



EVPN-VXLAN as Data Center fabric solution

An ABB Journey

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**Aussie
Broadband**

THE ACTUAL AUSSIE WAY®

What do we cover today



BACKGROUND

KEY CHALLENGES

OUR APPROACH

PRODUCT SELECTION

PLANNING AND EXECUTION

Background



Traditional three-tier infrastructure utilizing vPC technology, alongside a TRILL network.



A substantial number of devices in operation requiring ongoing management.



Day-to-day operations and troubleshooting rely on manual tools.



Daily service provisioning is increasing, necessitating rapid scalability.



Network visibility is distributed across several different monitoring tools.

Challenges



Complexity and Inflexibility of Network



Manual Day to Day Operations



Difficulty in Troubleshooting Faults



Scalability Limitations



Lack of Modern Network Visibility



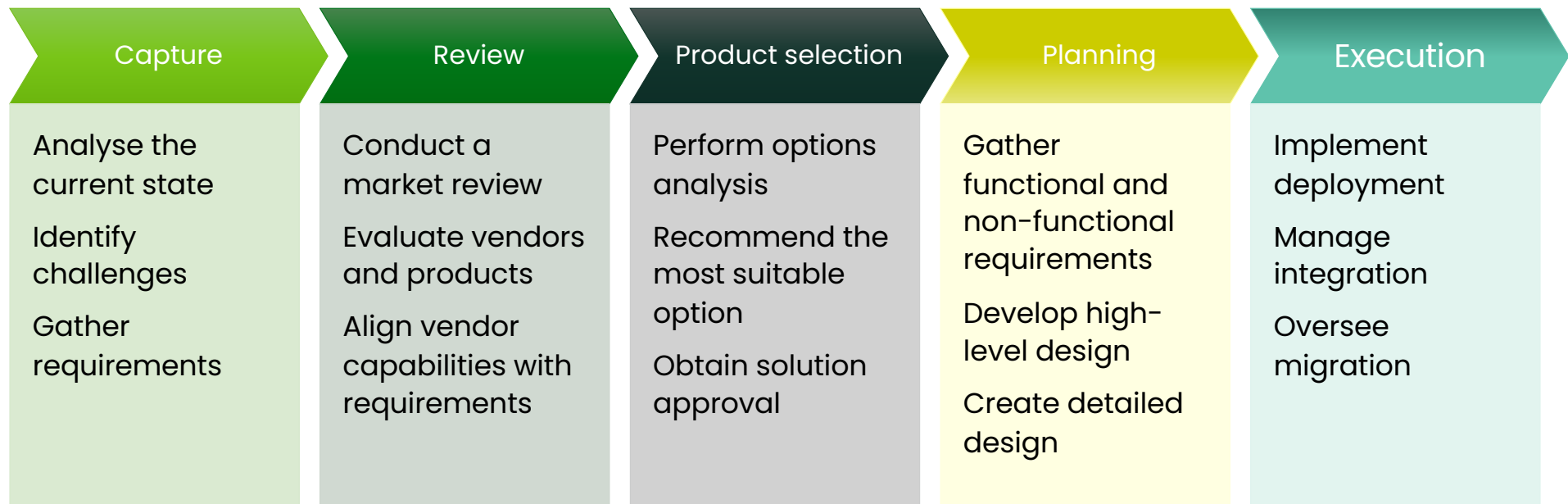
Inconsistent Monitoring Practices



Time-Consuming and Challenging Upgrades



Approach





Data Center Technology Requirements



Technical

Resilience & High
availability
Failure Impact



Performance

Traffic Optimisation
Convergence Time



Scalability

Flexibility
Higher BW support
Port Expansion
Architecture Simplicity

Data Center evolution



Traditional Three-Tier (Early 2000s)

- Layer 2
- Access, Distribution and Core layer
- Limited redundancy with potential of single points of failure
- Limited Scalability

- High availability network technology
- Layer 2
- Enhanced redundancy & high availability through dual switch connectivity as a single logical port channel
- Supports moderately seamless expansion with LACP domain

LAG/LACP (Late 2008)

TRILL (Early 2010s)

- Loop-free multipath/TRILL Protocol
- Layer 2
- Enhanced redundancy & high availability via loop-free multipath forwarding
- Suitable for large Layer 2 networks within a single data center
- Uses FabricPath IS-IS as underlay control plane

- Encapsulation technology that creates layer 2 overlays over layer 3
- Layer 2
- No inherent redundancy; relies on underlying network for redundancy
- Ideal for large-scale multi-site deployments
- Limited Virtualization capabilities /virtual Layer 2 overlays

VXLAN (Late 2010s)

EVPN/VXLAN (2018s)

- Enhanced Layer 2 & Layer 3 with EVPN/VXLAN
- Layer 2 and Layer 3
- Enhanced redundancy & high availability with multipath forwarding
- Scalable for diverse network sizes
- Advanced network virtualization & segmentation
- Utilizes MP-BGP EVPN as overlay

Traditional Three-Tier

PUBLIC

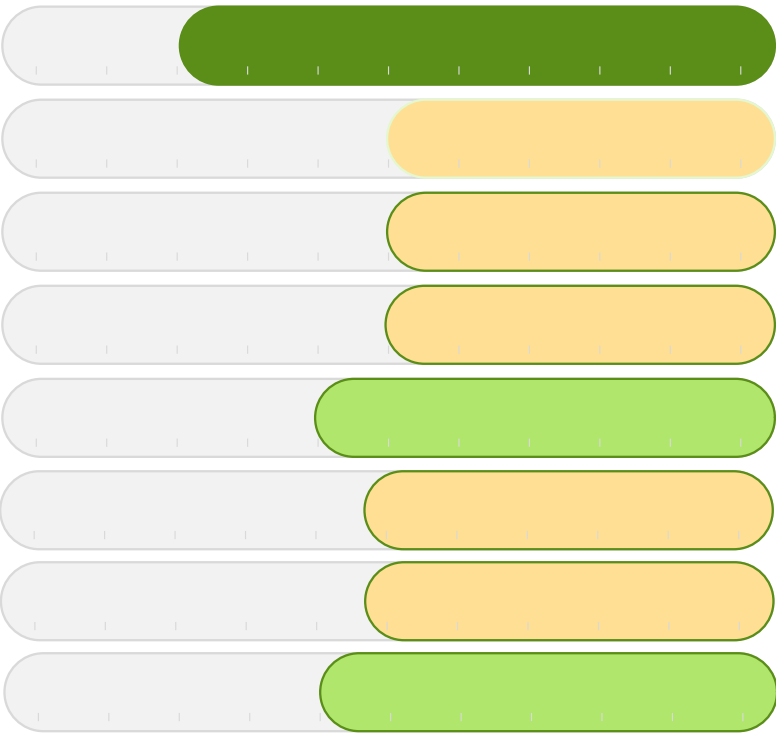
Two-Tier Spine-and-Leaf

Technology Comparison



TRILL

EVPN/VXLAN



**Redundancy & High availability**

**Failure Impact**

**Traffic Optimisation**

**Convergence Time**

**Scalability**

**Higher BW support**

**Port Expansion**

**Architecture Simplicity**



Operational Requirements for a Modern Data Center



Improved Visibility

Capacity Planning

Network Health

Statistics



Faster Troubleshooting

Traffic Path Troubleshooting

Network Topology

Flow Telemetry



Simple Maintenance

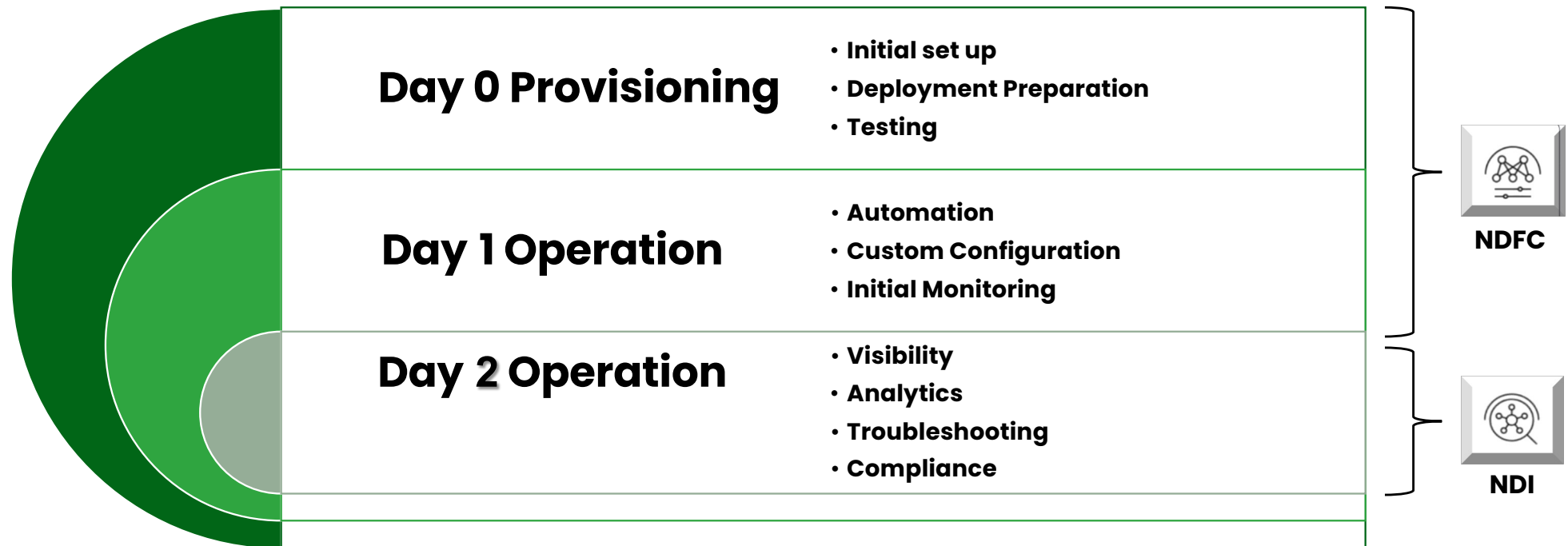
Management Vendor Support

Upgrade and Deployment Assistance

Unified Management

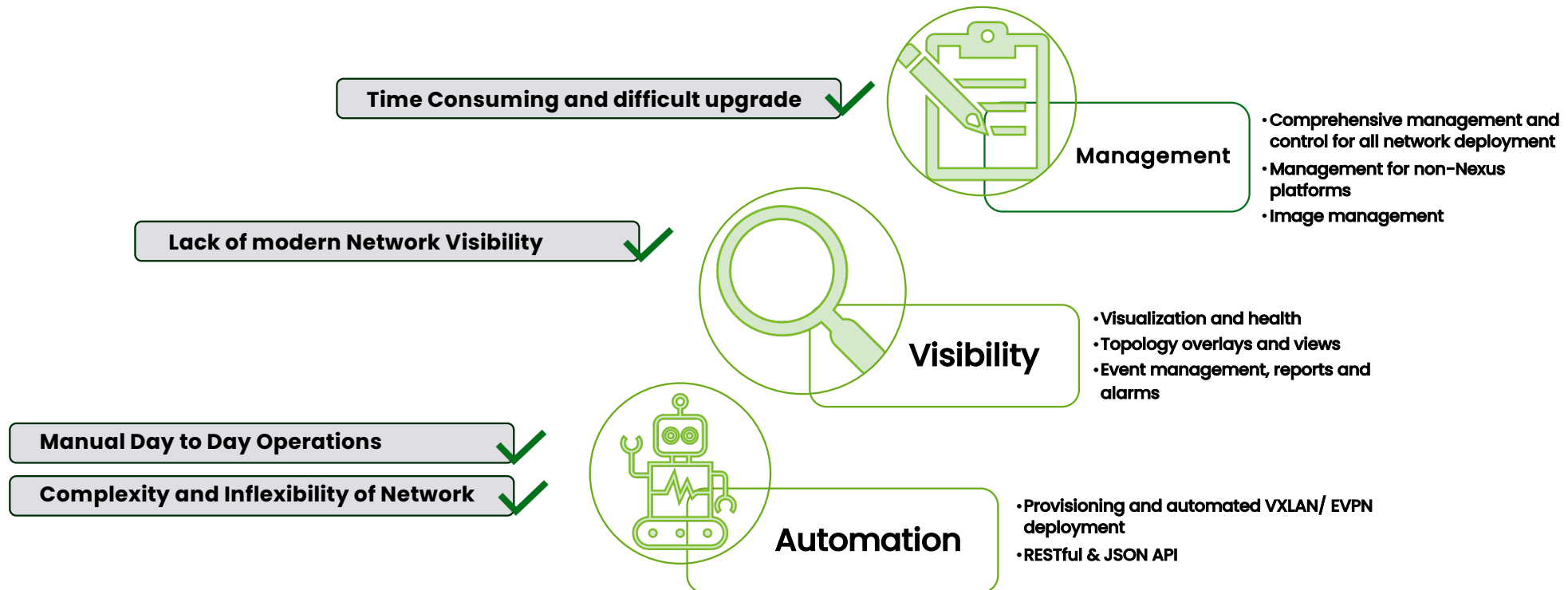


Unifying Network Operations

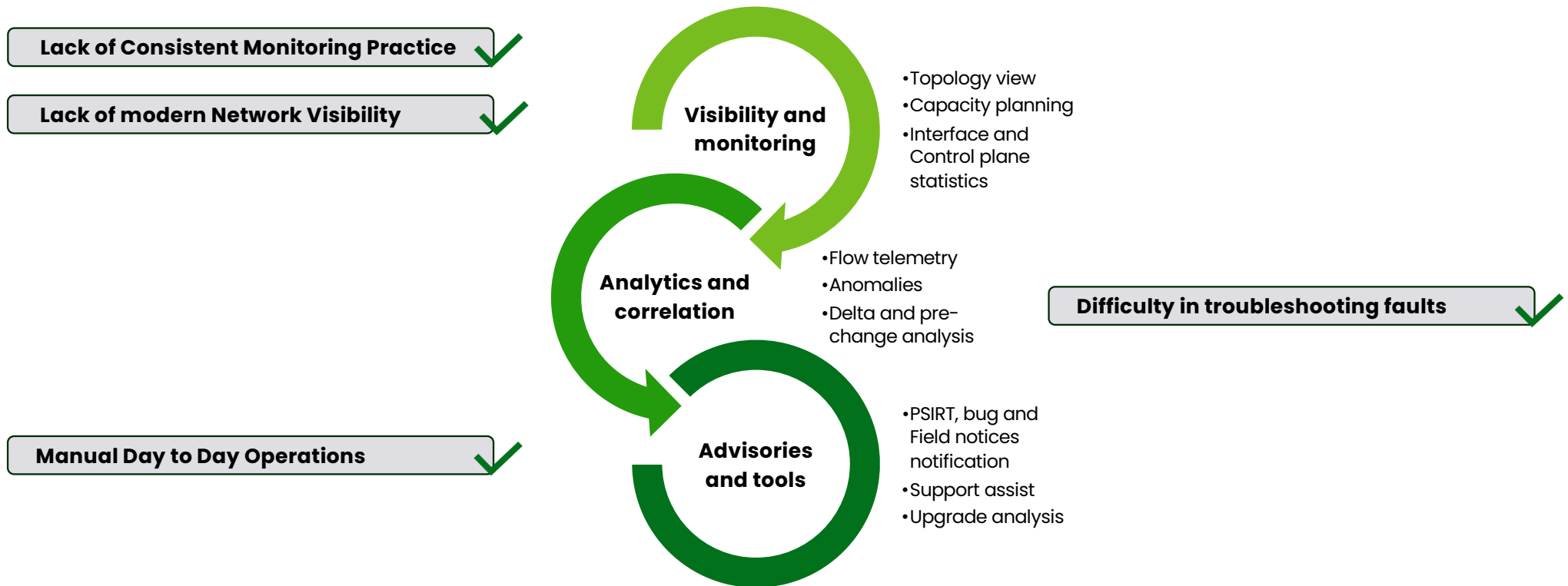




Day 0 & Day 1: Nexus Dashboard Fabric Controller (NDFC)



Day 2: Nexus Dashboard Insight (NDI)



Planning Execution



Greenfield Rollout and Migration Strategy

Desing and Deploy

Desing and deploy new VXLAN BGP EVPN Fabric

- Requirement gathering
 - Scalability, performance, redundancy, and security requirements.
- High level design
 - Physical and logical topology
 - Determine the number of Spines and Leafs, bandwidth and spine & Leaf interconnections, Consider factors like oversubscription ratio
- Detailed design
- NDFC provisioning
- Validation and test
- NDFC goes live

Integration

Connect VXLAN BGP EVPN to current infrastructure

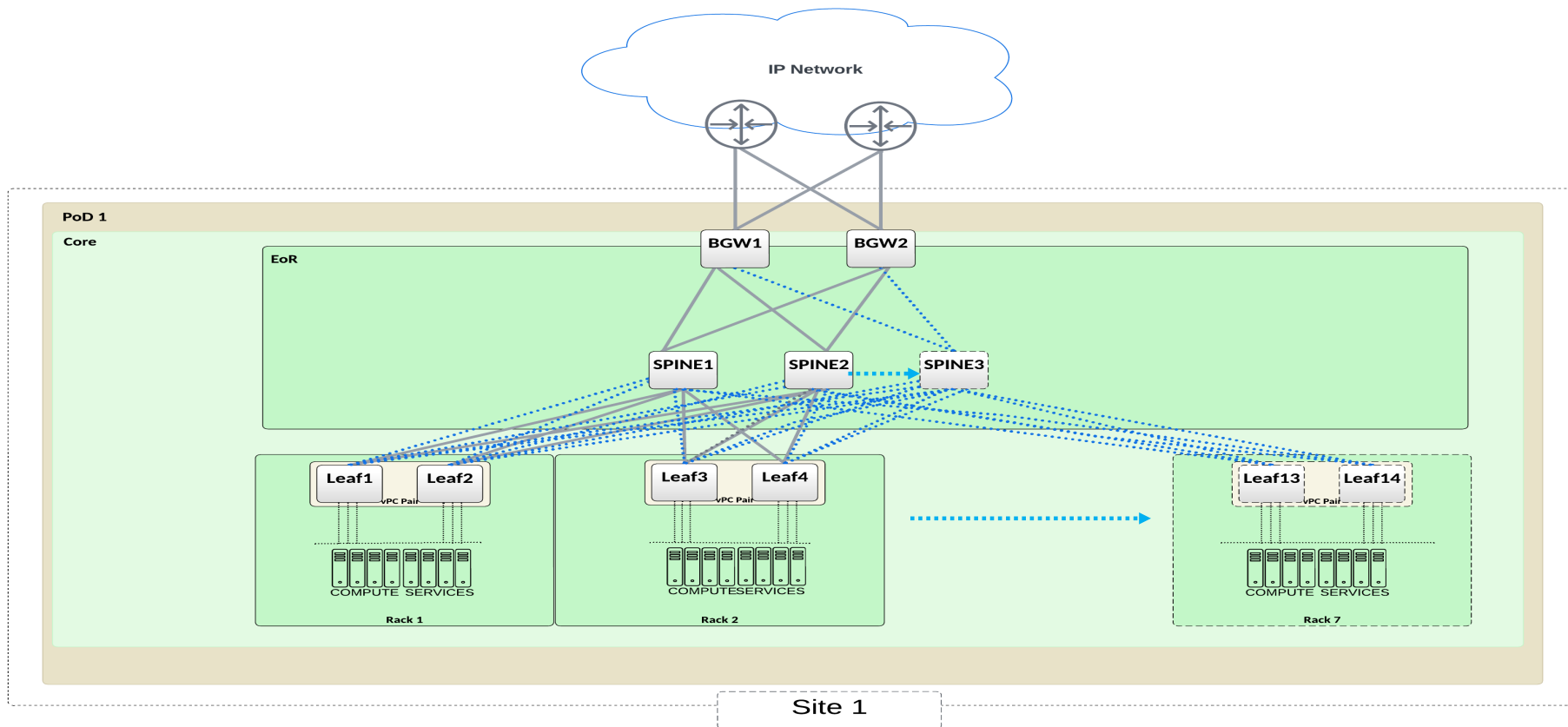
- Layer 2 Interconnection
 - VLAN mapping
- Layer 3 Interconnection
 - Routing Protocol Choice
 - VRF Mapping
- Define First-Hop Gateway
- NDI provisioning

Migration

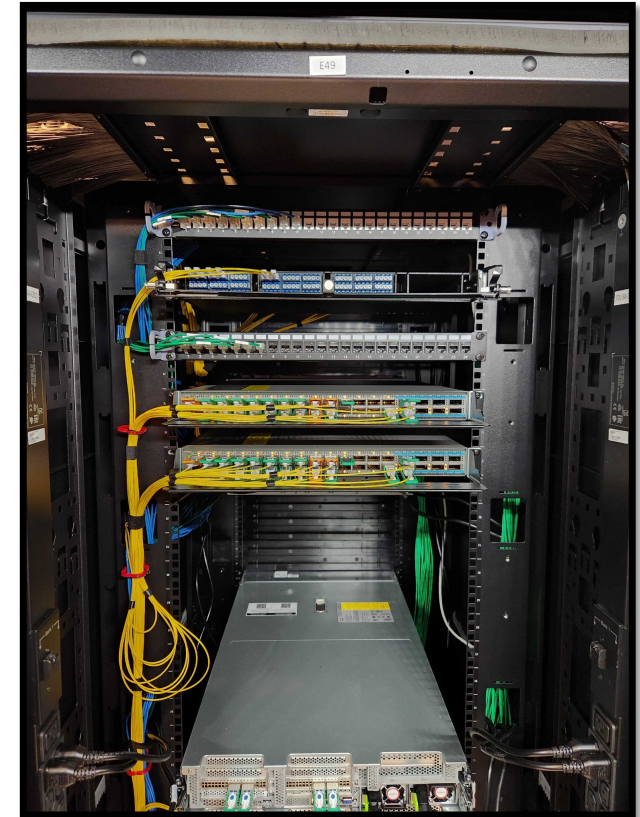
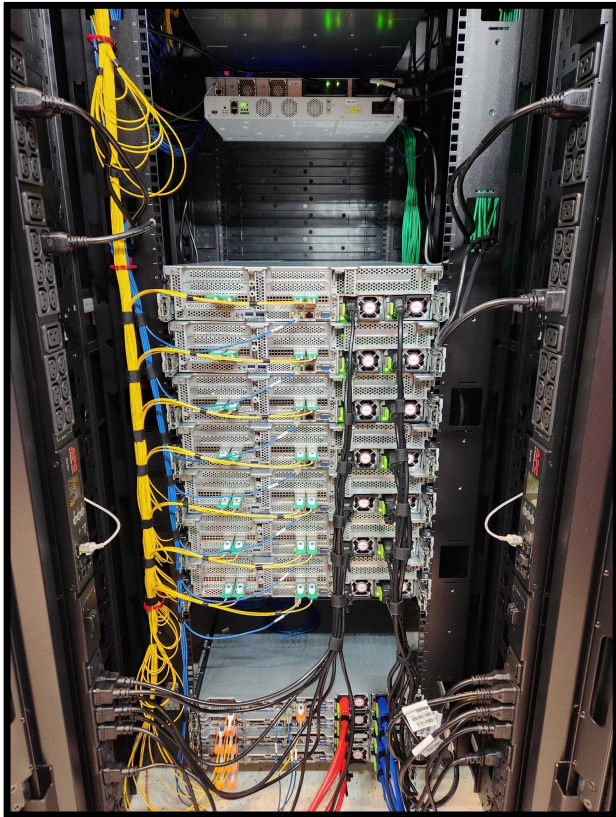
Migrate workloads to use new VXLAN BGP EVPN fabric

- Workload migration
- Migrate First-Hop Gateway
- Decommission Layer 2 Interconnect
- Day 2 operation, NDI goes live

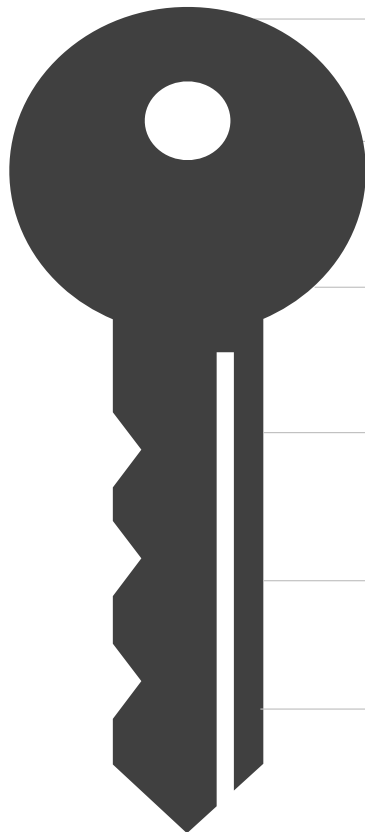
High-Level Design Key Points



How does it look?



Key Takeaways



01

Capture Challenges Effectively

02

Strike a Balance Between Must-Haves and Desirables in Requirements

03

Don't Take Vendors' Word for it – test it

04

Implement Automation from Day 0

05

Set High Standard but Adapt Strategically

06

Foster Vendor Collaboration



THANK YOU



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