Cisco VTS 2.6.2 Day Zero Configuration Examples

The following sections provide details about the different VTS deployment scenarios and the respective Day Zero configuration.

1. For details about platforms that are supported in each role, see the Supported Platforms section in *Cisco VTS Installation Guide*.

* [VTS Day Zero Configuration for Various Roles and Platforms](#_VTS_Day_Zero)
* [Day Zero Configuration Changes Required on IOS XRv](#_Day_Zero_Configuration)
* [Underlay Day Zero Routing to Advertise for VTF and IOSXRv n/w to all Devices in Data Center Topology](#_Underlay_Day_Zero)
* [VTF - Day Zero Configuration on Non-VTEP Devices](#_VTF_-_Day_1)
* [IOS XRv Day Zero Configuration for High Availability](#_IOS_XRv_Day_1)
* [Ethernet Segment Identifier (ESI) Day Zero Configuration on TORs](#_Ethernet_Segment_Identifier)
* [VTS Day Zero Configuration for TCAM to support security group feature](#TCAM_REGION)
* [Day Zero Configuration - Network Convergence System (NCS) 5500 Series](#_Day_Zero_Configuration_1)

# VTS Day Zero Configuration for Various Roles and Platforms

The following sections provide examples of day zero configurations required on different platforms, based on their role.

1. You need to replace the variables (IP addresses, passwords, and so on) in the examples below with values from your own system.

* Day Zero Configuration—IOS XRv
* Day Zero Configuration—Cisco Nexus 9300 or Cisco Nexus 9500 as ToR
* Day Zero Configuration—Cisco Nexus 7000/7700 as ToR
* Day Zero Configuration—Cisco Nexus 5600 as ToR
* Day Zero Configuration—Cisco Nexus 9300 or Cisco Nexus 9500 as DC Gateway
* Day Zero Configuration—Cisco Nexus 7000/7700 as DC Gateway
* Day Zero Configuration—Cisco Nexus 5600 as DC Gateway
* Day Zero Configuration—Cisco Nexus 9300 or Cisco Nexus 9500 or Cisco Nexus 5600 or Cisco Nexus 7000 as Spine
* Day Zero Configuration—Cisco ASR 9000 as DCI—VRF Peering Mode
* Day Zero Configuration—Cisco Nexus 7000 as DCI—VRF Peering Mode
* Day Zero Configuration—Cisco ASR 9000 as Integrated DCI (DCI and DC Gateway)
* Day Zero Configuration—Cisco Nexus 7000 as Integrated DCI (DCI and DC Gateway)
* VTF-L2 connected TOR Interface Configuration

# Important Notes

* In a datacenter, on the DCI the fabric facing loopback should be unique. This is because we construct the route distinguisher with fabric facing loopback and L3VNI (fabric-facing-loopback:L3VNI).
* When using SVI uplinks with VXLAN enabled on Cisco Nexus 9200 Series switches and Cisco Nexus 9300-EX switches, use the system nve infra-vlans command to specify the VLANs that are used for uplink SVI. Failing to specify the VLANs results in traffic loss.

Day Zero Configuration—IOS XRv

hostname xrvr01

logging buffered 5242880

logging buffered critical

logging facility syslog

service timestamps log datetime

telnet vrf default ipv4 server max-servers 10

line console

exec-timeout 0 0

!

line default

exec-timeout 0 0

!

control-plane

management-plane

out-of-band

interface MgmtEth0/0/CPU0/0

allow all peer

address ipv4 169.254.10.0/30

!

!

!

!

!

!

interface Loopback0

ipv4 address 20.1.0.4 255.255.255.255

!

interface MgmtEth0/0/CPU0/0

ipv4 address 169.254.10.2 255.255.255.0

!

interface GigabitEthernet0/0/0/0

ipv4 address 10.29.128.12 255.255.255.0

!

interface GigabitEthernet0/0/0/1

ipv4 address 172.20.111.28 255.255.255.0

!

interface GigabitEthernet0/0/0/2

shutdown

!

router static

maximum path ipv4 30000

address-family ipv4 unicast

0.0.0.0/0 10.29.128.1

!

!

router ospf 100

area 0.0.0.0

default-cost 10

interface Loopback0

!

interface GigabitEthernet0/0/0/0

!

interface GigabitEthernet0/0/0/1

!

!

!

platform mode production accept-eula

end

Day Zero Configuration—Cisco Nexus 9300 or Cisco Nexus 9500 as ToR

hostname ToR1

vdc ToR1 id 1

feature telnet

feature nxapi

feature bash-shell

cfs eth distribute

nv overlay evpn

feature ospf

feature bgp

feature pim

feature isis

feature interface-vlan

feature vn-segment-vlan-based

feature lacp

feature dhcp

feature vpc

feature lldp

feature vtp

feature scp

feature nv overlay

username admin password cisco123 role network-admin

ip pim rp-address 2.2.2.2 group-list 224.0.0.0/4

ip pim ssm range 232.0.0.0/8

route-map vts-subnet-policy permit

vrf context management

ip route 0.0.0.0/0 172.29.128.1

vpc domain 50

peer-keepalive destination 172.29.128.8

peer-gateway

ip arp synchronize

ipv6 nd synchronize

interface Ethernet1/1

Description \*\*\*Interface connected to Compute1 eth1\*\*\*

switchport mode trunk

switchport trunk allowed vlan none

spanning-tree port type edge trunk

spanning-tree bpduguard enable

spanning-tree bpdufilter enable

interface Ethernet1/2

Description \*\*\*Interface connected to Controller1 eth1 for dhcp\*\*\*

switchport mode trunk

switchport trunk allowed vlan none

spanning-tree port type edge trunk

spanning-tree bpduguard enable

spanning-tree bpdufilter enable

interface Ethernet1/3

Description \*\*\*Interface connected to Compute1 eth2 for vPC link\*\*\*

switchport mode trunk

switchport trunk allowed vlan none

speed 1000

channel-group 100

no shutdown

interface Ethernet1/4

Description \*\*\*Interface connected to ToR2 eth1/4 for vPC peer link\*\*\*

switchport mode trunk

channel-group 20

no shutdown

interface Ethernet1/47

Description \*\*\*Interface connected to ios-XRV1\*\*\*

switchport mode access

switchport access vlan 800

no shutdown

interface Ethernet1/48

Description \*\*\*Interface connected to ios-XRV2\*\*\*

switchport mode access

switchport access vlan 800

no shutdown

interface Vlan800

no shutdown

ip address 88.88.88.1/24

ip router ospf 100 area 0.0.0.0

ip pim sparse-mode

interface port-channel20

Description \*\*\*Port channel link connected to ToR2 vPC peer link\*\*\*

switchport mode trunk

spanning-tree port type network

speed 1000

vpc peer-link

interface port-channel00

Description \*\*\*Port channel link connected to compute1 link\*\*\*

switchport mode trunk

switchport trunk allowed vlan none

spanning-tree port type edge trunk

spanning-tree bpduguard enable

spanning-tree bpdufilter enable

vpc 50

interface Ethernet2/1

Description \*\*\*Interface connected to Spine eth2/1\*\*\*

no switchport

ip address 11.1.1.2/24

ip router ospf 100 area 0.0.0.0

ip pim sparse-mode

no shutdown

interface mgmt0

vrf member management

ip address 172.29.128.7/26

interface loopback0

ip address 2.2.2.2/32

ip router ospf 100 area 0.0.0.0

ip pim sparse-mode

line console

line vty

boot nxos bootflash:/n9000-dk9.7.0.3.I1.1.bin

router ospf 100

router-id 2.2.2.2

area 0.0.0.0 default-cost 10

*If you do not intend to configure a route reflector in your network, you must add the BGP ASN manually.*

router bgp 1

  router-id 1.0.0.1

  address-family ipv4 unicast

  address-family l2vpn evpn

  neighbor 1.0.0.2 remote-as 1

    update-source loopback0

    address-family ipv4 unicast

    address-family l2vpn evpn

      send-community both

*If you intend to relay DHCP requests to a central DHCP server:*

feature dhcp

service dhcp

ip dhcp relay

ip dhcp relay information option

ip dhcp relay sub-option type cisco

ip dhcp relay information option vpn

ipv6 dhcp relay

ipv6 dhcp relay option vpn

ipv6 dhcp relay option type cisco

**FEX configuration**:

install feature-set fex

feature-set fex

fex 101

  pinning max-links 1

  description "FEX101"

interface port-channel100

  switchport mode fex-fabric

  fex associate 101

interface Ethernet1/1-4

channel-group 100

*In case you want to connect the server in a VPC mode with the FEX port, Server VPC mode is supported.*

**Server VPC config**:

**TOR1**

vpc domain 50

  role priority 100

  system-priority 100

  peer-keepalive destination 172.29.128.57 source 172.29.128.56

  peer-gateway

ipv6 nd synchronize

interface port-channel50

  switchport mode trunk

switchport trunk allowed vlan none

  spanning-tree port type network

  vpc peer-link

interface port-channel21

  switchport mode trunk

switchport trunk allowed vlan none

  vpc 21

interface Ethernet101/1/48

  switchport mode trunk

switchport trunk allowed vlan none

  channel-group 21 mode active  
  
**TOR2**

vpc domain 50

  role priority 100

  system-priority 100

  peer-keepalive destination 172.29.128.56 source 172.29.128.57

  peer-gateway

ipv6 nd synchronize

interface port-channel50

  switchport mode trunk

switchport trunk allowed vlan none

  spanning-tree port type network

  vpc peer-link

interface port-channel21

  switchport mode trunk

switchport trunk allowed vlan none

  vpc 21

interface Ethernet101/1/48

  switchport mode trunk

switchport trunk allowed vlan none

  channel-group 21 mode active

Day Zero Configuration—Cisco Nexus 7000/7700 as ToR

|  |
| --- |
| **Leaf VDC node:**  feature-set fabricpath feature-set fabric switchname N7K-Leaf-VDC  feature telnet cfs eth distribute  feature fabric forwarding nv overlay evpn feature fabricpath-vpn feature ospf feature bgp feature ospfv3 feature pim feature fabric multicast feature interface-vlan feature lacp feature lldp feature nv overlay feature nxapi  feature vni  username admin password 5 $5$Br/hUENC$QtUVSkr.nYdICxAR4yYdvd234FGHg6xnbS0DTuEfZU5  role vdc-admin no password strength-check ip domain-lookup  snmp-server user admin vdc-admin auth md5 0x2f35355ead2c11a03e1df61b17fcbbfc priv 0x2f35355ead2c11a03e1df61b17fcbbfc localizedk ey rmon event 1 log description FATAL(1) owner [PMON@FATAL](mailto:PMON@FATAL) rmon event 2 log description CRITICAL(2) owner [PMON@CRITICAL](mailto:PMON@CRITICAL) rmon event 3 log description ERROR(3) owner [PMON@ERROR](mailto:PMON@ERROR) rmon event 4 log descryption WARNING(4) owner [PMON@WARNING](mailto:PMON@WARNING) rmon event 5 log description INFORMATION(5) owner [PMON@INFO](mailto:PMON@INFO)  ip pim rp-address 20.1.0.24 group-list 224.0.0.0/4 ip pim ssm range 232.0.0.0/8 vlan 1  ##If you intend to manage the device using secure protocols, then you must enable HTTPS in the device using  nxapi https port 443  interface mgmt0   vrf member management   ip address 171.32.29.121/26  interface Vlan1   no ip redirects   no ipv6 redirects  interface port-channel100    description \*\*\*EtherChannel for connection to Compute 34\*\*\*  interface Ethernet1/36   description \*\*\*Connect to Spine e1/45\*\*\*   ip address 17.1.1.2/24   ipv6 address 2016:17:1:1::2/64   ip router ospf 200 area 0.0.0.0   ipv6 router ospfv3 200 area 0.0.0.0   ip pim sparse-mode   no shutdown  interface Ethernet1/37    description \*\*\*connection to Compute 34 eth2\*\*\*   channel-group 100 mode active   no shutdown  interface Ethernet1/38    description \*\*\*connection to Compute 34 eth3\*\*\*   channel-group 100 mode active   no shutdown  interface Ethernet1/40    description \*\*\*connection to Compute 38 eth1\*\*\*   no shutdown  interface loopback0   ip address 20.1.0.121/32    ip router ospf 200 area 0.0.0.0   ip pim sparse-mode  line console   exec-timeout 0 line vty router ospf 200   router-id 20.1.0.121   area 0.0.0.0 default-cost 10 router ospfv3 200   router-id 20.1.0.121 fabricpath domain default no system default switchport shutdown  ***If you do not intend to configure a route reflector in your network, you must add the BGP ASN manually:***  router bgp 100    router-id 20.1.0.121    address-family ipv4 unicast    address-family ipv6 unicast    address-family l2vpn evpn    neighbor 20.1.0.23 remote-as 100      update-source loopback0      address-family l2vpn evpn        send-community both  ***If you intend to relay DHCP requests to a central DHCP server:***  feature dhcp  service dhcp  ip dhcp relay  ip dhcp relay information option  ip dhcp relay sub-option type cisco  ip dhcp relay information option vpn  ipv6 dhcp relay  ipv6 dhcp relay option vpn  ipv6 dhcp relay option type cisco  ipv6 dhcp relay source-interface Ethernet1/36  ***Fex configuration:***  feature-set fex  fex 121    pinning max-links 1    debounce time 0    description FEX 121  interface port-channel121  description \*\*\*Port-Channel for connection to FEX 121\*\*\*  switchport  switchport mode fex-fabric  fex associate 121  interface port-channel1212    description \*\*\*FEX Port-Channel for connection to Compute 37\*\*\*  interface Ethernet1/39  switchport  switchport mode fex-fabric  fex associate 121  channel-group 121  interface Ethernet121/1/2    description \*\*\*FEX port connection to Compute 37 eth1\*\*\*    channel-group 1212 mode active    no shutdown |

Day Zero Configuration—Cisco Nexus 5600 as ToR

hostname ToR2

install feature-set fabric

feature-set fabric

cfs eth distribute

feature fabric forwarding

nv overlay evpn

feature ospf

feature bgp

feature pim

feature interface-vlan

feature lacp

feature vpc

feature lldp

feature nv overlay

feature nxapi

feature vn-segment-vlan-based

hardware ethernet store-and-fwd-switching

configure profile vrf-tenant-profile

configure terminal

fabric forwarding switch-role leaf

username admin password cisco123 role network-admin

ip pim rp-address 1.1.1.1 group-list 239.0.0.0/24 bidir

ip pim ssm range 232.0.0.0/8

vrf context management

ip route 0.0.0.0/0 172.29.128.1

vpc domain 50

peer-keepalive destination 172.29.128.7

peer-gateway

ip arp synchronize

ipv6 nd synchronize

interface Vlan10

no shutdown

ip address 1.0.1.1/24

ip router ospf 1 area 0.0.0.0

ip pim sparse-mode

vpc nve peer-link-vlan 10

interface Ethernet1/1

Description \*\*\*Interface connected to Compute2 eth1\*\*\*

switchport mode trunk

switchport trunk allowed vlan none

spanning-tree port type edge trunk

spanning-tree bpduguard enable

spanning-tree bpdufilter enable

interface Ethernet1/3

Description \*\*\*Interface connected to Compute1 eth3 for vPC link\*\*\*

switchport mode trunk

switchport trunk allowed vlan none

speed 1000

channel-group 100

no shutdown  
 spanning-tree port type edge trunk

switchport trunk allowed vlan except 10

interface Ethernet1/4

Description \*\*\*Interface connected to ToR2 eth1/4 for vPC peer link\*\*\*

switchport mode trunk

channel-group 20

no shutdown

interface port-channel20

Description \*\*\*Port channel link connected to ToR1 vPC peer link\*\*\*

switchport mode trunk

spanning-tree port type network

speed 1000

vpc peer-link

interface port-channel00

Description \*\*\*Port channel link connected to compute2 link\*\*\*

switchport mode trunk

switchport trunk allowed vlan none

spanning-tree port type edge trunk

spanning-tree bpduguard enable

spanning-tree bpdufilter enable

vpc 50

interface Ethernet2/1

Description \*\*\*Interface connected to Spine eth2/1\*\*\*

no switchport

ip address 12.1.1.2/24

ip router ospf 100 area 0.0.0.0

ip pim sparse-mode

no shutdown

interface mgmt0

vrf member management

ip address 172.29.128.8/26

interface loopback0

ip address 3.3.3.3/32

ip router ospf 100 area 0.0.0.0

ip pim sparse-mode

line console

line vty

boot nxos bootflash:/n9000-dk9.7.0.3.I1.1.bin

router ospf 100

router-id 3.3.3.3

area 0.0.0.0 default-cost 10  
  
*If you do not intend to configure a route reflector in your network, you must add the BGP ASN manually.*

router bgp 1

  router-id 1.0.0.1

  address-family ipv4 unicast

  address-family l2vpn evpn

  neighbor 1.0.0.2 remote-as 1

    update-source loopback0

    address-family ipv4 unicast

    address-family l2vpn evpn

      send-community both

*If you intend to setup two 5600s in a VPC pair, as a prerequisite VPC should be configured.*

interface Vlan1001

  no shutdown

  ip address 1.0.1.1/24

  ip router ospf 1 area 0.0.0.0

  ip pim sparse-mode

vpc nve peer-link-vlan 1001

*NVE config:*

interface nve1  
no shutdown  
source-interface loopback0  
host-reachability protocol bgp

*dot1q auto-config:*

platform fabric database dot1q disable

*If you intend to relay DHCP requests to a central DHCP server:*

feature dhcp

ip dhcp relay

ip dhcp relay information option

ip dhcp relay sub-option type cisco

ip dhcp relay information option vpn

ipv6 dhcp relay

ipv6 dhcp relay option vpn

ipv6 dhcp relay option type cisco

**FEX configuration**:

feature fex

fex 101

  pinning max-links 1

  description "FEX0101"

fex 102

  pinning max-links 1

  description "FEX0102"

interface port-channel101

  fex associate 101

interface port-channel102

  fex associate 102

interface Ethernet1/1-2

channel-group 102

interface Ethernet2/1

channel-group 101

**VPC modes**:

FEX VPC:

feature vpc

vpc domain 100

  role priority 2000

  system-priority 4000

  peer-keepalive destination 172.29.128.55 source 172.29.128.54

  delay restore 150

ipv6 nd synchronize

interface port-channel30

  switchport mode trunk

switchport trunk allowed vlan none

  spanning-tree port type network

  flowcontrol send on

  vpc peer-link

interface port-channel101

  switchport mode fex-fabric

  fex associate 101

  vpc 100

interface port-channel102

  switchport mode fex-fabric

  fex associate 102

  vpc 102

interface Ethernet101/1/1

  switchport mode trunk

switchport trunk allowed vlan none

interface Ethernet101/1/2

  switchport mode trunk

switchport trunk allowed vlan none

interface Ethernet101/1/3

  switchport mode trunk

switchport trunk allowed vlan none

Enhanced VPC:

interface port-channel20

  switchport mode trunk

switchport trunk allowed vlan none

interface Ethernet102/1/23

  switchport mode trunk

switchport trunk allowed vlan none

  speed 1000

  channel-group 20 mode active

interface Ethernet101/1/48

  switchport mode trunk

  channel-group 20 mode active

Day Zero Configuration—Cisco Nexus 9300 or Cisco Nexus 9500 as DC Gateway

hostname ToR3

vdc ToR1 id 1

feature telnet

feature nxapi

feature bash-shell

cfs eth distribute

nv overlay evpn

feature ospf

feature bgp

feature pim

feature isis

feature interface-vlan

feature vn-segment-vlan-based

feature lacp

feature dhcp

feature vpc

feature lldp

feature vtp

feature scp

feature nv overlay

username admin password cisco123 role network-admin

no password strength-check

ip domain-lookup

spanning-tree mode mst

snmp-server user admin network-admin auth md5 cisco123 priv cisco123 localizedkey

ip pim rp-address 2.2.2.2 group-list 224.0.0.0/4

ip pim ssm range 232.0.0.0/8

vrf context management

ip route 0.0.0.0/0 172.29.128.1

interface Ethernet1/1

Description \*\*\*Interface connected to Compute3 eth1\*\*\*

switchport mode trunk

switchport trunk allowed vlan none

spanning-tree port type edge trunk

spanning-tree bpduguard enable

spanning-tree bpdufilter enable

interface Ethernet1/2

Description \*\*\*Interface connected to DCI G0/0/1/19\*\*\*

no switchport

ip address 10.5.55.1/24

ipv6 address 2001:2002:1:1::3/64

no shutdown

interface Ethernet2/1

Description \*\*\*Interface connected to Spine eth2/1\*\*\*

no switchport

ip address 13.1.1.2/24

ip router ospf 100 area 0.0.0.0

ip pim sparse-mode

no shutdown

interface mgmt0

vrf member management

ip address 172.29.128.9/26

interface loopback0

ip address 4.4.4.4/32

ip router ospf 100 area 0.0.0.0

ip pim sparse-mode

line console

line vty

boot nxos bootflash:/n9000-dk9.7.0.3.I1.1.bin

router ospf 100

router-id 4.4.4.4

area 0.0.0.0 default-cost 10

Day Zero Configuration—Cisco Nexus 7000/7700 as DC Gateway

|  |
| --- |
| **Border Leaf VDC node:**  feature-set fabricpath  feature-set fabric  hostname N7K-BorderLeaf-VDC  feature telnet  cfs eth distribute  feature fabric forwarding  nv overlay evpn  feature fabricpath-vpn  feature ospf  feature bgp  feature ospfv3  feature pim  feature fabric multicast  feature interface-vlan  feature lacp  feature lldp  feature nv overlay  feature nxapi  feature vni  username admin password 5 $5$d03SuJcC$yFCGPGz9PZAzBMp.GksV8ldiwZLfHpQ.gZKEQKIMks8 role vdc-admin  no password strength-check  ip domain-lookup  snmp-server user admin vdc-admin auth md5 0xe274ded350c828fb42e72afcf04d5944 priv 0xe274ded350c828fb42e72afcf04d5944 localize  dkey  rmon event 1 log description FATAL(1) owner PMON@FATAL  rmon event 2 log description CRITICAL(2) owner PMON@CRITICAL  rmon event 3 log description ERROR(3) owner PMON@ERROR  rmon event 4 log description WARNING(4) owner PMON@WARNING  rmon event 5 log description INFORMATION(5) owner PMON@INFO  ip pim rp-address 20.1.0.24 group-list 224.0.0.0/4  ip pim ssm range 232.0.0.0/8  vlan 1  vrf context management  ip route 0.0.0.0/0 172.23.209.1  ##If you intend to manage the device using secure protocols, then you must enable HTTPS in the device using  nxapi https port 443  interface mgmt0  vrf member management  ip address 171.32.29.225/26  interface Vlan1  interface Ethernet1/1  description \*\*\* Connected to Compute 12 Eth1 \*\*\*  no shutdown  interface Ethernet1/2  description \*\*\* Connected to Spine E1/47 \*\*\*  ip address 19.1.1.2/24  ipv6 address 2016:19:1:1::2/64  ip router ospf 200 area 0.0.0.0  ipv6 router ospfv3 200 area 0.0.0.0  ip pim sparse-mode  no shutdown  interface Ethernet1/3  description \*\*\* Connected to DCI GigabitEthernet0/0/0/16 for **VRF-Peering** **Mode**\*\*\*  ip address 10.5.57.1/24  ipv6 address 2016:10:5:57::1/64  ip router ospf 200 area 0.0.0.0  no shutdown  interface Ethernet1/4  description \*\*\* Connected to Compute 13 Eth1 \*\*\*  no shutdown  interface loopback0  ip address 20.1.0.225/32  ip router ospf 200 area 0.0.0.0  ip pim sparse-mode  line console  exec-timeout 0  line vty  router ospf 200  router-id 20.1.0.225  area 0.0.0.0 default-cost 10  router ospfv3 200  router-id 20.1.0.225  fabricpath domain default  evpn  no system default switchport shutdown  lldp holdtime 255 |

Day Zero Configuration—Cisco Nexus 5600 as DC Gateway

hostname ToR2

install feature-set fabric

feature-set fabric

cfs eth distribute

feature fabric forwarding

nv overlay evpn

feature ospf

feature bgp

feature pim

feature interface-vlan

feature lacp

feature vpc

feature lldp

feature nv overlay

feature nxapi

feature vn-segment-vlan-based

hardware ethernet store-and-fwd-switching

configure profile vrf-tenant-profile

configure terminal

fabric forwarding switch-role leaf

username admin password cisco123 role network-admin

ip pim rp-address 10.10.10.250 group-list 239.0.0.0/24 bidir

ip pim ssm range 232.0.0.0/8

vrf context management

ip route 0.0.0.0/0 172.29.128.1

vpc domain 50

peer-keepalive destination 172.29.128.7

peer-gateway

ip arp synchronize

ipv6 nd synchronize

interface Vlan10

no shutdown

ip address 1.0.1.1/24

ip router ospf 1 area 0.0.0.0

ip pim sparse-mode

vpc nve peer-link-vlan 10

interface Ethernet1/1

Description \*\*\*Interface connected to Compute2 eth1\*\*\*

switchport mode trunk

switchport trunk allowed vlan none

spanning-tree port type edge trunk

spanning-tree bpduguard enable

spanning-tree bpdufilter enable

interface Ethernet1/3

Description \*\*\*Interface connected to Compute1 eth3 for vPC link\*\*\*

switchport mode trunk

switchport trunk allowed vlan none

speed 1000

channel-group 100

no shutdown

interface Ethernet1/4

Description \*\*\*Interface connected to ToR2 eth1/4 for vPC peer link\*\*\*

switchport mode trunk

channel-group 20

no shutdown

interface port-channel20

Description \*\*\*port channel link connected to ToR1 vPC peer link\*\*\*

switchport mode trunk

spanning-tree port type network

speed 1000

vpc peer-link

interface Ethernet1/5

Description \*\*\*Interface connected to DCI G0/0/1/19\*\*\*

no switchport

ip address 10.5.55.1/24

ipv6 address 2001:2002:1:1::3/64

no shutdown

interface Ethernet2/1

Description \*\*\*Interface connected to Spine eth2/1\*\*\*

no switchport

ip address 12.1.1.2/24

ip router ospf 100 area 0.0.0.0

ip pim sparse-mode

no shutdown

interface mgmt0

vrf member management

ip address 172.29.128.8/26

interface loopback0

ip address 3.3.3.3/32

ip router ospf 100 area 0.0.0.0

ip pim sparse-mode

line console

line vty

boot nxos bootflash:/n9000-dk9.7.0.3.I1.1.bin

router ospf 100

router-id 3.3.3.3

area 0.0.0.0 default-cost 10

BGP:

router bgp 65000  
router-id 10.10.10.211  
address-family ipv4 unicast  
neighbor 10.10.10.1 remote-as 65000  
update-source loopback0  
address-family l2vpn evpn  
send-community both  
neighbor 10.10.10.2 remote-as 65000  
update-source loopback0  
address-family l2vpn evpn  
send-community both  
neighbor 10.10.254.72 remote-as 100 <-- vrf peering to Edge Router  
update-source loopback0  
disable-connected-check  
address-family ipv4 unicast  
evpn

NVE interface:

interface nve1  
no shutdown  
source-interface loopback0  
host-reachability protocol bgp

Day Zero Configuration—Cisco Nexus 9300 or Cisco Nexus 9500 or Cisco Nexus 5600 or Cisco Nexus 7000 as Spine

hostname SolTB1-Spine1

vdc SolTB1-Spine1 id 1

allocate interface Ethernet1/1-48

allocate interface Ethernet2/1-12

limit-resource vlan minimum 16 maximum 4094

limit-resource vrf minimum 2 maximum 4096

limit-resource port-channel minimum 0 maximum 512

limit-resource u4route-mem minimum 248 maximum 248

limit-resource u6route-mem minimum 96 maximum 96

limit-resource m4route-mem minimum 58 maximum 58

limit-resource m6route-mem minimum 8 maximum 8

feature telnet

feature nxapi

feature bash-shell

cfs eth distribute

nv overlay evpn

feature ospf

feature bgp

feature pim

feature isis

feature interface-vlan

feature vn-segment-vlan-based

feature lacp

feature vpc

feature vtp

feature lldp

feature nv overlay

username admin password cisco123 role network-admin

no password strength-check

ip domain-lookup

snmp-server user admin network-admin auth md5 cisco123 priv cisco123 localizedkey

rmon event 1 log trap public description FATAL(1) owner PMON@FATAL

rmon event 2 log trap public description CRITICAL(2) owner PMON@CRITICAL

rmon event 3 log trap public description ERROR(3) owner PMON@ERROR

rmon event 4 log trap public description WARNING(4) owner PMON@WARNING

rmon event 5 log trap public description INFORMATION(5) owner PMON@INFO

ip pim rp-address 2.2.2.2 group-list 224.0.0.0/4

ip pim ssm range 232.0.0.0/8

##If you intend to manage (Nexus 7000) the device using secure protocols, then you must enable HTTPS in the device using

nxapi https port 443

vlan 1

vrf context management

ip route 0.0.0.0/0 172.20.98.193

interface Ethernet1/1

Description \*\*\*Interface connected to XRVR1 G0/0/0/0\*\*\*

no switchport

ip address 10.6.45.1/24

no shutdown

interface Ethernet1/2

Description \*\*\*Interface connected to XRVR2 G0/0/0/0\*\*\*

no switchport

ip address 10.6.46.1/24

no shutdown

interface Ethernet2/1

Description \*\*\*Interface connected to ToR1 eth2/1\*\*\*

no switchport

ip address 11.1.1.1/24

ip router ospf 100 area 0.0.0.0

ip pim sparse-mode

no shutdown

interface Ethernet2/2

Description \*\*\*Interface connected to ToR2 eth2/1\*\*\*

no switchport

ip address 12.1.1.1/24

ip router ospf 100 area 0.0.0.0

ip pim sparse-mode

no shutdown

interface Ethernet2/3

Description \*\*\*Interface connected to ToR3 DC GW eth2/1\*\*\*

no switchport

ip address 13.1.1.1/24

ip router ospf 100 area 0.0.0.0

ip pim sparse-mode

no shutdown

interface mgmt0

vrf member management

ip address 172.20.98.206/26

interface loopback0

ip address 5.5.5.5/32

ip router ospf 100 area 0.0.0.0

ip pim sparse-mode

line console

line vty

boot nxos bootflash:/n9000-dk9.6.1.2.I3.1.bin

router ospf 100

router-id 5.5.5.5

area 0.0.0.0 default-cost 10

Day Zero Configuration—Cisco ASR 9000 as DCI—VRF Peering Mode

service unsupported-transceiver

hostname asr9k1

telnet ipv4 server max-servers 5

username admin

password cisco123

group root-system

group cisco-support

interface MgmtEth0/0/CPU0/0

ipv4 address 172.29.128.10 255.255.255.0

interface GigabitEthernet0/0/1/19

description to peer node DC GW ToR3 eth1/2

ipv4 address 10.5.55.2 255.255.255.0

ipv6 address 2001:2002:1:1::2/64

interface loopback0

ipv4 address 6.6.6.6/32

router static

address-family ipv4 unicast

0.0.0.0/0 172.29.128.1

rd-set auto

end-set

route-policy vts-route-policy

pass

end-policy

lldp

*##If you intend to manage the device using secured ports/protocols (SSH), make sure the SSH is enabled (pre-req: k9sec package) in the device and also configure the below commands as well*

ssh server v2

ssh server vrf default

ssh timeout 60

Day Zero Configuration—Cisco Nexus 7000 as DCI—VRF Peering Mode

hostname dci-tb19

no system admin-vdc

install feature-set fabricpath

install feature-set fabric

vdc dci-tb19 id 1

limit-resource module-type f3

allow feature-set fabricpath

allow feature-set fabric

cpu-share 5

allocate interface Ethernet3/1-12

feature-set fabricpath

feature-set fabric

feature telnet

feature scp-server

cfs eth distribute

feature fabric forwarding

nv overlay evpn

feature ospf

featur bgp

feature pim

feature fabric multicast

feature interface-vlan

feature lacp

feature vpc

feature lldp

feature vtp

feature nv overlay

feature nxapi

feature vni

ip pim rp-address 11.1.1.1 group-list 224.0.0.0/4

ip pim ssm range 232.0.0.0/8

bridge-domain 1001-2000

vrf context management

ip route 0.0.0.0/0 172.20.100.1

hardware forwarding unicast trace

encapsulation vni dynamic dot1q 2-3967

*##If you intend to manage the device using secure protocols, then you must enable HTTPS in the device using*

nxapi https port 443

line default exec-timeout 0 0

line console exec-timeout 0 0

interface mgmt0

vrf member management

ip address 172.20.100.199/24

interface Vlan1

interface Ethernet3/3

description to peer node DC GW ToR3 eth1/2

no switchport

ip address 10.5.55.2 255.255.255.0

ipv6 address 2001:2002:1:1::2/64

no shutdown

interface loopback0

ip address 12.1.1.1/32

ip router ospf 100 area 0.0.0.0

ip pim sparse-mode

line console

line vty

boot kickstart bootflash:/n7000-s2-kickstart.7.3.0.D1.0.64.gbin sup-1

boot system bootflash:/n7000-s2-dk9.7.3.0.D1.0.64.gbin sup-1

router ospf 100

router-id 12.1.1.1

area 0.0.0.0 default-cost 10

fabricpath domain default

no system default switchport shutdown

no system auto-upgrade epld

Day Zero Configuration—Cisco ASR 9000 as Integrated DCI (DCI and DC Gateway)

service unsupported-transceiver

hostname asr9k1

telnet ipv4 server max-servers 5

username admin

password cisco123

group root-system

group cisco-support

interface MgmtEth0/0/CPU0/0

ipv4 address 172.29.128.10 255.255.255.0

interface GigabitEthernet0/0/1/19

description Interface connected to Spine

ipv4 address 20.0.1.3/24

no shutdown

interface loopback0

ipv4 address 6.6.6.6/32

router ospf 100

router-id 6.6.6.6  
 address-family ipv4 unicast

area 0

interface loopback0

interface GigabitEthernet0/0/1/19

router static

address-family ipv4 unicast

0.0.0.0/0 172.29.128.1

rd-set auto

end-set

lldp

*##If you intend to manage the device using secured ports/protocols (SSH), make sure the SSH is enabled (pre-req: k9sec package) in the device and also configure the below commands as well*

ssh server v2

ssh server vrf default

ssh timeout 60

line default exec-timeout 0 0

line console exec-timeout 0 0

Day Zero Configuration—Cisco Nexus 7000 as Integrated DCI (DCI and DC Gateway)

hostname dci-tb19

no system admin-vdc

install feature-set fabricpath

install feature-set fabric

vdc dci-tb19 id 1

limit-resource module-type f3

allow feature-set fabricpath

allow feature-set fabric

cpu-share 5

allocate interface Ethernet3/1-12

feature-set fabricpath

feature-set fabric

feature telnet

feature scp-server

cfs eth distribute

feature fabric forwarding

nv overlay evpn

feature ospf

feature bgp

feature pim

feature fabric multicast

feature interface-vlan

feature lacp

feature vpc

feature lldp

feature vtp

feature nv overlay

feature nxapi

feature vni

ip pim rp-address 11.1.1.1 group-list 224.0.0.0/4

ip pim ssm range 232.0.0.0/8

bridge-domain 1001-2000

vrf context vrf-tenant-profile

vrf context management

ip route 0.0.0.0/0 172.20.100.1

hardware forwarding unicast trace

encapsulation vni dynamic dot1q 2-3967

*##If you intend to manage the device using secure protocols, then you must enable HTTPS in the device using*

nxapi https port 443

interface mgmt0

vrf member management

ip address 172.20.100.199/24

interface Vlan1

interface Ethernet3/3

Description \*\*\*Interface connected to Spine\*\*\*

no switchport

ip address 20.0.1.3/24

ip router ospf 100 area 0.0.0.0

ip pim sparse-mode

no shutdown

interface loopback0

ip address 12.1.1.1/32

ip router ospf 100 area 0.0.0.0

ip pim sparse-mode

line console

line vty

boot kickstart bootflash:/n7000-s2-kickstart.7.3.0.D1.0.64.gbin sup-1

boot system bootflash:/n7000-s2-dk9.7.3.0.D1.0.64.gbin sup-1

router ospf 100

router-id 12.1.1.1

area 0.0.0.0 default-cost 10

fabricpath domain default

no system default switchport shutdown

no system auto-upgrade epld

# Day Zero Configuration Changes Required on IOS XRv

Basic IGP Neighbor-ship for BGP EVPN Advertisement

interface GigabitEthernet0/0/0/0

ipv4 address 10.29.128.12 255.255.255.0

interface Loopback0

ipv4 address 20.1.0.4 255.255.255.255

!

router ospf 100

router-id 20.1.0.4

address-family ipv4 unicast

area 0.0.0.0

default-cost 10

interface Loopback0

!

interface GigabitEthernet0/0/0/0

!

interface GigabitEthernet0/0/0/1

!

!

Corresponding Day 0 Configuration on Leaf/Spine

router ospf 100

router-id 4.4.4.4

area 0.0.0.0 default-cost 10

interface loopback0

ip address 4.4.4.4/32

ip router ospf 100 area 0.0.0.0

ip pim sparse-mode

vlan 800

no shutdown

interface Vlan800

no shutdown

ip address 10.29.128.1/24

ip router ospf 100 area 0.0.0.0

ip pim sparse-mode

interface ethernet 1/1 *This is the interface where the IOS XRv connects to leaf or spine*

no shutdown

switchport mode access

switchport access vlan800

# Underlay Day Zero Routing to Advertise for VTF and IOSXRv n/w to all Devices in Data Center Topology

The VTF IP address needs to be routed via the underlay network so that the VTF endpoint is advertised to all

the physical Leaf and Spine in the Data Center network.

Table 1) OSPF as Underlay Routing Protocol

|  |  |
| --- | --- |
| Sample OSPF Configuration  on Leaf 1 |  |
| SVI for VTF n/w | interface Vlan800  no shutdown  ip address 10.29.128.1/24  ip router ospf 100 area 0.0.0.0 |
| OSPF Configuration | router ospf 100  router-id 4.4.4.4  area 0.0.0.0 default-cost 10  interface Vlan800  ip router ospf 100 area 0.0.0.0 |
| Interface Configuration | interface ethernet 1/1  switchport access vlan 800 |
| Sample OSPF Configuration  on Leaf 2 |  |
| SVI for VTF n/w | vlan 800  interface Vlan800  no shutdown  ip address 20.29.128.1/24  ip router ospf 100 area 0.0.0.0 |
| OSPF Configuration | router ospf 100  router-id 5.5.5.5  area 0.0.0.0 default-cost 10  interface Vlan800  ip router ospf 100 area 0.0.0.0 |
| Interface Configuration | interface ethernet 1/1  switchport access vlan 800 |
| Verification of Routes | OSPF Process ID 100 VRF default, Routing Table  (D) denotes route is directly attached (R) denotes route is in RIB  4.4.4.4/32 (intra)(D) area 0.0.0.0  via 4.4.4.4/Lo0\* , cost 1 distance 110  7.7.7.7/32 (intra)(R) area 0.0.0.0  via 21.0.0.3/Eth1/13 , cost 5 distance 110  8.8.8.8/32 (intra)(R) area 0.0.0.0  via 5.1.1.10/Eth1/7 , cost 41 distance 110  9.9.9.9/32 (intra)(R) area 0.0.0.0  via 21.0.0.3/Eth1/13 , cost 9 distance 110  10.6.45.0/24 (intra)(D) area 0.0.0.0  via 10.6.45.0/Eth1/15\* , cost 40 distance 110  10.29.128.0/24 (intra)(D) area 0.0.0.0  via 10.29.128.0/Vlan800\* , cost 40 distance 110  OSPF Process ID 200 VRF default, Routing Table  (D) denotes route is directly attached (R) denotes route  is in RIB  5.5.5.5/32 (intra)(D) area 0.0.0.0  via 5.5.5.5/Lo1\* , cost 1 distance 110 |

BGP helps scale routes through the data center. For an extensive large data center, BGP provides better scalable control plane to route tenant VM based traffic. BGP protocol can also be used to scale and route VTF underlay network.

# Day Zero Configuration Required for VTF as L2 Switch on Cisco Nexus 9000 Platform

**Note#** \*\*For N9K Platform C9372PX day0 TCAM config needs to change as below otherwise the non VXLAN traffic will be dropped

**hardware access-list tcam region arp-ether 256 double-wide**

|  |
| --- |
| interface Vlan900    no shutdown    no ip redirects    ip address 30.30.30.1/24    no ipv6 redirects    ip pim sparse-mode    interface Ethernet1/40    switchport    switchport mode trunk    switchport trunk native vlan 900    switchport trunk allowed vlan 900    no shutdown |

# Day Zero Configuration Required for VTF as L2 Switch on Cisco Nexus 7000 Platform

|  |
| --- |
| system bridge-domain 222 vni 5222  bridge-domain 222     interface Bdi222   no shutdown   ip address 10.123.20.1/24   ip router ospf 100 area 0.0.0.0   ip pim sparse-mode    interface Ethernet1/14   service instance 11 vni     no shutdown     encapsulation untagged dot1q 222 vni 5222 bridge-domain 222   member vni 5222 |

Table 2) BGP as Protocol for Routing VTF n/w Advertisements

|  |  |
| --- | --- |
| Sample BGP Configuration |  |
| Note: Use this as the Day0  BGP configuration if Route  Reflectors are in your  system. | interface Vlan800  no shutdown  ip address 10.29.128.1/24  router bgp 23  router-id 4.4.4.4  address-family ipv4 unicast  network 10.29.128.56/32  network 10.29.128.57/32  nexthop route-map vts-subnet-policy  address-family l2vpn evpn  retain route-target all |

# VTF - Day Zero Configuration on Non-VTEP Devices

vlan 1,800

interface Vlan800

no shutdown

ip address 10.29.128.1/24

interface Ethernet1/10 This is the interface from the compute to VTF.

switchport mode trunk

switchport trunk allowed vlan 800

# 

# VTS L3 High Availability Day Zero Configuration

vrf VTS-MGMT

address-family ipv4 unicast

!

!

interface Loopback0

ipv4 address 8.8.8.8 255.255.255.255

no shut

!

interface GigabitEthernet0/0/0/1

no ipv4 address 60.60.60.4 255.255.255.0

vrf VTS-MGMT

ipv4 address 60.60.60.4 255.255.255.0

!

router static

maximum path ipv4 30000

address-family ipv4 unicast

0.0.0.0/0 60.60.60.1

!

vrf VTS-MGMT

address-family ipv4 unicast

0.0.0.0/0 60.60.60.1

!

!

!

router ospf 100

router-id 8.8.8.8

address-family ipv4 unicast

area 0.0.0.0

default-cost 10

interface Loopback0

!

interface GigabitEthernet0/0/0/0

!

!

!

vrf VTS-MGMT

address-family ipv4 unicast

!

!

interface Loopback0

ipv4 address 52.52.52.52 255.255.255.255

no shut

!

interface GigabitEthernet0/0/0/1

no ipv4 address 70.70.70.4 255.255.255.0

vrf VTS-MGMT

ipv4 address 70.70.70.4 255.255.255.0

!

router static

maximum path ipv4 30000

address-family ipv4 unicast

0.0.0.0/0 70.70.70.1

!

vrf VTS-MGMT

address-family ipv4 unicast

0.0.0.0/0 70.70.70.1

!

!

!

router ospf 100

router-id 52.52.52.52

address-family ipv4 unicast

area 0.0.0.0

default-cost 10

interface Loopback0

!

interface GigabitEthernet0/0/0/0

!

!

!

# Static Multihoming Day Zero Configuration on TORs both N9k and N7K

# Note: Static multihoming doesn’t work with VPC, so please disable the VPC and also remove the peer link connectivity and secondary IP address from the lookback interface.

For Convergence please enable spanning tree port type edge trunk on the interfaces of both TORs which forms Static Multi-homing group.

# Day Zero configuration on TOR1 with/out FEX

|  |
| --- |
| interface port-channel10description \*\*\* TOR Port-Channel for Connection to X Compute Node \*\*\*Spanning-tree port type edge trunk interface Ethernet1/8  description \*\*\* Port Channel Connection to Compute X VNIC2 \*\*\*  spanning-tree port type edge trunk  channel-group 10 mode active  no shutdown  interface port-channel1211  description \*\*\* FEX Port-Channel for Connection to Y Compute Node \*\*\*\*  **spanning-tree port type edge trunk**  interface Ethernet122/1/2  channel-group 1211 mode active  no shutdown |

# Day Zero configuration on TOR2 with/out FEX

|  |
| --- |
| interface port-channel10description \*\*\* TOR Port-Channel for Connection to X Compute Node \*\*\*Spanning-tree port type edge trunk interface Ethernet1/16  description \*\*\* VPC Connection to Compute X VNIC3 \*\*\*  spanning-tree port type edge trunk  channel-group 10 mode active  no shutdown  interface port-channel1211  description \*\*\* FEX Port-Channel for Connection to X Compute Node \*\*\*\*  **spanning-tree port type edge trunk**  interface Ethernet121/1/2  channel-group 1211 mode active  no shutdown |

# Ethernet Segment Identifier (ESI) Day Zero Configuration on TORs for VTF and VHost (VTSR)

# Note: Below are the day0 configs that are needed for the VTF to install successfully. ESI is supported for N9k only both (Ingress and Multicast) and ESI is not supported on N7k

**SVI IP address should be same in both TORs. Apply the same configuration on both the TORs which formed ESI.**

**If you have another ESI Connection from different compute shared with the same TORs, then please create another ip sla config with other VTF IP.**

**When using SVI uplinks with VXLAN enabled on Cisco Nexus 9200 Series switches and Cisco Nexus 9300-EX switches, use #system nve infra-vlans <vlan> command, to specify the VLANs that are used for uplink SVI. Failing to specify the VLANs results in traffic loss**

**Note: \*\* For vHost, we don’t support switchport mode trunk. Please replace with switchport access vlan underlay config.**

**Ex:**

#switchport mode trunk  
#switchport trunk allowed vlan 100

**Replace with**

**#switchport access vlan 100 (Port channel and on physical interface)**

# Day Zero Configuration on TOR1 & TOR2

|  |
| --- |
| evpn esi multihoming    feature sla sender  track 2 ip sla 2 reachability  route-map redist-static permit 299    ip route 32.32.32.75/32 Vlan100  track 2 // This IP 32.32.32.75 is vtf IP, which you want to install on the compute  router ospf UNDERLAY    redistribute static route-map redist-static    ip sla 2    icmp-echo 32.32.32.75 source-ip 32.32.32.1      threshold 100      timeout 500      frequency 1    ip sla schedule 2 life forever start-time now    interface Vlan100    no shutdown    no ip redirects    ip address 32.32.32.1/24    ip router ospf 200 area 0.0.0.0   ipv6 router ospfv3 200 area 0.0.0.0    ip pim sparse-mode    interface port-channel10    switchport    switchport mode trunk    switchport trunk allowed vlan 100    ethernet-segment 45    system-mac aabb.ccdd.eeff    spanning-tree port type edge trunk    spanning-tree bpduguard enable    spanning-tree bpdufilter enable    no shutdown    interface Ethernet1/2  switchport mode trunk switchport trunk allowed vlan 100 channel-group 10 mode active no shutdown    interface Ethernet2/2    description "CONNECTED WITH SPINE"    // Every TOR has different IP connected to the Spine    evpn multihoming core-tracking   <<<Just add this under the Interface connected with Spine>>>    ip address 10.10.10.10/24    ip router ospf 100 area 0.0.0.0    ip pim sparse-mode    no shutdown |

# VPC Day Zero Configuration on TORs for VTF and VHost (VTSR)

# Note: Below are the day0 configs that are needed for the VTF to install successfully. VPC is supported on both N9k and N7k (Ingress and Multicast).

**SVI IP address should be same in both TORs. Apply the same configuration on both the TORs which formed VPC**

**If you have another VPC Connection from different compute shared with the same TORs, then please create another ip sla config with other VTF IP.**

**When using SVI uplinks with VXLAN enabled on Cisco Nexus 9200 Series switches and Cisco Nexus 9300-EX switches, use #system nve infra-vlans <vlan> command, to specify the VLANs that are used for uplink SVI. Failing to specify the VLANs results in traffic loss**

**Note: \*\* For vHost, we don’t support switchport mode trunk. Please replace with switchport access vlan underlay config.**

**Ex:**

#switchport mode trunk  
#switchport trunk allowed vlan 100

**Replace with**

**#switchport access vlan 100 (Port channel and on physical interface)**

# Day Zero Configuration on TOR1 & TOR2

|  |
| --- |
| vpc domain 50  peer-keepalive destination 172.29.128.8  peer-gateway  ip arp synchronize  ipv6 nd synchronize    feature sla sender  track 2 ip sla 2 reachability  route-map redist-static permit 299    ip route 32.32.32.75/32 Vlan100  track 2 // This is the VTF IP which you want to install on Compute  router ospf UNDERLAY    redistribute static route-map redist-static    ip sla 2    icmp-echo 32.32.32.75 source-ip 32.32.32.1      threshold 100      timeout 500      frequency 1    ip sla schedule 2 life forever start-time now    interface Vlan100  no shutdown  no ip redirects  ip address 32.32.32.1/24  ip router ospf 200 area 0.0.0.0 ipv6 router ospfv3 200 area 0.0.0.0  ip pim sparse-mode    interface port-channel10  switchport  switchport mode trunk  switchport trunk allowed vlan 100  spanning-tree port type edge trunk  spanning-tree bpduguard enable  spanning-tree bpdufilter enable   vpc 50  interface port-channel20  Description \*\*\*Port channel link connected to ToR2 vPC peer link\*\*\*  switchport mode trunk  spanning-tree port type network  speed 1000  vpc peer-link    interface Ethernet1/4  Description \*\*\*Interface connected to ToR2 eth1/4 for vPC peer link\*\*\*  switchport mode trunk  channel-group 20  no shutdown    interface Ethernet1/2  switchport mode trunk switchport trunk allowed vlan 100 channel-group 10 mode active no shutdown |

# 

# Static Multihoming Day Zero Configuration on TORs for VTF and VHost (VTSR)

# Note: Below are the day0 configs that are needed for the VTF to install successfully. SMH is supported on both N9k and N7k (Ingress and Multicast).

**SVI IP address should be same in both TORs. Apply the same configuration on both the TORs which formed SMH**

**If you have another SMH Connection from different compute shared with the same TORs, then please create another ip sla config with other VTF IP.**

**When using SVI uplinks with VXLAN enabled on Cisco Nexus 9200 Series switches and Cisco Nexus 9300-EX switches, use #system nve infra-vlans <vlan> command, to specify the VLANs that are used for uplink SVI. Failing to specify the VLANs results in traffic loss**

**Note: \*\* For vHost, we don’t support switchport mode trunk. Please replace with switchport access vlan underlay config.**

**Ex:**

#switchport mode trunk  
#switchport trunk allowed vlan 100

**Replace with**

**#switchport access vlan 100 (Port channel and on physical interface)**

|  |
| --- |
| feature sla sender  track 2 ip sla 2 reachability  route-map redist-static permit 299    ip route 32.32.32.75/32 Vlan100  track 2 // This is the VTF IP which you want to install on compute  router ospf UNDERLAY    redistribute static route-map redist-static    ip sla 2    icmp-echo 32.32.32.75 source-ip 32.32.32.1      threshold 100      timeout 500      frequency 1    ip sla schedule 2 life forever start-time now    interface Vlan100    no shutdown    no ip redirects    ip address 32.32.32.1/24    ip router ospf 200 area 0.0.0.0   ipv6 router ospfv3 200 area 0.0.0.0    ip pim sparse-mode    interface port-channel10    switchport    switchport mode trunk    switchport trunk allowed vlan 100    no shutdown    interface Ethernet1/8  switchport mode trunk switchport trunk allowed vlan 100 spanning-tree port type edge trunk channel-group 10 mode active no shutdown |

# Underlay Day Zero configuration on Physical Ethernet for VTF and VHost (VTSR)

**When using SVI uplinks with VXLAN enabled on Cisco Nexus 9200 Series switches and Cisco Nexus 9300-EX switches, use # system nve infra-vlans <vlan> command, to specify the VLANs that are used for uplink SVI. Failing to specify the VLANs results in traffic loss**

**Note: \*\* For vHost, we don’t support switchport mode trunk. Please replace with switchport access vlan underlay config.**

**Ex:**

#switchport mode trunk  
#switchport trunk allowed vlan 100

**Replace with**

**#switchport access vlan 100 (Port channel and on physical interface)**

|  |
| --- |
| interface Vlan100 no shutdown no ip redirects ip address 42.42.42.1/24 ipv6 address 2001:42:42:42::1/64 no ipv6 redirects ip router ospf 200 area 0.0.0.0  ipv6 router ospfv3 200 area 0.0.0.0 ip pim sparse-mode    interface Ethernet1/38 switchport switchport mode trunk switchport trunk allowed vlan 100 no shutdown |

# Underlay Day Zero configuration on Ether channel for VTF and vHost (VTSR)

**When using SVI uplinks with VXLAN enabled on Cisco Nexus 9200 Series switches and Cisco Nexus 9300-EX switches, use #system nve infra-vlans <vlan> command, to specify the VLANs that are used for uplink SVI. Failing to specify the VLANs results in traffic loss**

**Note: \*\* For vHost, we don’t support switchport mode trunk. Please replace with switchport access vlan underlay config.**

**Ex:**

#switchport mode trunk  
#switchport trunk allowed vlan 100

**Replace with**

**#switchport access vlan 100 (Port channel and on physical interface)**

|  |
| --- |
| interface Vlan100 no shutdown no ip redirects ip address 42.42.42.1/24 ipv6 address 2001:42:42:42::1/64 no ipv6 redirects ip router ospf 200 area 0.0.0.0  ipv6 router ospfv3 200 area 0.0.0.0 ip pim sparse-mode    interface port-channel10    switchport    switchport mode trunk    switchport trunk allowed vlan 100    no shutdown  interface Ethernet1/8  switchport mode trunk switchport trunk allowed vlan 100 spanning-tree port type edge trunk channel-group 10 mode active  interface Ethernet1/9  switchport mode trunk switchport trunk allowed vlan 100 spanning-tree port type edge trunk channel-group 10 mode active |

# Ethernet Segment Identifier (ESI) Day Zero Configuration on TORs

1. You have to disable VPC (no feature vpc) before enabling ESI feature. Different ESI groups/domains must have different ES-id or system MAC. In other words, duplicate ES-id and system MAC are not allowed among ESI groups. This needs to be guaranteed by providing the correct Day Zero configurations for ESI on Cisco Nexus 9000 switches.

**Day Zero Configuration on TOR1**

evpn esi multihoming          <<<<To enable ESI>>>>>>>>

hardware access-list tcam region vpc-convergence 256

hardware access-list tcam region arp-ether 256

interface nve1

  no shutdown

  source-interface loopback0

  host-reachability protocol bgp

interface port-channel30

  switchport mode trunk

  switchport trunk allowed vlan none

  ethernet-segment 45

    system-mac aabb.ccdd.eeff

spanning-tree port type edge trunk

spanning-tree bpduguard enable

spanning-tree bpdufilter enable

interface Ethernet1/1

  description "Compute 1 is connected with ETH1"

  switchport mode trunk

  switchport trunk allowed vlan none

spanning-tree port type edge trunk

spanning-tree bpduguard enable

spanning-tree bpdufilter enable

  channel-group 30 mode active

interface Ethernet2/2

  Description " Connected with Spine"

  no switchport

  evpn multihoming core-tracking                   <<<Just add this under the Interface connected with Spine>>>

  ip address 16.1.1.2/24

  ip router ospf 100 area 0.0.0.0

  ip pim sparse-mode

  no shutdown

**Day Zero Configuration on TOR2**

evpn esi multihoming                              <<<<To enable ESI>>>>>>

interface port-channel30

  switchport

  switchport mode trunk

  switchport trunk allowed vlan none

  ethernet-segment 45

    system-mac aabb.ccdd.eeff

spanning-tree port type edge trunk

spanning-tree bpduguard enable

spanning-tree bpdufilter enable

interface nve1

  no shutdown

  source-interface loopback0

  host-reachability protocol bgp

interface Ethernet1/21

  description "Compute 1 second connection for ESI with Eth2"

  switchport

  switchport mode trunk

  switchport trunk allowed vlan none

spanning-tree port type edge trunk

spanning-tree bpduguard enable

spanning-tree bpdufilter enable

  channel-group 30 mode active

interface Ethernet2/2

  description "CONNECTED WITH SPINE"

  evpn multihoming core-tracking                             <<<Just add this under the Interface connected with Spine>>>

  ip address 17.1.1.2/24

  ip router ospf 100 area 0.0.0.0

  ip pim sparse-mode

  no shutdown

## Server/Host Configuration

After your BGP sessions are established, use the below command to see if ESI is up.

show nve etherenet-segment detail

ESI: 03.<aa:bb:cc:dd:ee:ff><00:00:2d>,

   Parent interface: port-channel30,

  ES State: Up

  Port-channel state: Up

  NVE Interface: nve1

   NVE State: Up

   Host Learning Mode: Control-Plane

  Active Vlans: --

   DF Vlans: --

   Active VNIs: --

  Number of ES  members: 2

  My ordinal: 1

  DF timer start time: 00:00:00

  Config State: config-applied

  DF List: 9.1.1.1 10.1.1.1

  ES route added to L2RIB: True

  EAD routes added to L2RIB: True

# VTF-L2 connected TOR Interface Configuration

In case of Cisco Nexus 9000 series devices. (93XX, 95XX, 9XXX) and Nexus 5000 (56XX):

|  |
| --- |
| interface Ethernet1/2  description \*\*\*Interface connected to Compute1 Eth1 link running VTF-L2\*\*\* switchport mode trunk switchport trunk native vlan 100 switchport trunk allowed vlan 100 |

In case of Cisco Nexus 7000 series devices(7000/7700):

|  |
| --- |
| system bridge-domain 100  vni 9999  bridge-domain 100  member vni 9999  !  interface Ethernet1/42  description \*\*\*Interface connected to Compute1 Eth1 link running VTF-L2\*\*\*  no shutdown  service instance 100 vni  no shutdown  encapsulation untagged dot1q 100 vni 9999 !  interface Bdi100  no shutdown  ip address 75.76.1.1/30  ip router ospf 100 area 0.0.0.0  ip pim sparse-mode  Here, vlan 100 and bdi 100 are underlay vlan and bdi interfaces on respective TOR/device. |

# VTS Day Zero Configuration for TCAM to support security group feature

The following 2 tcam regions are required to use VTS security group feature for baremetal and SRIOV ports.

**hardware access-list tcam region vacl xxx**

**hardware access-list tcam region ipv6-vacl xxx**

Sample TCAM region allocation for Nexus9000 93180YC-EX

|  |
| --- |
| NAT ACL[nat] size = 0  Ingress PACL [ing-ifacl] size = 0  VACL [vacl] size = 256  Ingress RACL [ing-racl] size = 1024  Ingress RBACL [ing-rbacl] size = 0  Ingress L2 QOS [ing-l2-qos] size = 256  Ingress L3/VLAN QOS [ing-l3-vlan-qos] size = 512  Ingress SUP [ing-sup] size = 512  Ingress L2 SPAN filter [ing-l2-span-filter] size = 256  Ingress L3 SPAN filter [ing-l3-span-filter] size = 256  Ingress FSTAT [ing-fstat] size = 0  span [span] size = 0  Egress RACL [egr-racl] size = 1024  Egress SUP [egr-sup] size = 256  Ingress Redirect [ing-redirect] size = 0  Egress L2 QOS [egr-l2-qos] size = 0  Egress L3/VLAN QOS [egr-l3-vlan-qos] size = 0  Ingress NBM [ing-nbm] size = 0 |

Sample TCAM region allocation for Nexus9000 C9372TX

|  |
| --- |
| IPV4 PACL [ifacl] size = 256  IPV6 PACL [ipv6-ifacl] size = 0  MAC PACL [mac-ifacl] size = 0  IPV4 Port QoS [qos] size = 0  IPV6 Port QoS [ipv6-qos] size = 0  MAC Port QoS [mac-qos] size = 0  FEX IPV4 PACL [fex-ifacl] size = 0  FEX IPV6 PACL [fex-ipv6-ifacl] size = 0  FEX MAC PACL [fex-mac-ifacl] size = 0  FEX IPV4 Port QoS [fex-qos] size = 0  FEX IPV6 Port QoS [fex-ipv6-qos] size = 0  FEX MAC Port QoS [fex-mac-qos] size = 0  IPV4 VACL [vacl] size = 256  IPV6 VACL [ipv6-vacl] size = 256  MAC VACL [mac-vacl] size = 0  IPV4 VLAN QoS [vqos] size = 0  IPV6 VLAN QoS [ipv6-vqos] size = 0  MAC VLAN QoS [mac-vqos] size = 0  IPV4 RACL [racl] size = 0  IPV6 RACL [ipv6-racl] size = 0  IPV4 Port QoS Lite [qos-lite] size = 0  FEX IPV4 Port QoS Lite [fex-qos-lite] size = 0  IPV4 VLAN QoS Lite [vqos-lite] size = 0  IPV4 L3 QoS Lite [l3qos-lite] size = 0  Egress IPV4 QoS [e-qos] size = 0  Egress IPV6 QoS [e-ipv6-qos] size = 0  Egress MAC QoS [e-mac-qos] size = 0  Egress IPV4 VACL [vacl] size = 256  Egress IPV6 VACL [ipv6-vacl] size = 256  Egress MAC VACL [mac-vacl] size = 0  Egress IPV4 RACL [e-racl] size = 0  Egress IPV6 RACL [e-ipv6-racl] size = 0  Egress IPV4 QoS Lite [e-qos-lite] size = 0  IPV4 L3 QoS [l3qos] size = 0  IPV6 L3 QoS [ipv6-l3qos] size = 0  MAC L3 QoS [mac-l3qos] size = 0  Ingress System size = 256  Egress System size = 256  SPAN [span] size = 0  Ingress COPP [copp] size = 256  Ingress Flow Counters [flow] size = 0  Egress Flow Counters [e-flow] size = 0  Ingress SVI Counters [svi] size = 0  Redirect [redirect] size = 256  NS IPV4 Port QoS [ns-qos] size = 0  NS IPV6 Port QoS [ns-ipv6-qos] size = 0  NS MAC Port QoS [ns-mac-qos] size = 0  NS IPV4 VLAN QoS [ns-vqos] size = 0  NS IPV6 VLAN QoS [ns-ipv6-vqos] size = 0  NS MAC VLAN QoS [ns-mac-vqos] size = 0  NS IPV4 L3 QoS [ns-l3qos] size = 0  NS IPV6 L3 QoS [ns-ipv6-l3qos] size = 0  NS MAC L3 QoS [ns-mac-l3qos] size = 0  VPC Convergence/ES-Multi Home [vpc-convergence] size = 0  IPSG SMAC-IP bind table [ipsg] size = 0  Ingress ARP-Ether ACL [arp-ether] size = 0  ranger+ IPV4 QoS Lite [rp-qos-lite] size = 0  ranger+ IPV4 QoS [rp-qos] size = 256  ranger+ IPV6 QoS [rp-ipv6-qos] size = 256  ranger+ MAC QoS [rp-mac-qos] size = 256  NAT ACL[nat] size = 0  Mpls ACL size = 0  MOD RSVD size = 0  sFlow ACL [sflow] size = 0  mcast bidir ACL [mcast\_bidir] size = 0  Openflow size = 0  Openflow Lite [openflow-lite] size = 0  Ingress FCoE Counters [fcoe-ingress] size = 0  Egress FCoE Counters [fcoe-egress] size = 0  Redirect-Tunnel [redirect-tunnel] size = 0  SPAN+sFlow ACL [span-sflow] size = 0  Openflow IPv6 [openflow-ipv6] size = 0  mcast performance ACL [mcast-performance] size = 0  Mpls Double Width ACL size = 0  N9K ARP ACL [n9k-arp-acl] size = 0  N3K V6 Span size = 0  N3K V6 L2 Span size = 0 |

# Day Zero Configuration - Network Convergence System (NCS) 5500 Series

!! IOS XR Configuration version = 6.5.1

!

hostname DC1-SPINE-RR

!

interface Loopback0 --------- **Configure loopback with both IPV4 and IPV6**

ipv4 address 172.12.255.10 255.255.255.255

ipv6 address 2001:192:168:121::1/128

!

interface MgmtEth0/RP0/CPU0/0

ipv4 address 172.XX.23.XX 255.255.255.128

ipv6 address 2001:XXX:10e:201b::XXXX:XXX/64

ipv6 enable

!

interface TenGigE0/0/0/45 ------------------ **Connected to NCS5500 TOR**

description DC1-NCS3

ipv4 address 10.1.3.1 255.255.255.252

!

router static

address-family ipv4 unicast

0.0.0.0/0 172.25.23.1

!

address-family ipv6 unicast

::/0 2001:420:10e:201b::1

!

!

router ospf 100 ----------------------- **Run either OSPF or IS-IS with SR on SPINE and TOR/s**

router-id 172.12.255.10

**segment-routing mpls**

**segment-routing forwarding mpls**

**segment-routing sr-prefer**

area 0

interface Loopback0

prefix-sid index 12

!

interface TenGigE0/0/0/45

network point-to-point

!

netconf agent tty

!

netconf-yang agent

ssh

!

lldp

!

ssh timeout 120

ssh server session-limit 10

ssh server v2

ssh server vrf default

ssh server netconf vrf default

end

Day Zero Configuration - Network Convergence System (NCS) 5500 Series as ToR

!! IOS XR Configuration version = 6.5.1

!

hostname DC1-NCS3

interface Loopback0

ipv4 address 172.14.255.10 255.255.255.255

ipv6 address 2001:192:168:124::1/128

!

interface TenGigE0/0/0/45 ----------------- **Interface connected to SPINE**

description DC1-SPINE-RR

ipv4 address 10.1.3.2 255.255.255.252

!

router ospf 100

router-id 172.14.255.10

segment-routing mpls

segment-routing forwarding mpls

segment-routing sr-prefer

area 0

interface Loopback0

prefix-sid index 14

!

interface TenGigE0/0/0/45

network point-to-point

!

netconf agent tty

!

netconf-yang agent

ssh

!

lldp

!

ssh timeout 120

ssh server session-limit 10

ssh server v2

ssh server vrf default

ssh server netconf vrf default

end

Day Zero Configuration - Network Convergence System (NCS) 5500 Series as ToR for VTF-L2

!! IOS XR Configuration version = 6.5.1

!

hostname DC1-NCS3

!

interface TenGigE0/0/0/28.100 l2transport --- **Underlay interface for VTF-L2 host**

encapsulation untagged

!

!

interface BVI100 -------------------- **Underlay GW BVI**

ipv4 address 115.1.1.1 255.255.255.0

ipv6 address 2001:192:168:1::1/64

!

!

l2vpn ------------------ **Underlay BG and BD configuration**

bridge group UNDERLAY

bridge-domain UNDERLAY

interface TenGigE0/0/0/28.100

!

routed interface BVI100

!

!

!

!

netconf agent tty

!

netconf-yang agent

ssh

!

lldp

!

ssh timeout 120

ssh server session-limit 10

ssh server v2

ssh server vrf default

ssh server netconf vrf default

end