

# DC network architecture best practices

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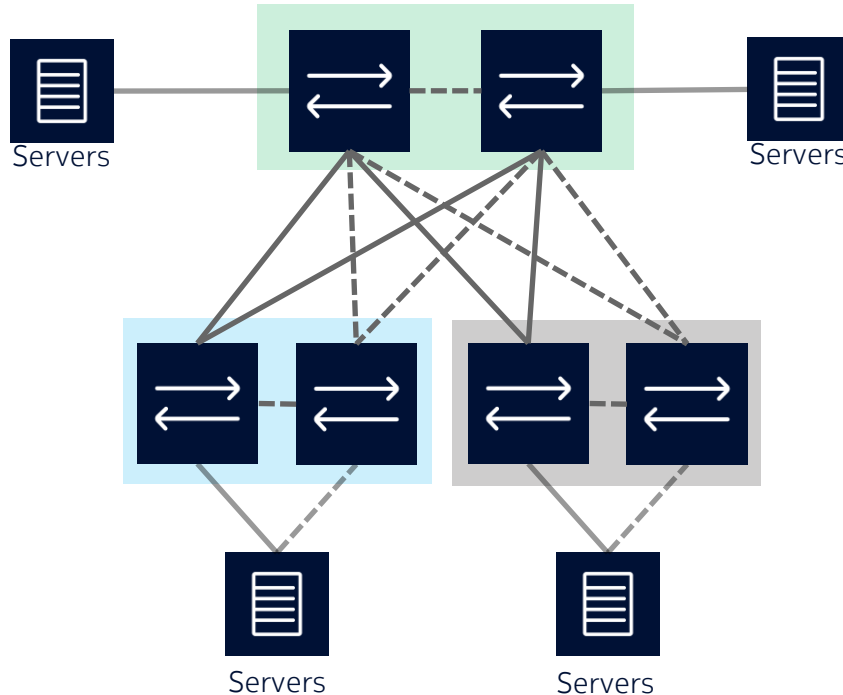


# Agenda

1. Legacy L2 DC fabrics
2. L3 fabric and IPv6 unnumbered
3. EVPN-VxLAN and benefits of EVPN

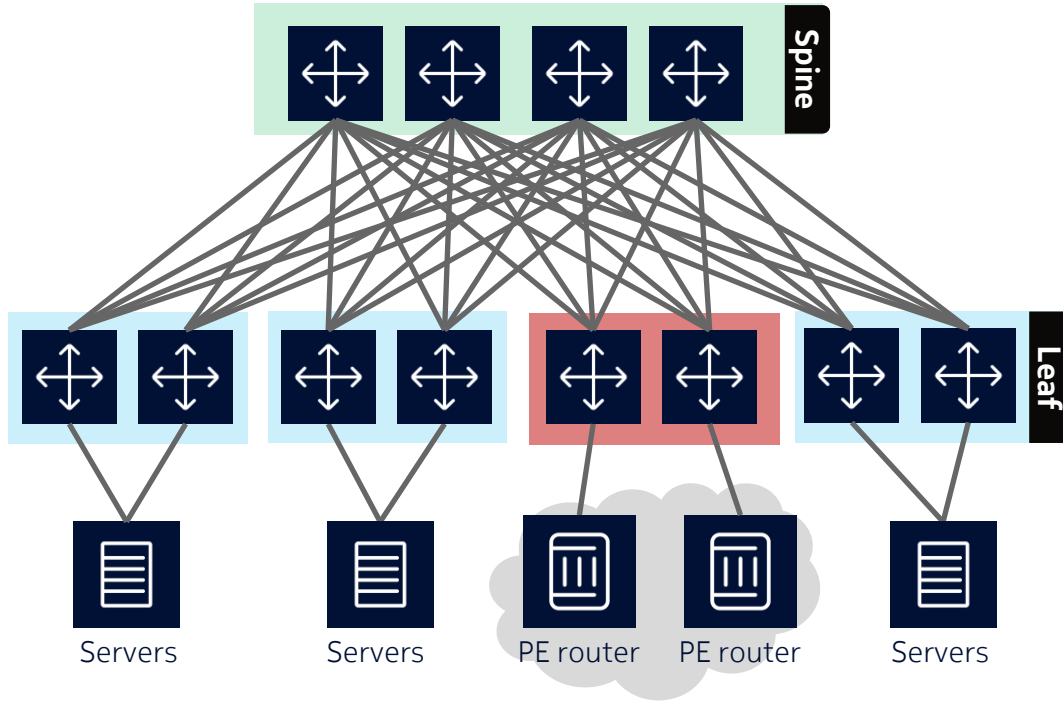
# L2 fabric

## Understanding the legacy



- Broadcast storms → STP & RSTP & MSTP
- Suboptimal bandwidth/link usage
- Temporary L2 Loops while converging
- Inefficient load distribution
- Scalability challenges

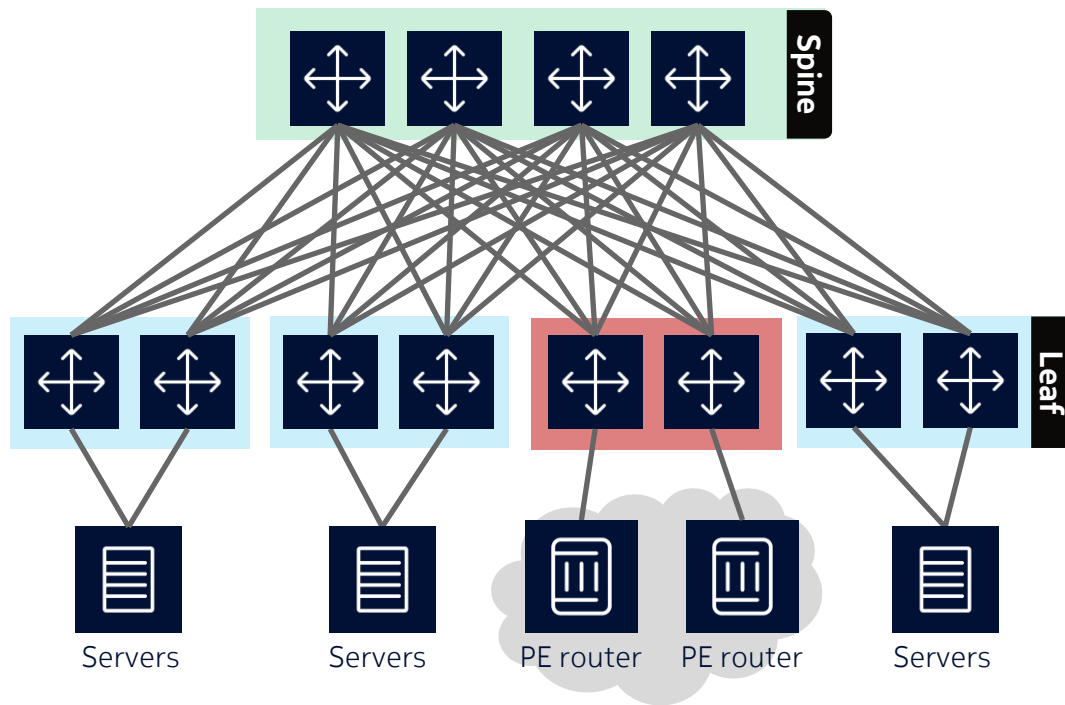
# L3 Clos fabric



- Easy to Scale Up
- L2 Loop-free
- Better Load balancing: ECMP & IPv6 Hash labels for extra entropy
- Design inputs:
- Workload BW – Per Rack BW
- Traffic forecast & oversubscription ratio
- Fault tolerance
- Protocols: BGP, ISIS, OSPF

# L3 fabric

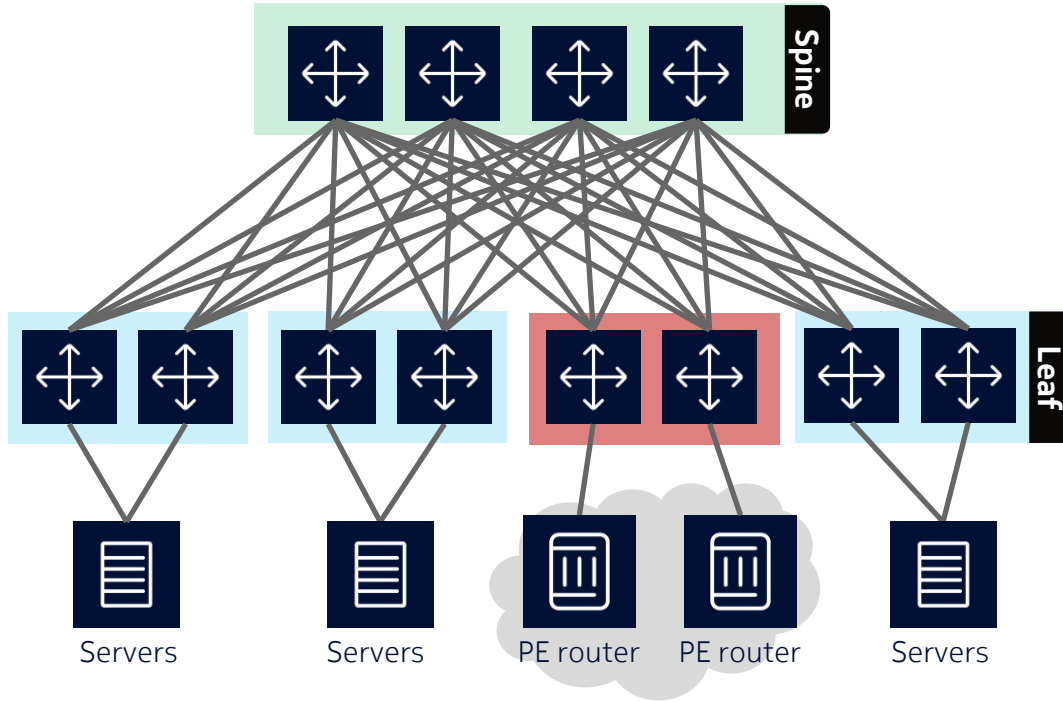
Underlay with eBGP / RFC 7938



- Simple design
- Scalable
- Lower HW resource consumption
- Flexible policy engine
- Smaller failure impact radius

# L3 fabric

IPv6 unnumbered underlay

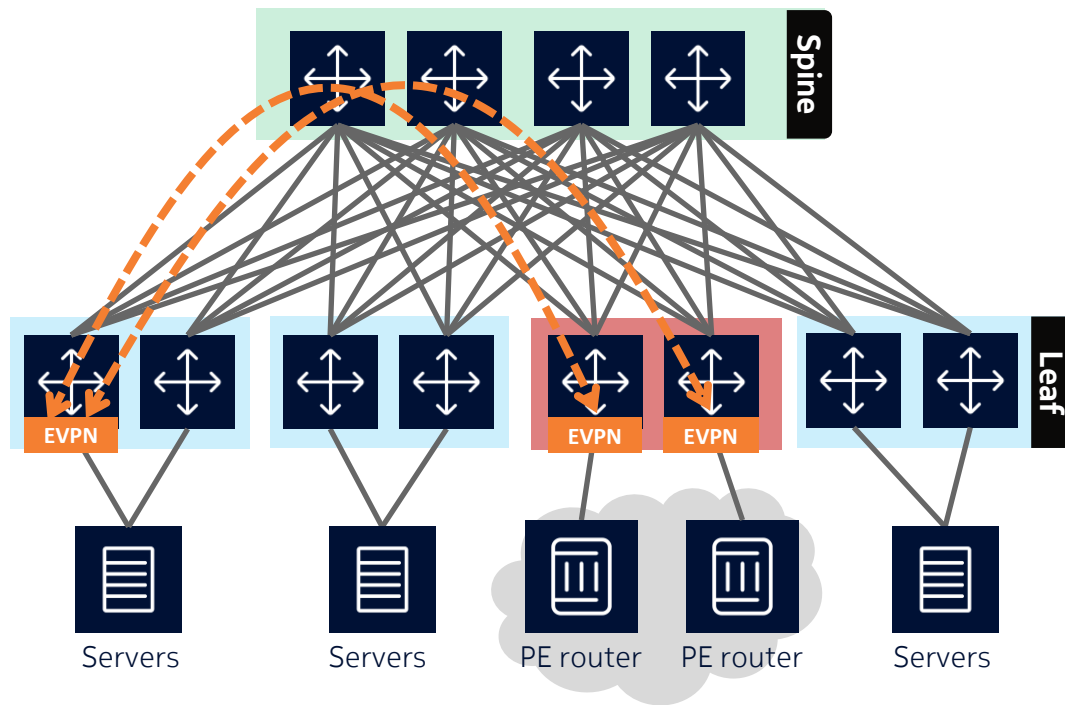


- **Interfaces use auto-generated IPv6 link-local addresses without needing a unique global IP address.**
- **IPv6 ND Router Advertisements are used to announce and learn peers' link-local addresses.**
- **BGP unnumbered feature establishes the peerings based on the IPs exchanged**



# EVPN-VxLAN

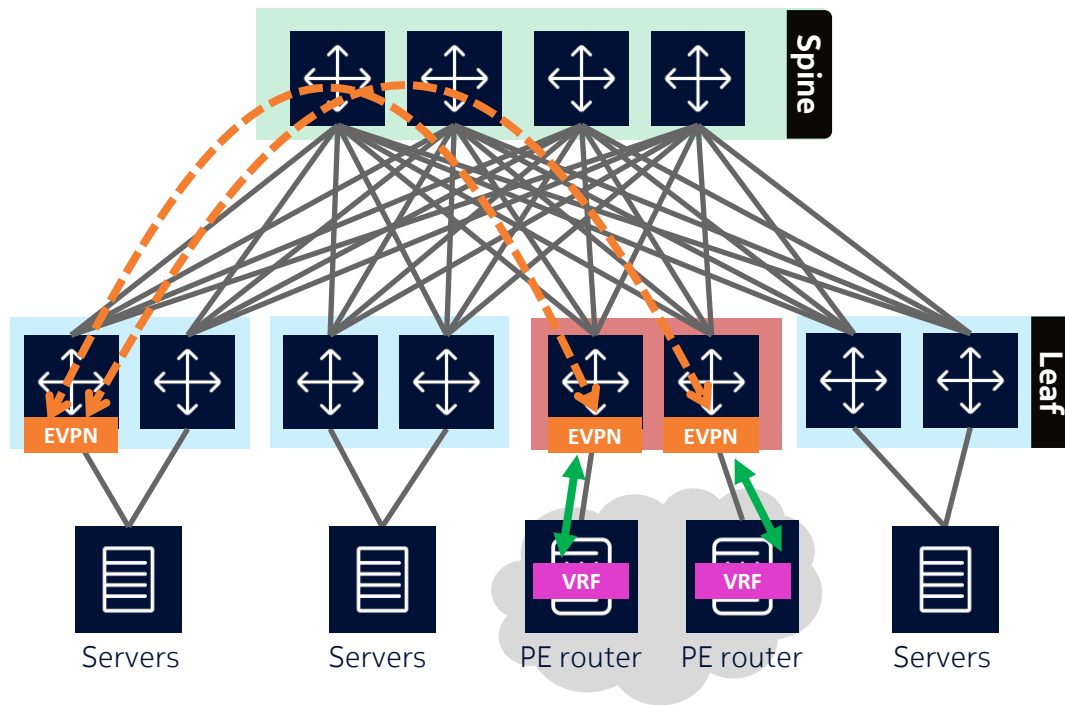
Overlay with EVPN



- Network segmentation
- Loop prevention
- L2 Multi-homing
- Anycast gateway
- Host mobility
- ARP suppression

# Connecting to WAN

## Vlan Hand-off

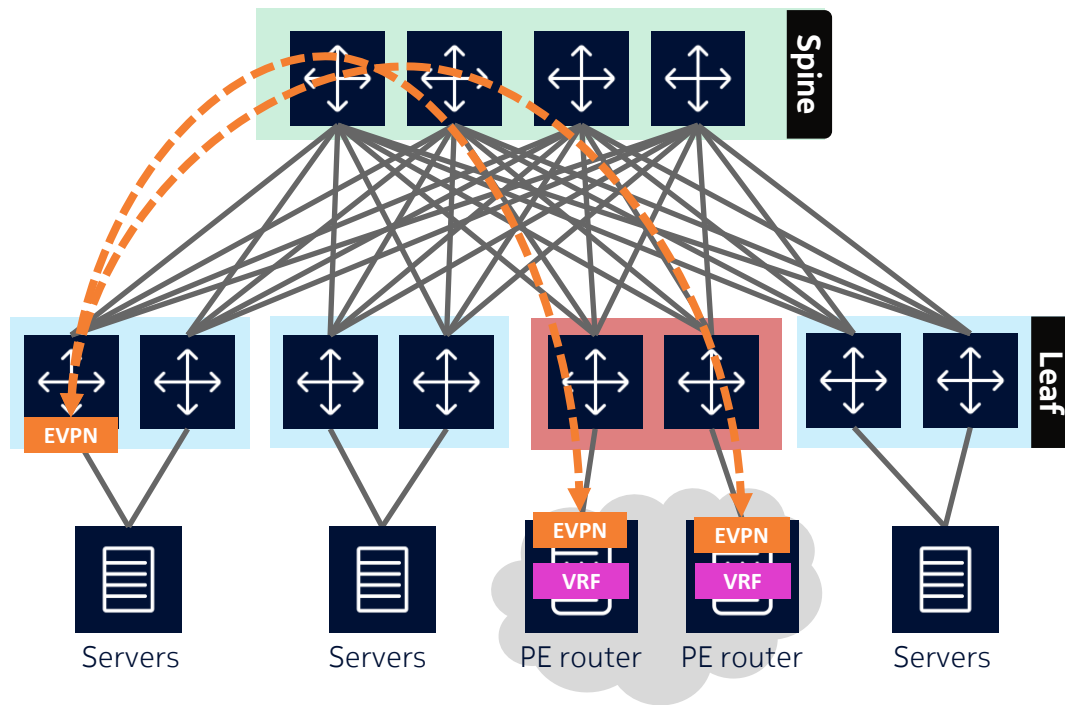


- Clear demarcation between DC and WAN
- No need for high end PE
- For L2 networks, Ethernet Segments
- For L3 networks Inter-AS Option A



# Connecting to WAN

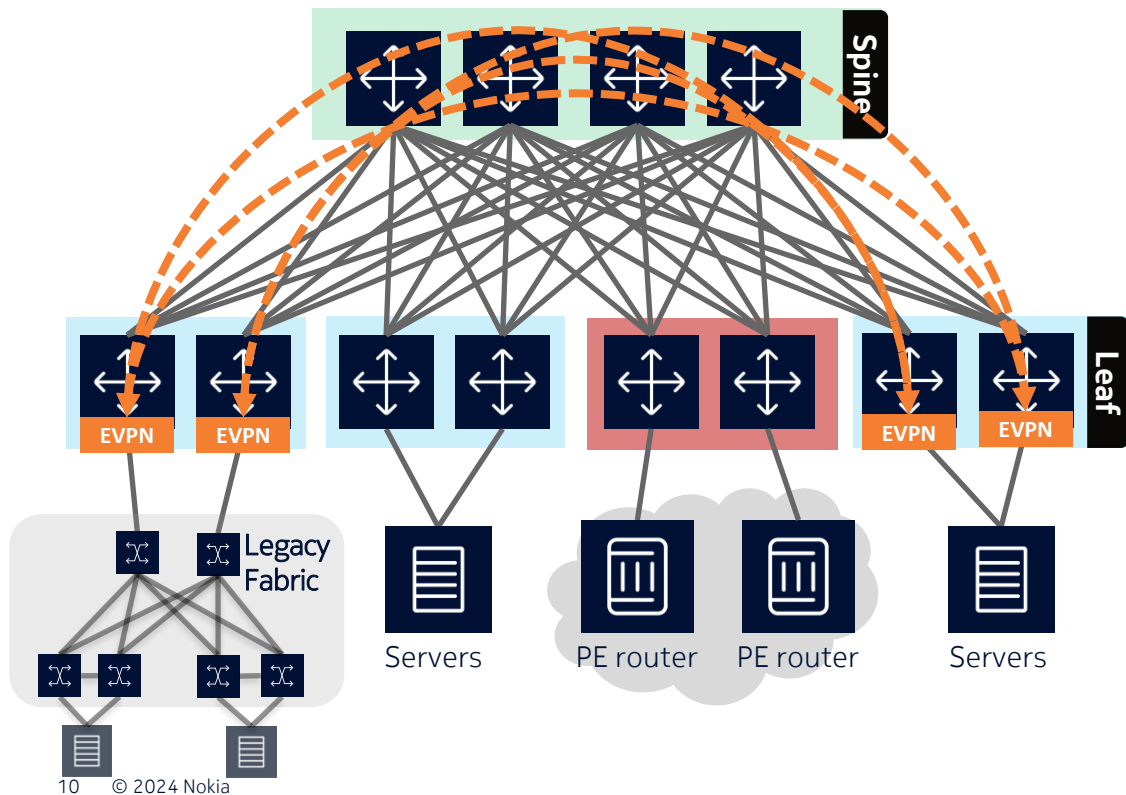
## Integrated Model



- Faster convergence for L2
- Need for routing policies to segregate WAN and DC
- Need for a high end PE like 7750
- No need for Inter AS Option-A

# Migration

From Legacy to Modern



- Seamless migration via EVPN Overlay

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