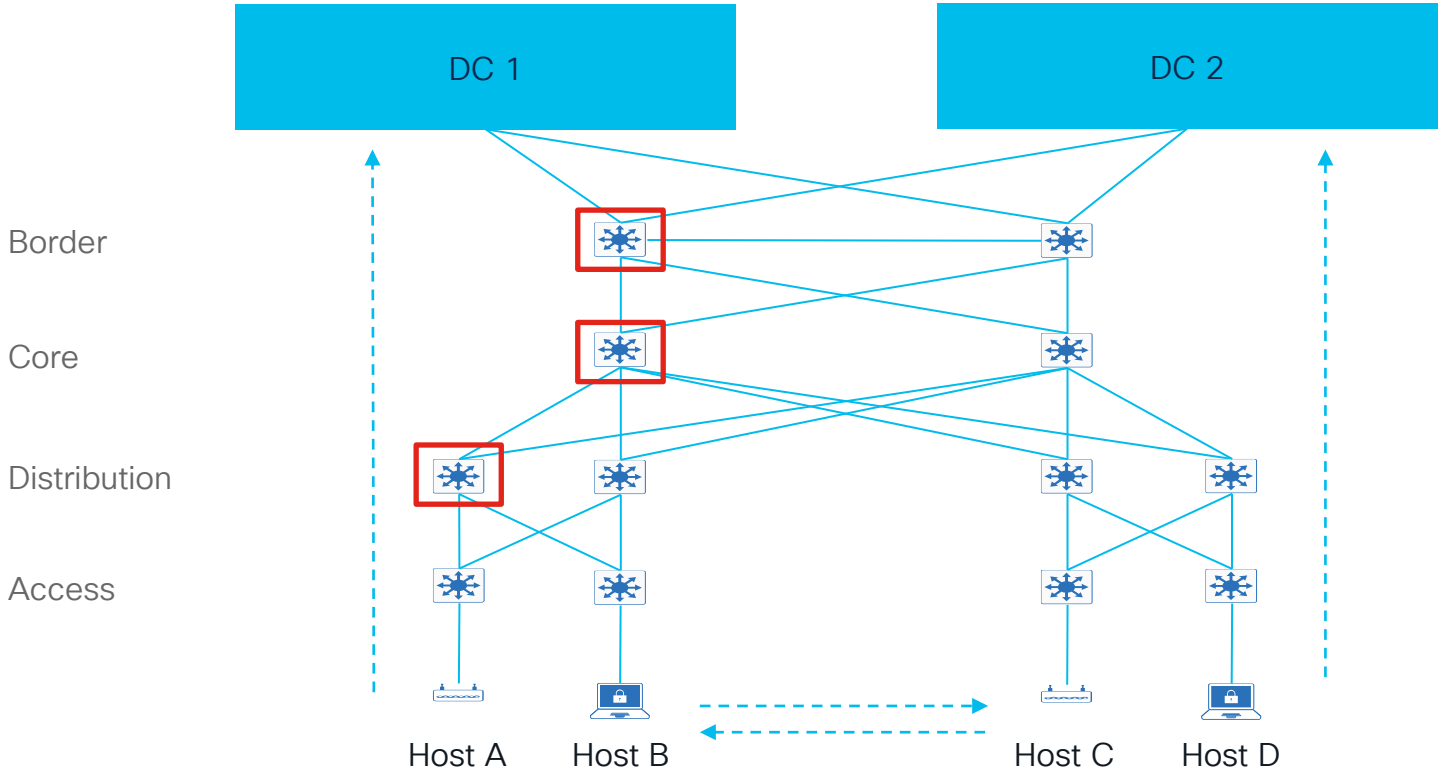


SDA Distribution Config

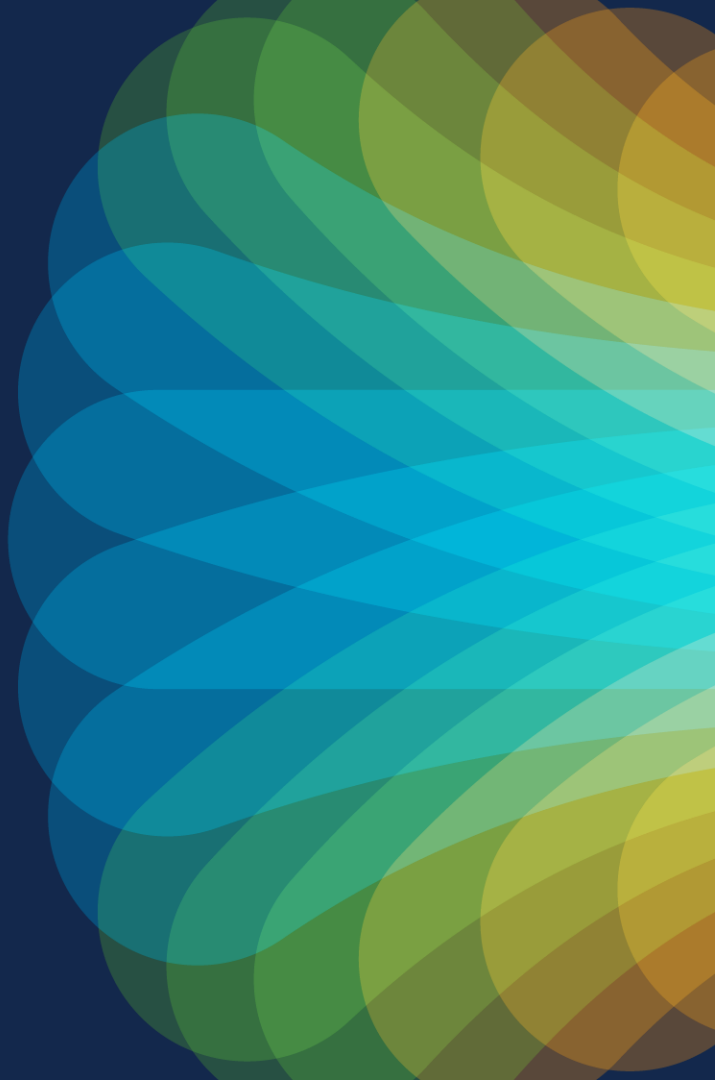


- L3 Fabric
- ISIS Underlay Network
- 3 Protocols
- Configuration Consistency

SD-Access – the power of the L3 underlay



Migration
How did Fiona Stanley Hospital get there?



Fiona Stanley Hospital SDA Migration

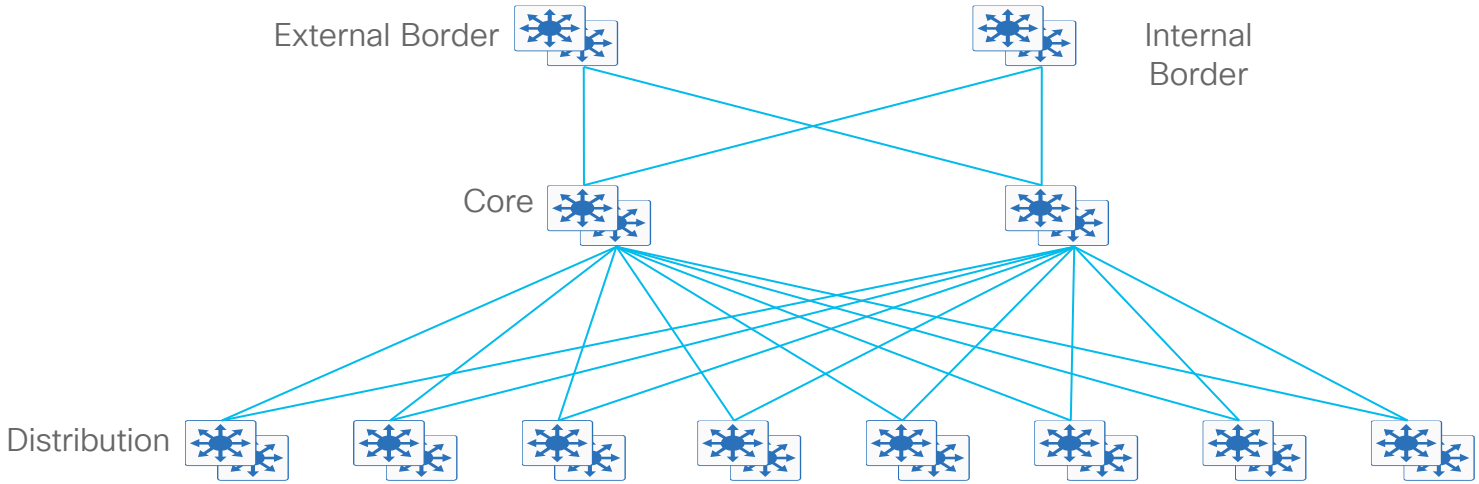
100% Network Migrated in **16 WEEKS**

15000 ports

ZERO rollbacks

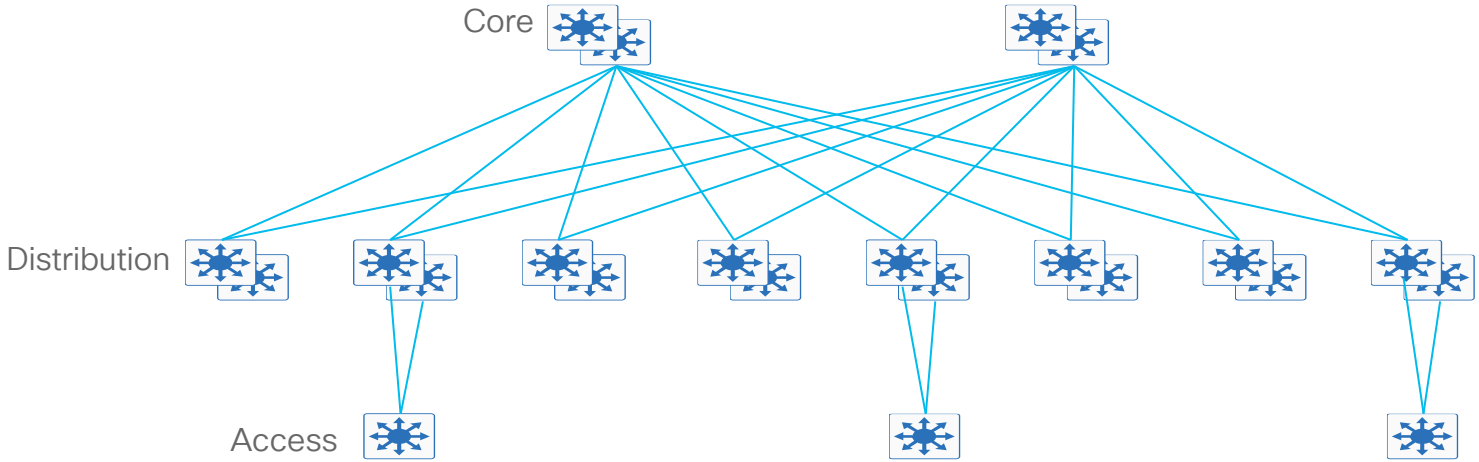
Step 1 – Build the underlay

- Build parallel Core, Distribution and Border (Internal and External)
  - Manual IS-IS config



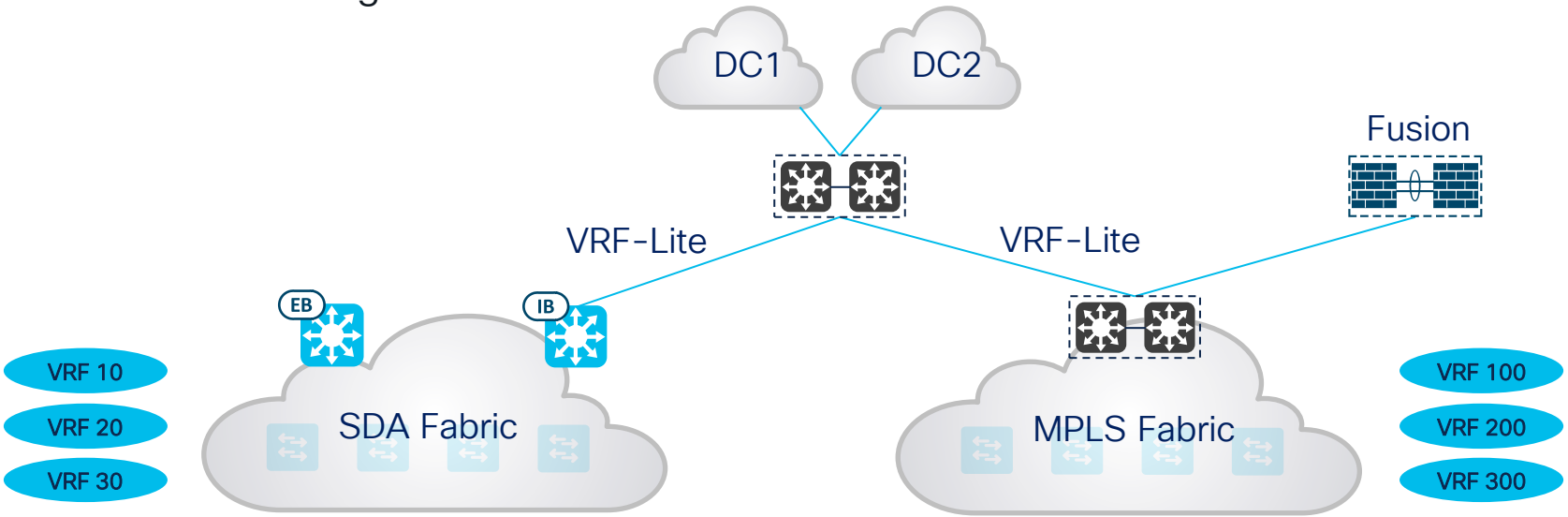
Step 1a – Build the underlay

- Build some parallel access layer switches
  - Manual IS-IS config
  - Discover in DNAC and provision
  - Test Devices and Apps



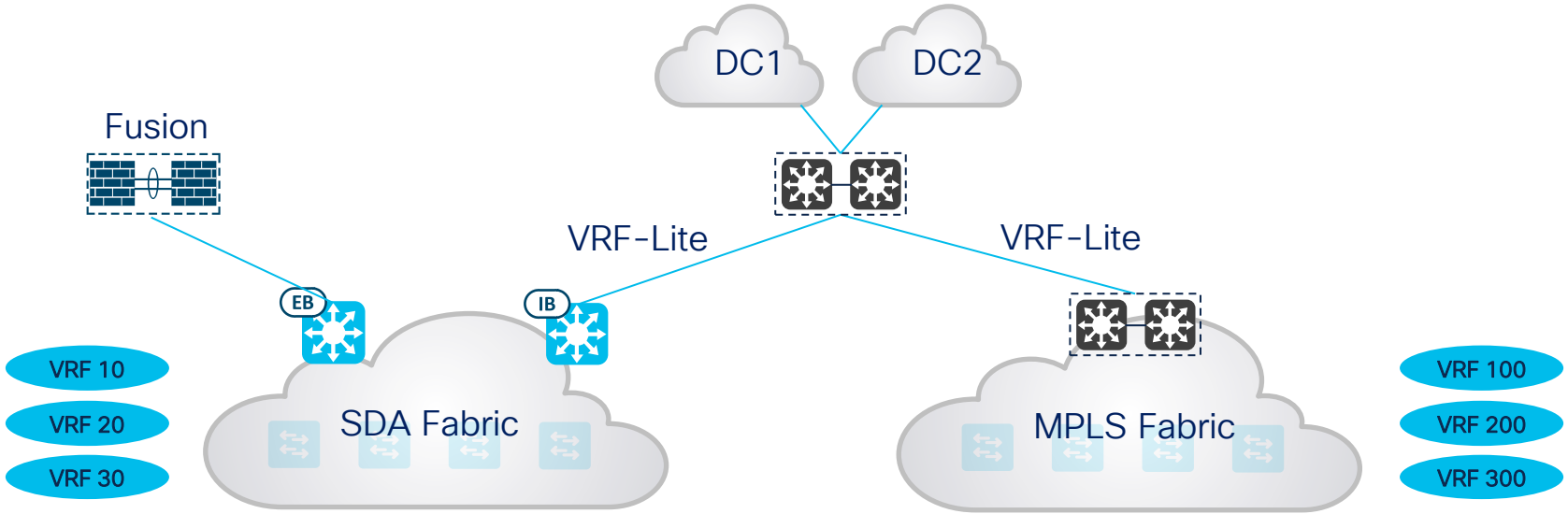
Step 2 – Connect to the Existing MPLS and Data Centers

- VRF-lite from the Internal Border to the Aggregation
  - New IP Pools for the SD-Access Network
  - Inter VRF routing at Fusion FW



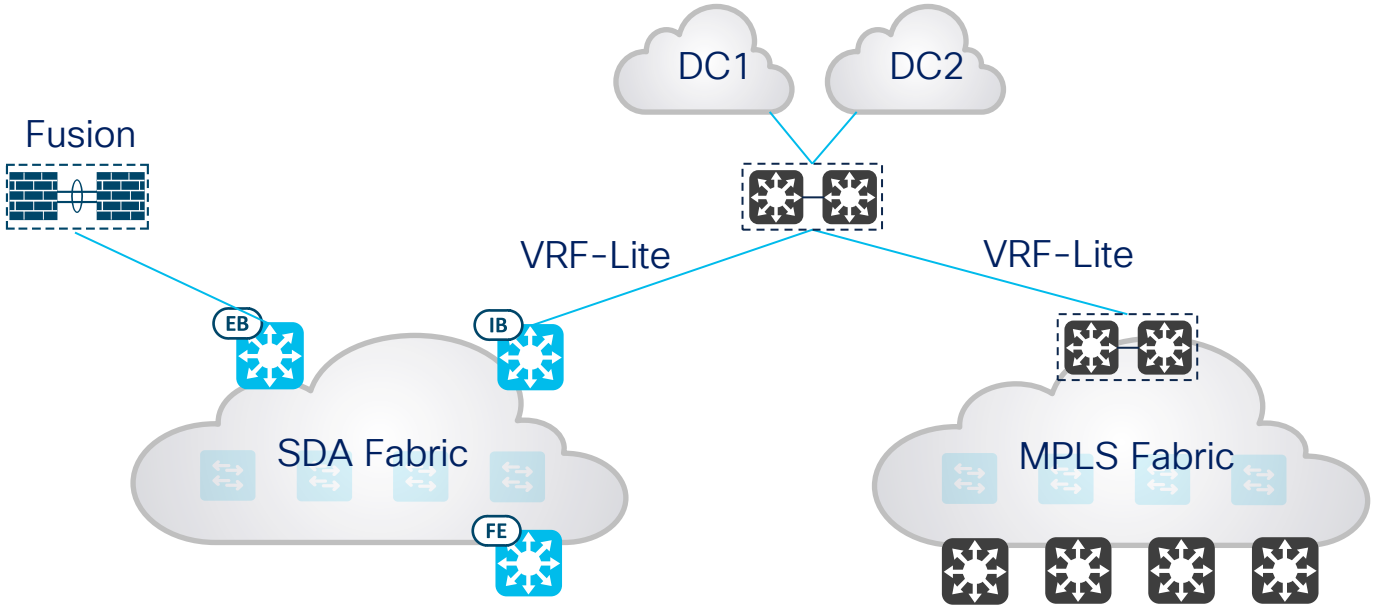
Step 3 – Move the Fusion

- Connect the Fusion FW's to the External Border Nodes
  - ALL Inter VRF routing is now via the SDA fabric to the fusion FW



Step 4 – Migrate the Access Layer

- 3 Wiring Closets (6 Fabric Edges) and approximately 1000 ports per week



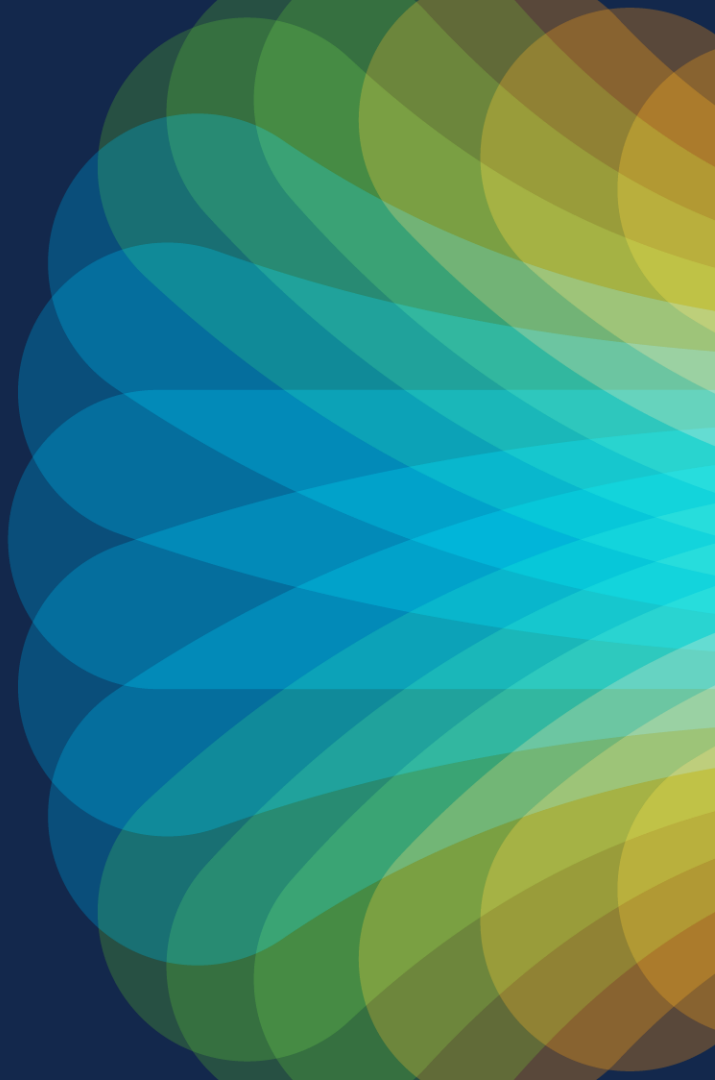
Step 4 – Migrate the Access Layer cont…

- IT Engineer AND Electrician
  - Rack the switch
  - Provision the manual ISIS underlay on the FE
  - Discover in DNAC
  - Provision the fabric and test
  - Re-Patch the UTP cables
  - Move 700 AP's that were part of the production network – Wireless OTT
  - Static port config where required – very small number (Silent host etc)
  - Device testing

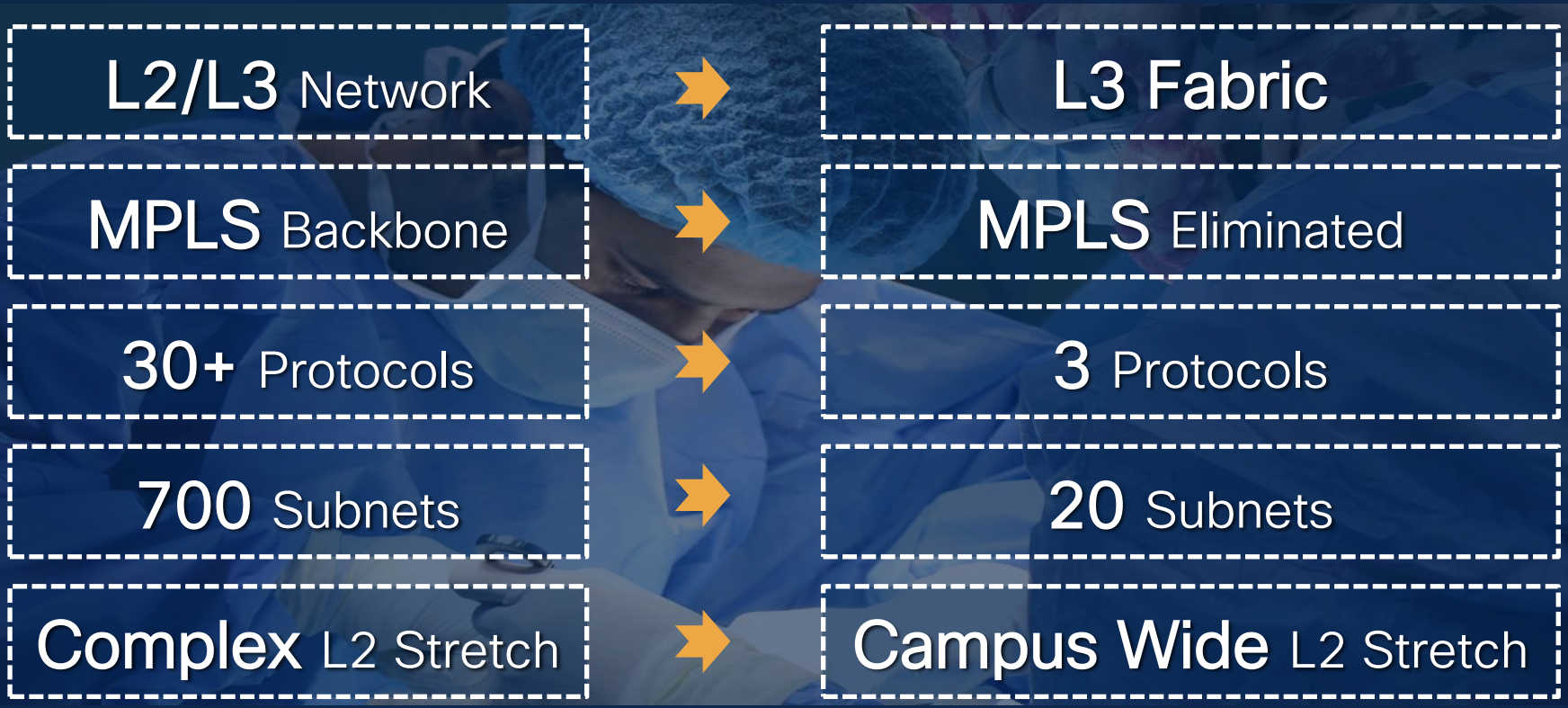
Step 5 – Migrate the Critical Essential Network

- IT Engineer AND 3 Electricians
  - Migrate the 1500 AP's from the critical essentials network to the new network
  - Electrician simply had to move the UTP cable
  - ONE DAY (6 Hours) – all AP's moved seamlessly
  - Critical Essentials network – decommissioned

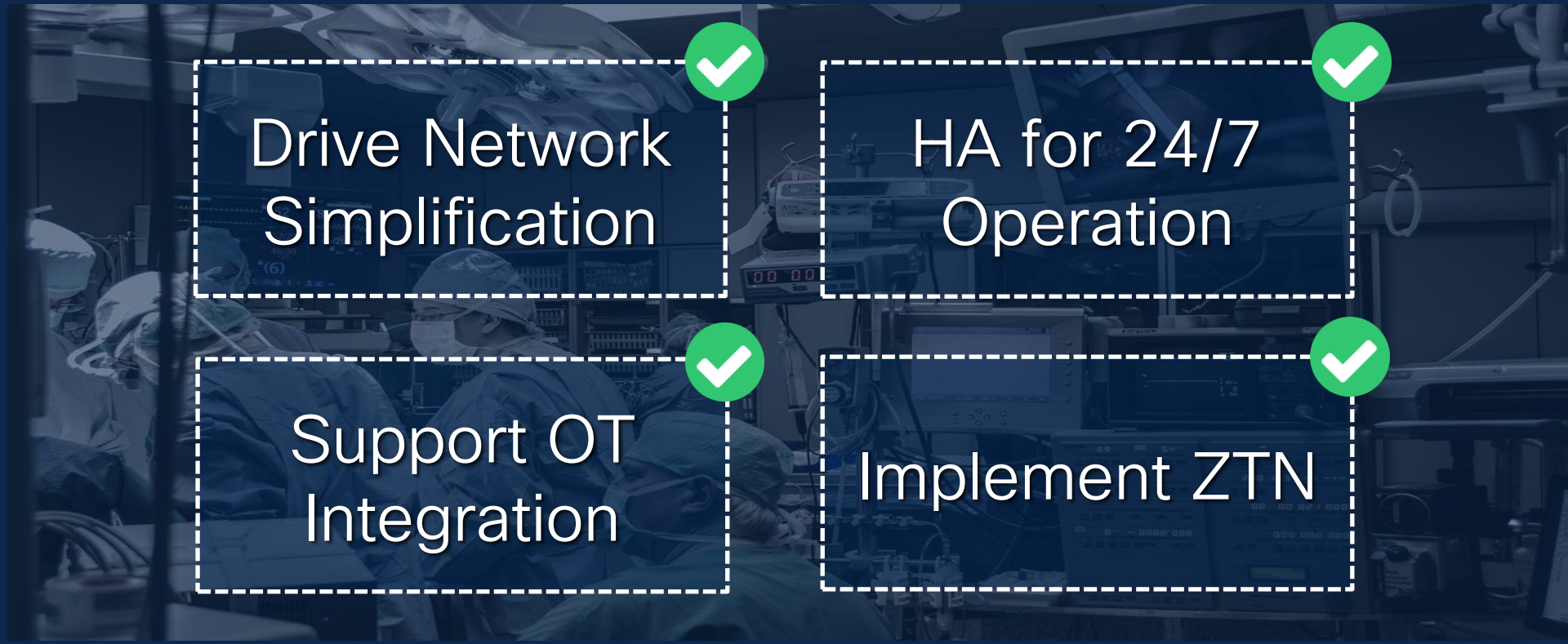
The Results



The RESULTS



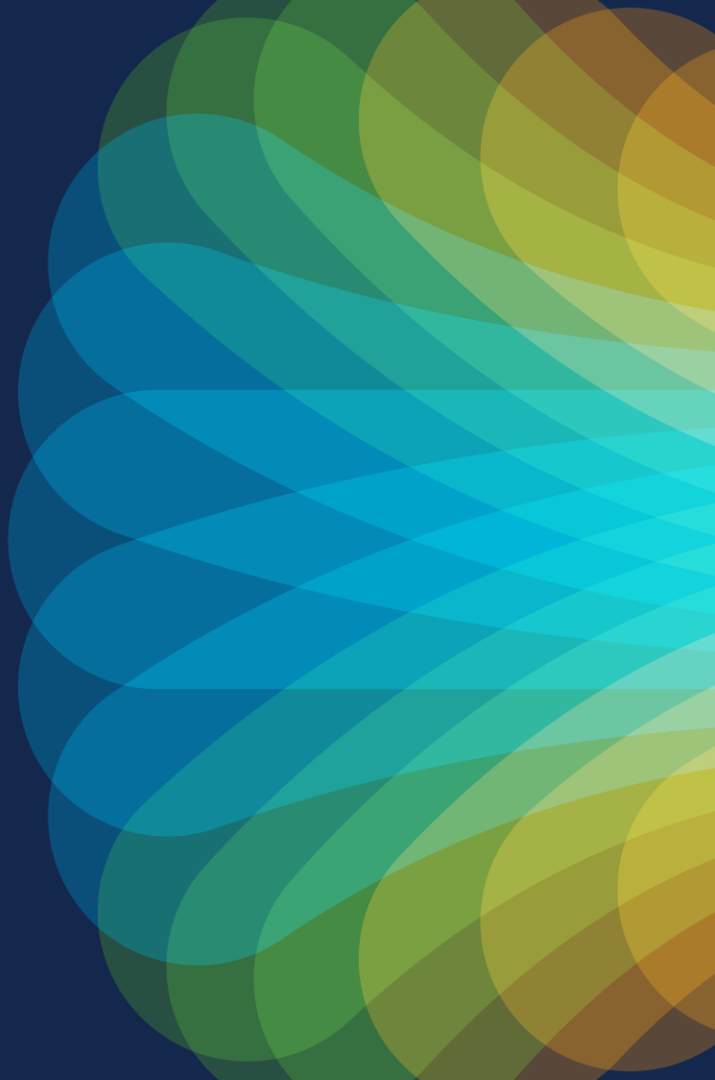
The RESULTS



TOYOTA Motors

Journey with SD-Access

Max Hernandez: Manager, Network Platforms
Toyota Motors North America



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2022 TOYOTA OPERATIONS BY STATE

UNITED STATES

TOYOTA

Sienna
since 1997
(in IN since 2003)

Sequoia
since 2000

Highlander
since 2009
(Highlander Hybrid in IN since 2013)

RAV4 Hybrid
since 2020

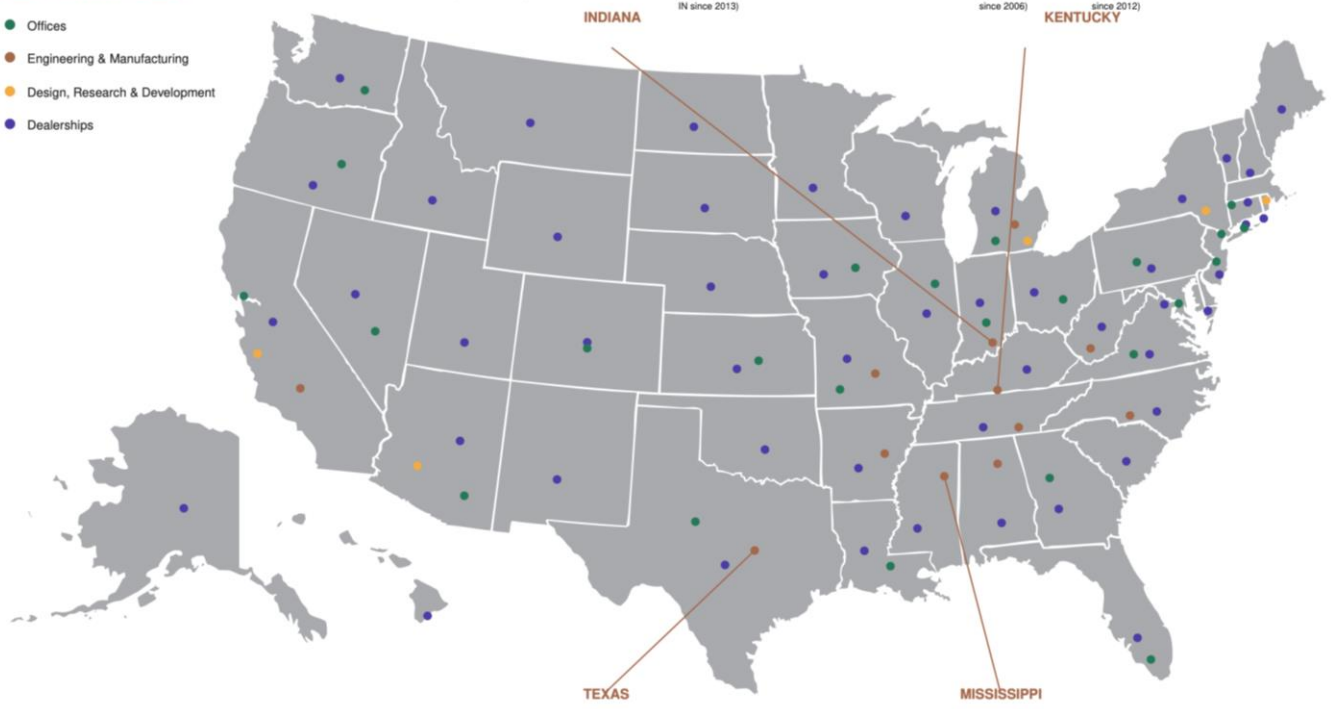
Camry
since 1988
(Camry Hybrid in KY since 2006)

Avalon
since 1994
(Avalon Hybrid in KY since 2012)

Lexus ES 350
since 2015

Dots represent category presence within a state and not quantity of location.

- Offices
- Engineering & Manufacturing
- Design, Research & Development
- Dealerships



Tacoma
since 1991
(in TX since 2010)

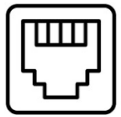
Tundra
since 1998
(in TX since 2006)

Corolla
since 1986
(in MS Since 2011)

Toyota network by the numbers

51,415
Total Wireless Clients

47,428
Total Wired Clients



10,887
Total Wireless Access Points

4,550
Network Switches

BACKGROUND – CHALLENGES

Secured Network Connectivity	Network Infrastructure Visibility	Standards	Automation	Wireless Connectivity for Industry 4.0 demand
• Limited visibility to the devices connected to our network • Unable to create profiles and corresponding policies for devices	• Many sources of "truth" • Did not have complete network visibility • Alerting was not 100% reliable	• Each switch/site configured based on engineer/vendor experience or approach • 80 versions of software for catalyst switches	• limited tools to automate task • Deployments were all manual or using scripting developed by engineer and or vendor	• Factory automation demands exceeded capabilities • Wi-Fi is shared medium that cannot guarantee low latency network communication • A safety rated wireless network is required

Wireless Connectivity

Office areas required more AP's to cover conference rooms and other areas with high quantity of users. The Wi-Fi signal in these areas is optimized for higher bandwidth.

Standard density Wi-Fi deployments place AP's every other column (120ft apart). At times additional AP's are required to address interference or coverage issues. The Wi-Fi signal is optimized to reach greater distances.

Wi-Fi Signal Strength

Stronger --- Weaker

Existing AP (Access Point)

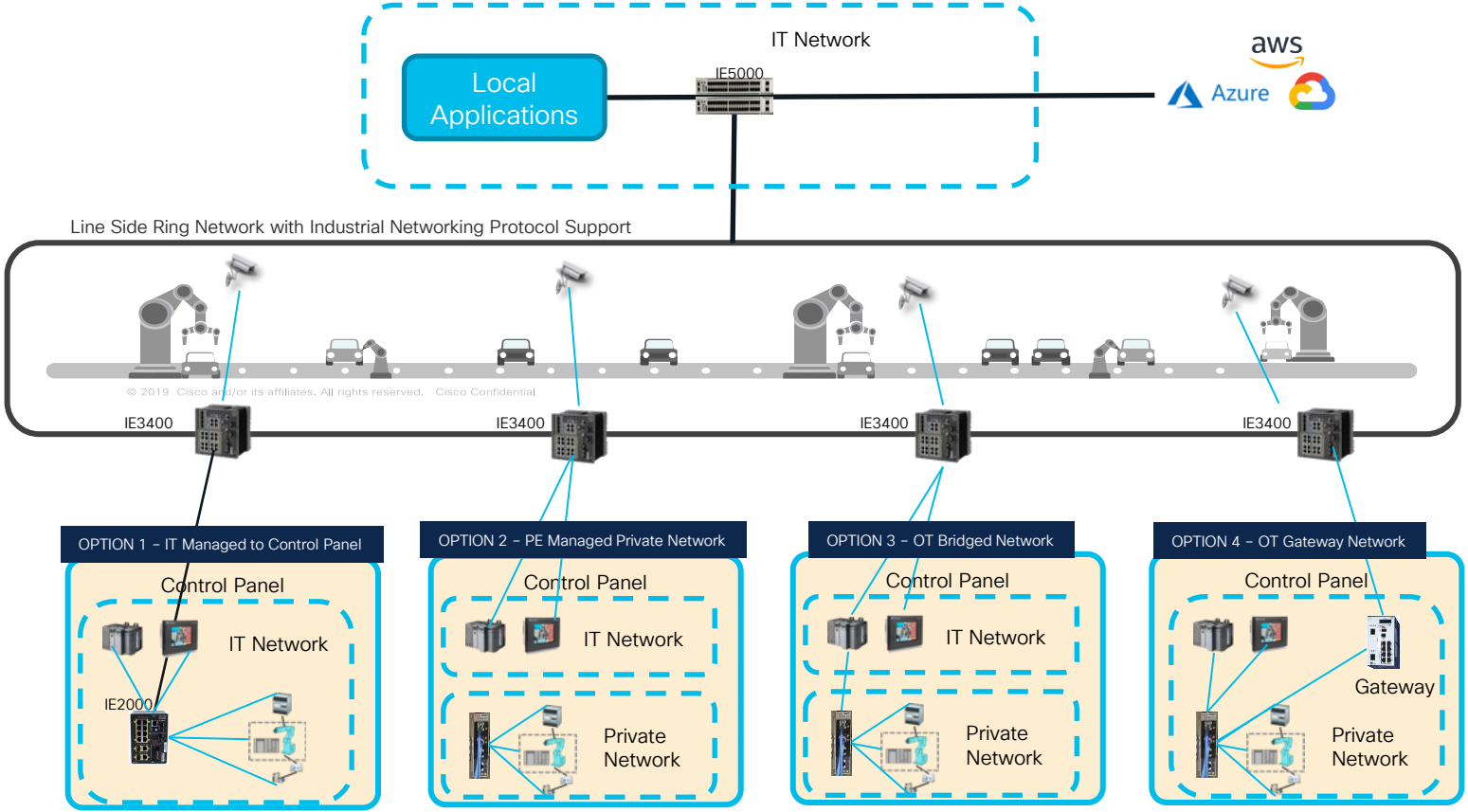
New AP (Access Point)

All Wi-Fi access points on the plant floor were remounted on uni-strut 3ft off the column. This ensures optimum radio coverage

High density Wi-Fi deployments place AP's every column (60ft apart). This is used when AGV's are in use to ensure consistent connectivity at all times as AGV's move thru the plant.

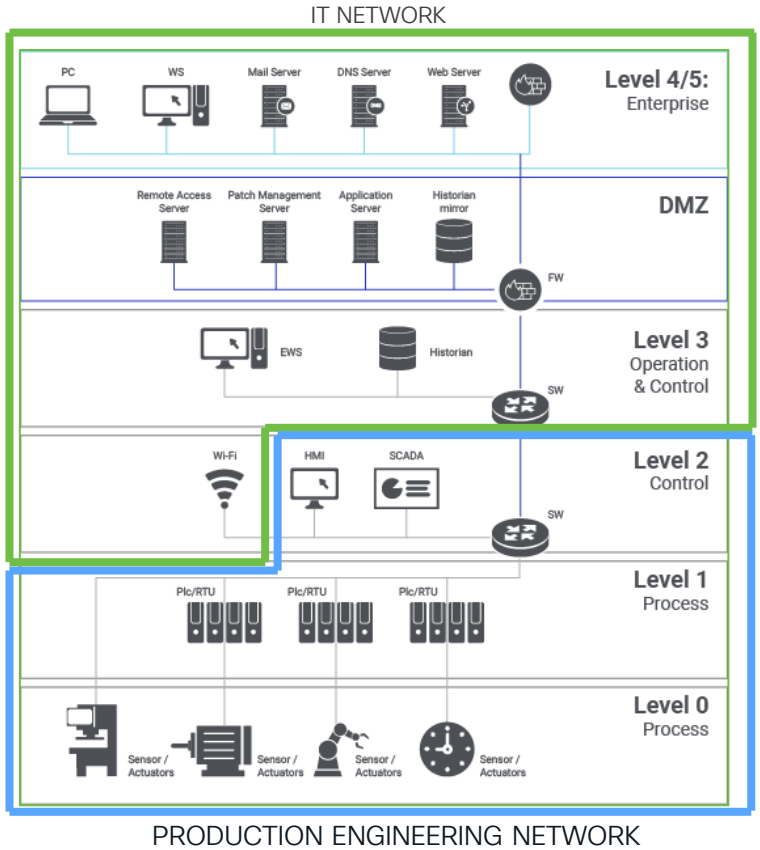
AGV/Tugger paths

OT Network Connectivity



Changing how we build Manufacturing Networks

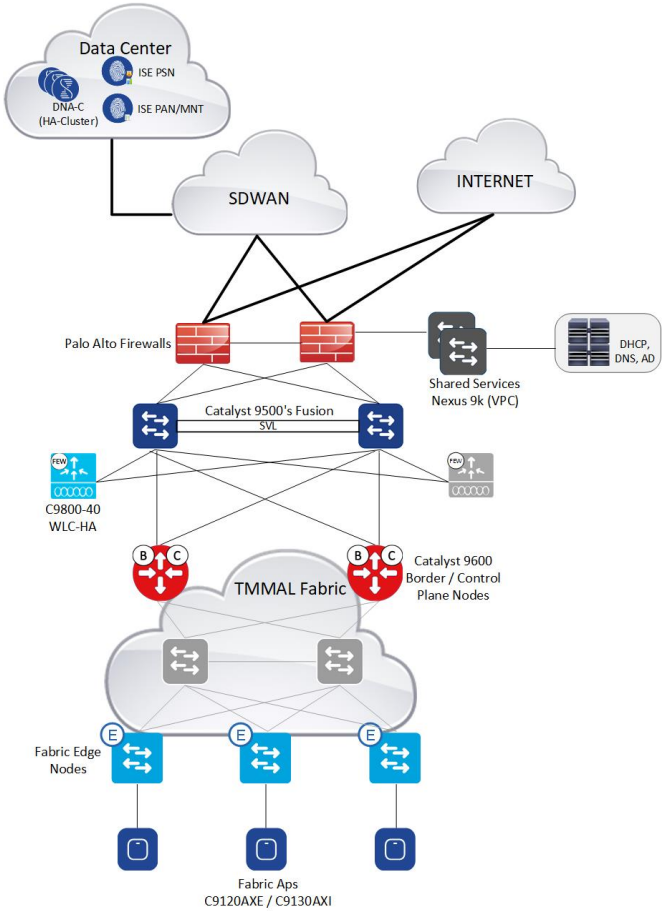
- Industry 4.0
  - Comprehensive and consumable Network Analytics
  - Wall to Wall Reliable Wireless Connectivity
  - Secure postures and profiling
  - Automation
- The SDA Manufacturing Network project was initiated to meet the growing need of network segmentation, zero trust, and automation.
- Developing and maintaining strong business relationships is the key to achieving modern manufacturing networks!



SD-Access Journey

1. Existing ISE deployment was the foundation
    1. ISE 22 nodes
2. DNAC/SDA Proof of Concept in the Lab
3. Enterprise Agreement for licensing and support
4. Fast DNAC Deployment and Adoption
    1. 80% of Wireless integrated within 6 months
    2. 80% of existing LAN integrated within 1 year
5. Develop SD-Access Reference Designs
6. Full SDA Deployments at 3 Location
    1. Manufacturing Plant
    2. Port Location
    3. Parts Warehouse
7. Go forward architecture for all sites!

Global SD-Access Wireless Architecture at TMMAL



SD-Access: Value to TOYOTA

Secure Network Access	• Simplified Guest and Office Access • Policy Based Virtual Networks
Network Visibility and Management	• WLWLC centralized control plane: all the innovative RF features such as AP Management, RRM, and Mobility will be leveraged in SD Access wireless
Standardized Templates and Configurations Across Sites	• Consistent Configuration at all sites • Fast restoration times
Automated Configuration and Provisioning	• Templates make onboarding and configuring switches easier
Framework to support Industry 4.0	• Ready to support requirements as they arise

Fill out your session surveys!

Attendees who fill out a minimum of four session surveys and the overall event survey will get **Cisco Live-branded socks** (while supplies last)!

Attendees will also earn 100 points in the **Cisco Live Challenge** for every survey completed.

These points help you get on the leaderboard and increase your chances of winning daily and grand prizes

Continue your education

- Visit the Cisco Showcase for related demos
- Book your one-on-one Meet the Engineer meeting
- Attend the interactive education with DevNet, Capture the Flag, and Walk-in Labs
- Visit the On-Demand Library for more sessions at www.CiscoLive.com/on-demand

The bridge to possible

Thank you

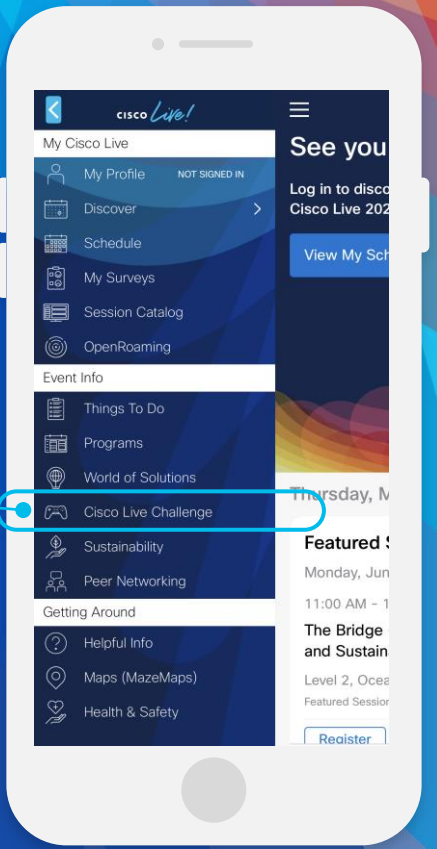
Cisco Live
Challenge

Gamify your Cisco Live experience!

Get points for attending this session!

How:

1. Open the Cisco Events App.
2. Click on 'Cisco Live Challenge' in the side menu.
3. Click on View Your Badges at the top.
4. Click the + at the bottom of the screen and scan the QR code:

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