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How to setup an ACI fabric from scratch

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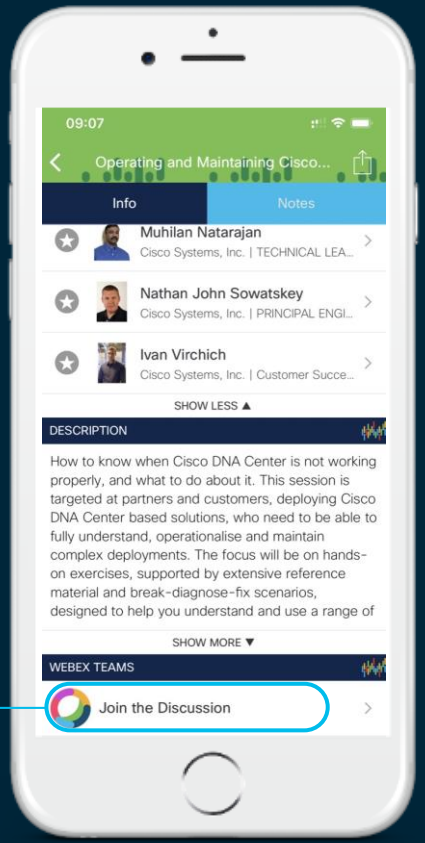


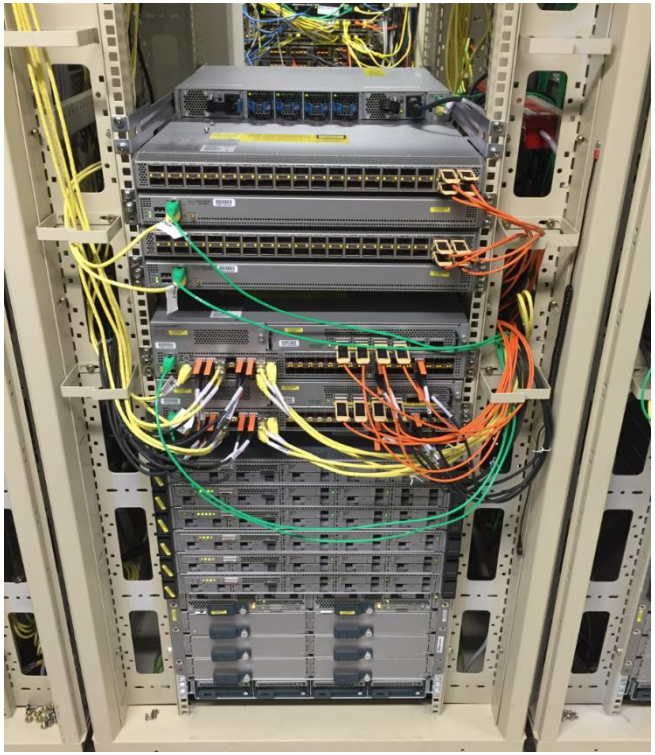
Agenda

- Prerequisites
- Hardware inspection
- Hardware installation
- Build fabric topology
- Configure the fabric
- Upgrade the fabric

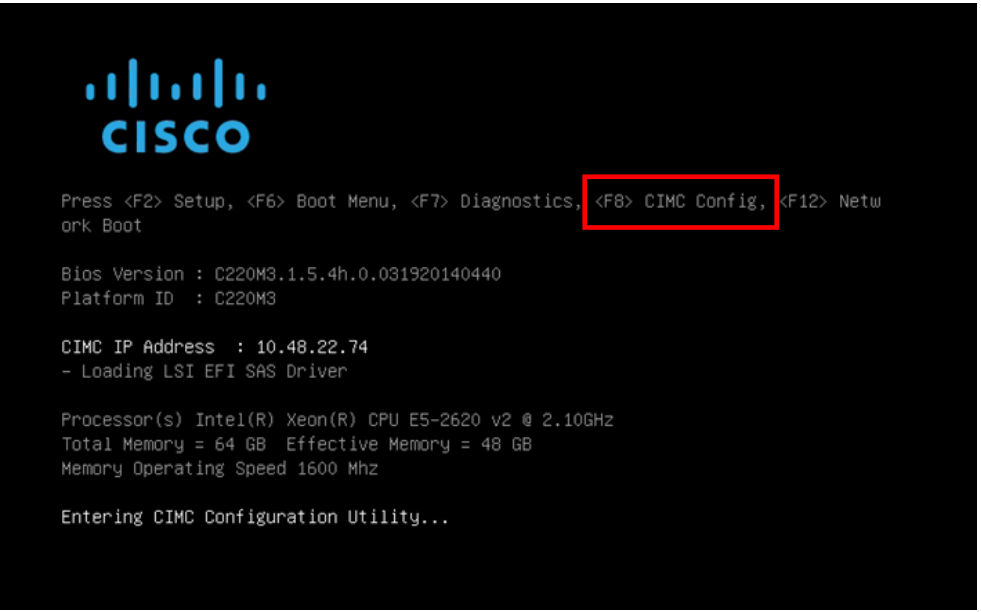
Prerequisites

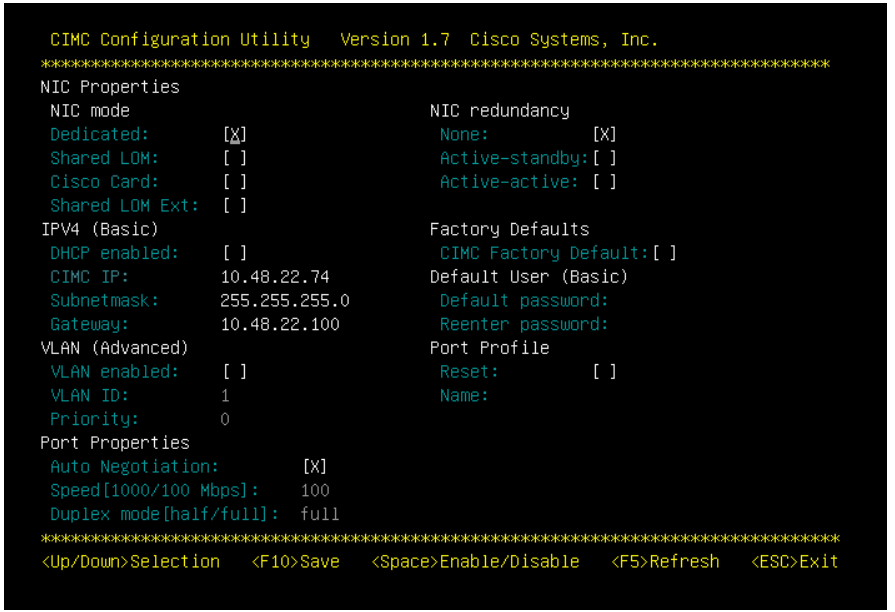
- Before starting, you should have:
  - At least 6 routable IP addresses for APIC OOB mgmt and APIC CIMC
  - Functional NTP server
  - Serial number of all leafs and spines
  - Optionally but recommended:
    - 1 IP per leaf and spine for OOB
    - SCP / FTP / HTTP server
    - Console / serial server
  - Infrastructure VLAN / VTEP pool
  - vCenter IP address and credentials

Hardware inspection / installation

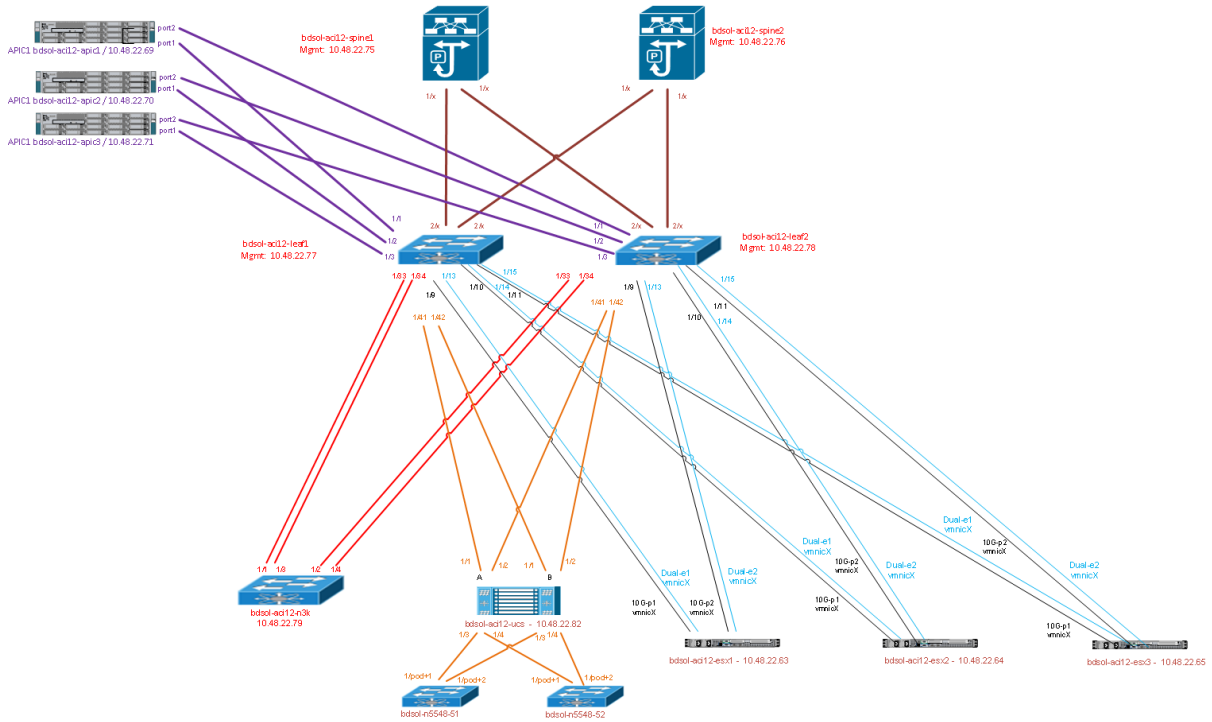


Configure APIC CIMC

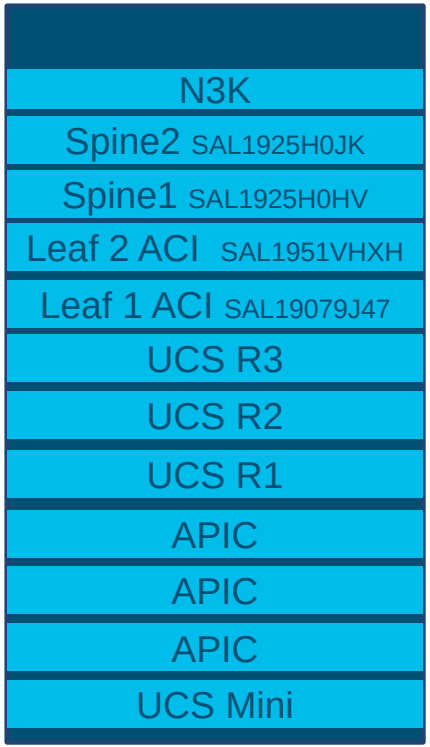




Our setup for the day



Physical Layout



Consoles

Device	bdsol-2901-51	Device	bdsol-2901-51
bdsol-aci12-ucs-A	2011	bdsol-aci12-spine1	2015
bdsol-aci12-ucs-B	2012	bdsol-aci12-spine2	2016
bdsol-aci12-leaf1	2013	bdsol-aci12-n3k	2017
bdsol-aci12-leaf12	2014		

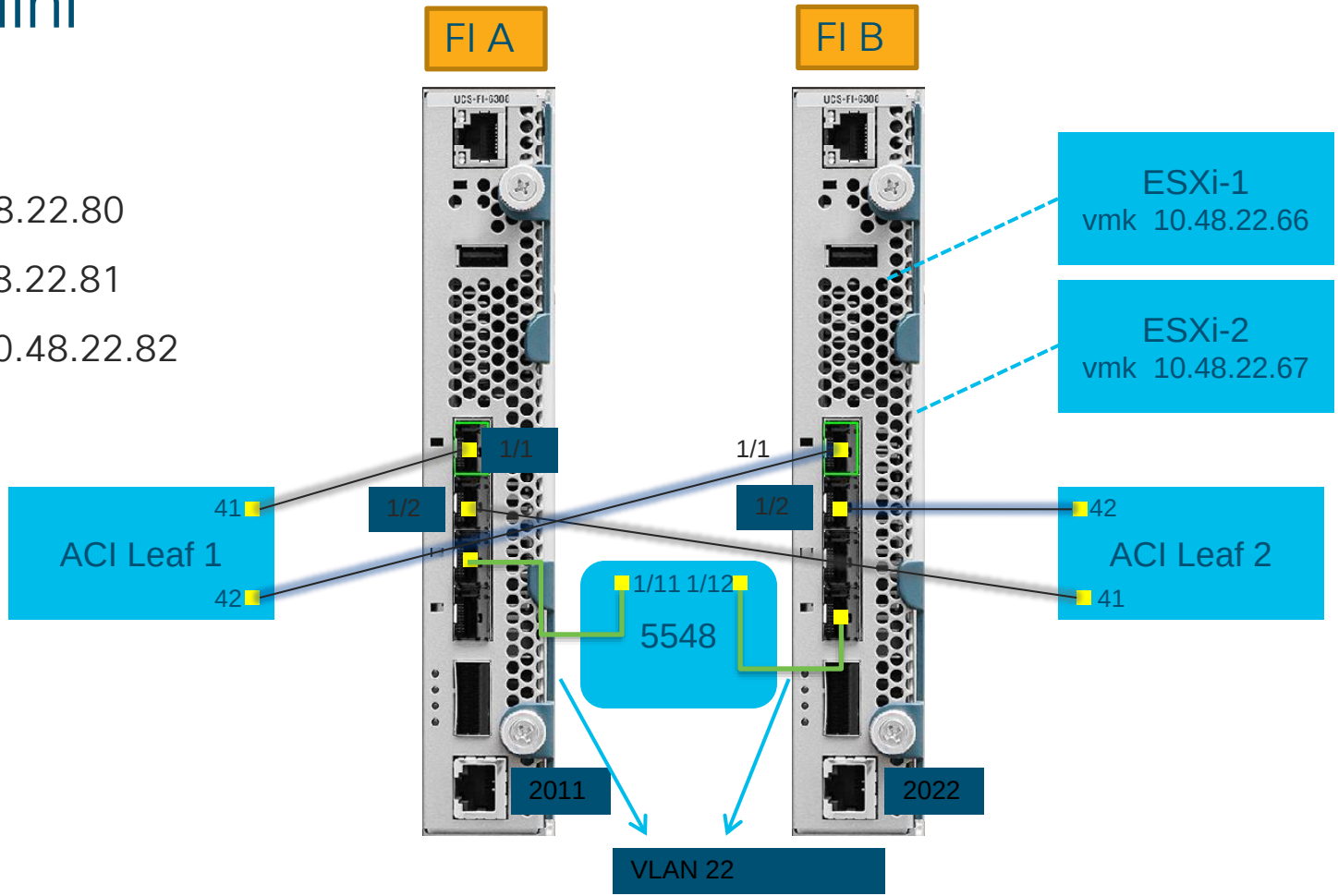
IPs

Device	IP
bdsol-aci12-apic1	10.48.22.69
bdsol-aci12-apic2	10.48.22.70
bdsol-aci12-apic3	10.48.22.71
leaf1	10.48.22.77
leaf2	10.48.22.78
spine1	10.48.22.75
spine2	10.48.22.76

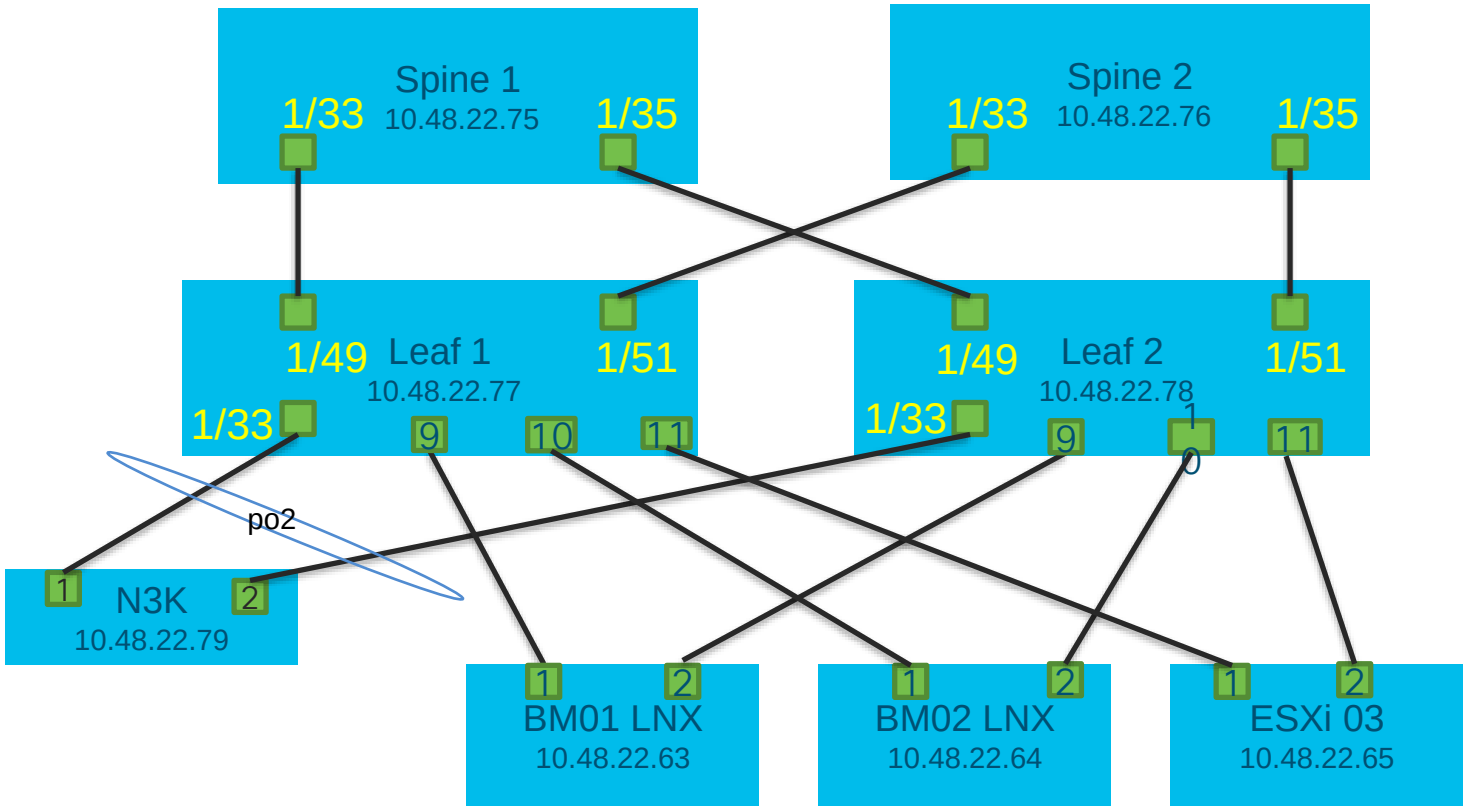
UCS Mini

Details

- FI A: 10.48.22.80
- FI B: 10.48.22.81
- Cluster: 10.48.22.82



ACI – topology



Build fabric topology

- APIC initial configuration (APIC #1) [only the 1st one for now]
- 1st leaf discovery
- spine discovery
- leaf discovery
- Remaining APIC 2 and 3 configuration
- Verification
- OOB mgmt. IP’s for leafs and spines
- NTP configuration
- Route reflector

Live demo #1

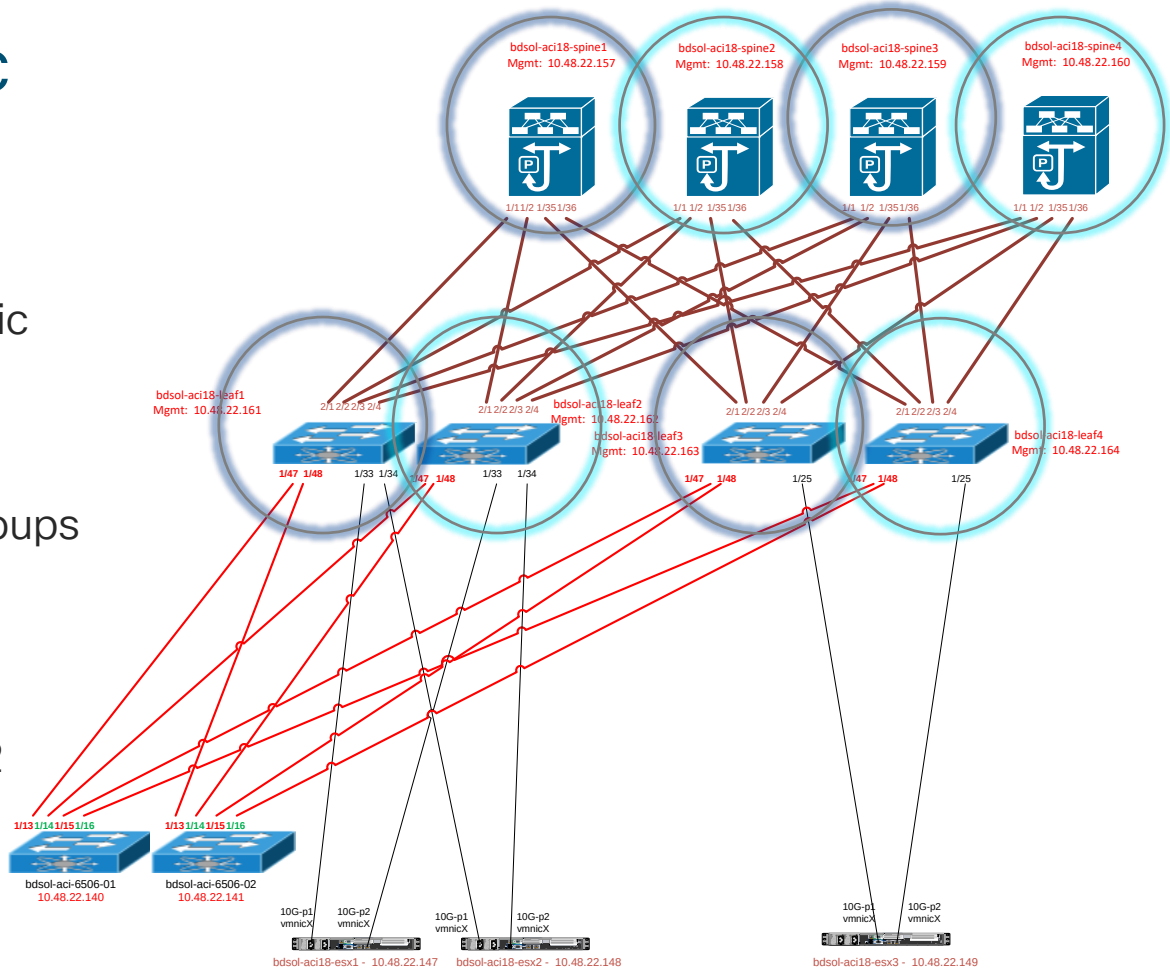
Configure the fabric

- Bringing workloads into the fabric
  - VMware vCenter integration with UCS-B / UCS-C / vPC
  - Bare metal integration
- Tenant / EPG's
- External connectivity through OSPF

Live demo #2

Upgrade the fabric

- Download APIC software and leaf/spine software to the fabric
- Verify critical hosts are dual connected
- Separate in 2 maintenance groups
- Upgrade APIC's
- Upgrade maintenance group 1
- Upgrade maintenance group 2



Live demo #3

Special considerations

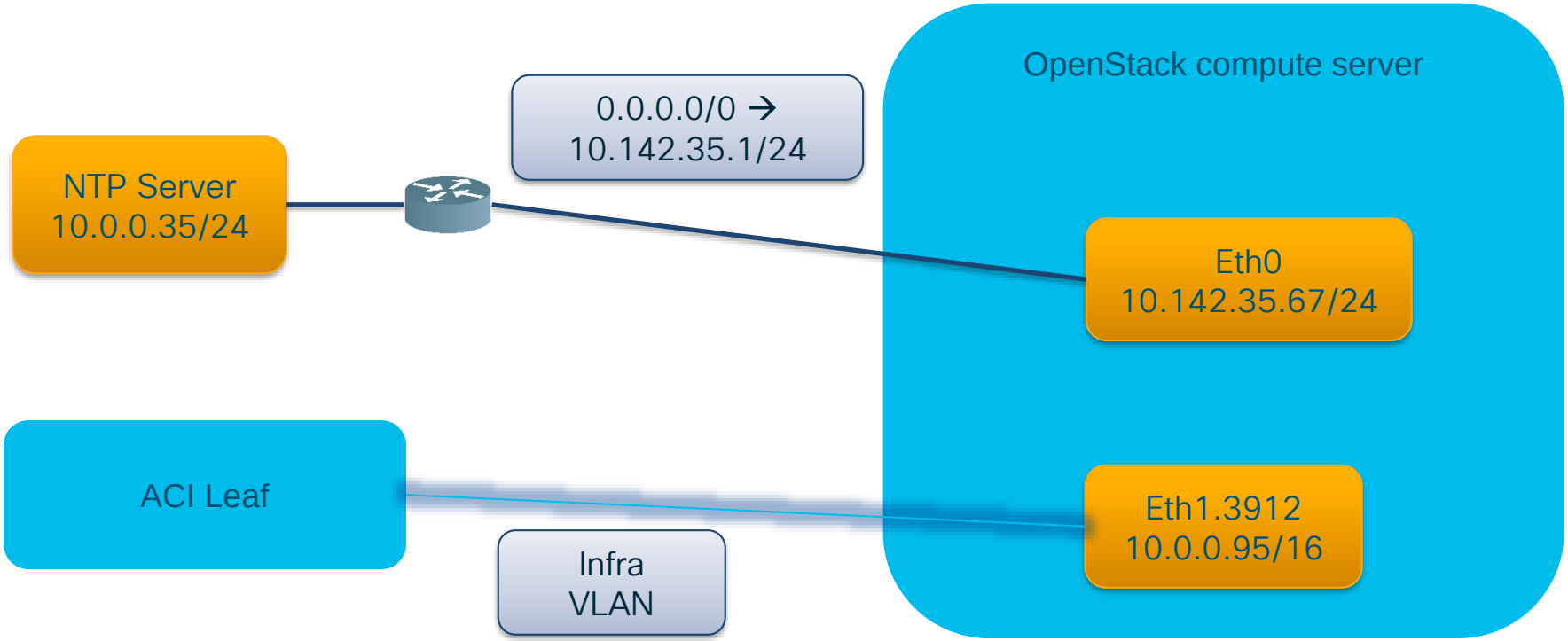
Special considerations

- # 1 TEP pool / infrastructure VLAN
- #2 UCS-B connectivity with VMware

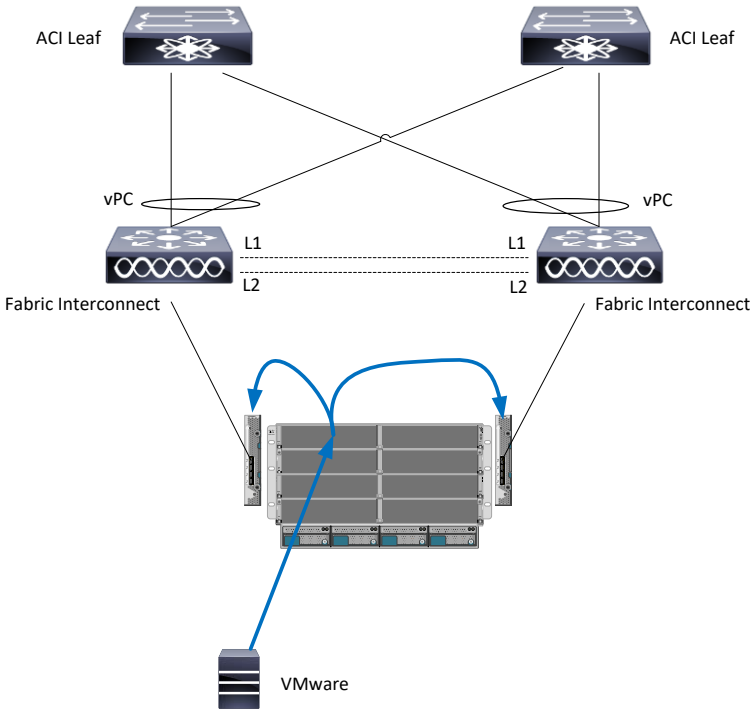
1 TEP pool / infrastructure VLAN

- TEP Pool
  - Tunnel endpoint address pool
  - IP addresses from this pool are assigned to all fabric elements to communicate over the infrastructure VLAN
  - “This subnet should not overlap with any other routed subnets in your network. If this subnet does overlap with another subnet, change this subnet to a different /16 subnet. The recommended minimum mask is /19.
- Infrastructure VLAN:
  - In-band VLAN
  - Allows APIC to communicate with leafs and spines
- Hypervisor integrations, MultiPOD → Infrastructure VLAN and TEP Pool will be extended
  - OpenStack, Kubernetes, …

1 VTEP pool / infrastructure VLAN

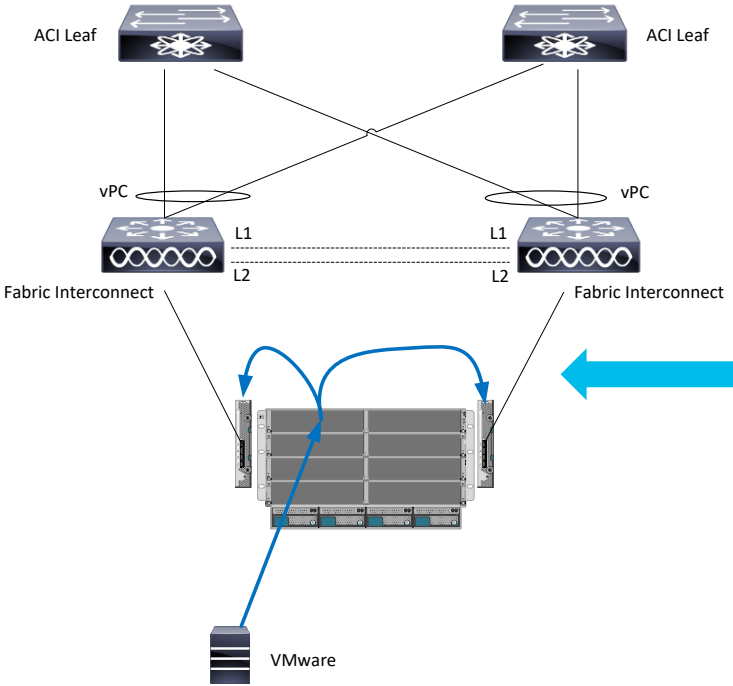


#2 UCS-B connectivity with VMware



- Each Fabric Interconnect has a port-channel towards the ACI Leafs
- Fabric interconnects are connected for clustering → no data traffic is on the link
- The hypervisor running on a blade has 2 independent connections → no switch dependent protocols can be used
- Using IP-hash algorithms will cause MAC flaps on the UCS FI's and N5K's

#2 UCS-B connectivity with Vmware (cont.)



PC Interface Policy Group
Port Channel Policy → LACP

VSwitch Policy
Port Channel Policy → MAC Pinning

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