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#CiscoLive



The bridge to possible

Tame Migrations for Small to Large Campus with SD-Access and SD-WAN at Scale

We did it for 150+ Sites!

Dhrumil Prajapati – Sr. Delivery Architect
@DhruPrajapati
BRKENS-3830

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Agenda

- Introduction
- The beast which we need to TAME!
- Having a solid foundation
- What is the migration process?
- Lessons Learnt
- Conclusion

Who am I?



Dhrumil Prajapati

Sr. Delivery Architect

Technology and Transformation Group – CX

7+ Years @ Cisco

CCIE #28071 (R/S, SP)

CCDE #20210002

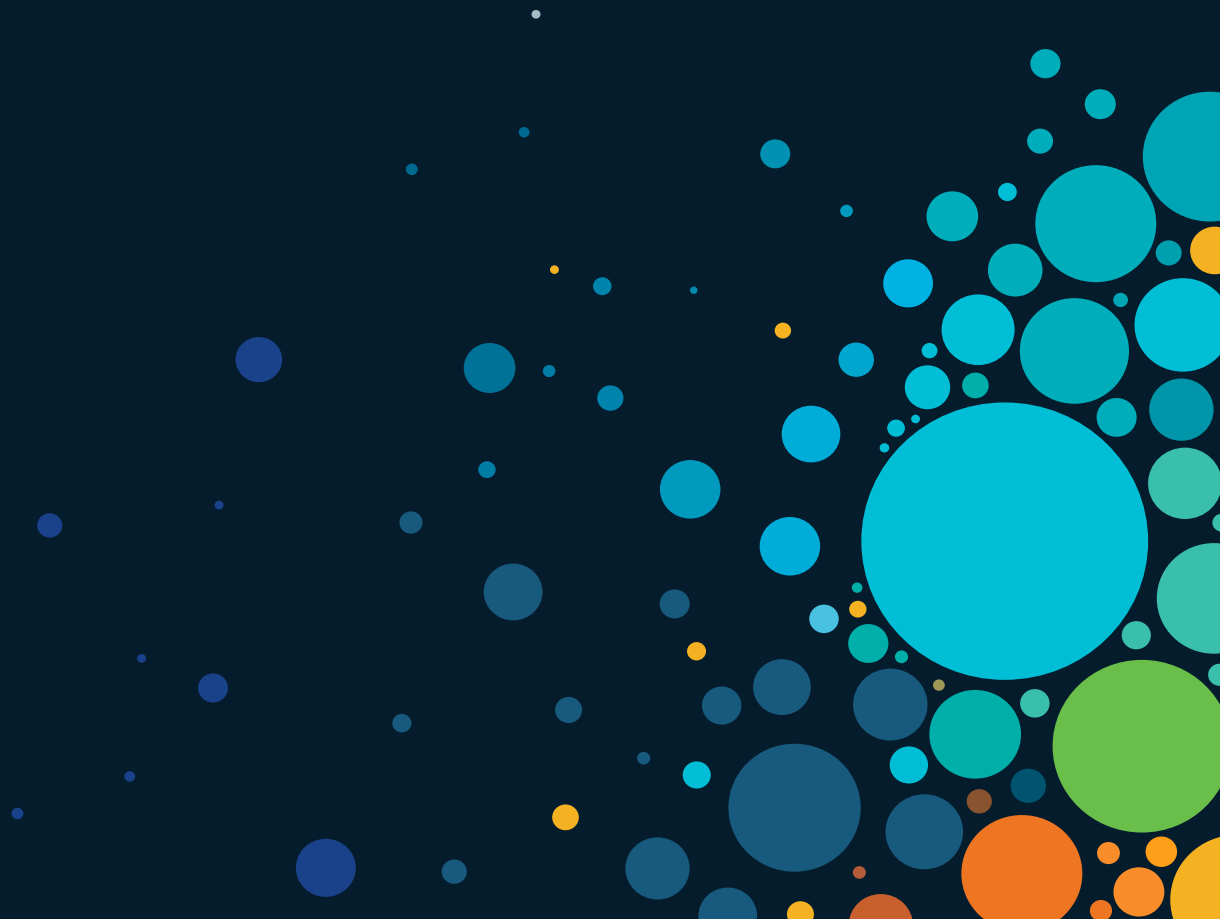
Specialized in: SD-Access, SD-WAN, MPLS,
Enterprise Architecture

@DhruPrajapati

Special Thanks: Ritika Singh



The Beast!

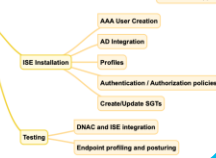


Prepared by Dhrumil Prajapati
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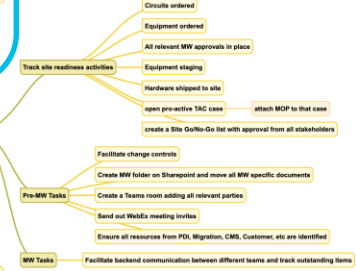
SDA Site Deployment Checklist

Plan, Design, Implement

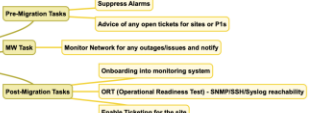
One-Time Tasks



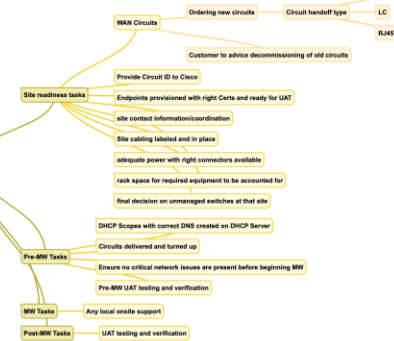
PMO



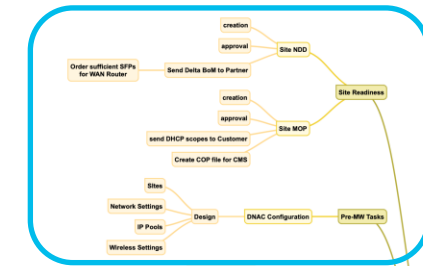
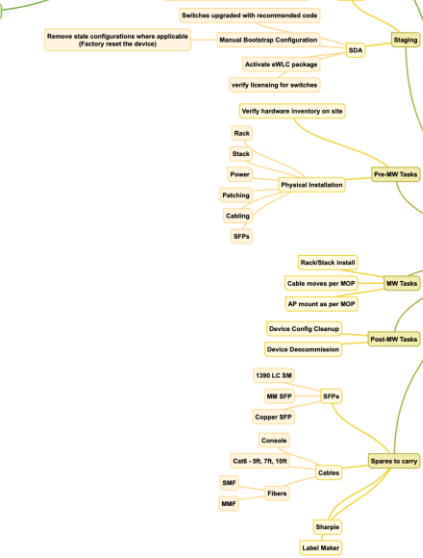
CMS/NOC



Customer



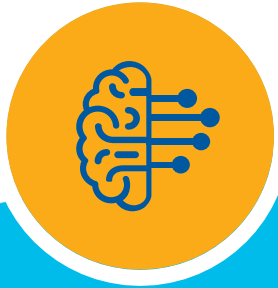
Migration Team



Having a Solid Foundation



5 Pillars and a Bedrock



PDI/AMO



PMO



Migration
Team



Customer



Partner

Automation

Plan Design Implementation / AMO

Design & Drive

DNAC ISE Integration
AAA Certificates Fabric Domain
SGT VN Policy Profiling
KT and Pilot Sites

Templates & Tools

Golden SDWAN Templates
Endpoint Discovery
Delta & Underlay Configs

Testing & Validation

Testing XL,L,M+,SM,XS Design
Snowflakes Validation
L2BN functionality

Post MW Hypercare

First 24hr hypercare support



Bringing stakeholders together



PMO : Build The City



Setting realistic schedules



Chase timelines and engineer requests



Bridging the gap and ensuring good customer sentiment

Migration Team



Site Readiness

Network Design Document

BoM Preparation

MoP Preparation

Target Design



Pre-Migration Window

DNAC Configuration

Staging of Devices

UAT



Migration Window

Discover & Provision

Add to Fabric – L2/L3

External Networks

Host Onboarding & Post Check

Customer

Site Readiness Tasks

- ✓ Circuit ID and Handoff Type
- ✓ Site Technical POC
- ✓ Site Survey Information
- ✓ Decommission of Old Circuit

Migration Window

- ✓ User Acceptance Testing
- ✓ Circuit Provider Ticket if required
- ✓ Correct DNS on DHCP Scopes



Pre-Migration

- ✓ Site Remediation Completed
- ✓ Adequate Power & Connectors
- ✓ Rack space & unmanaged devices

Post-Migration

- ✓ Post Migration UAT
- ✓ Coordination with Cisco for wireless/wired Testing

Partner

Staging

- Code Upgrade
- License & eWLC package
- Load Bootstrap
- vManage Reachability



MW & Post MW

- Cable Moves as per MoP
- AP mounting
- Device Cleanup & Decommission



Pre-MW

- Verify on-site inventory
- Rack, Stack, Power
- Cable all Devices



Readiness

- SFP : Copper & Fiber
- Cables: Console, Patch Cord
- Fibers: SMF, MMF
- Equipment: Label Marker

Automation In SDA/SDWAN

Why is it needed?



Large Site can have over 15000 endpoints

Validation & UAT can miss a lot of endpoints

How Automation Helps



Underlay Config generator reduced MOP time



Reduced Migration Time with Fabric Config Generator



Site Snapshot & Overview of endpoints

Automation Possibilities



Legacy Hardware Readiness & Assessment Tools



Endpoint Discovery & Site Overview



DNAC Site Hierarchy Push



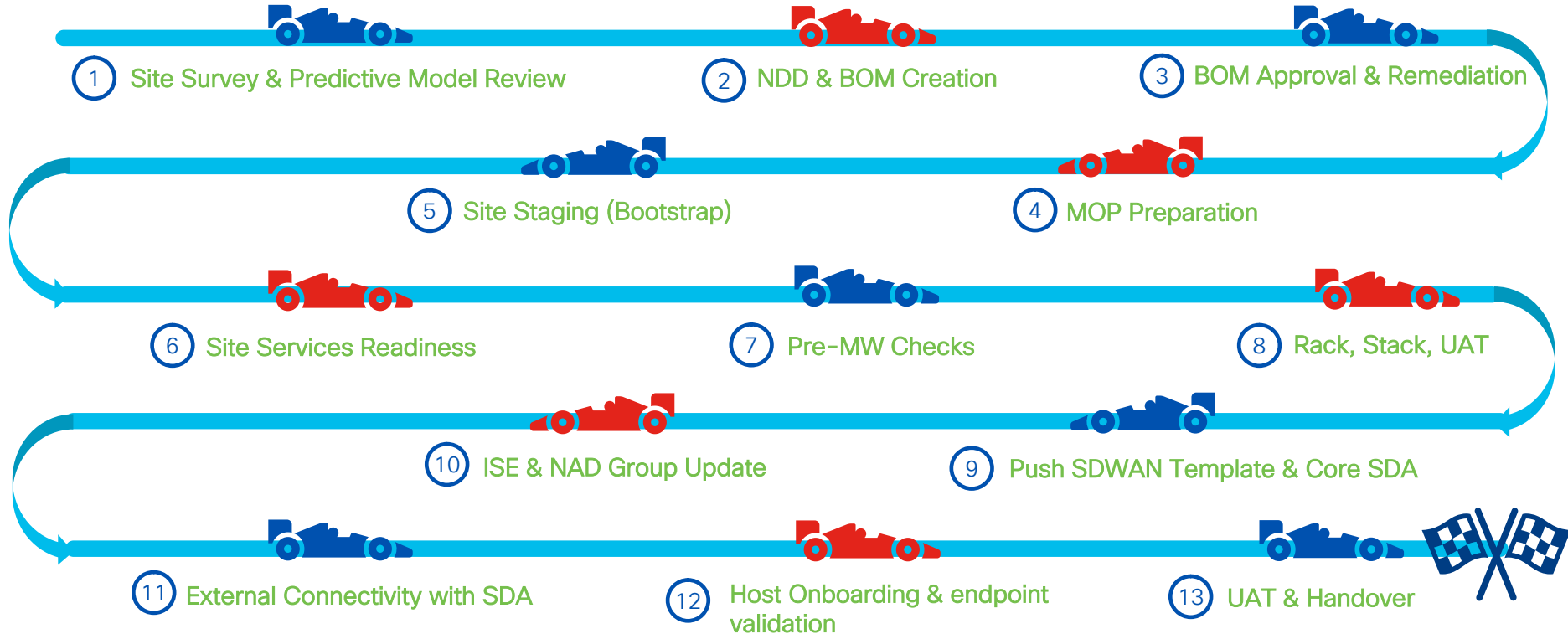
Fabric Fusion Config Generator



Pre & Post Ping Sweep and Routing Delta

What is the Migration Process?

Migration Pit stops/Checkpoints



Migration Approaches

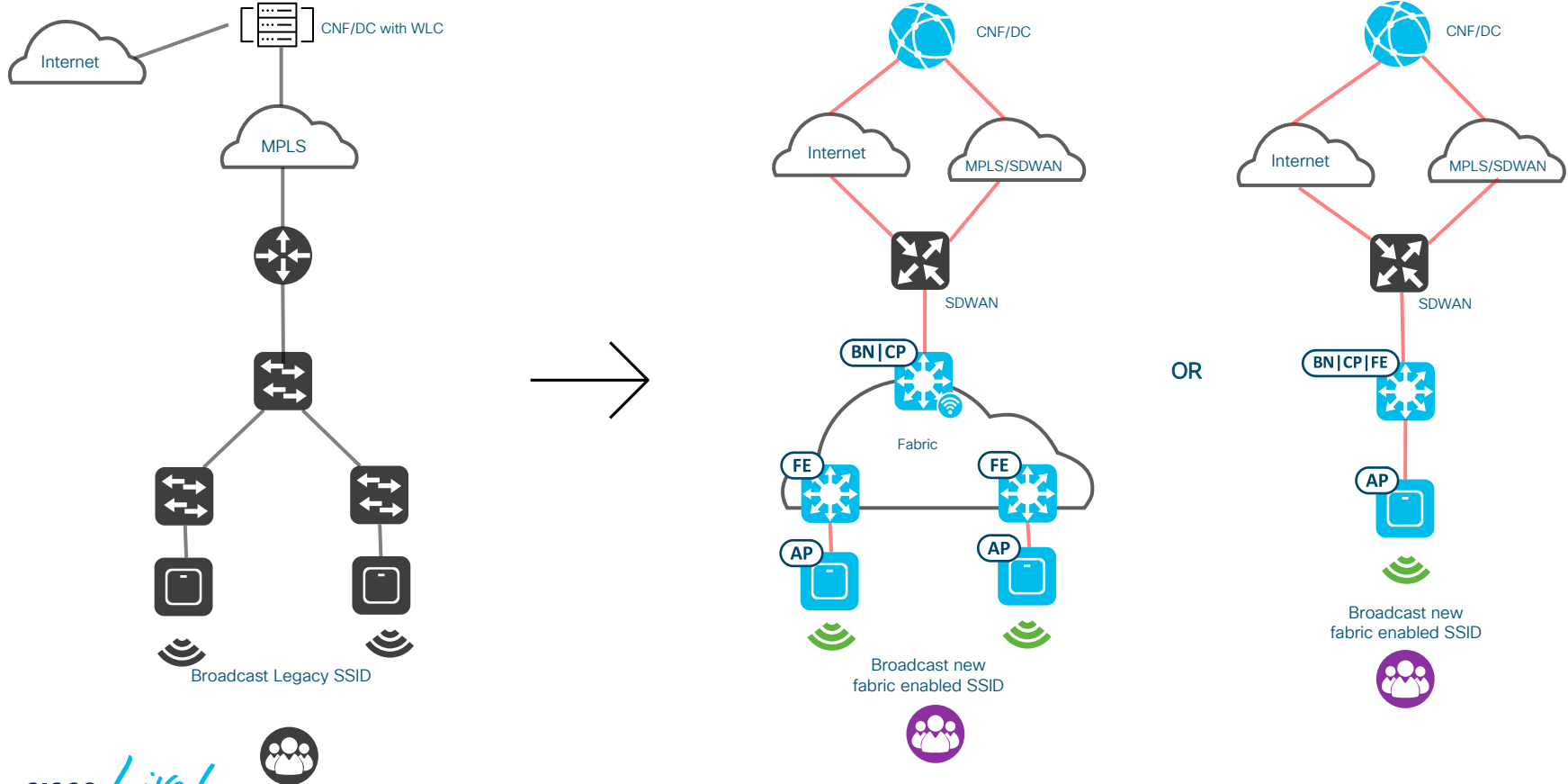
Single Step

- Move from current state to end state in 1 Maintenance Window
- Suited for Small Sites
- Process:
 - Move to SD-WAN
 - Replace and/or upgrade LAN switches to SDA
 - Migrate SDA Wireless

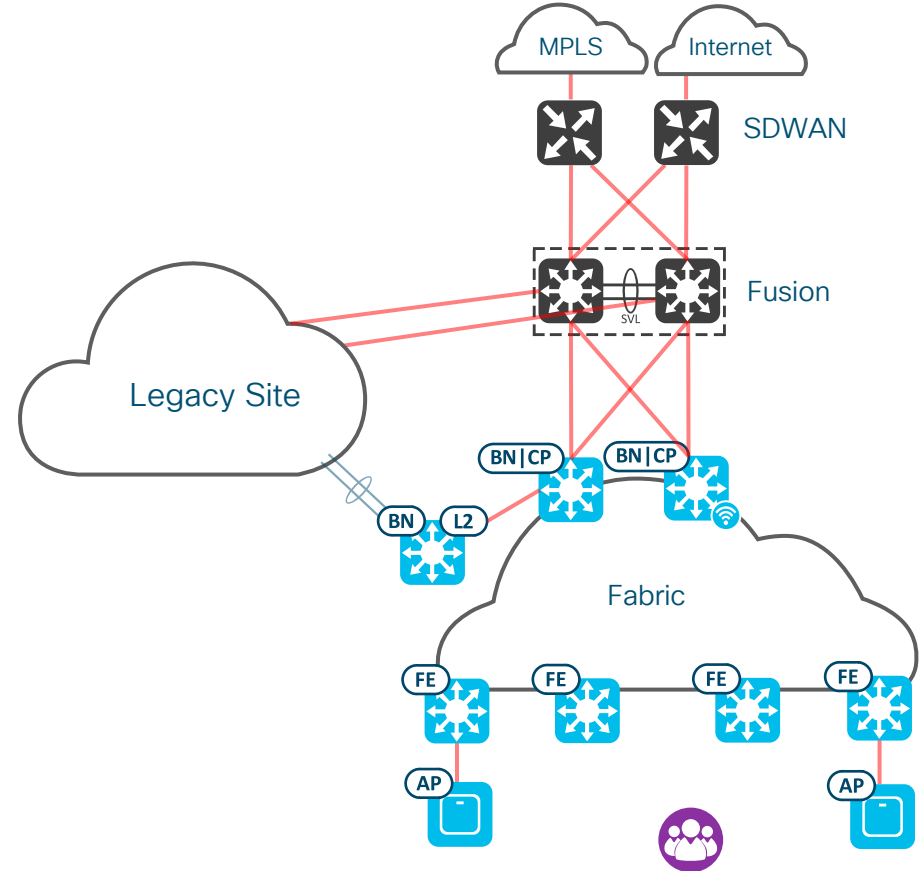
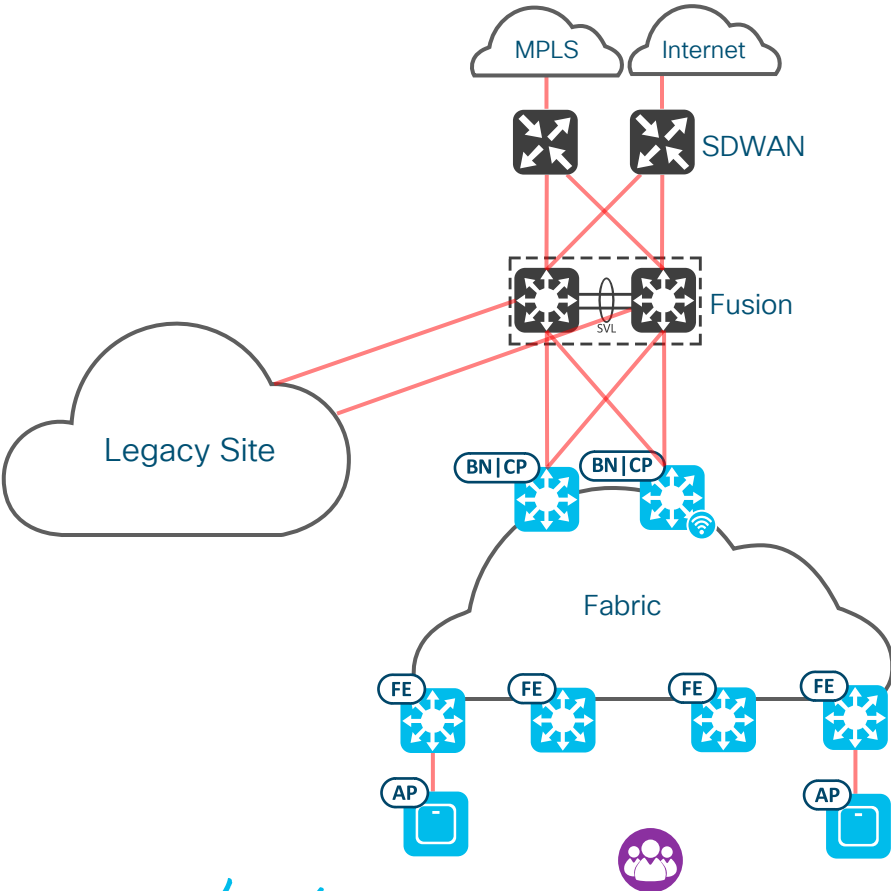
Multiple Step

- Move from current to end state in multiple Maintenance Windows
- Suited for Medium to Large sites
- Process:
 - Day 1: SDWAN, Fusion and BN/CPs
 - Day 2+: Replace and/or upgrade targeted LAN closets to SDA
 - Migrate SDA Wireless

Migration Approach – Single Step

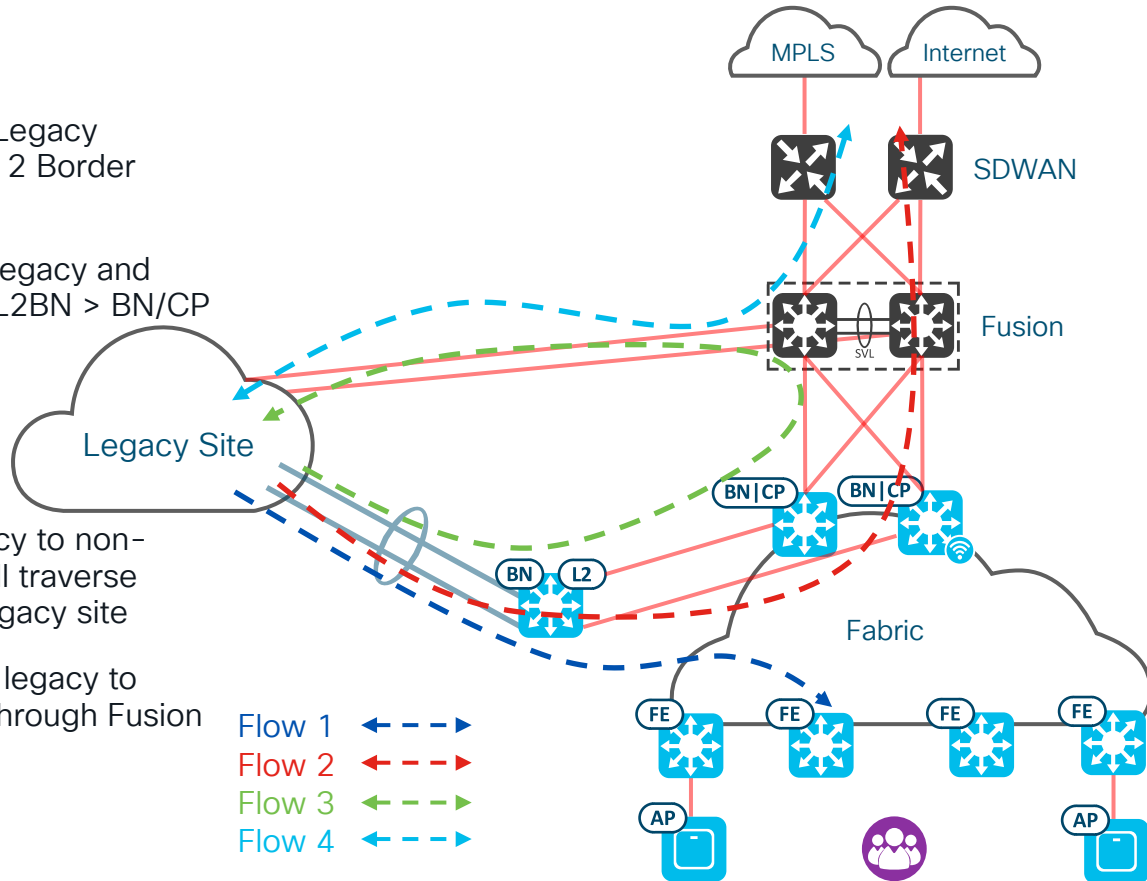


Migration Approach – Multiple Step



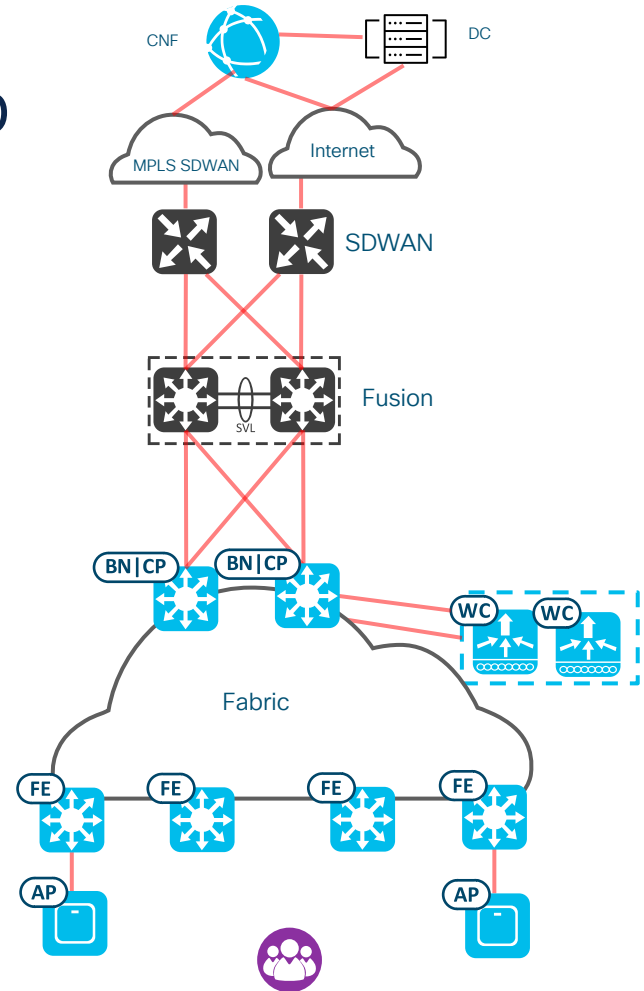
Multi Step Migration with L2BN Traffic Flow

- Any migrated subnet traffic between Legacy and Fabric will traverse through Layer 2 Border Node (L2BN)
- Any migrated subnet traffic between legacy and remote location will traverse through L2BN > BN/CP > Fusion > SDWAN
- Any migrated subnet traffic from legacy to non-migrated subnet in legacy network will traverse through L2BN > BN/CP > Fusion > Legacy site
- Any non-migrated subnet traffic from legacy to remote location will traverse directly through Fusion > SDWAN

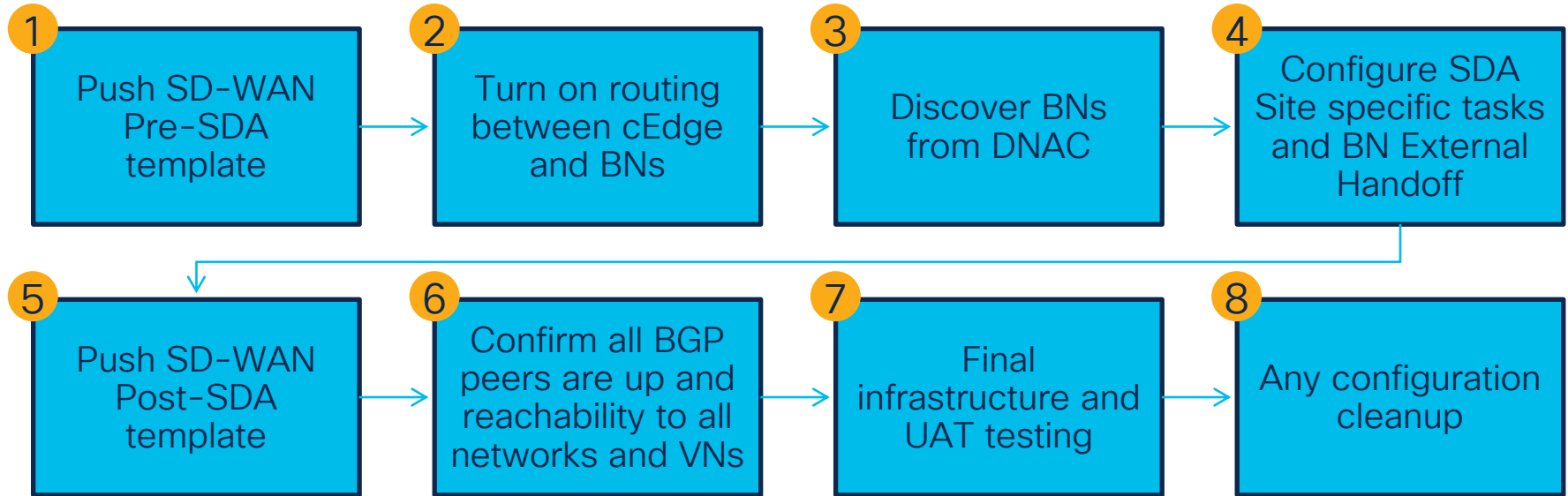


Migration Approach – Final Step

- SDA Capable devices will be on boarded into the fabric
- Any temporary configurations will be cleaned
- Local C9800 WLC will be enabled for fabric mode and re-provisioned with fabric SSIDs
- All the APs will be provisioned to broadcast the fabric enabled SSIDs.



SD-Access & SD-WAN Migration Steps



Lessons Learned

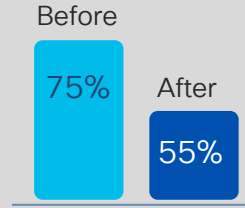
Technical Learnings



Extensive UAT



Presence of Hubs



Automation



DNAC Site Location



Reusable VLANs



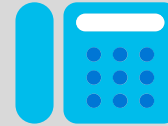
Interface & Tunnel
Mismatch (SDWAN)



GUEST Portal Login



Static Endpoints



External
Connectivity



3850 License

Technical Learnings Continued...



Circuit Tagging



Fusion & Legacy Core



ISE and DNAC Sync



vManage GUI



L2BN VLAN 1



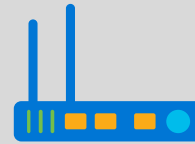
SDWAN Template Issue



DHCP Option 43



cEdge in CLI mode



Bandwidth Shaping



ASR1002-HX Cert Fail

Operational Issues

On-Site	Ad-Hoc	Limitations	Others
Circuit Testing, Circuit Handoff & labelling	Project Milestones & RACI	Platform Limitation	Cross Team Dependency
Rack, Stack, Mount APs in Advance	Snowflakes per Request	High burnout rate	Hardware Upgrades
BoM Lead Time	Scoping & Resourcing	Accountability	Staging Facility
Spare SFPs, Cables	Site Variations & Consolidation changes	Endpoint Visibility	Compliance
COVID, Travel & Security Guideline	Unknown devices	Unmanaged Switches	Timely Approvals

Conclusion



Key Takeaways

- SD-Access and SD-WAN migrations **can be done** at rapid pace
- Consistency in design is key for at-scale migrations
- You are getting one chance to re-do the network – take that opportunity!
- Remember those **5 pillars**
- Automation is crucial for efficiency and accuracy
- **BEAST is not as scary as it seems!**
- **Cisco CX** is always there to work with you and accomplish success together.

Technical Session Surveys

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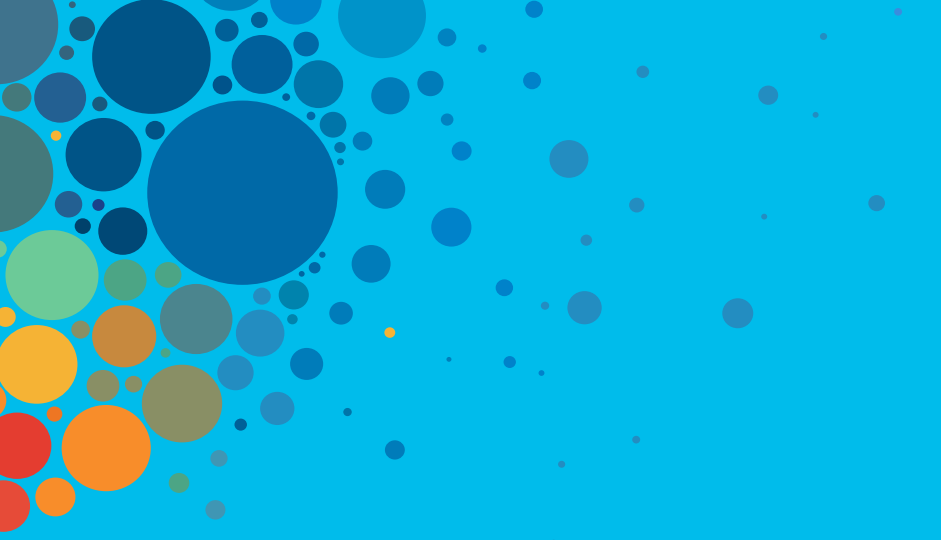
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The bridge to possible

Thank you

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