

# READY FOR ANY vForum2015

9 December 2015 | Taipei, Taiwan

擴充 SDDC 網路的現代化途徑：利用先進網路架構及 VMware NSX 建構高擴充性的 SDDC 基礎架構

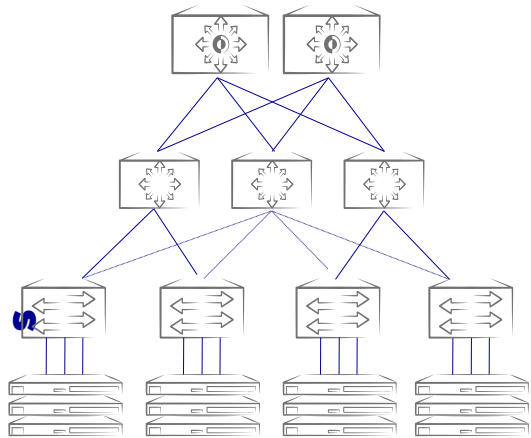
CK LAM

Brocade 亞太資料中心網路與虛擬化總監



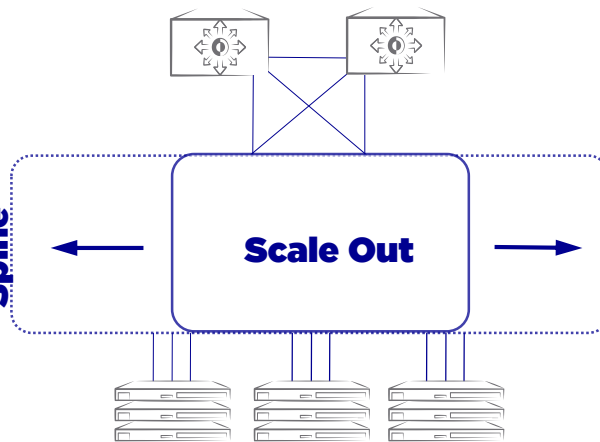
# Evolution of datacenter architectures

Access Agg Core

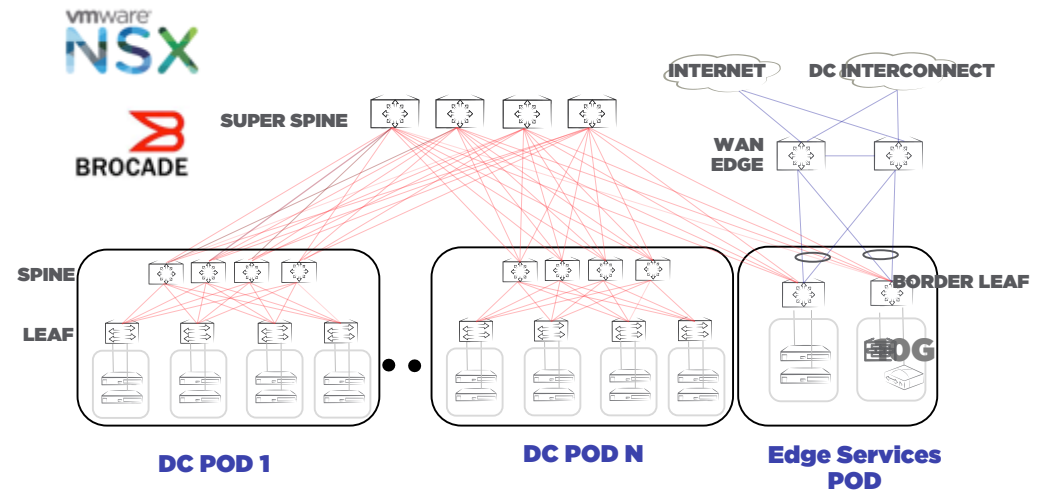


Phase 1:  
3-tier Architectures

Leaf / Spine

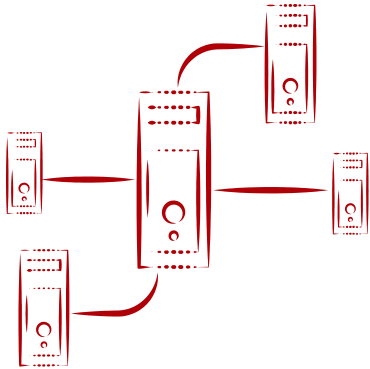


Phase 2:  
Scale-out Architectures



Phase 3:  
Advanced Scale-out Architectures  
+  
Overlay Networking

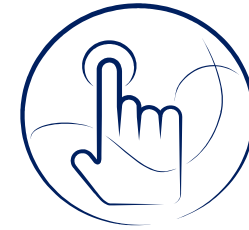
# Agenda



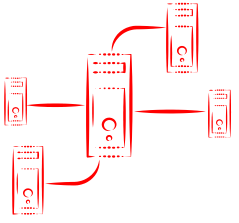
Physical network architectures for the SDDC



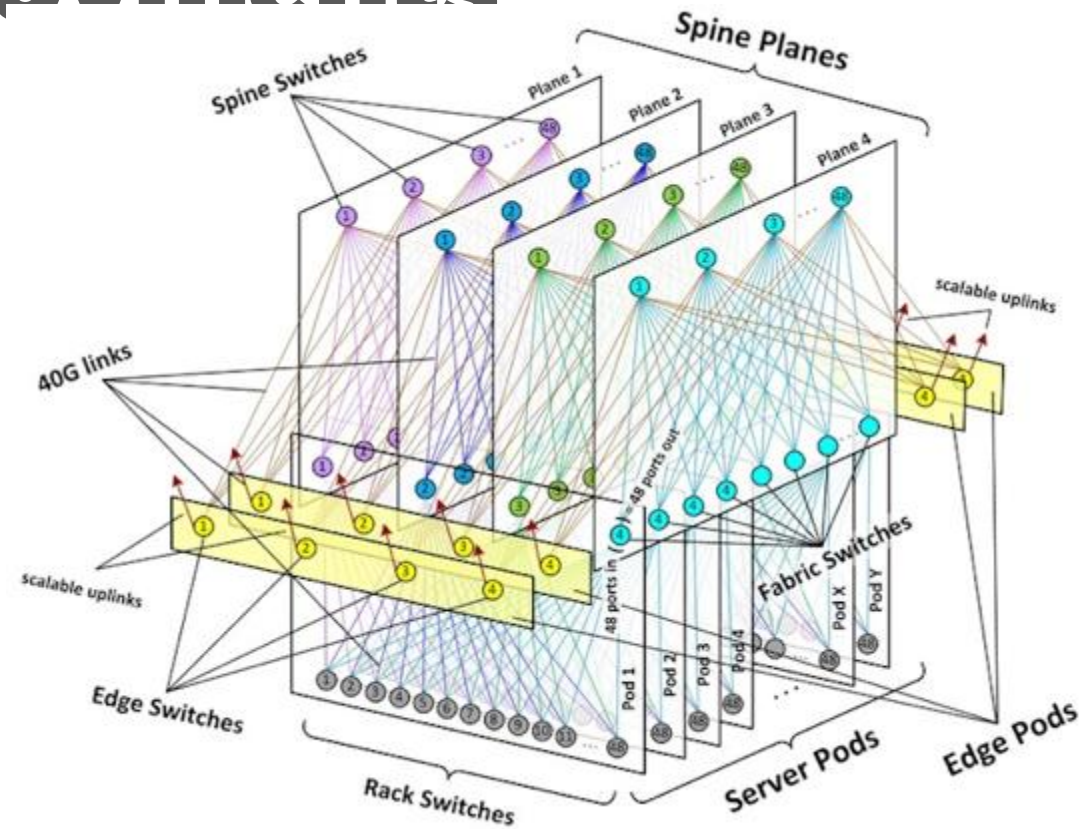
Logical networking with VMware NSX



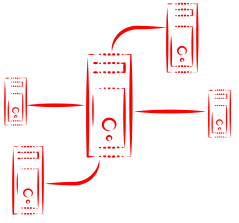
Provisioning, automation and visibility/monitoring



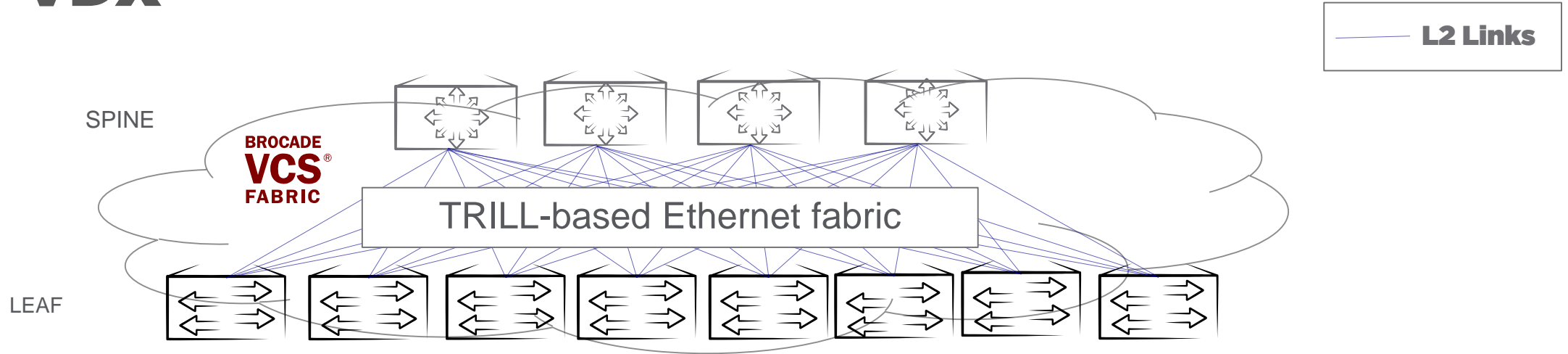
# Learning from massive scale deployments



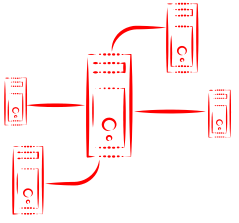
Source: <https://code.facebook.com/posts/360346274145943/introducing-data-center-fabric-the-next-generation-facebook-data-center-network/>



# Clos Concepts: L2 Clos network with Brocade VDX

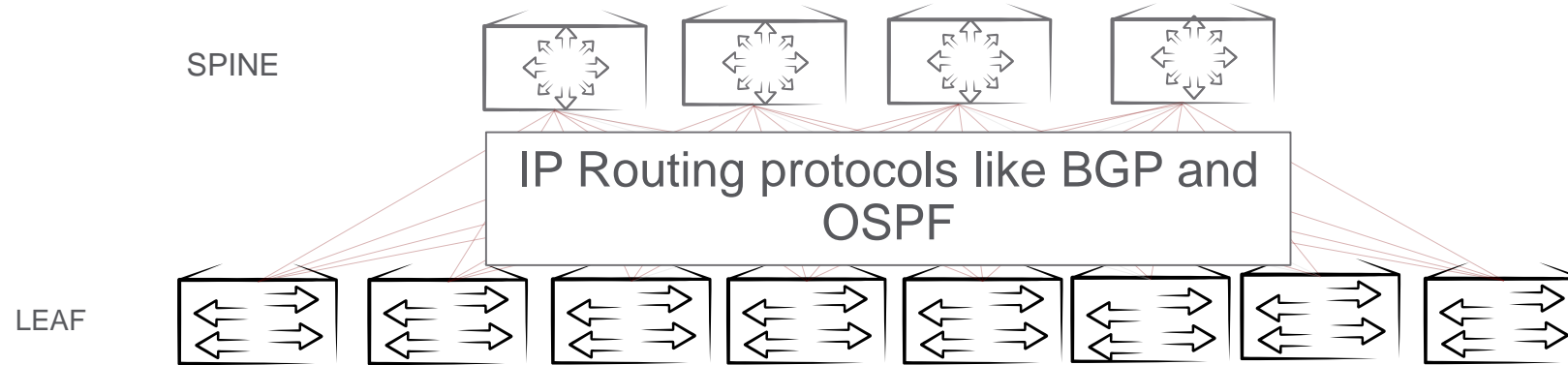


- Manage all fabric switches as a single logical device
- No blocking links and no need for Spanning Tree
- Multipathing at layers 1 to 3
- Zero-touch provisioning & Self-forming trunks

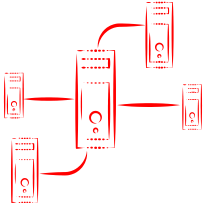


# Clos Concepts: L3 Clos network with Brocade VDX

L3 Links



- Zero-touch provisioning and deployment mechanisms (standards based)
  - DHCP and TFTP
- Management through Netconf/REST and DevOps integration
- Layer 2 Extension mechanisms through native VXLAN support



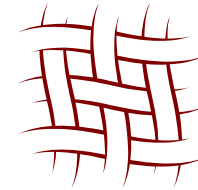
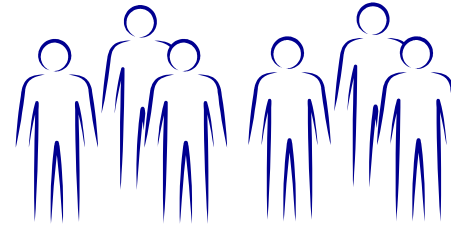
# Choices for datacenter infrastructure

## L2 Clos with Brocade VCS

- Smaller team to manage the infrastructure
- Embedded automation required for OpEx savings



## L3 Clos with Brocade VDX



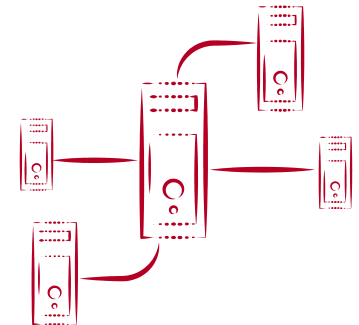
**L3 Clos**

- Larger team to manage the infrastructure
- Tool chains in place for automation and orchestration
- Network infrastructure scalable to very large deployments

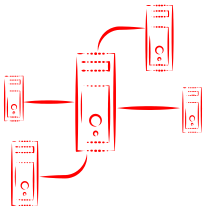
**Both VCS and L3 Clos deployments use the same VDX hardware and Brocade NOS software!**

# Building scalable physical networks

## L2 Clos based architectures

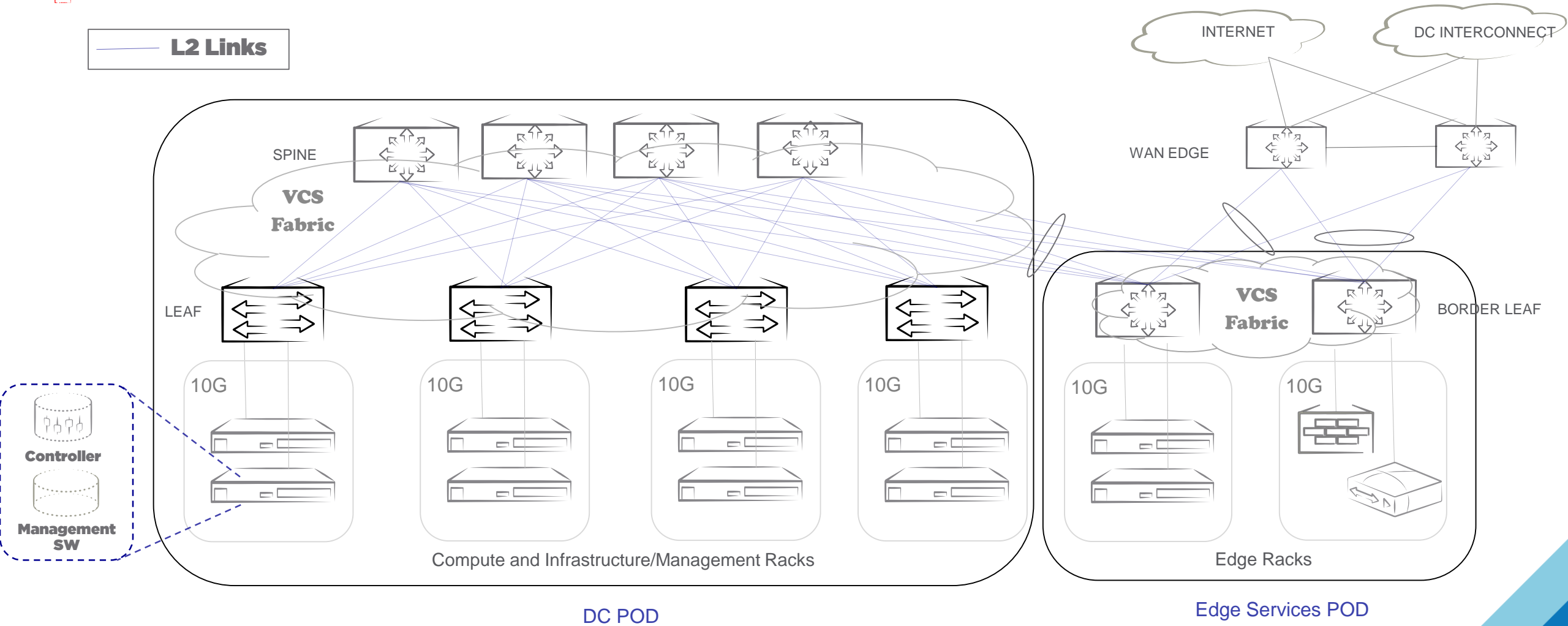


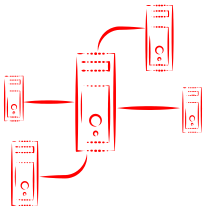




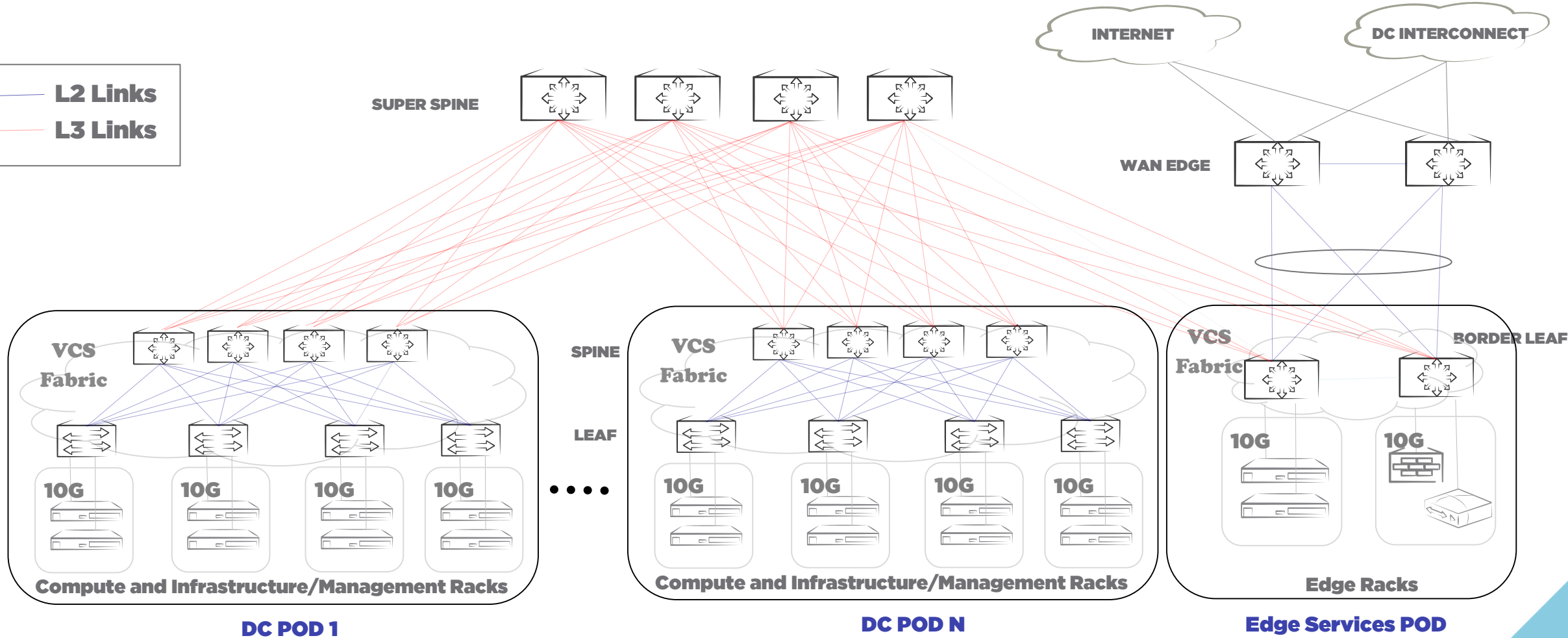
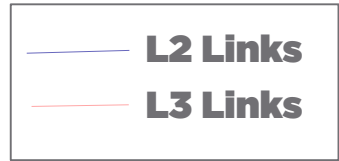
# L2 Clos based Datacenter Site (3-stage folded Clos)

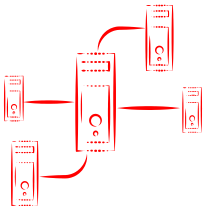
**L2 Links**



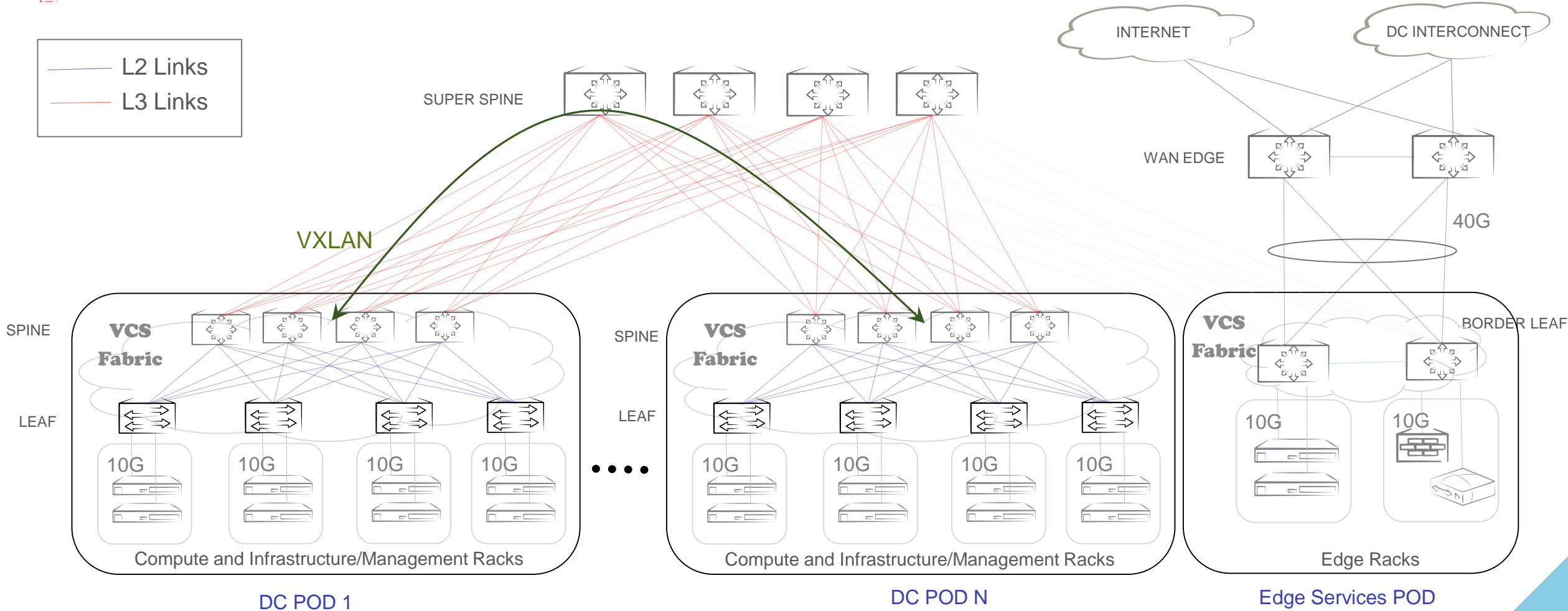
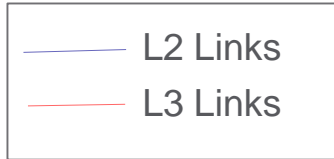


# Multi-fabric VCS physical architecture for DC Site (5-stage folded Clos)



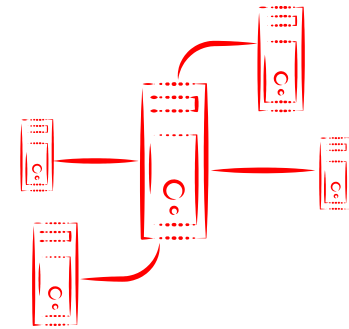


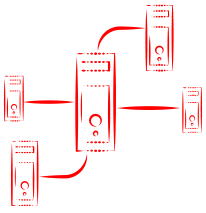
# L2 Extension between DC Pods for vMotion, Virtual SAN, Fault Tolerance



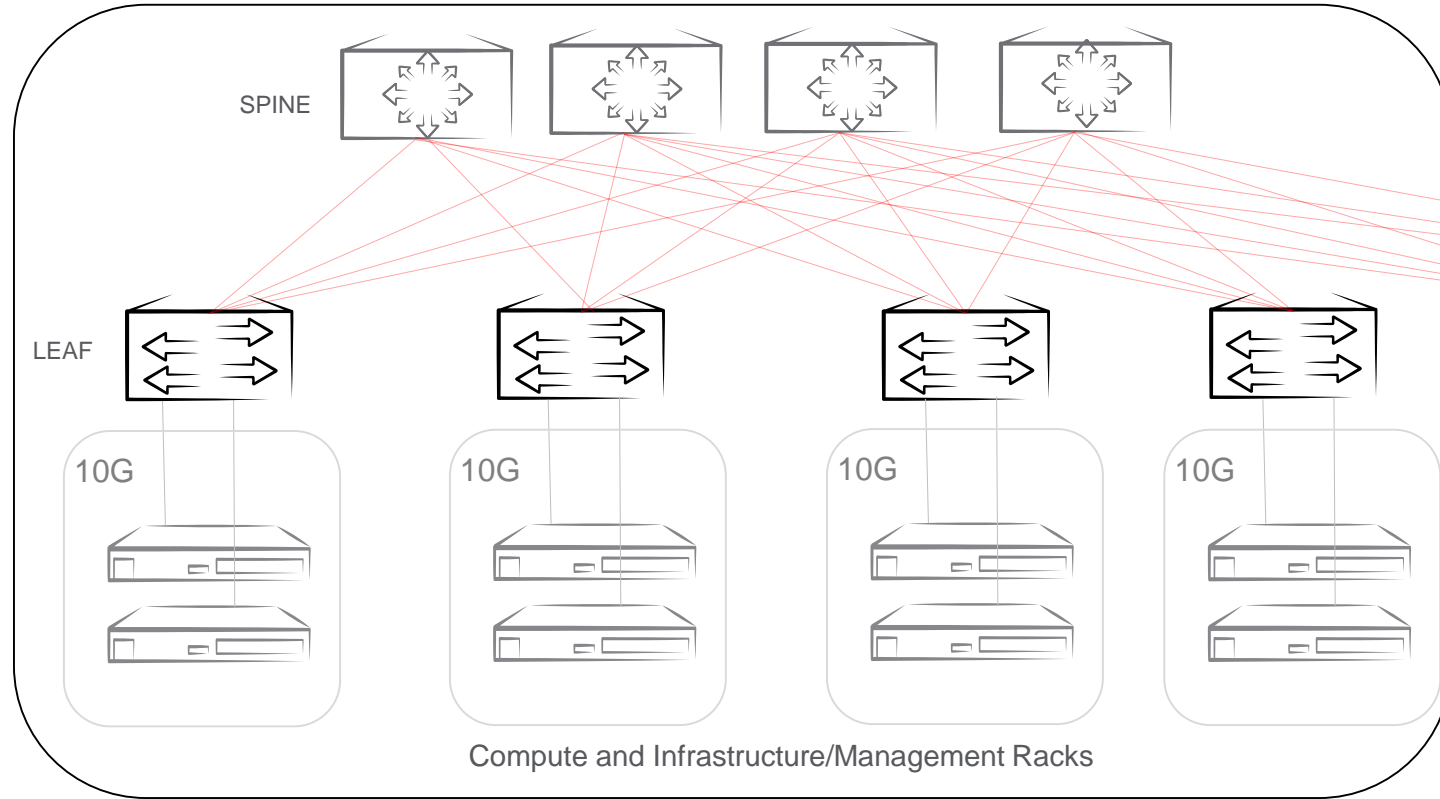
# Building scalable physical networks

## L3 Clos architectures

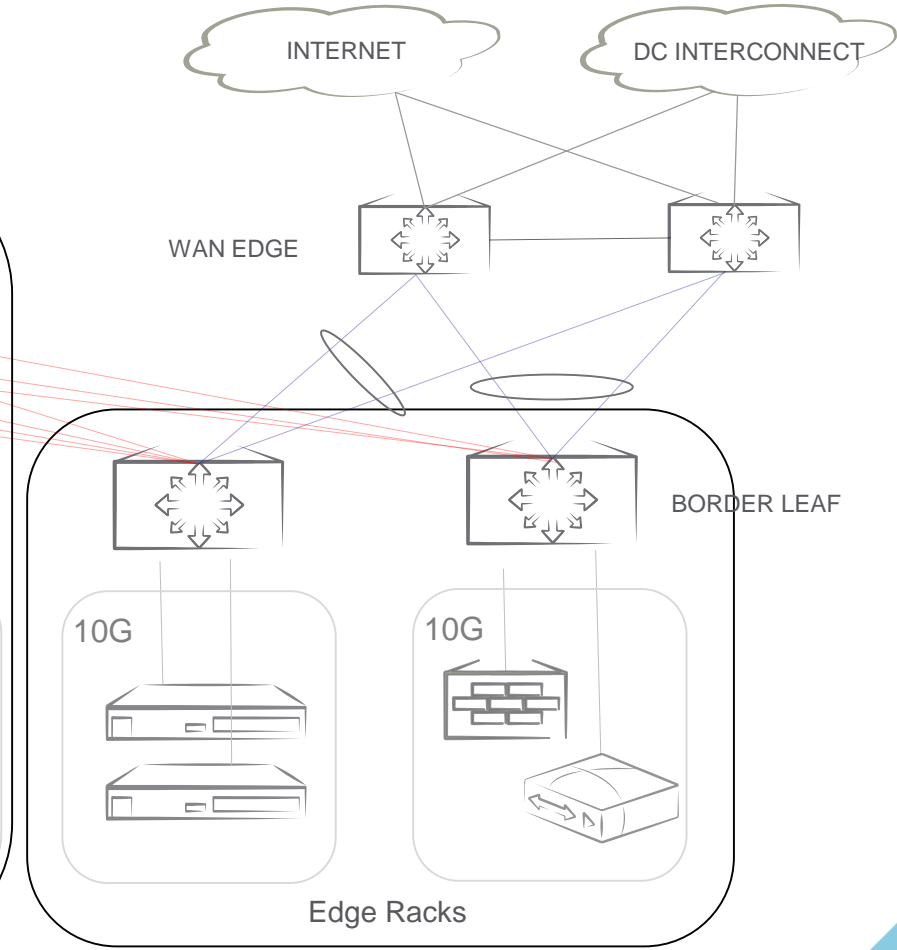




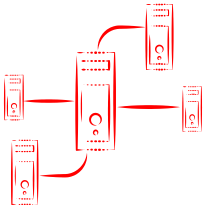
# L3 Clos based Datacenter Site (3-stage folded Clos)



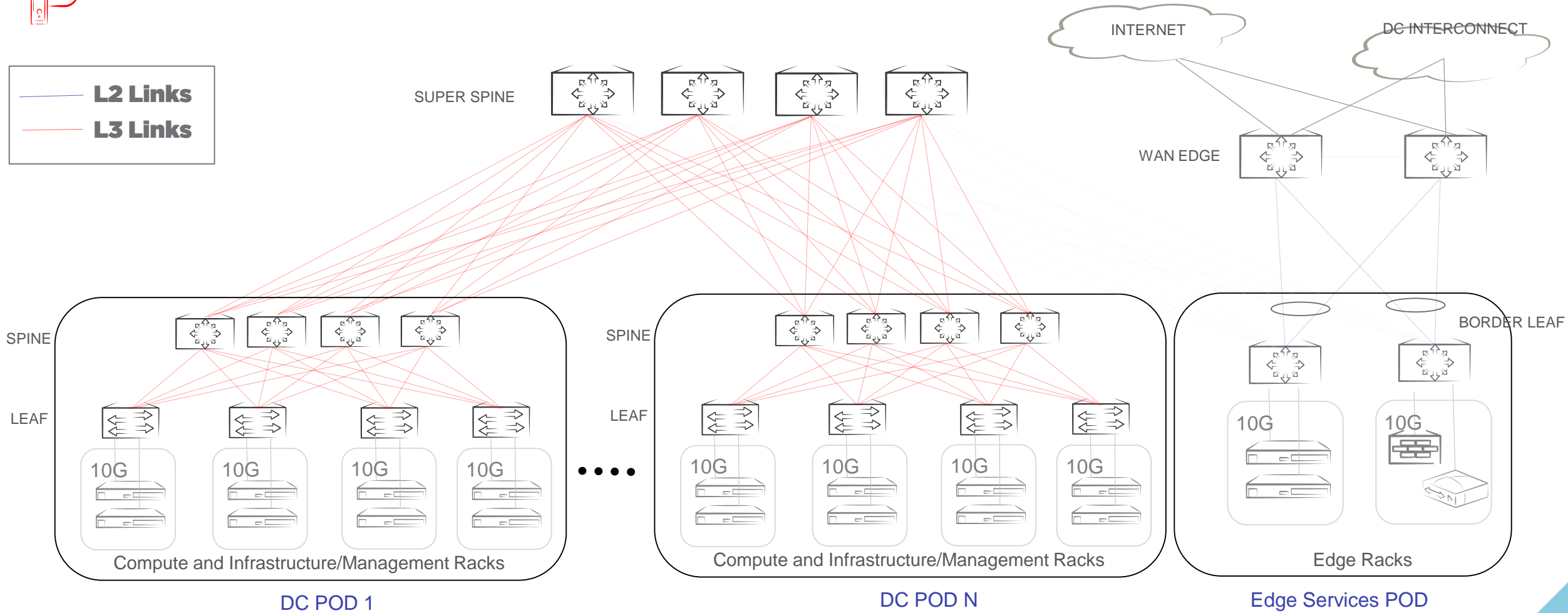
DC POD

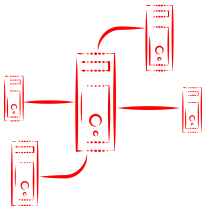


Edge Services POD

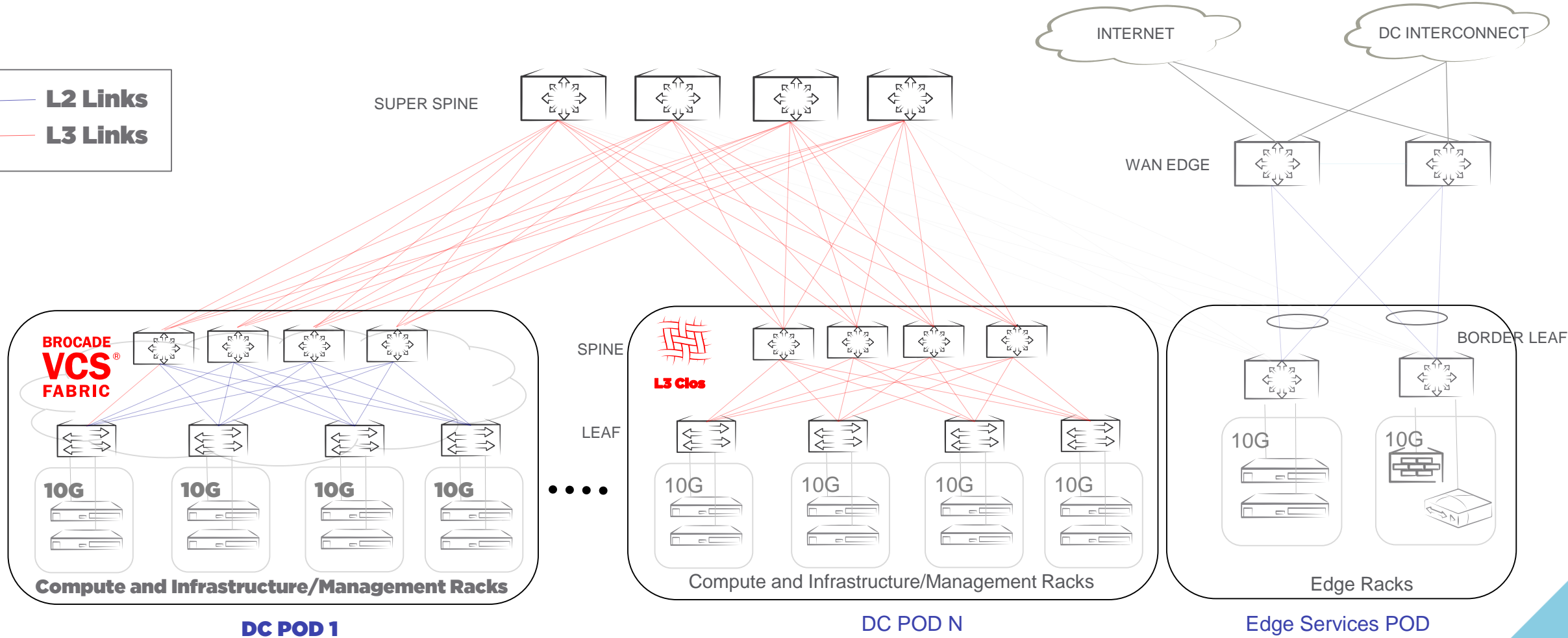
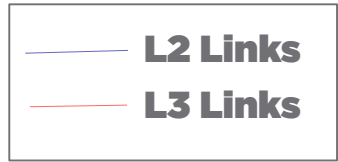


# L3 Clos based Datacenter Site (5-stage folded Clos)

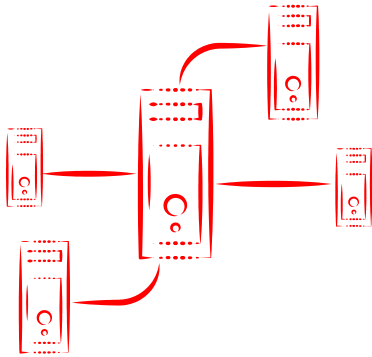




# Multi-fabric VCS and L3 Clos hybrid architecture (5-stage folded Clos)



# Agenda



Physical network architectures for the SDDC



Logical networking with VMware NSX

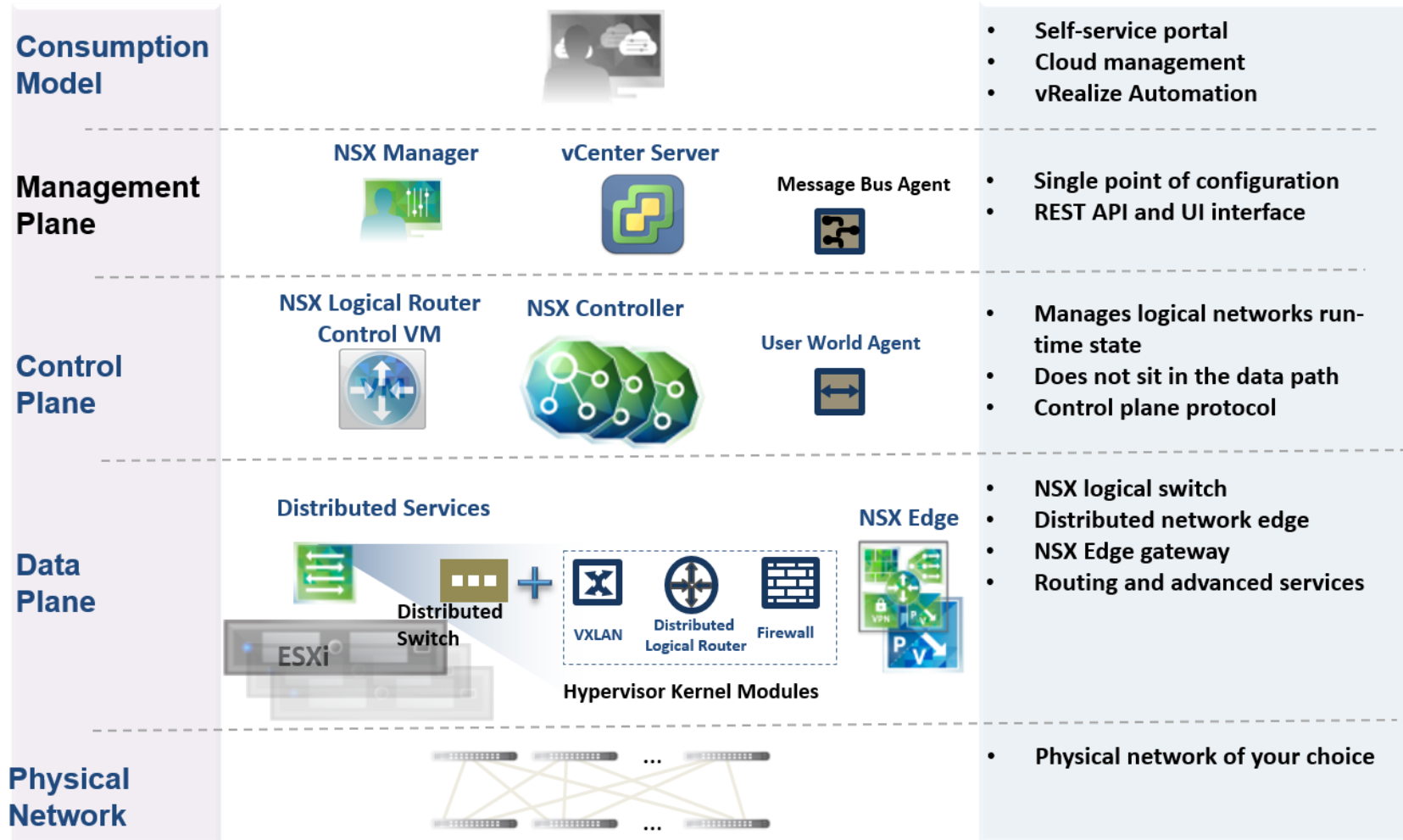


Provisioning, automation and visibility/monitoring





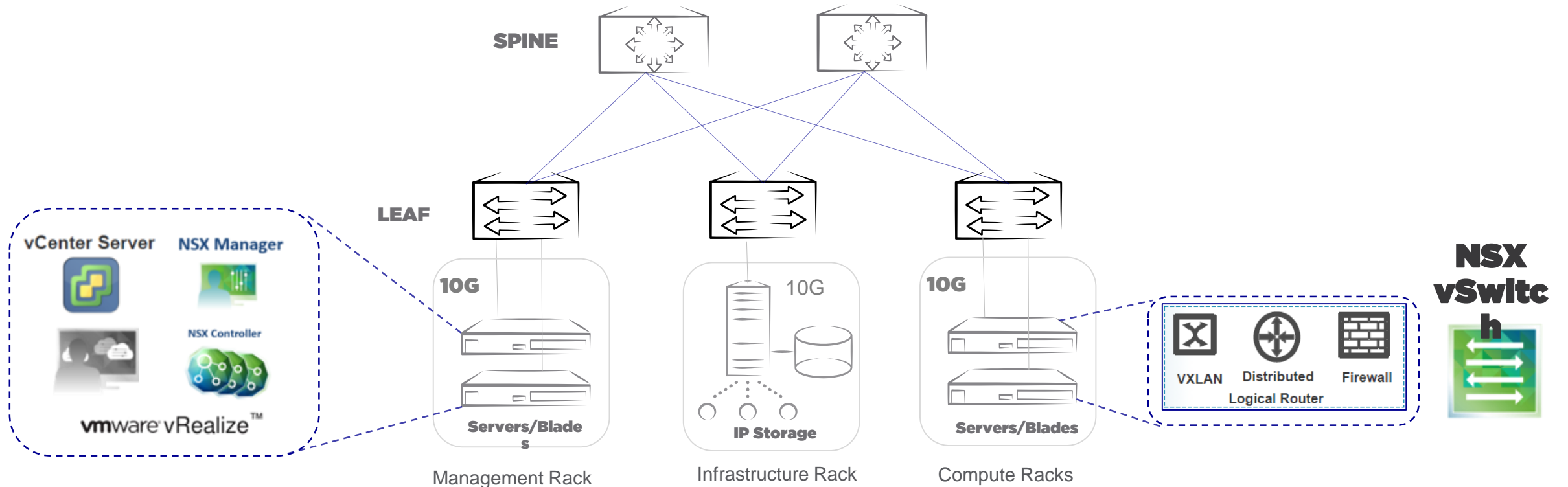
# NSX Components Overview





# NSX Components in the physical network

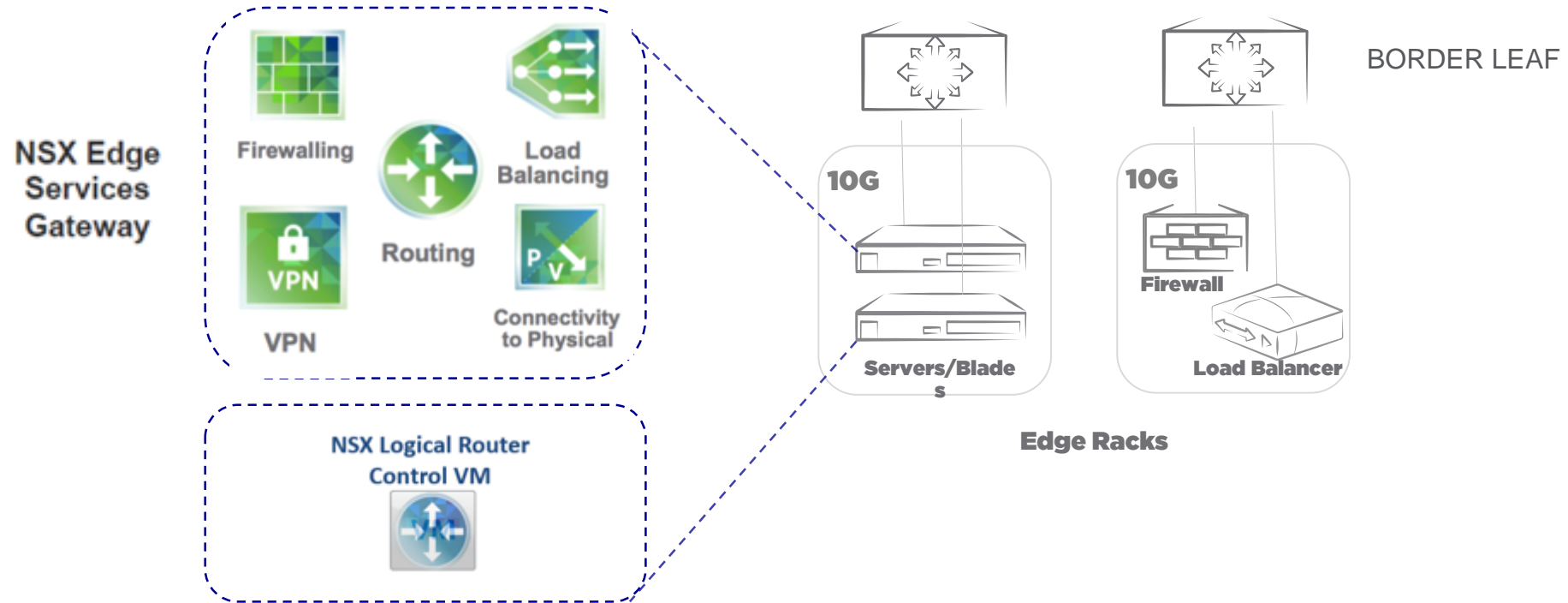
## Data Center Pod





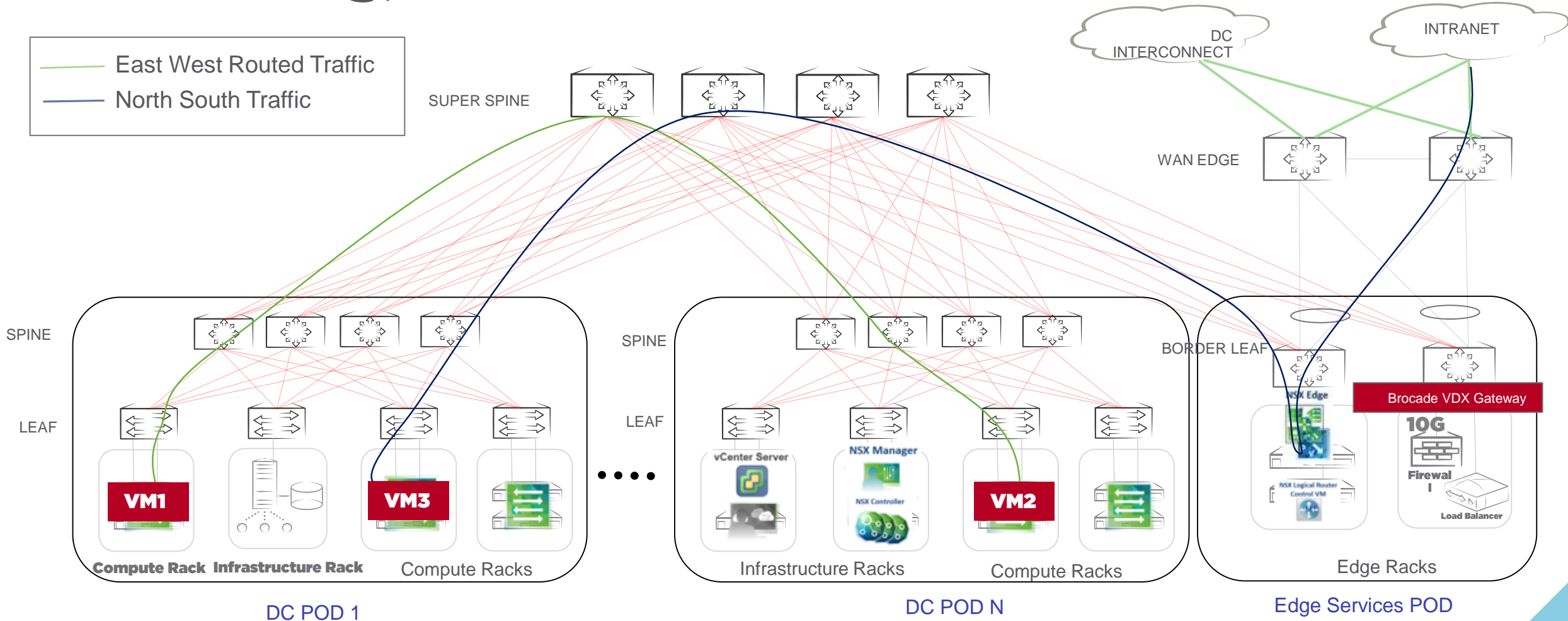
# NSX Components in the physical network

## Edge Services Pod



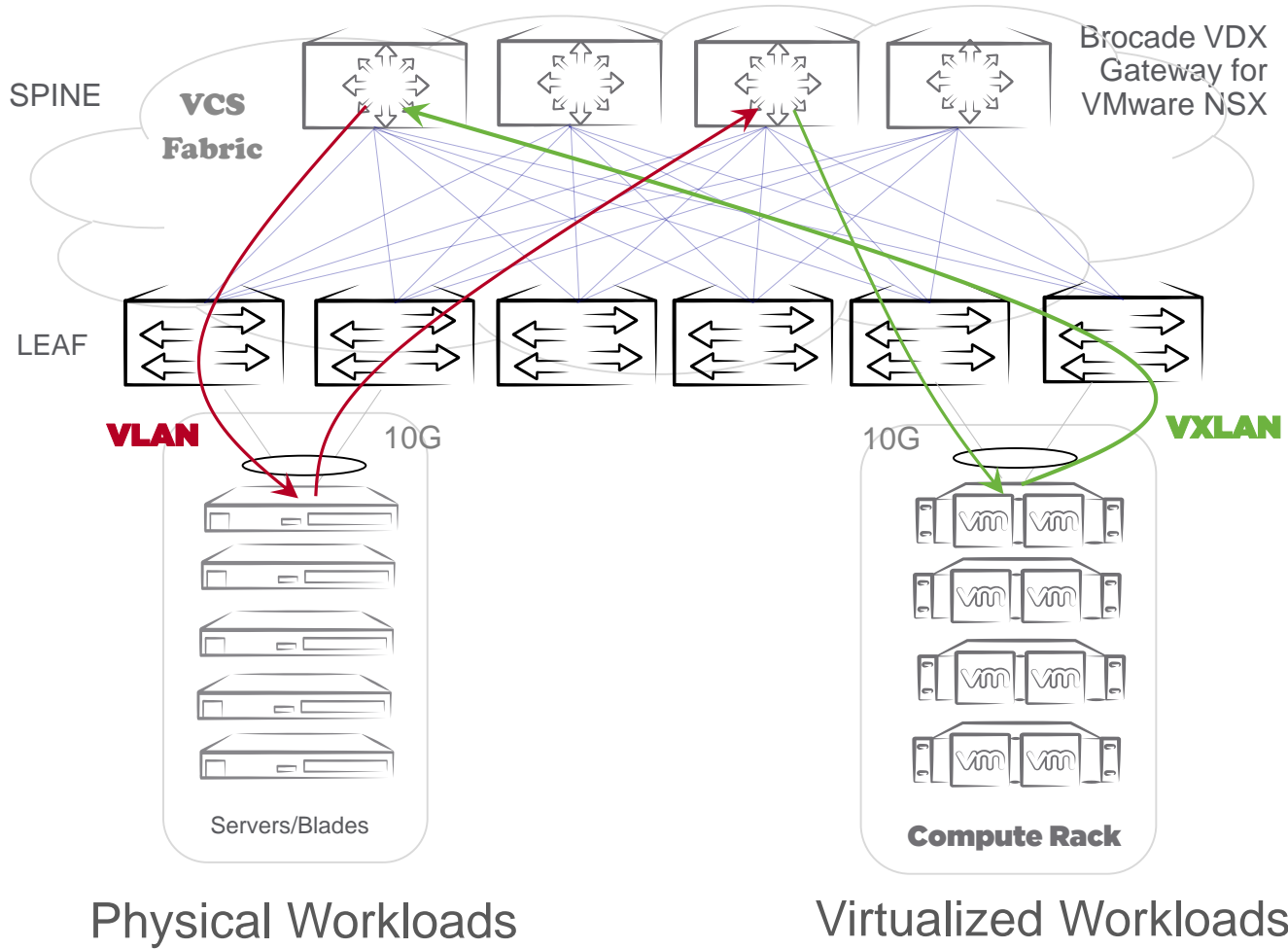


# Routed Traffic flows in the network (Distributed Routing)





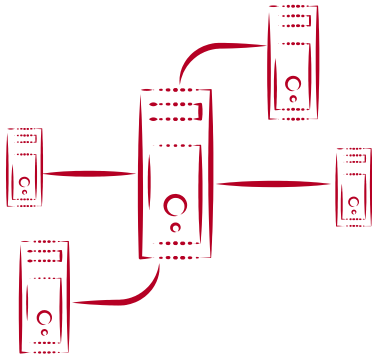
# NSX Hardware VTEP integration



## Brocade VDX Gateway

- High-performance VXLAN gateway (line-rate bridging)
- Full integration with VMware NSX
- Logical chassis: Single entity of management through NSX
- Resilient logical gateway: VTEP resides on all the switches

# Agenda



Physical network architectures for the SDDC



Logical networking with VMware NSX



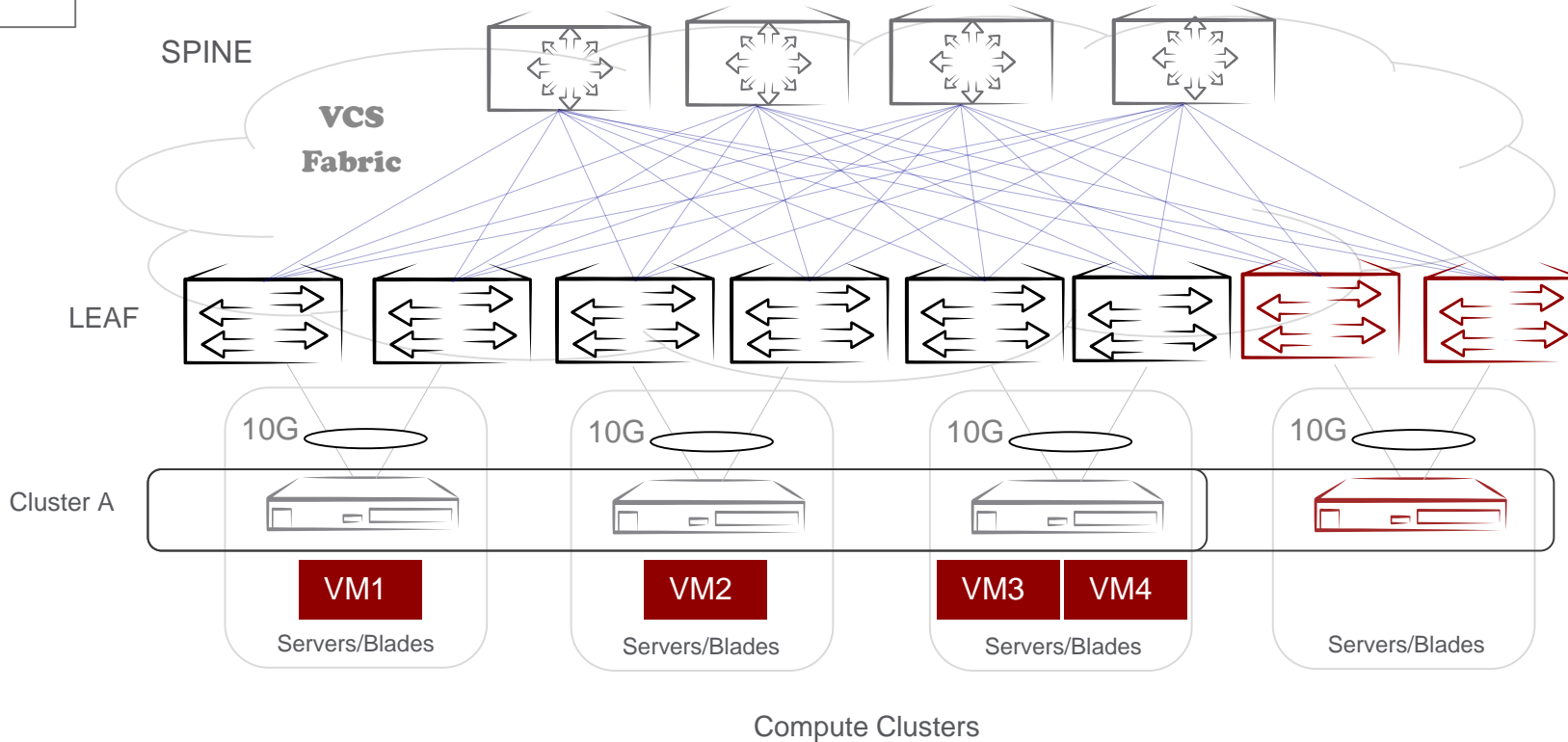
Provisioning, automation and visibility/monitoring



# Auto Provisioning

## Increasing cluster capacity in L2 Clos Topology

— L2 Links

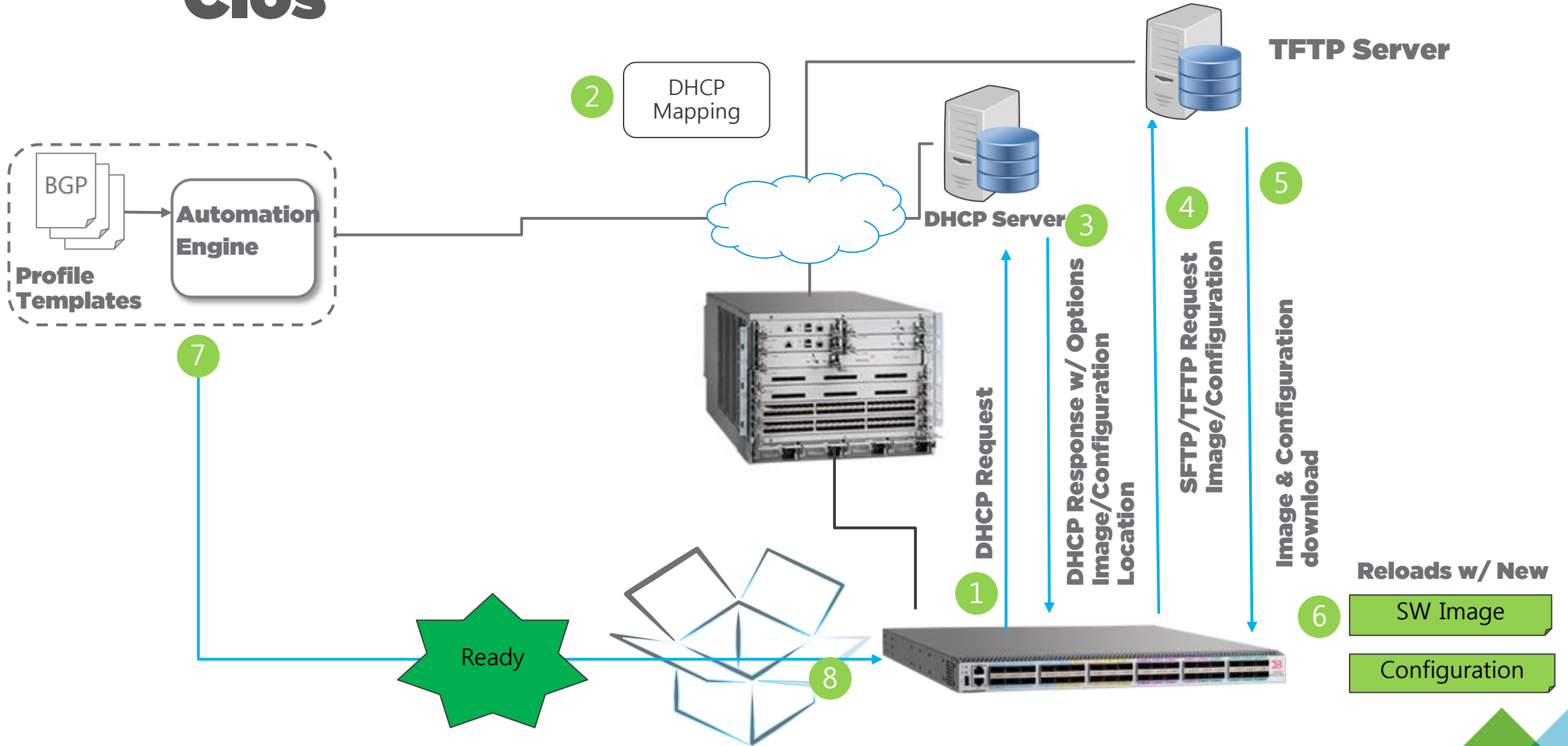


1. Auto-Fabric Deployment
2. ESXi host auto deployment and configuration\*
3. Automatic cluster inclusion and NSX Host Preparation
4. DRS balances the cluster

\*LACP Configuration may be pushed after new switches are part of VCS Fabric



# Auto Provisioning for VDX in L3 Clos



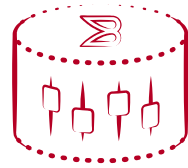




# Datacenter automation tools



Neutron ML2 PlugIn



Brocade Vyatta  
Controller (ODL  
based controller)



REST API

REST API/  
NETCONF/  
YANG Model



Puppet integration

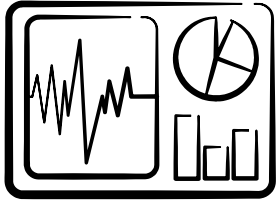


Python

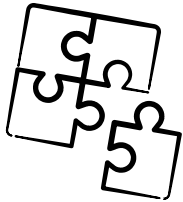


# Analytics Packs for vRealize Operations

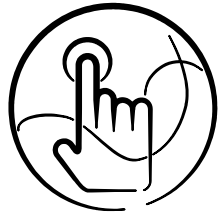
Greater visibility and actionable analytics



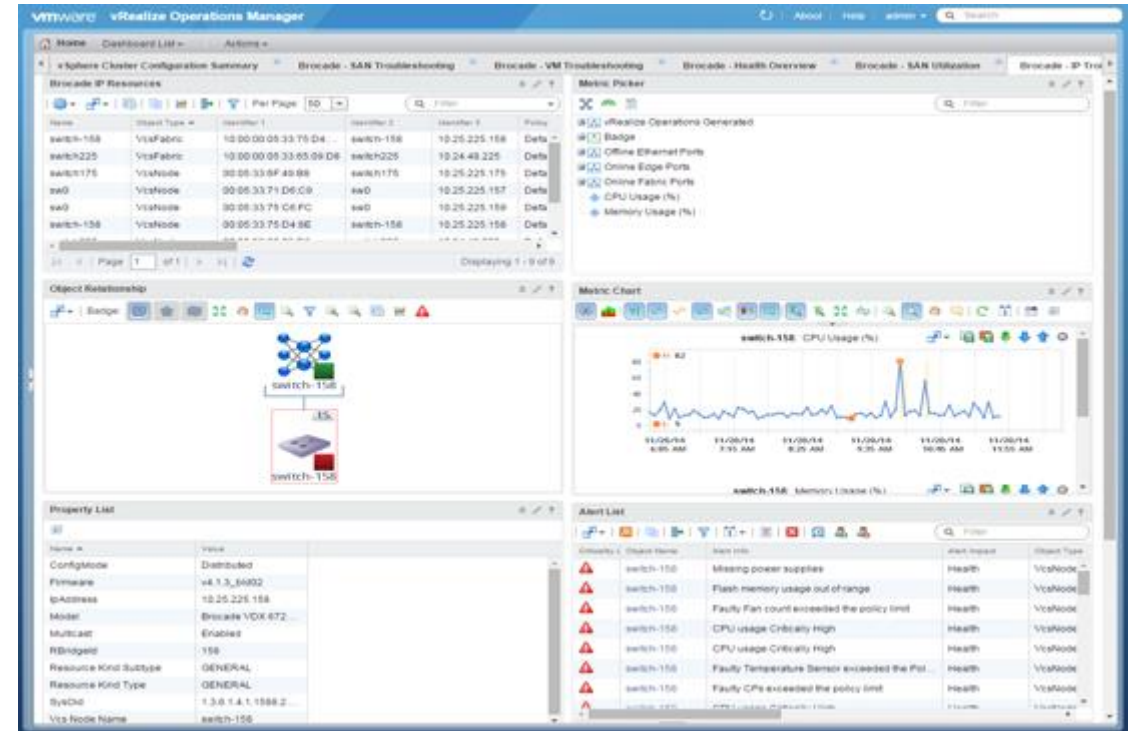
Intelligent Network Operations



Unified Virtual & Physical Networking



Simplified Policy Automation

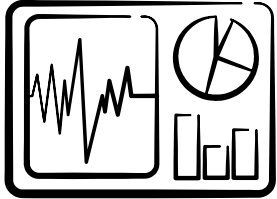


Go to Brocade Booth to see vRealize Operations presentation

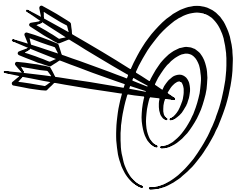


# Content Pack for vRealize Log Insight

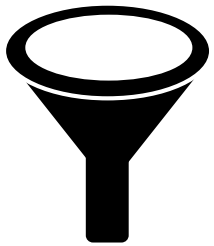
troubleshooting with actionable analytics



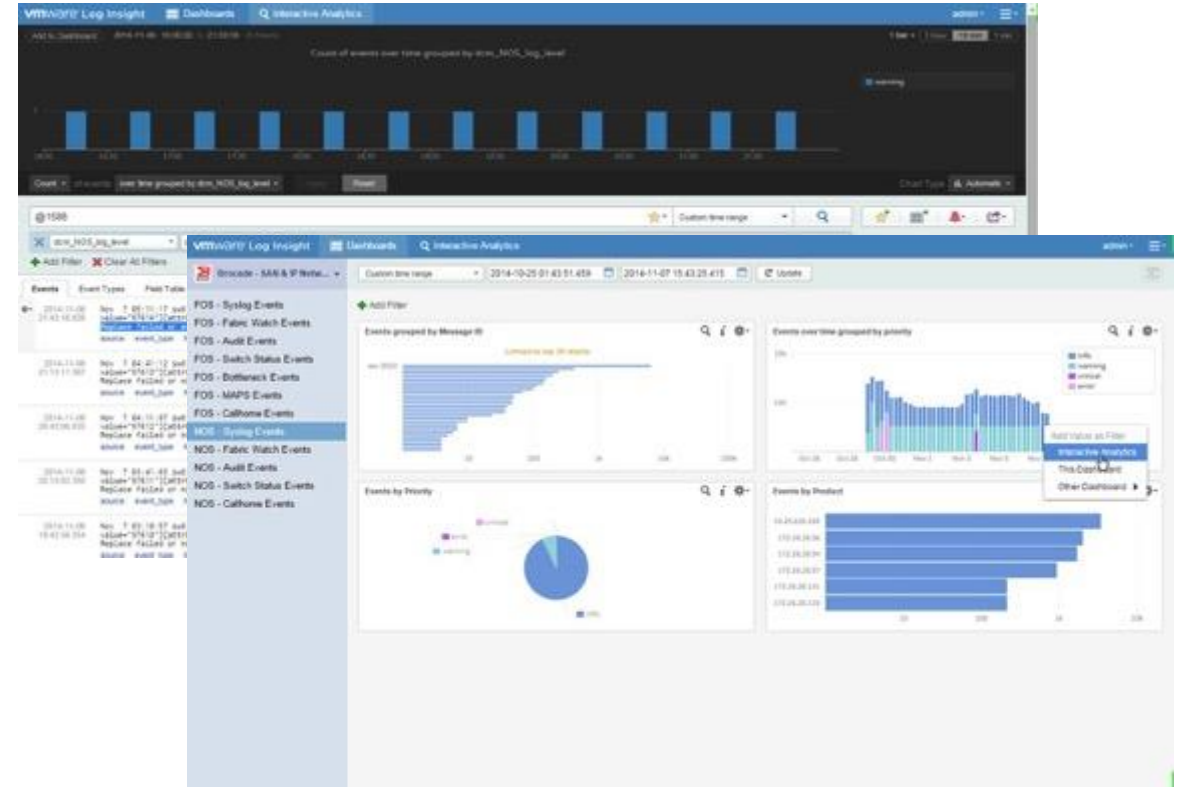
Unified Management



Simplifies Root-Cause Analysis



Powerful Filtering Capabilities





# VMware and Brocade – “Better Together”

- Brocade provides choices for building reliable and scalable underlay networks for the VMware SDDC
- Brocade VDX switches are easy to deploy and manage
- Brocade VDX gateway provides a highly resilient and easy to manage Hardware VTEP gateway for VMware NSX
- Integration with VMware vRealize in Brocade VDX switches provides visibility and monitoring for the network



# More information

- Brocade and VMware alliance page:



<http://www.brocade.com/en/partners/alliances/vmware.html>

- Configuration guide for Brocade Hardware VTEP:



<http://www.brocade.com/content/html/en/configuration-guide/nos-601-l2guide/GUID-773FF857-F62D-4A4A-89AA-B2301BF3ED8E.html>

- Deployment guide for NSX with Brocade VCS:



[http://www.brocade.com/downloads/documents/html\\_product\\_manuals/brocade-vcs-gateway-vmware-dp/index.html](http://www.brocade.com/downloads/documents/html_product_manuals/brocade-vcs-gateway-vmware-dp/index.html)

- Brocade VCS Gateway and VMware NSX Video on Demand (VoD):



<https://www.youtube.com/watch?v=khjBszMoM9s>

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