cisco Live!
ALL IN

The bridge to possible

Migrating Classical Enterprise Campus Networks to VXLAN EVPN Based Networks

Part 2

Nazim Khan – Customer Success Specialist

BRKENS-3096b

Cisco Webex App

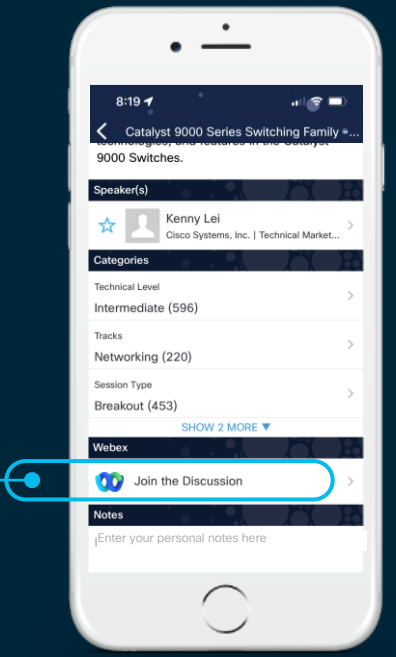
Questions?

Use Cisco Webex App to chat
with the speaker after the session

How

1. Find this session in the Cisco Live Mobile App
2. Click “Join the Discussion”
3. Install the Webex App or go directly to the Webex space
4. Enter messages/questions in the Webex space

Webex spaces will be moderated by the speaker until June 17, 2022.



https://ciscolive.ciscoevents.com/ciscolivebot/#BRKENS-3096b

© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

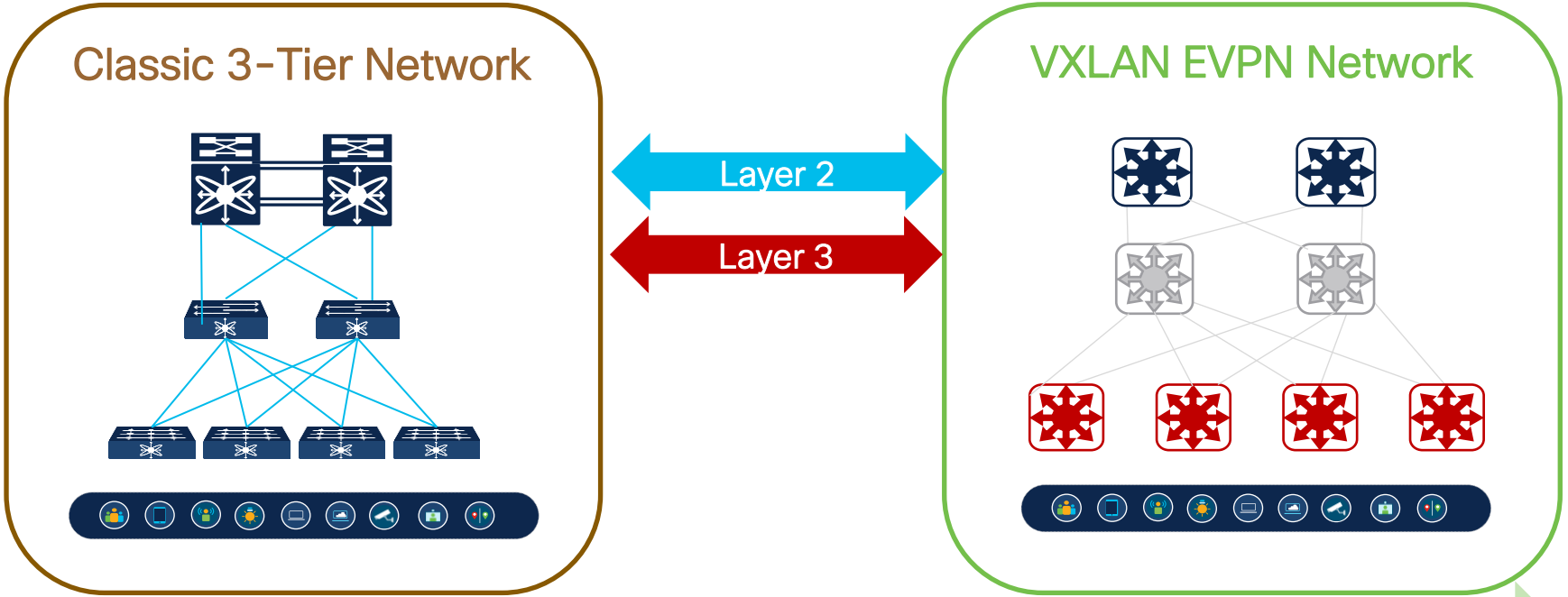
Agenda

- Recap of Part 1
- Migration Considerations
- Migration Walkthrough
- Migration Step-by Step
- Key Take Aways

© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

Recap of Part 1

Migration Strategy -1 : Build and Move



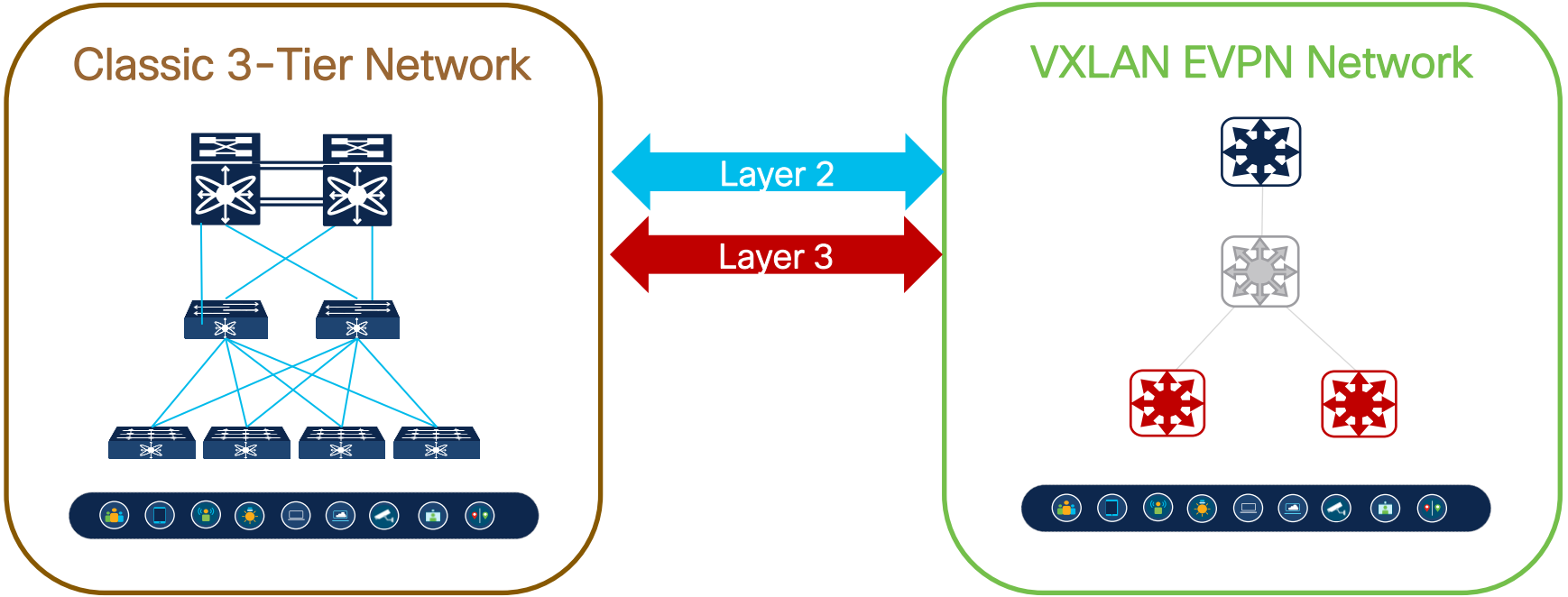
Deployment
Design & deploy new VXLAN BGP EVPN fabric

Integration
Connect VXLAN BGP EVPN to classical 3-tier network

Migration
Migrate end-points to use new VXLAN BGP EVPN fabric

© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

Migration Strategy -2 : Phased Migration



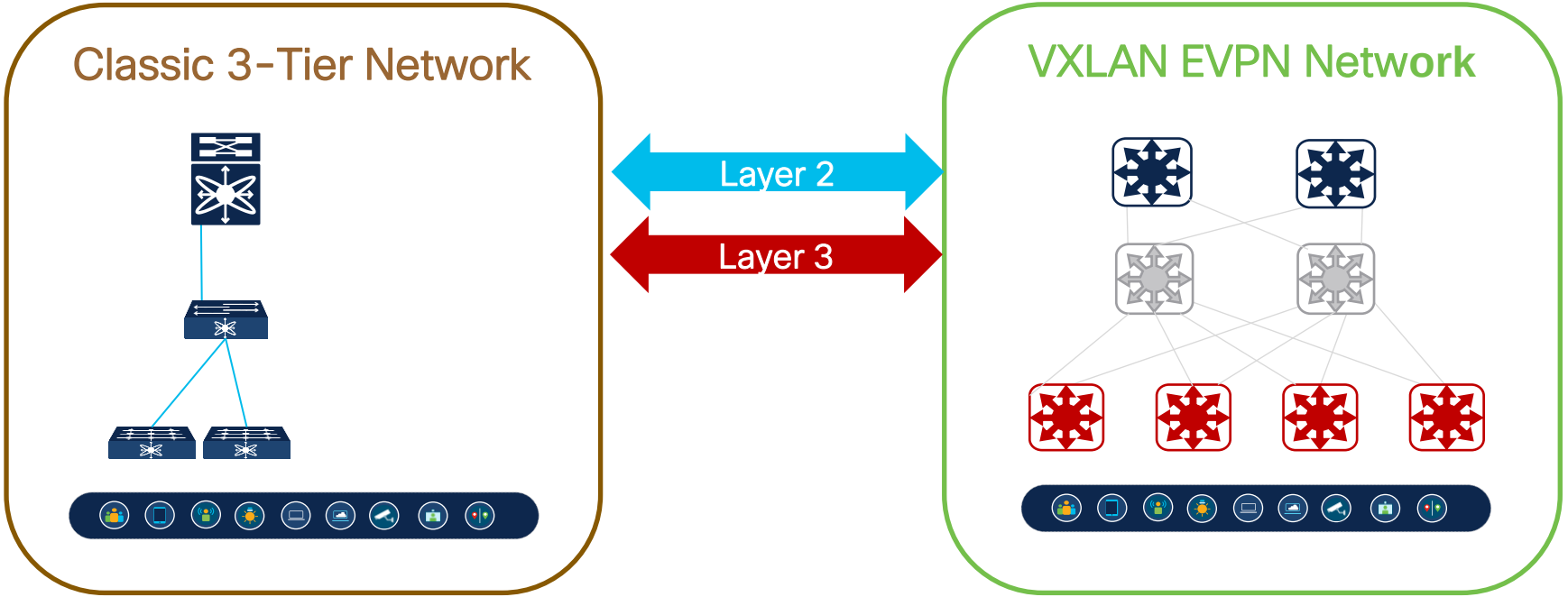
EVPN Island Deployment
Design & deploy new minimalistic VXLAN BGP EVPN fabric

Integration
Connect VXLAN BGP EVPN to classical 3-tier network

Phased Migration -1
Migrate few end-points to use new VXLAN BGP EVPN fabric

© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

Migration Strategy -2 : Phased Migration



EVPN Island Deployment
Design & deploy new minimalistic VXLAN BGP EVPN fabric

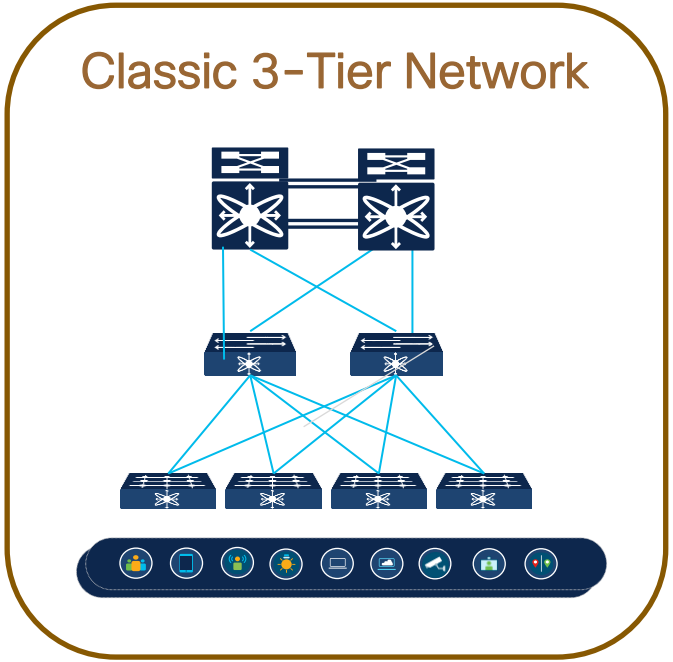
Integration
Connect VXLAN BGP EVPN to classical 3-tier network

Phased Migration -1
Migrate few end-points to use new VXLAN BGP EVPN fabric

Phased Migration -2
Migrate switches and scale the EVPN fabric

© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

Migration Strategy -3 : Flag Day

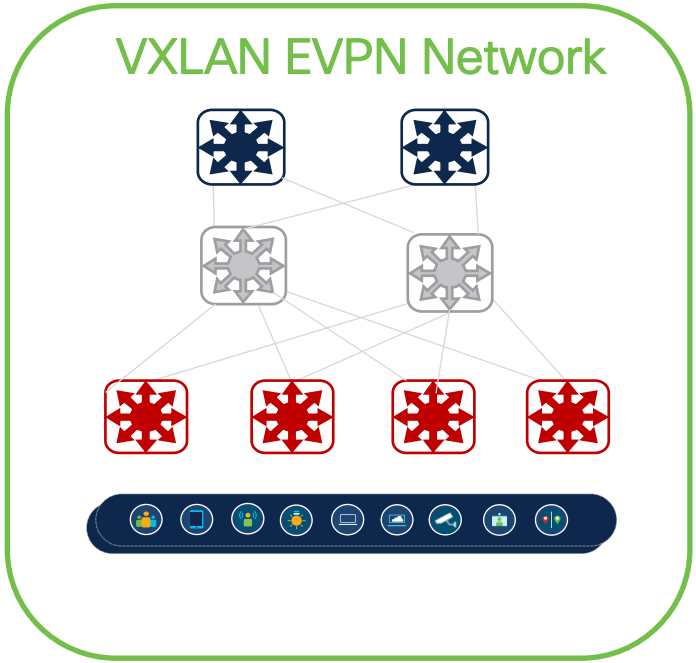


Backup Existing Network
Backup configuration, device states of existing classic 3-tier network

Prepare
Gracefully shutdown the classic 3-tier network and associated services

© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

Migration Strategy -3 : Flag Day



Backup Existing Network
Backup configuration, device states of existing classic 3-tier network

Prepare
Gracefully shutdown the classic 3-tier network and associated services

Bring Up
Upgrade Software, reconnect devices as per VXLAN EVPN Architecture

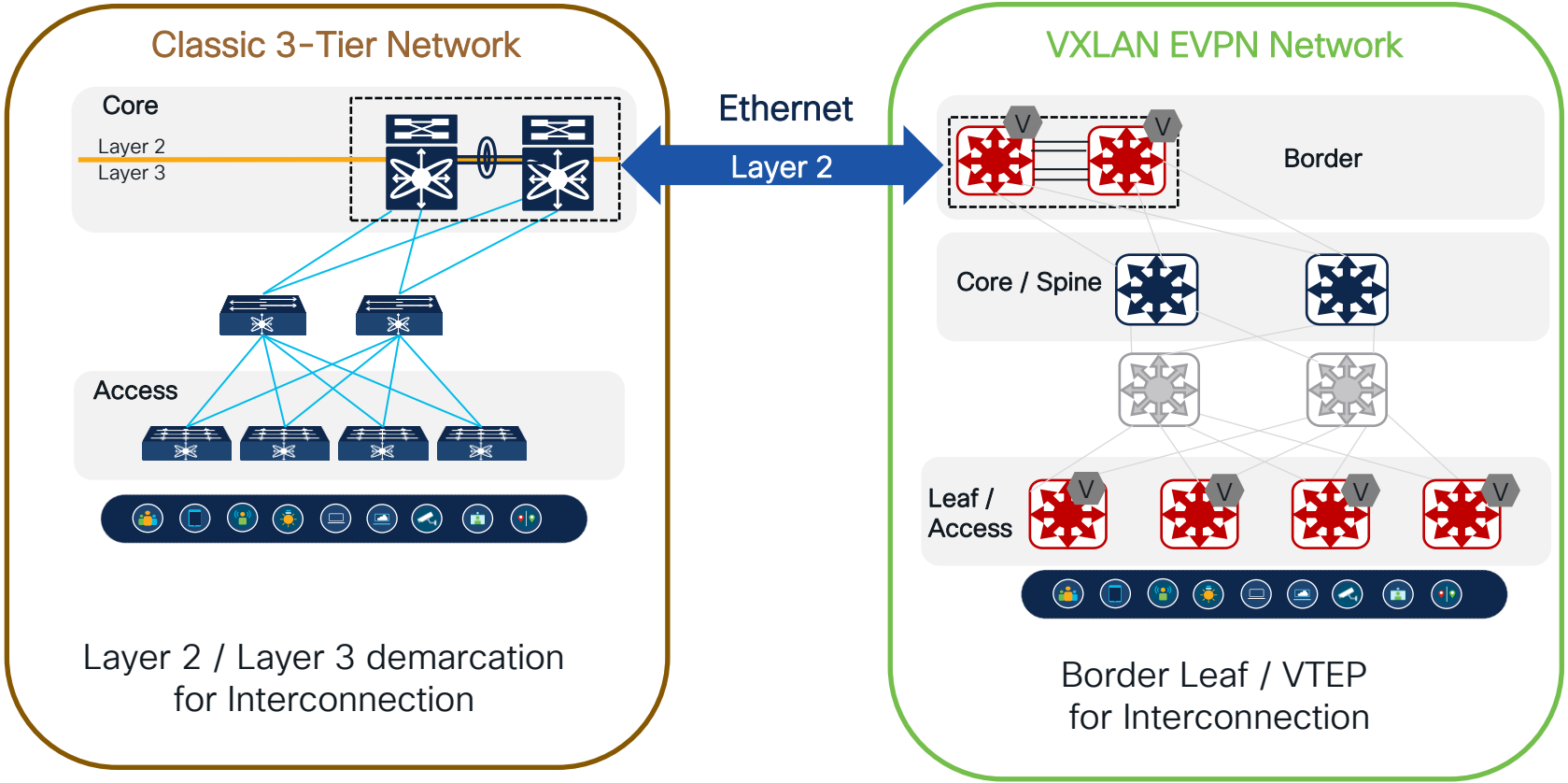
© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

Migration Considerations

Layer 2 Interconnect

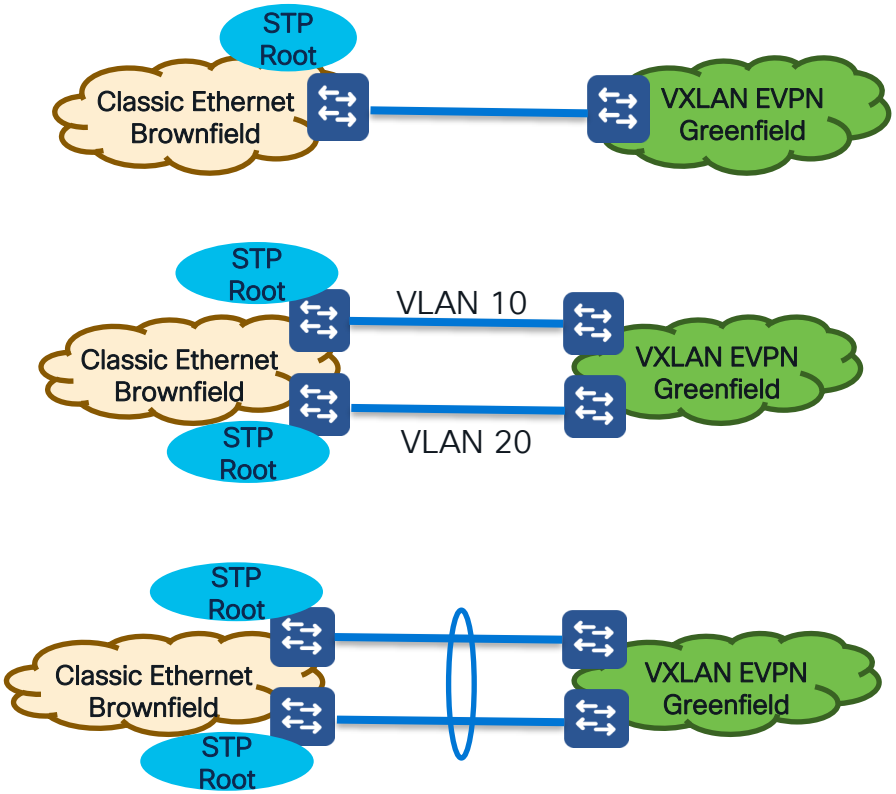
© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

Layer 2 Interconnection



© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

Spanning-Tree Considerations



© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

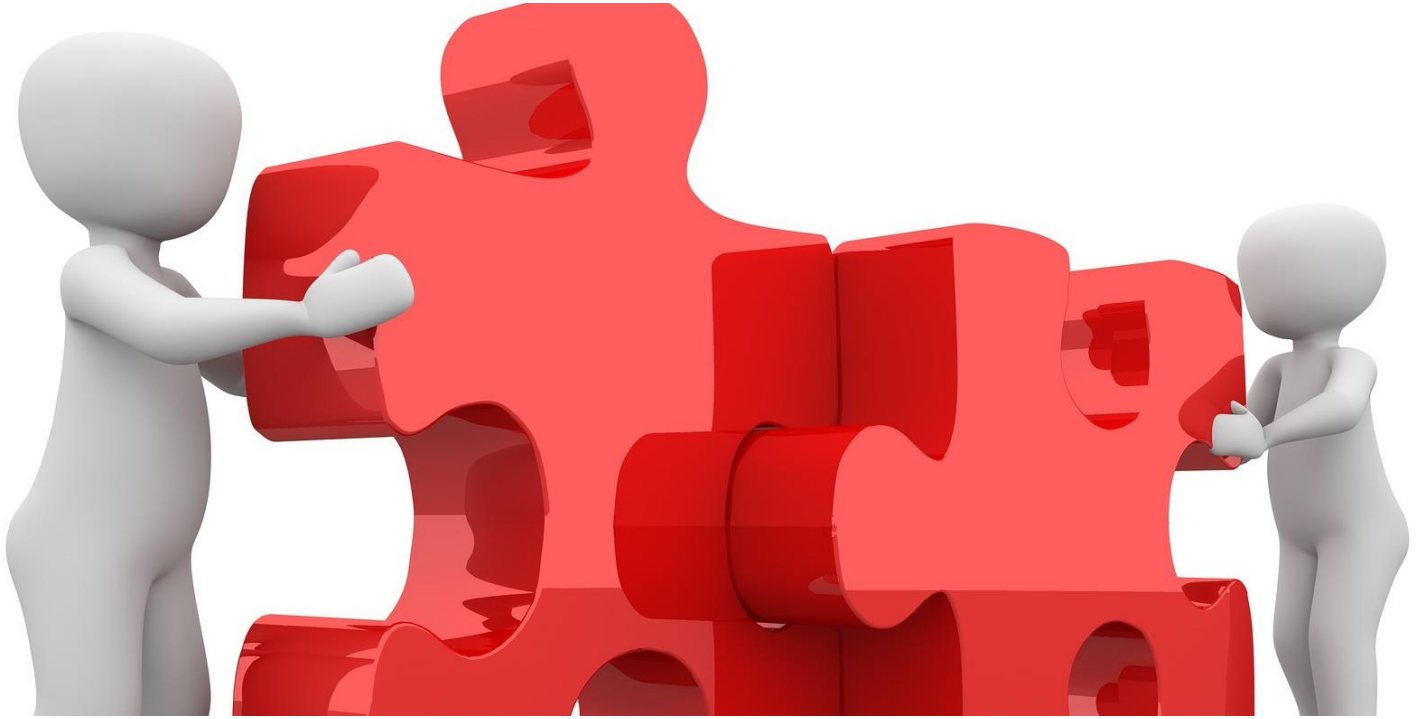
VLAN Mapping

1:1 VLAN Mapping

Mapping between different VLANs

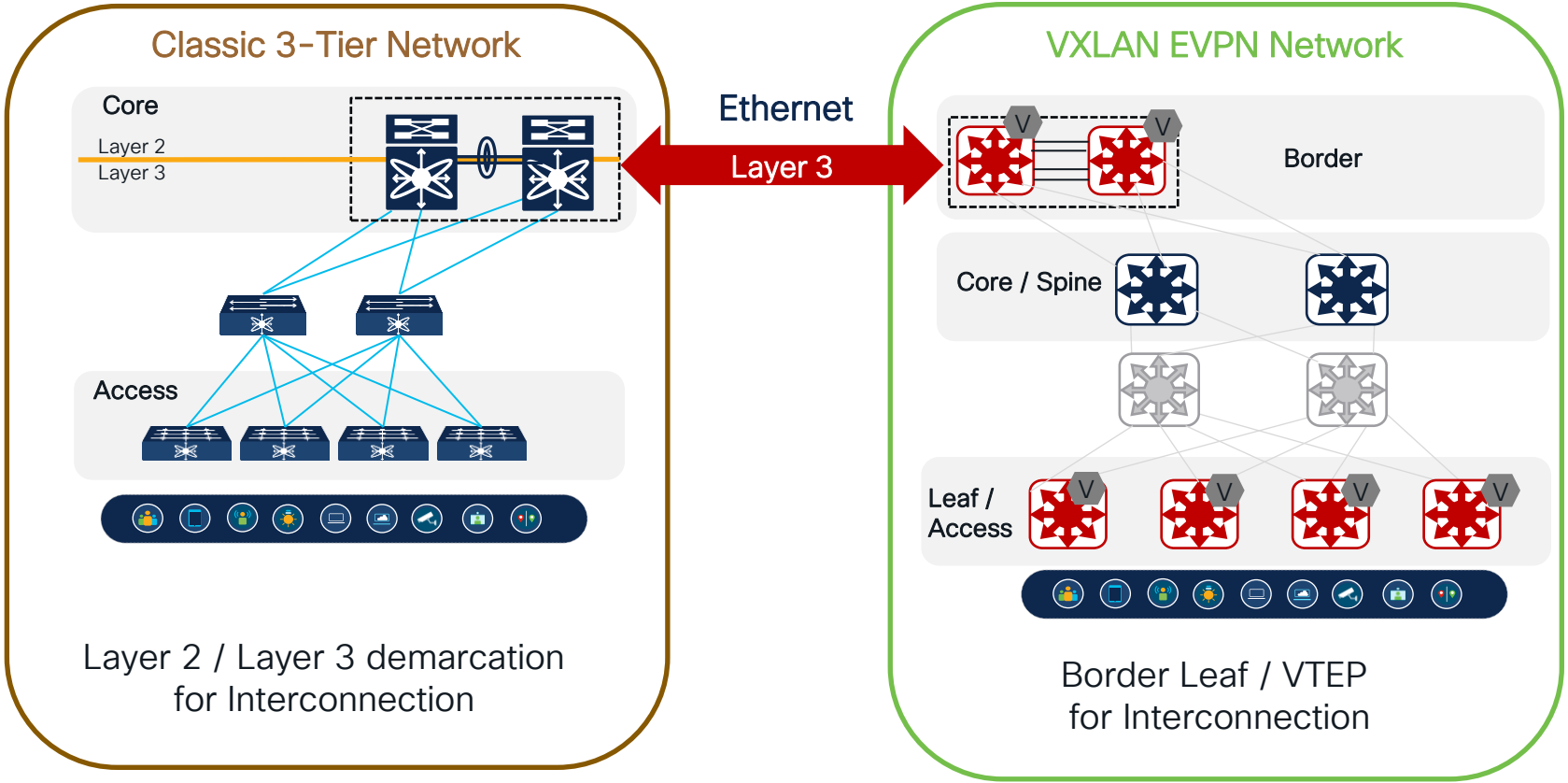
© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

Layer 3 Interconnect



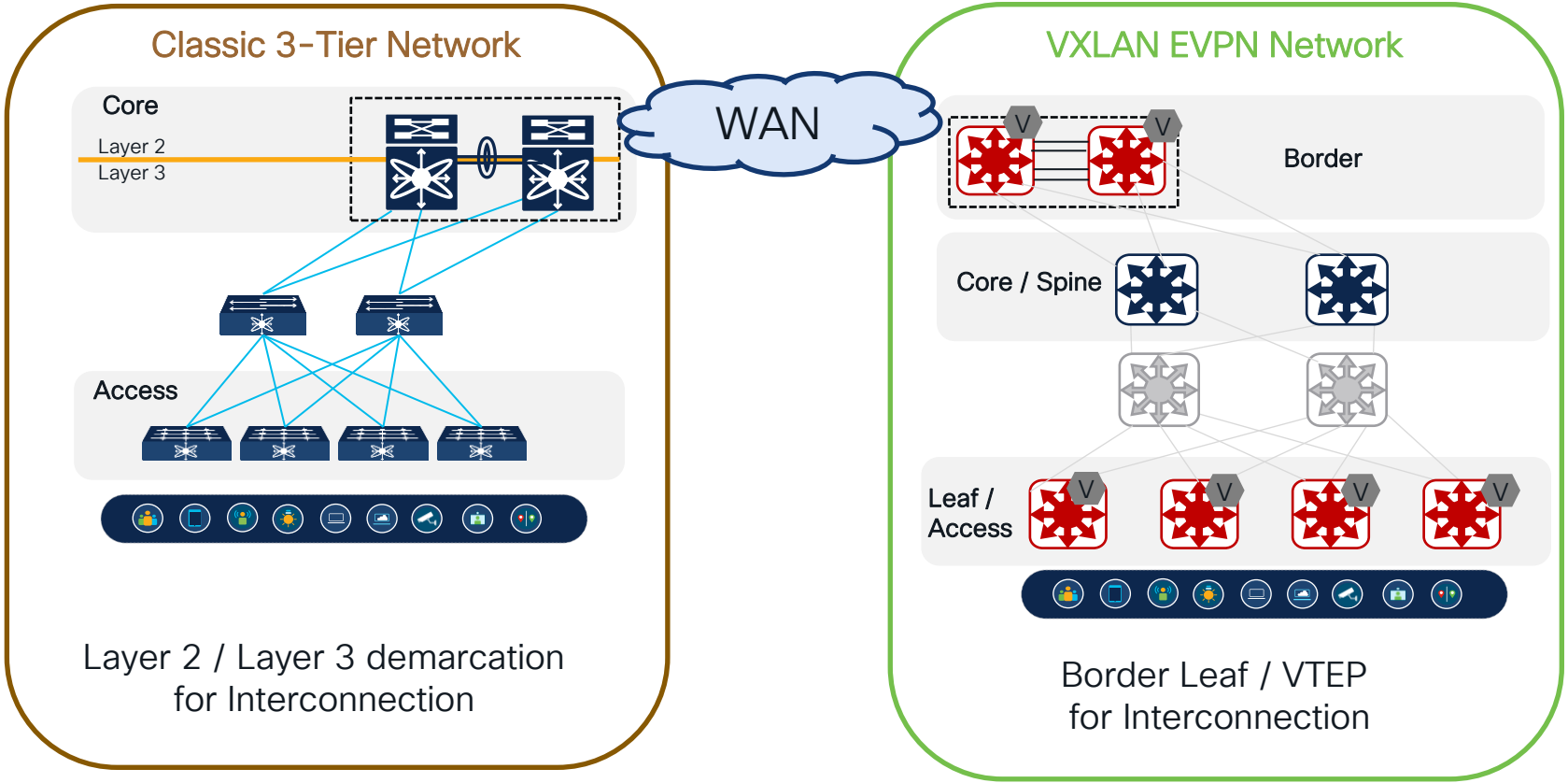
© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

Layer 3 Interconnection : Direct



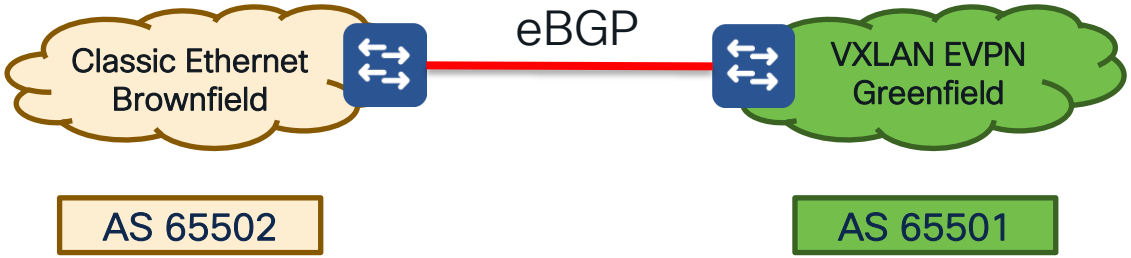
© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

Layer 3 Interconnection : WAN



© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

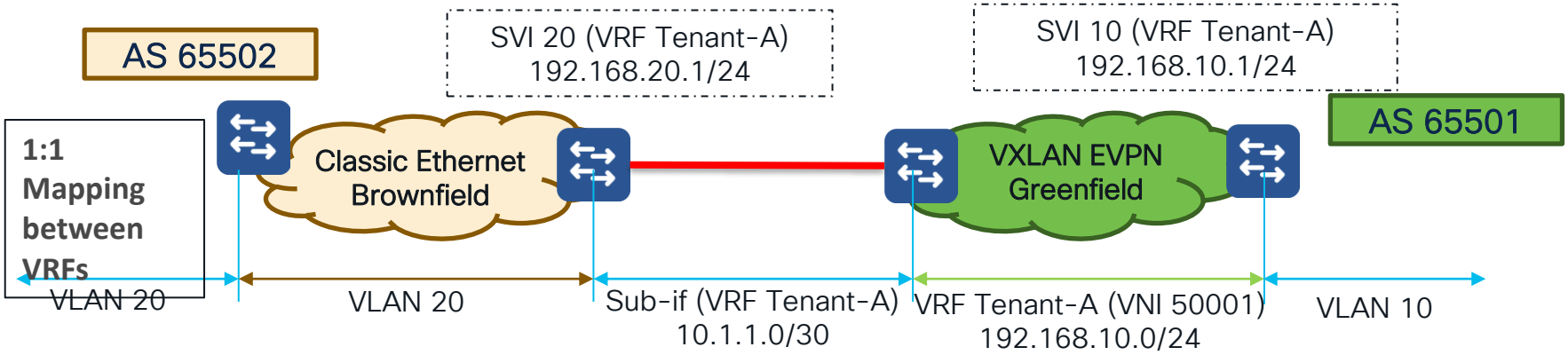
Layer-3 Interconnection : Routing Protcol

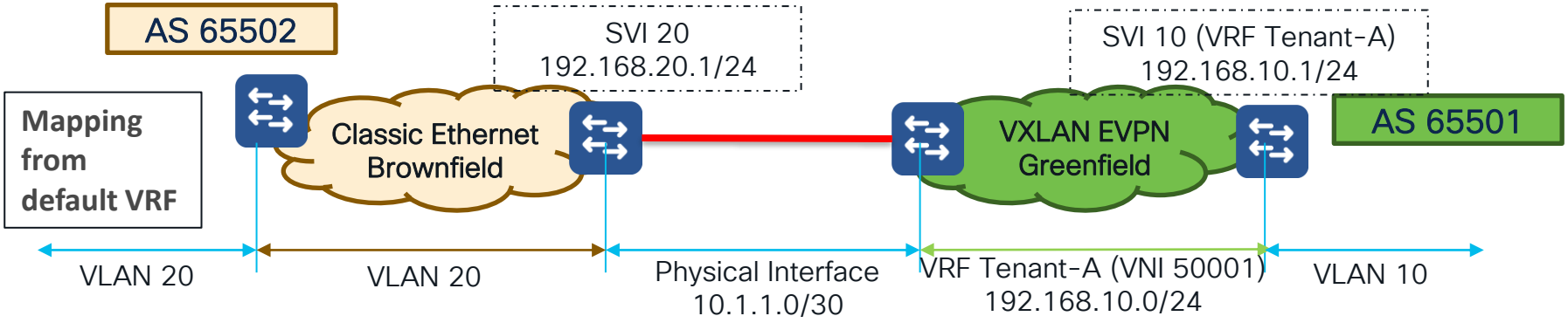


- **Routing Protocol considerations**
  - ✓ Greenfield network with VXLAN BGP EVPN
  - ✓ Routing domain separation
  - ✓ Extensive routing policy capability
  - ✓ VRF awareness
- **BGP meets these requirements & capabilities**

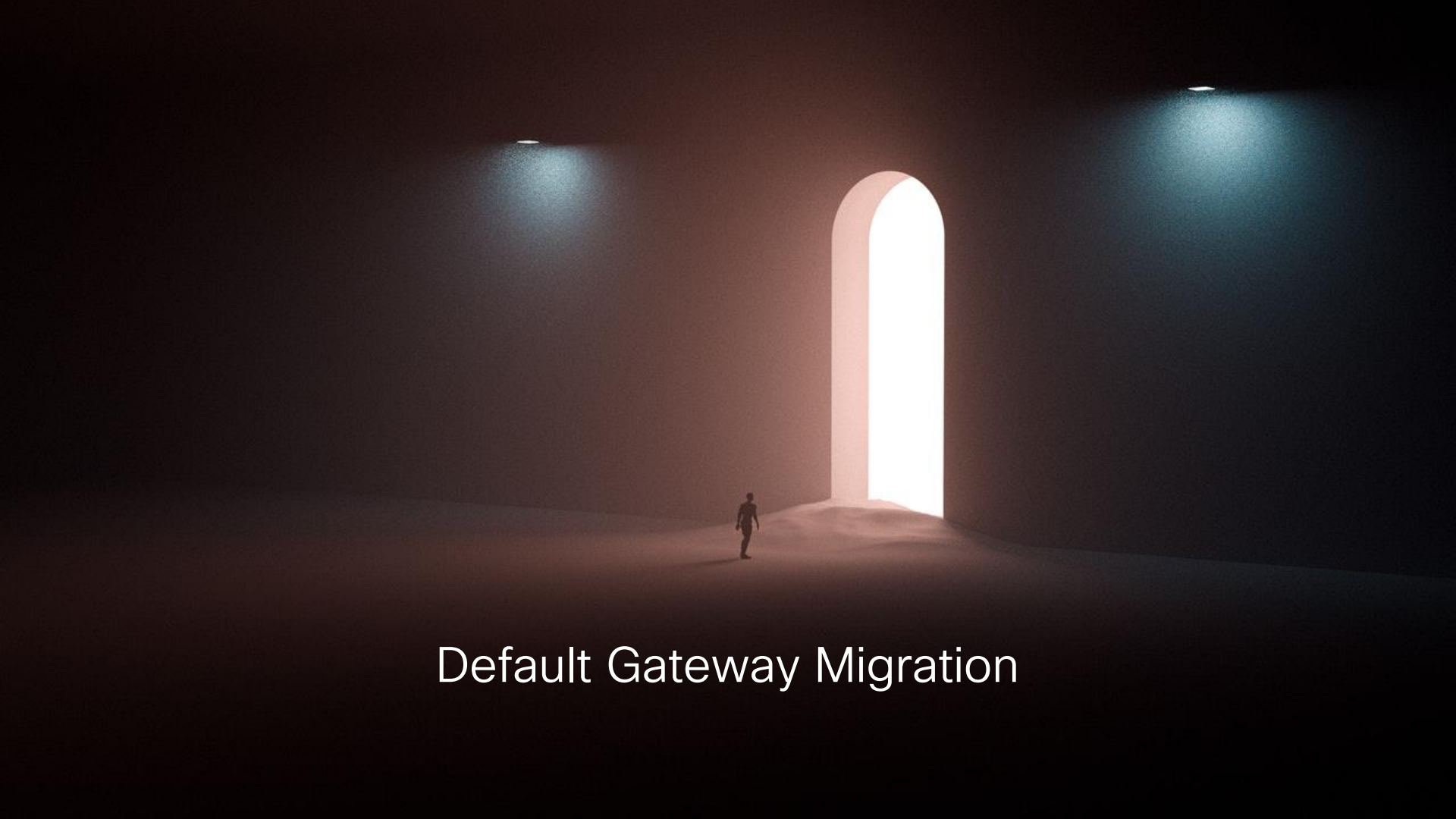
© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

VRF Mapping

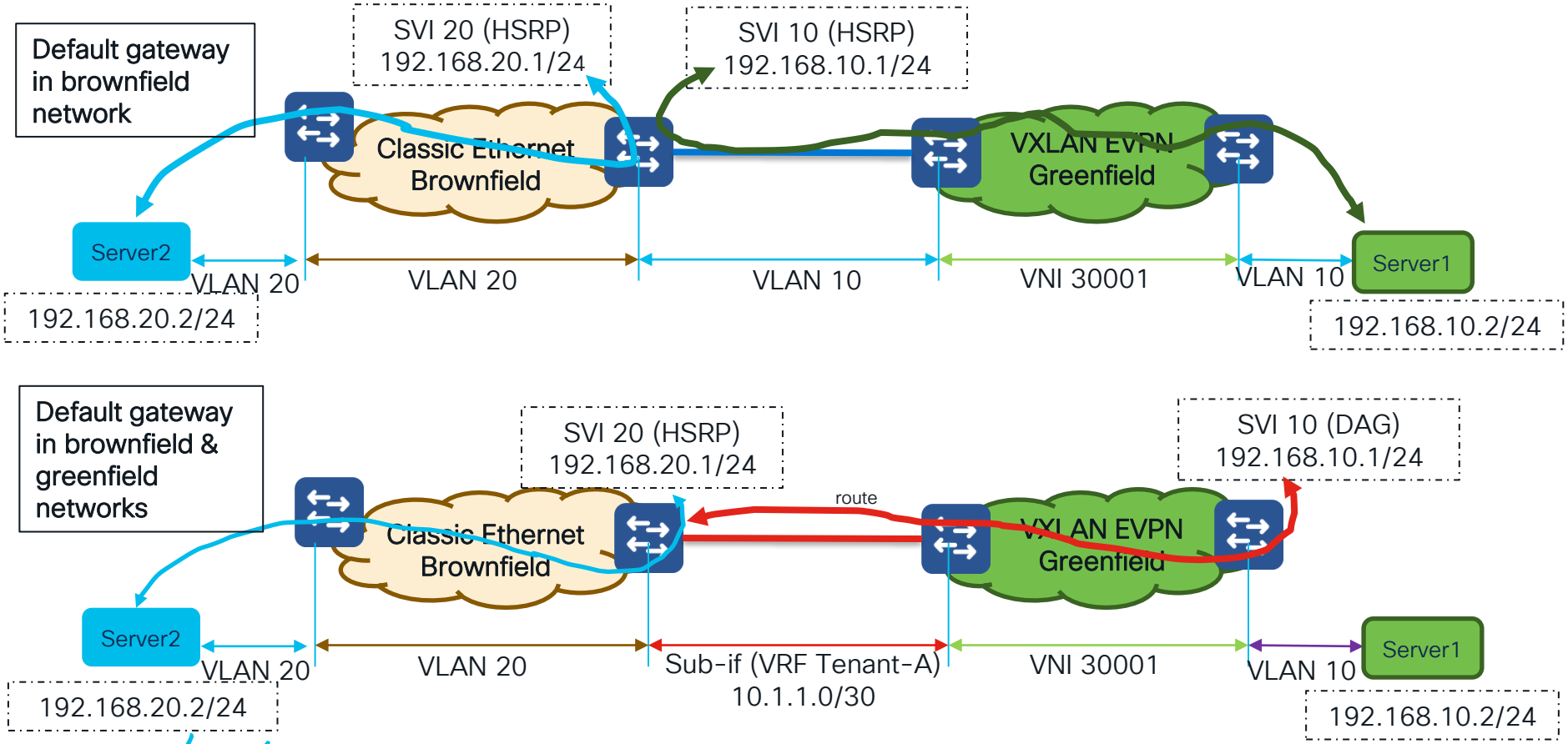




© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public


Default Gateway Migration

Default Gateway Migration Considerations



© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

Migration Walkthrough

Migration Walkthrough

Build & Move

- Build EVPN Fabric
- Layer 3 Interconnect
- Layer 2 Interconnect
- Default GW Migration
- Workload Migration
- Decommission

Phased Migration

- Build EVPN Fabric prototype
- Acclimate to VXLAN EVPN
- Layer 3 & 2 Interconnect
- Plan & Migrate in phases
- Scale EVPN fabric
- Default GW Migration
- Complete Migration
- Decommission

Flag Day

- Plan a shutdown window
- Backup Existing Network
- Rewire or add connections
- Gracefully shutdown
- Upgrade to support software
- Bring up EVPN fabric
- Integrate & Test

© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

Pre-Migration Checklist

- ✓ Validate Design & Hardware
- ✓ Validate Supported Software
- ✓ Validate required Licensing
- ✓ Verify Supported Scale
- ✓ Layer 2 & Layer 3 Interconnect Point
- ✓ Select VLAN Mapping strategy
- ✓ Select Routing Protocol
- ✓ Select VRF mapping strategy
- ✓ Default gateway migration strategy
- ✓ Method of Procedure (MOP)

© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

Migration Step-by-Step

© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

Building EVPN Fabric

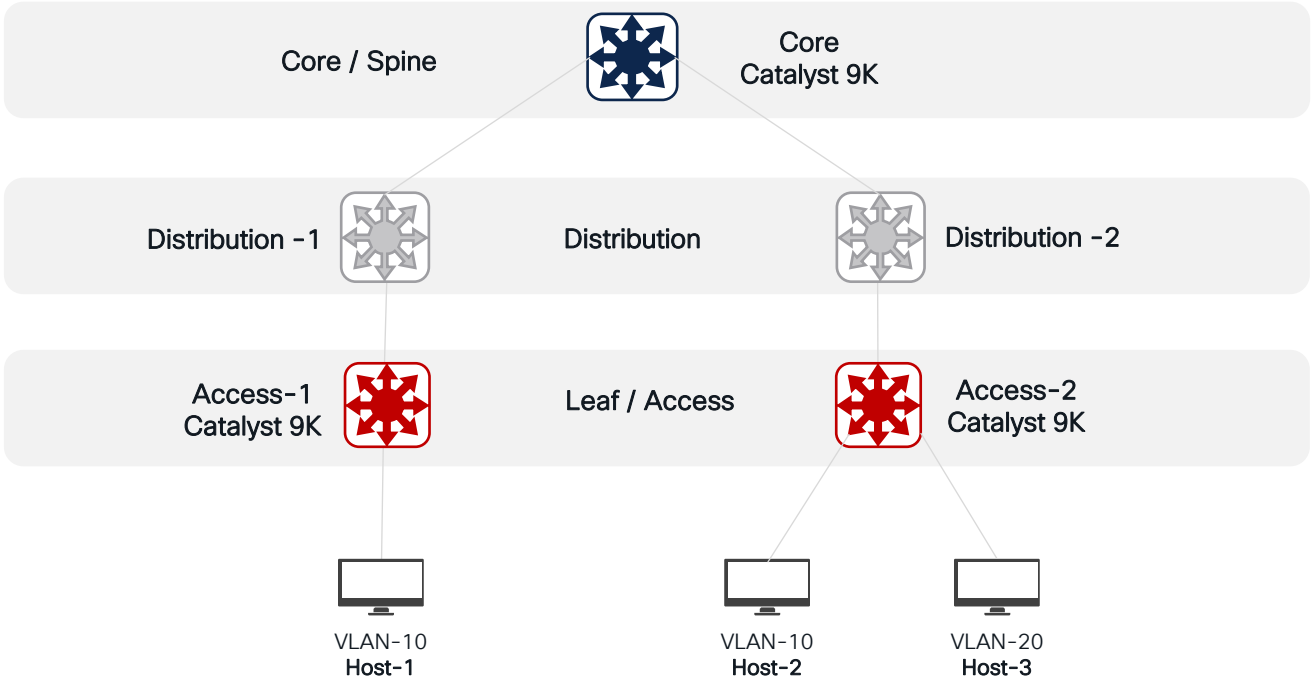
© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

VXLAN EVPN – Configuration Constructs

1. Underlay Configuration
2. Underlay Configuration for BUM – Ingress replication / Multicast
3. EVPN Control Plane Configuration
4. EVPN – Multitenancy Configuration
5. Overlay Configuration- Vxlan Data Plane
6. Distributed Anycast Gateway Configuration

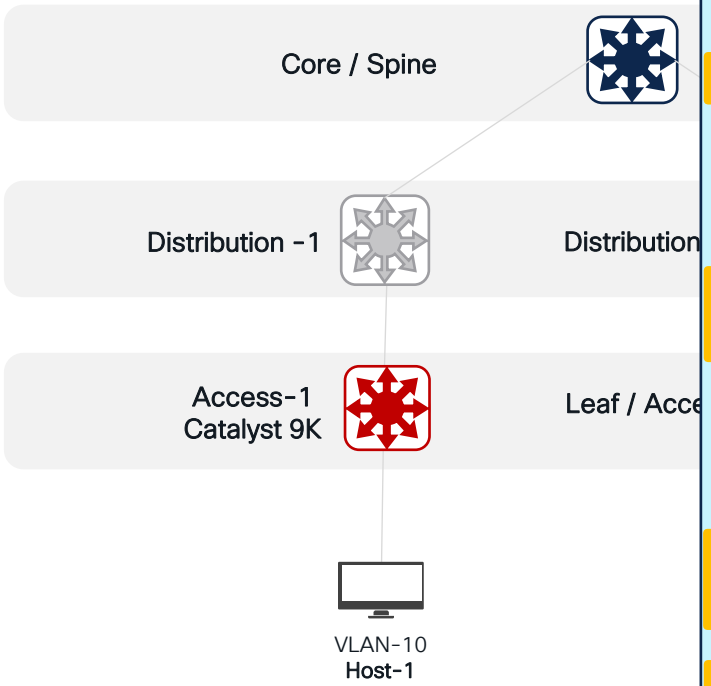
© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

Underlay Configuration – OSPF



© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

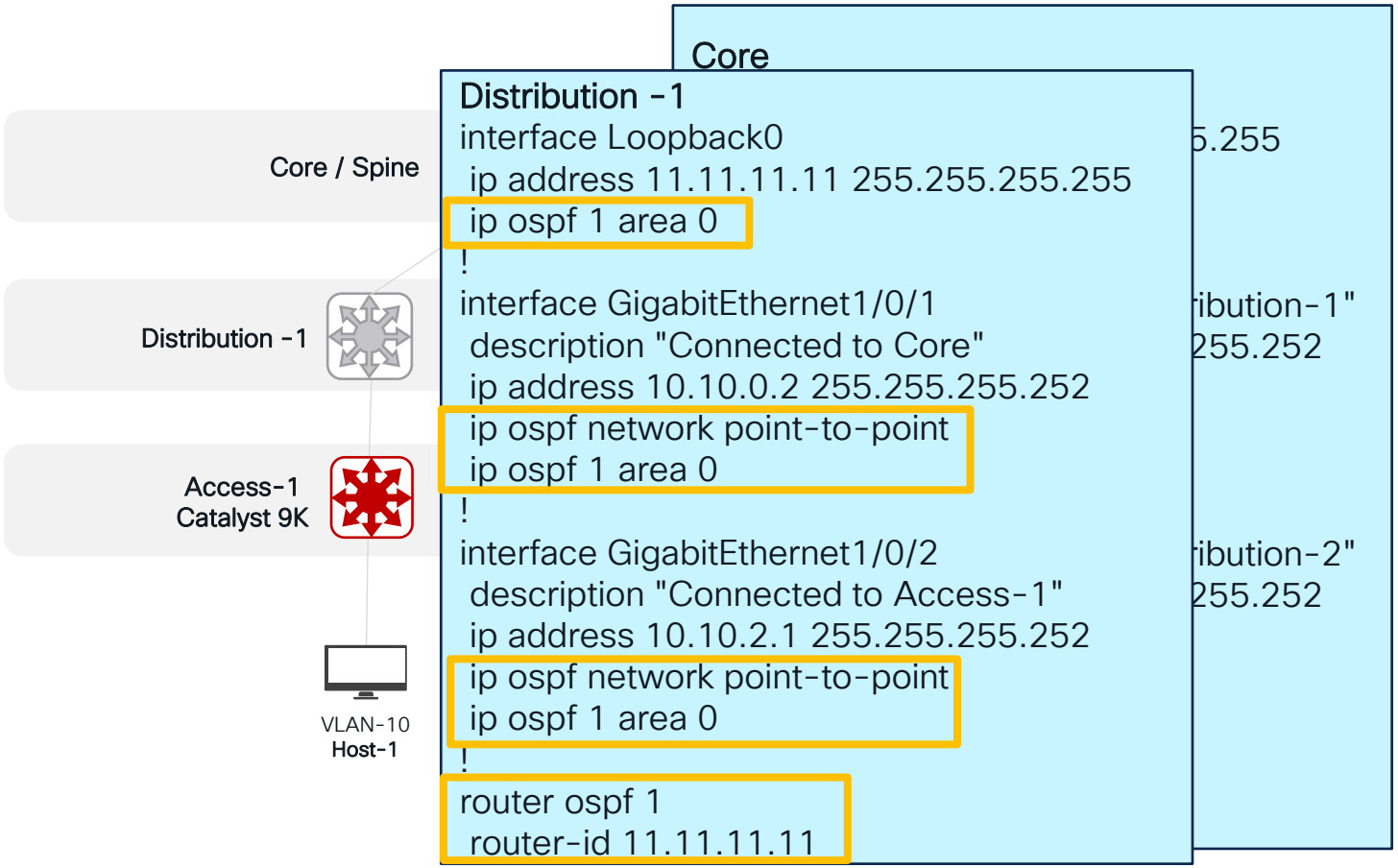
Underlay Configuration – OSPF




```
Core
interface Loopback0
 ip address 1.1.1.1 255.255.255.255
 ip ospf 1 area 0
!
interface TwentyFiveGigE1/0/3
 description "Connected to Distribution-1"
 ip address 10.10.0.1 255.255.255.252
 ip ospf network point-to-point
 ip ospf 1 area 0
!
interface TwentyFiveGigE1/0/4
 description "Connected to Distribution-2"
 ip address 10.10.1.1 255.255.255.252
 ip ospf network point-to-point
 ip ospf 1 area 0
!
router ospf 1
 router-id 1.1.1.1
```

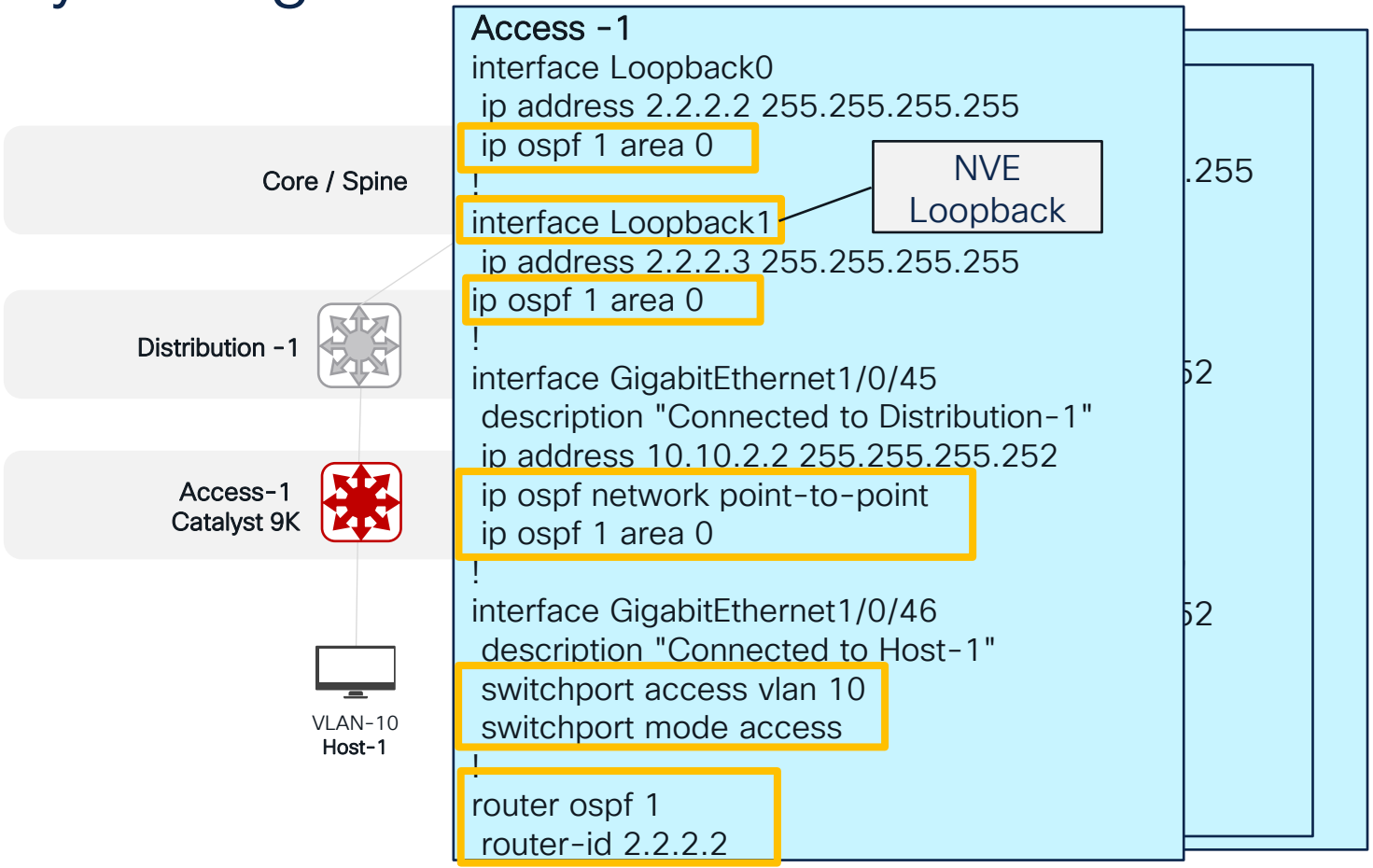

© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

Underlay Configuration – OSPF



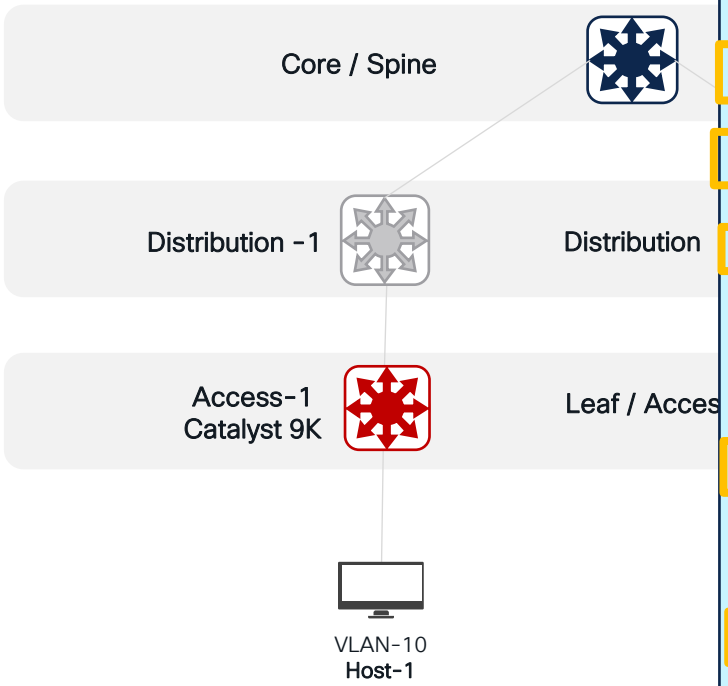
© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

Underlay Configuration – OSPF



© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

Underlay Configuration for BUM – PIM ASM

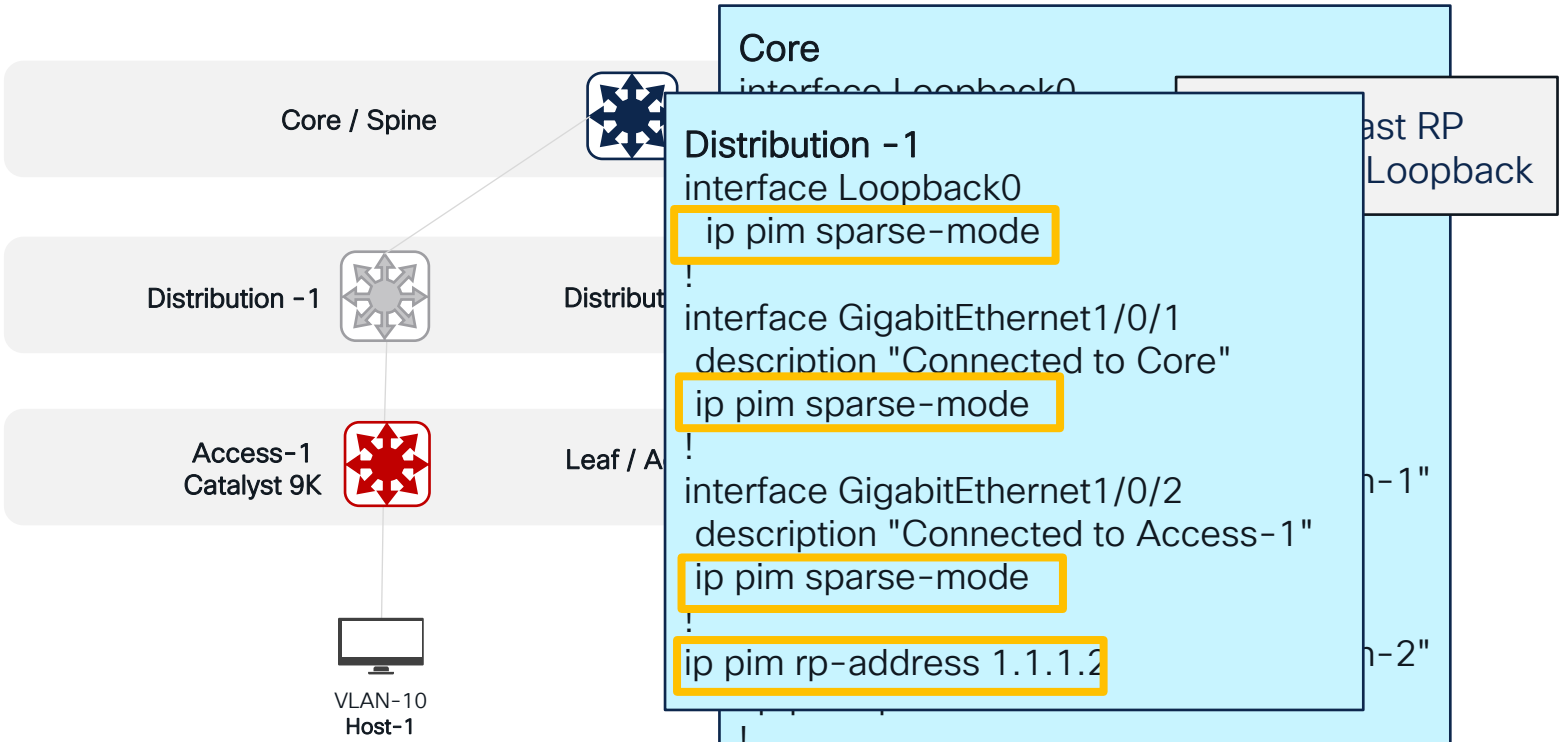



```
Core
interface Loopback0
 ip pim sparse-mode
!
interface Loopback1
 ip address 1.1.1.2 255.255.255.255
 ip pim sparse-mode
 ip ospf 1 area 0
!
interface TwentyFiveGigE1/0/3
 description "Connected to Distribution-1"
 ip pim sparse-mode
!
interface TwentyFiveGigE1/0/4
 description "Connected to Distribution-2"
 ip pim sparse-mode
!
ip pim rp-address 1.1.1.2
```

Anycast RP Loopback

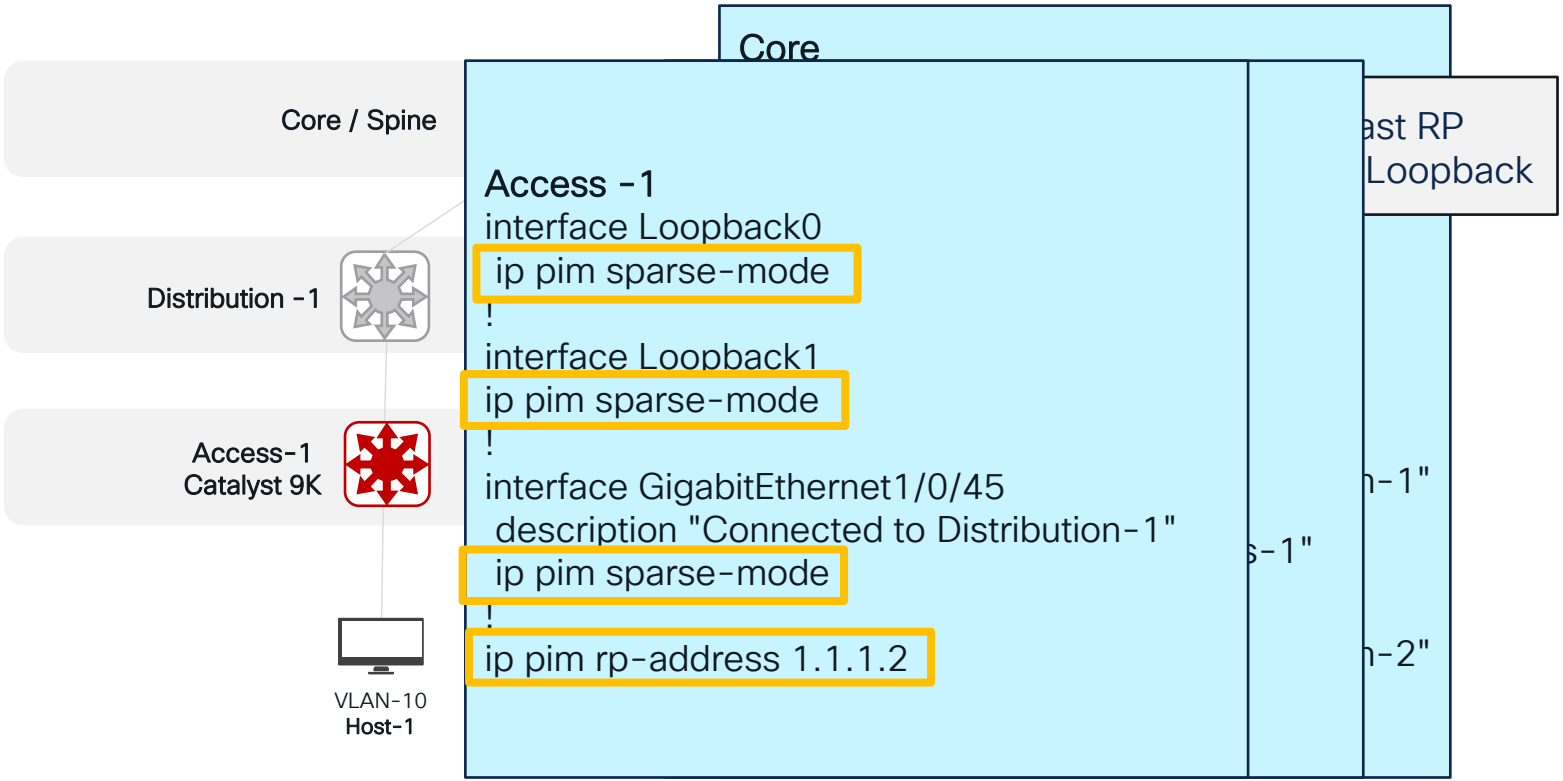
© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

Underlay Configuration for BUM – PIM ASM



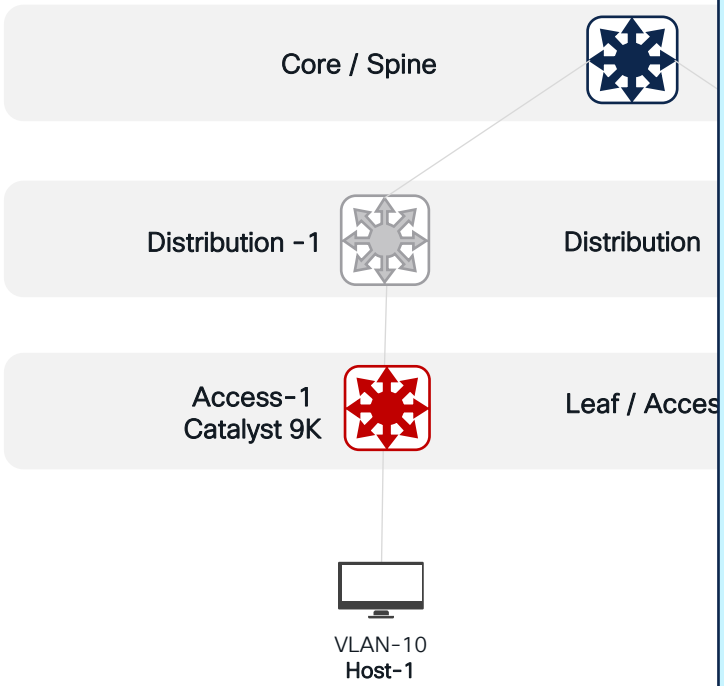
© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

Underlay Configuration for BUM – PIM ASM



© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

Overlay Configuration – BGP EVPN Control Plane

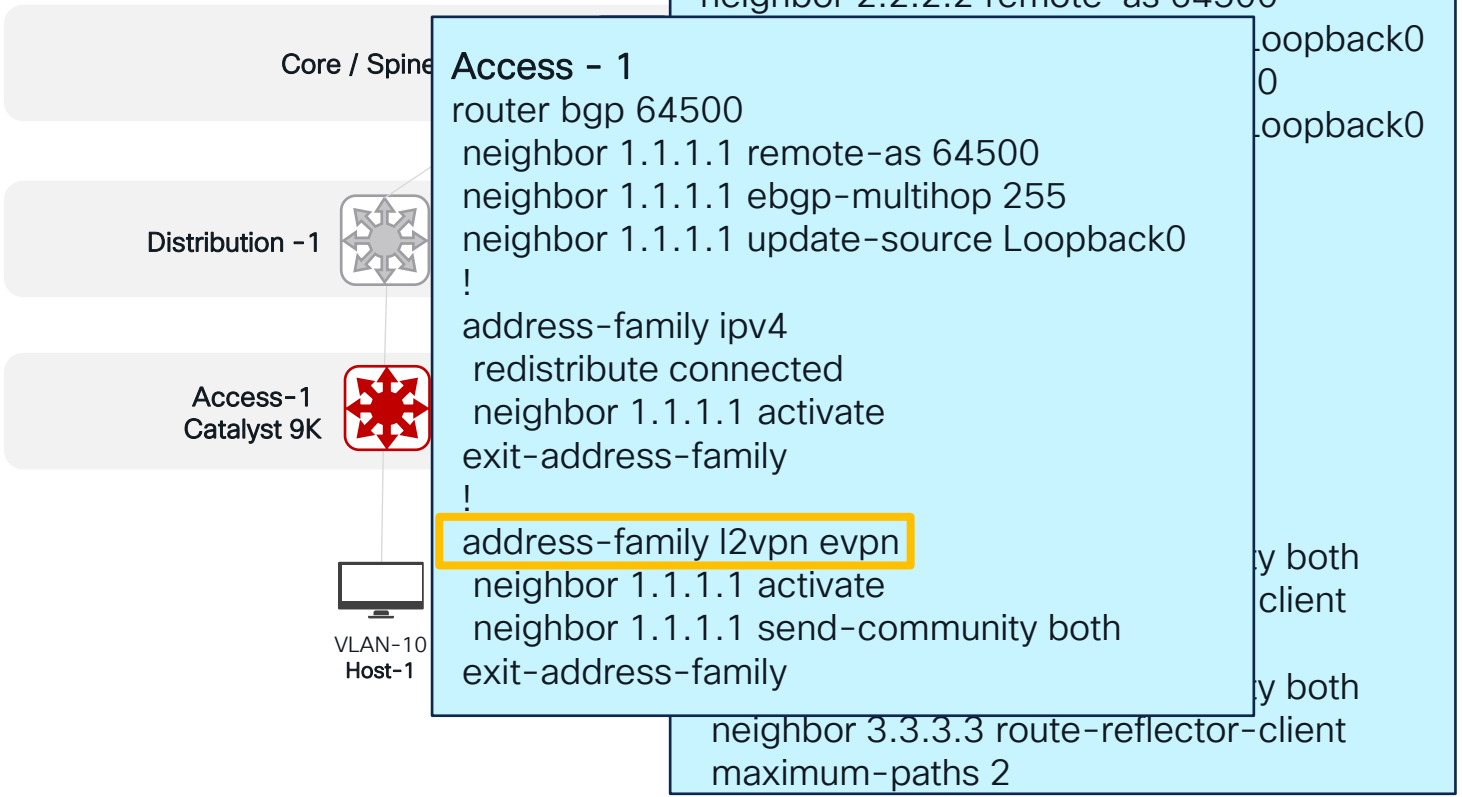


Core

```
router bgp 64500
 neighbor 2.2.2.2 remote-as 64500
 neighbor 2.2.2.2 update-source Loopback0
 neighbor 3.3.3.3 remote-as 64500
 neighbor 3.3.3.3 update-source Loopback0
 !
 address-family ipv4
  redistribute connected
  neighbor 2.2.2.2 activate
  neighbor 3.3.3.3 activate
  maximum-paths 2
 !
 address-family l2vpn evpn
  neighbor 2.2.2.2 activate
  neighbor 2.2.2.2 send-community both
  neighbor 2.2.2.2 route-reflector-client
  neighbor 3.3.3.3 activate
  neighbor 3.3.3.3 send-community both
  neighbor 3.3.3.3 route-reflector-client
  maximum-paths 2
```


© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

Overlay Configuration – BGP EVPN Control Plane

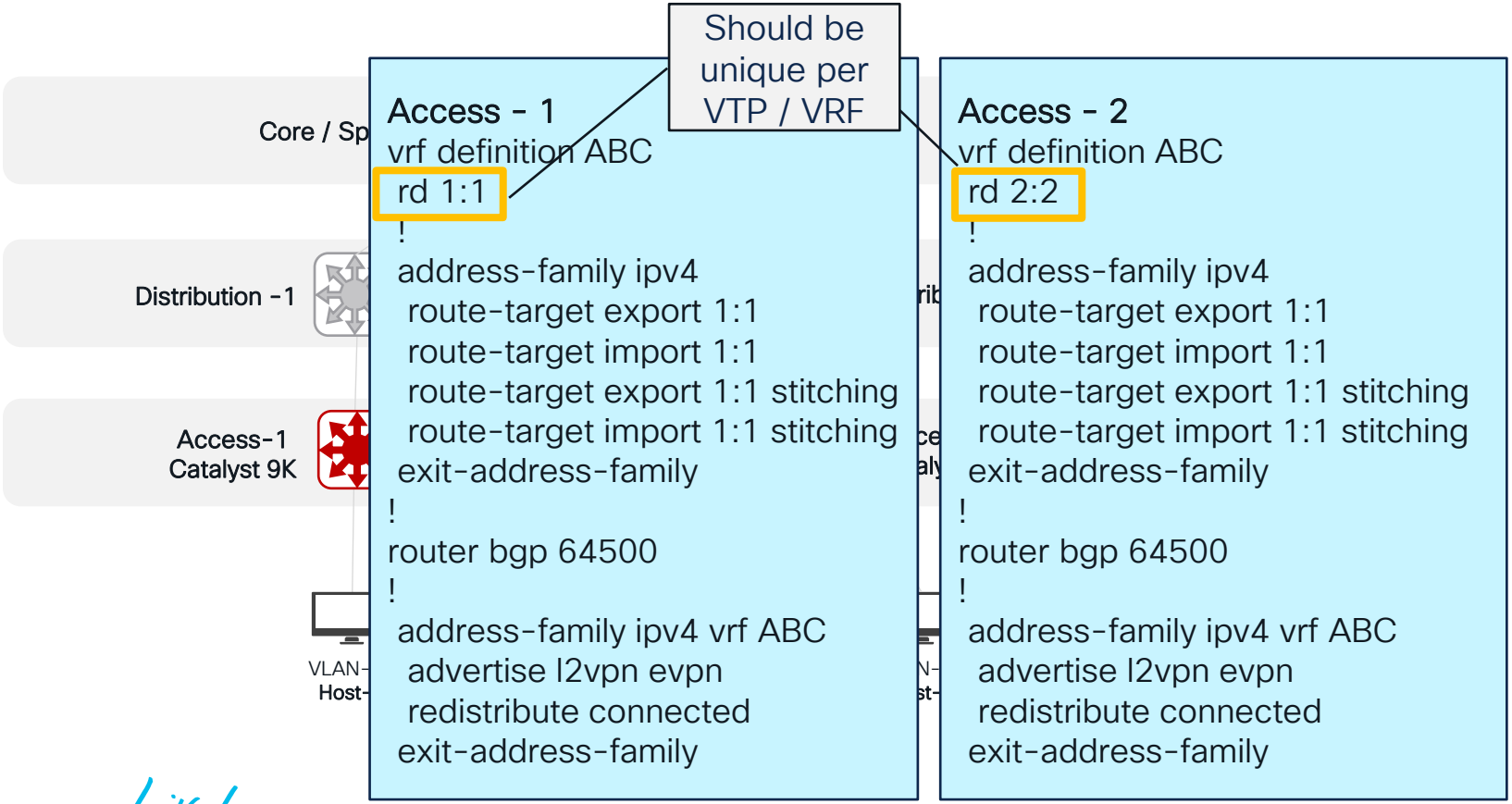



```
Core
router bgp 64500
 neighbor 2.2.2.2 remote-as 64500
                                    Loopback0
                                    0
                                    Loopback0
                                    y both
                                    client
                                    y both
 neighbor 3.3.3.3 route-reflector-client
 maximum-paths 2
```

```
Access - 1
router bgp 64500
 neighbor 1.1.1.1 remote-as 64500
 neighbor 1.1.1.1 ebgp-multihop 255
 neighbor 1.1.1.1 update-source Loopback0
 !
 address-family ipv4
  redistribute connected
  neighbor 1.1.1.1 activate
 exit-address-family
 !
 address-family l2vpn evpn
  neighbor 1.1.1.1 activate
  neighbor 1.1.1.1 send-community both
 exit-address-family
```

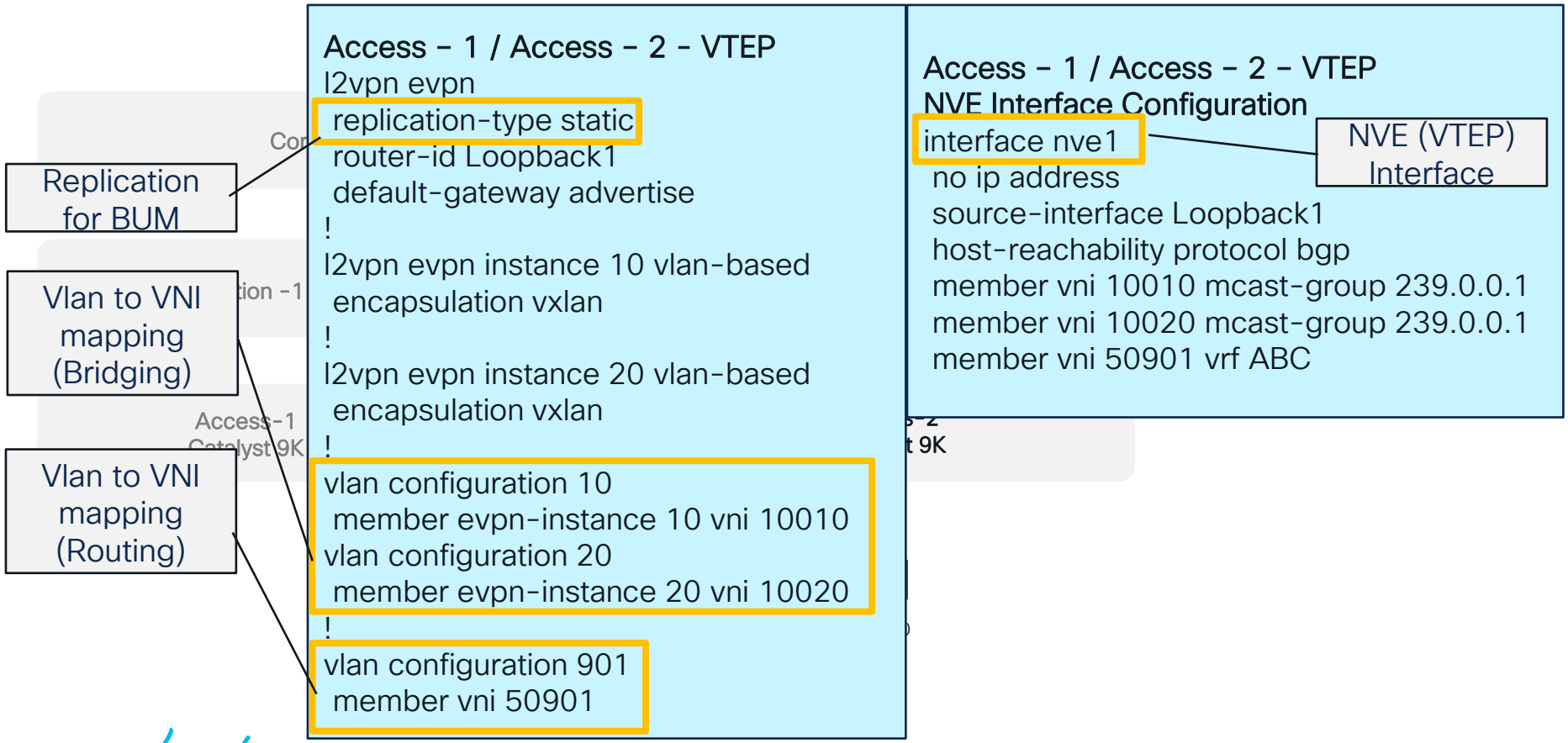

© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

Overlay Configuration – Multitenancy



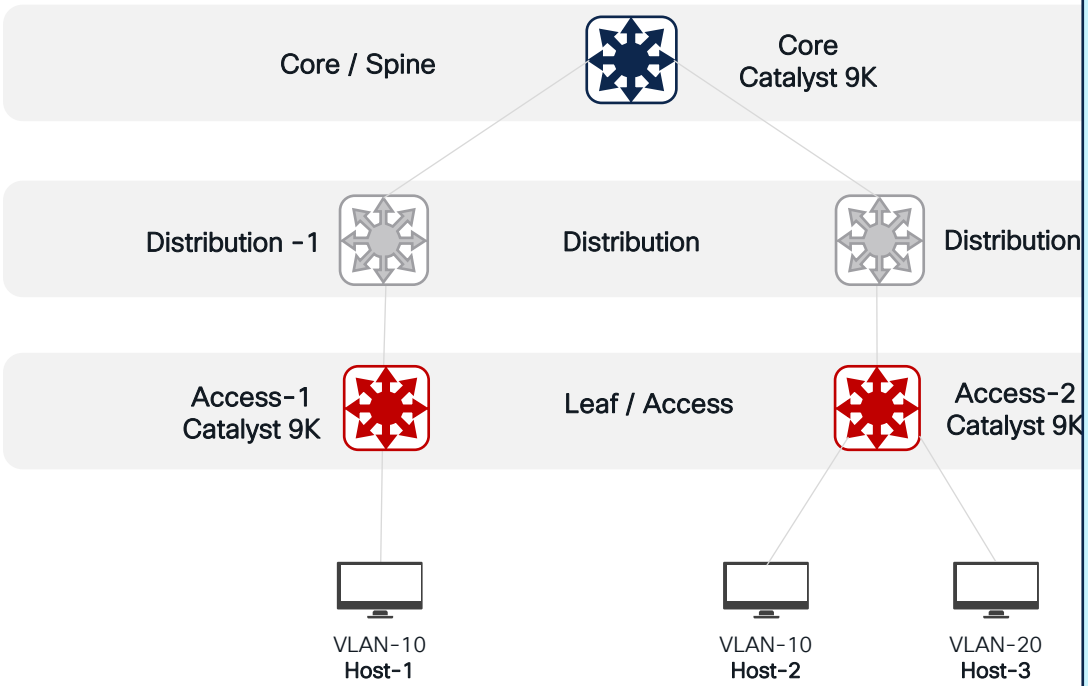
© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

Overlay Configuration – VXLAN Data Plane



© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

Distributed Anycast Gateway Configuration

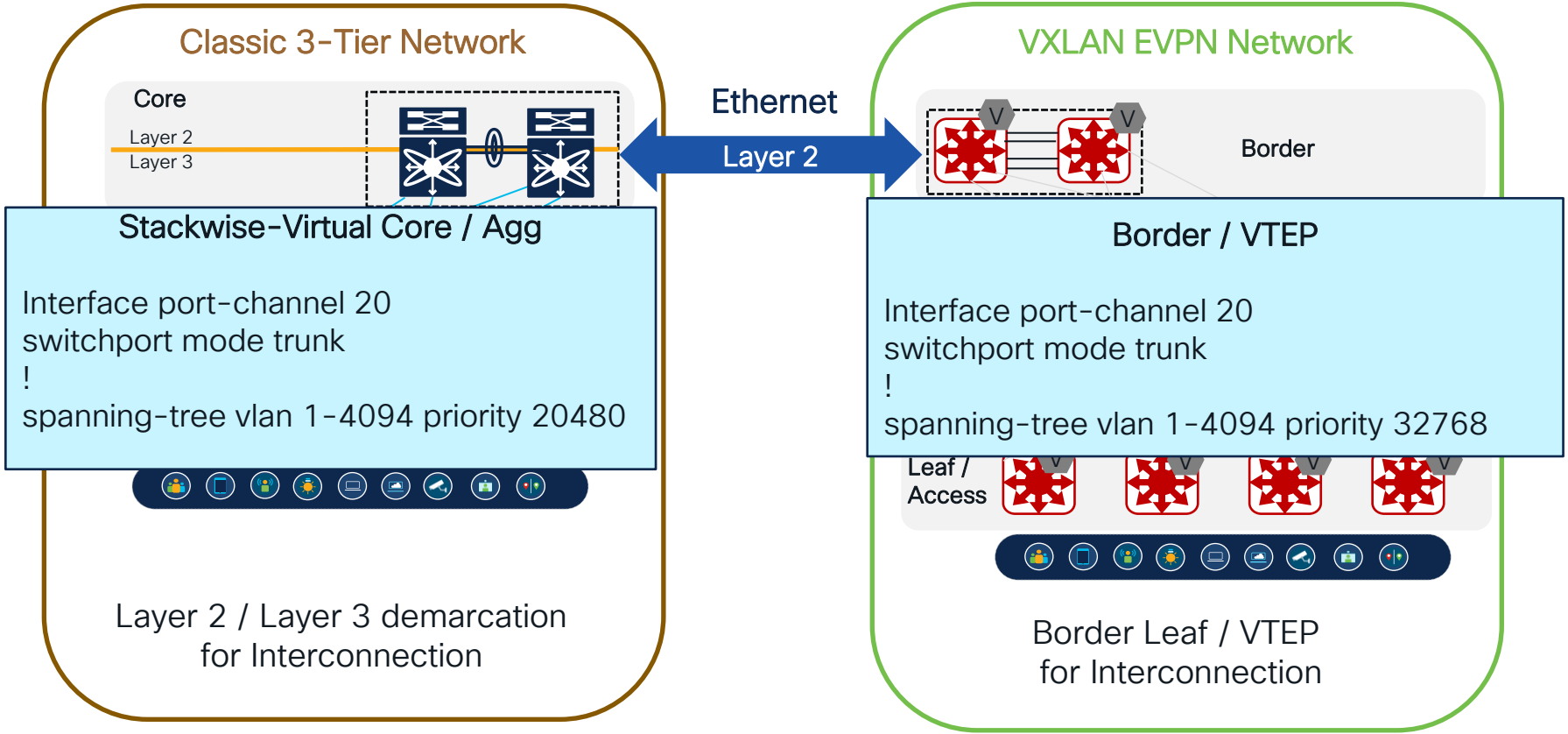


Access – 1 / Access – 2 : VTEP

```
interface Vlan10
 vrf forwarding ABC
 ip address 10.10.10.200 255.255.255.0
!
interface Vlan20
 vrf forwarding ABC
 ip address 10.10.20.200 255.255.255.0
 no autostate
!
interface Vlan901
 vrf forwarding ABC
 ip unnumbered Loopback1
 no autostate
```


© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

Layer 2 Interconnection



© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

Layer 3 Interconnection : Direct

Classic 3-Tier Network

Stackwise-Virtual Core / Agg

```
interface GigabitEthernet1/0/10
description “connected to VXLAN EVPN”
ip address 192.168.1.1 255.255.255.0
!
interface vlan 100
ip address 100.100.100.1 255.255.255.0
!
interface TwentyFiveGigE1/0/10
ip address 192.168.1.1 255.255.255.252
!
router bgp 64502
 neighbor 192.168.1.2 remote-as 64500
 neighbor 192.168.1.2 update-source
GigabitEthernet1/0/10
 !
 address-family ipv4
  redistribute connected
  network 100.100.100.0
```

Ethernet

Layer 3

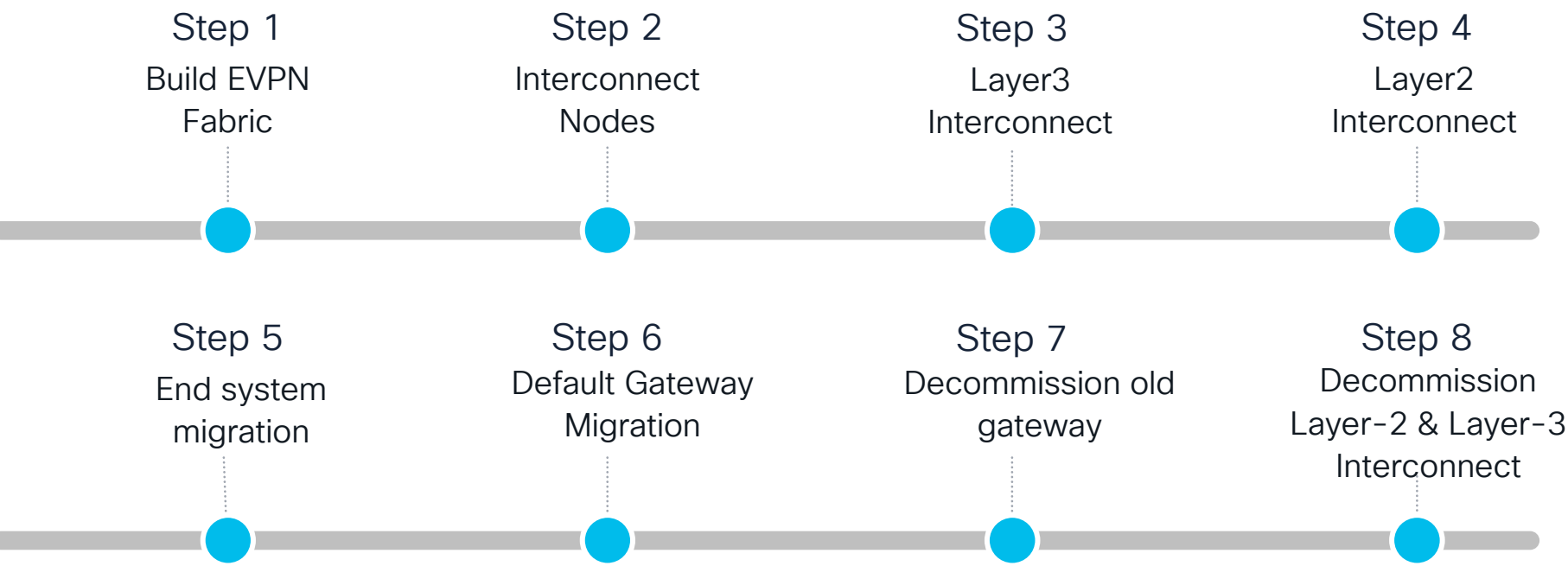
VXLAN EVPN Network

Access-1/Access-2 (VTEP)

```
interface GigabitEthernet1/0/10
description “connected to classical network”
vrf forwarding ABC
ip address 192.168.1.2 255.255.255.0
!
router bgp 64500
 !
 address-family ipv4 vrf ABC
  advertise l2vpn evpn
  redistribute connected
  neighbor 192.168.1.1 remote-as 64502
  neighbor 192.168.1.1 update-source
GigabitEthernet1/0/10
  neighbor 192.168.1.1 activate
```


© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

Migration workflow



© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

Key Takeaways

© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

And suddenly you know : It's time to start something new and trust the magic of beginnings

-Meister Eckhart

© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

Technical Session Surveys

- Attendees who fill out a minimum of four session surveys and the overall event survey will get Cisco Live branded socks!
- Attendees will also earn 100 points in the Cisco Live Game for every survey completed.
- These points help you get on the leaderboard and increase your chances of winning daily and grand prizes.

© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

Cisco Learning and Certifications

From technology training and team development to Cisco certifications and learning plans, let us help you empower your business and career. www.cisco.com/go/certs

Pay for Learning with Cisco Learning Credits

(CLCs) are prepaid training vouchers redeemed directly with Cisco.

Learn

Cisco U.
IT learning hub that guides teams and learners toward their goals

Cisco Digital Learning
Subscription-based product, technology, and certification training

Cisco Modeling Labs
Network simulation platform for design, testing, and troubleshooting

Cisco Learning Network
Resource community portal for certifications and learning

Train

Cisco Training Bootcamps
Intensive team & individual automation and technology training programs

Cisco Learning Partner Program
Authorized training partners supporting Cisco technology and career certifications

Cisco Instructor-led and Virtual Instructor-led training
Accelerated curriculum of product, technology, and certification courses

Certify

Cisco Certifications and Specialist Certifications
Award-winning certification program empowers students and IT Professionals to advance their technical careers

Cisco Guided Study Groups
180-day certification prep program with learning and support

Cisco Continuing Education Program
Recertification training options for Cisco certified individuals

Here at the event? Visit us at **The Learning and Certifications lounge at the World of Solutions**

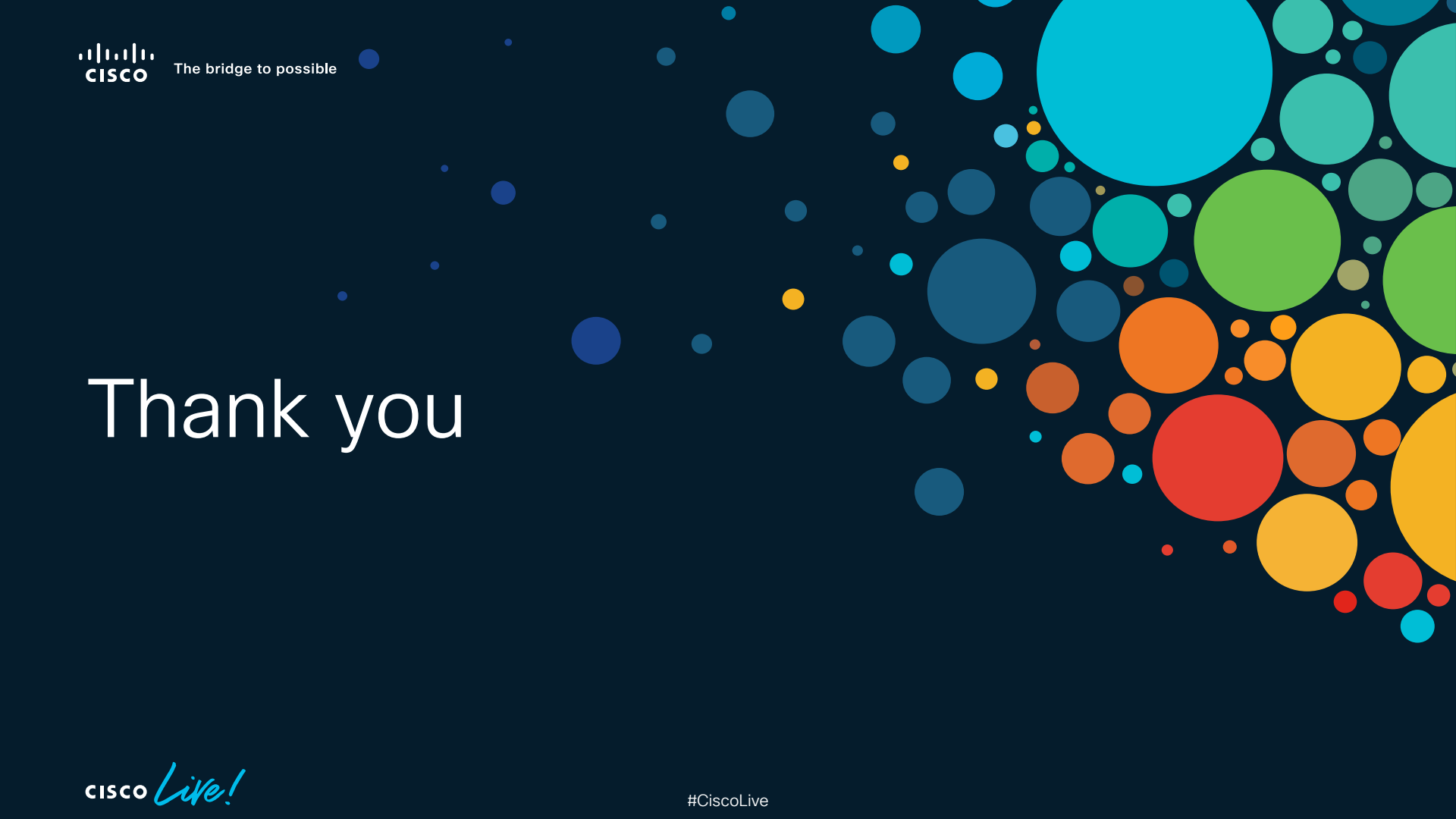
© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public

Continue your education

- Visit the Cisco Showcase for related demos
- Book your one-on-one Meet the Engineer meeting
- Attend the interactive education with DevNet, Capture the Flag, and Walk-in Labs
- Visit the On-Demand Library for more sessions at www.CiscoLive.com/on-demand

cisco Live!

© 2022 Cisco and/or its affiliates. All rights reserved. Cisco Public


cisco
The bridge to possible
Thank you
cisco Live!
#CiscoLive

cisco Live!
ALL IN