aruba
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VALIDATED REFERENCE DESIGN GUIDE

AOS-CX AND AOS-SWITCH STATIC VXLAN INTEROPERABILITY

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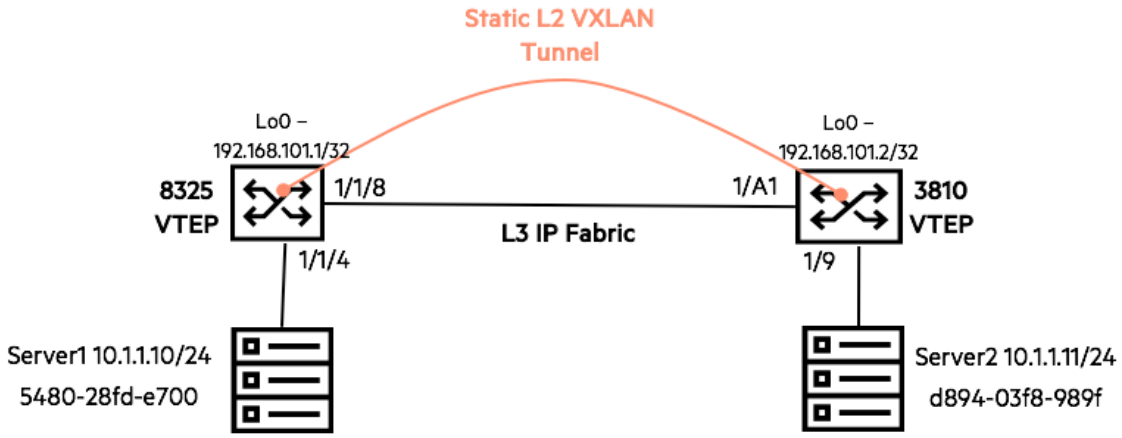
INTRODUCTION

This document provides guidance on deploying and verifying static L2 VXLAN tunnel between AOS-CX and AOS-Switch. This provides L2 network connectivity for servers/VMs connected on different switches/racks over a L3 IP fabric as shown in Figure 1.

Figure 1. Static VXLAN overview



Static VXLAN is recommended in smaller deployments:

- 10 VXLAN Tunnel End Points (VTEPs) or less
- MP-BGP EVPN is generally recommended in deployments with more than 10 VTEPs as it scales better with less chance of configuration errors

The following were used during the creation of this guide:

- AOS-CX (8325 with GL.10.02.0050)
- AOS-Switch (3810 with 16.08.0003)

8325 CONFIGURATION AND VERIFICATION

We utilize OSPF to advertise loopback connectivity between the VTEPs which will be used to create the VXLAN tunnel.

```
hostname 8325
!
router ospf 1
    area 0.0.0.0
!
vlan 1,10
! VLAN 10 will be used to map to VXLAN Network Identifier (VNI) 10
!
! interface group 1 contains ports 1/1/1-1/1/12
system interface-group 1 speed 10g
!
! port facing Server1
interface 1/1/4
    no shutdown
    no routing
    vlan access 10
```

```
!
! port facing remote VTEP
interface 1/1/8
    no shutdown
    ip address 192.168.100.1/30
    ip ospf 1 area 0.0.0.0
!
interface loopback 0
    ip address 192.168.101.1/32
    ip ospf 1 area 0.0.0.0
!
interface vxlan 1
! specify source IP based on loopback IP
    source ip 192.168.101.1
    no shutdown
    vni 10
! map VNI to VLAN
        vlan 10
! specify remote VTEP loopback IP
        vtep-peer 192.168.101.2
```

After the servers and remote VTEP are configured, the following verification commands can be used.

Ensure OSPF neighbors are established.

```
8325#sh ip os nei
OSPF Process ID 1 VRF default
==============================
Total Number of Neighbors: 1

Neighbor ID      Priority  State             Nbr Address       Interface
-------------------------------------------------------------------------
192.168.101.2    1         FULL/DR           192.168.100.2      1/1/8
```

Ensure remote VTEP loopback is learnt in routing table.

```
8325#sh ip ro

Displaying ipv4 routes selected for forwarding

'[x/y]' denotes [distance/metric]

192.168.100.0/30, vrf default
        via  1/1/8,  [0/0],  connected
192.168.100.1/32, vrf default
        via  1/1/8,  [0/0],  local
192.168.101.1/32, vrf default
        via  loopback0,  [0/0],  local
192.168.101.2/32, vrf default
        via  192.168.100.2,  [110/11],  ospf
```

Ensure VXLAN tunnel is operational

```
8325#sh int vxlan
Interface vxlan1 is up
Admin state is up
Description:
Destination UDP port: 4789
VTEP source IPv4 address: 192.168.101.1
VNI        VLAN   VTEP Peers
10         10     192.168.101.2
```

```
8325#sh int vxlan vteps
Interface vxlan1
Source           Destination      Origin       Status               VNI       VLAN
192.168.101.1    192.168.101.2    static       operational          10        10
```

Ensure local and remote MAC addresses are learnt.

```
8325#sh mac-address-table
MAC age-time            : 300 seconds
Number of MAC addresses : 2

MAC Address          VLAN     Type       Port
-------------------------------------------------
54:80:28:fd:e7:00    10       dynamic    1/1/4
d8:94:03:f8:98:9f    10       dynamic    vxlan1(192.168.101.2)
```

3810 CONFIGURATION AND VERIFICATION

We utilize OSPF to advertise loopback connectivity between the VTEPs which will be used to create the VXLAN tunnel.

```
hostname "3810"
vxlan enable
!
ip routing
!
router ospf
   area backbone
   enable
!
interface loopback 0
   ip address 192.168.101.2
   ip ospf 192.168.101.2 area backbone
!
vlan 100
   name "VLAN100"
   untagged 1/A1
   ip address 192.168.100.2 255.255.255.252
   ip ospf 192.168.100.2 area backbone
!
vlan 10
   name "VLAN10"
   untagged 1/9
   no ip address
!
```

```
interface tunnel 1
   tunnel name "VXLAN_Tunnel01"
   tunnel mode vxlan
   tunnel source 192.168.101.2
   tunnel destination 192.168.101.1
!
! Create Virtual Network and associate VNI to VLAN
virtual-network 10 10 "vni10"
!
!
! Map Overlay-VLAN (VLAN 10) to Tunnel 1
vxlan tunnel 1 overlay-vlan 10
```

After the servers and remote VTEP are configured, the following verification commands can be used.

Ensure OSPF neighbors are established.

```
3810# sh ip os nei

OSPF Neighbor Information

Router ID       Pri IP Address      NbIfState State    QLen  Events Status
--------------- --- --------------- --------- -------- ----- ------ ------
192.168.101.1   1   192.168.100.1   BDR       FULL     0     6      None
```

Ensure remote VTEP loopback is learnt in routing table.

```
3810# sh ip rou

                              IP Route Entries

  Destination        Gateway         VLAN Type      Sub-Type   Metric     Dist.
  ------------------ --------------- ---- --------- ---------- ---------- -----
  10.10.10.0/24      DEFAULT_VLAN    1    connected            1          0
  15.234.147.0/24    10.10.10.254    1    static               1          1
  127.0.0.0/8        reject               static               0          0
  127.0.0.1/32       lo0                  connected            1          0
  192.168.100.0/30   VLAN100         100  connected            1          0
  192.168.101.1/32   192.168.100.1   100  ospf       IntraArea 1          110
  192.168.101.2/32   lo0                  connected            1          0
```

Ensure VXLAN tunnel is operational

```
3810# sh int tun

 Tunnel Configuration :

  Tunnel               : 251659490
  Tunnel Name          : VxLAN_Tunnel01
  Tunnel Status        : Enabled
  Source Address       : 192.168.101.2
  Destination Address  : 192.168.101.1
  Mode                 : VXLAN Tunnel
  TOS                  : -1
  TTL                  : 64
```

```
  IPv6                 : n/a
  MTU                  : 1450


 Current Tunnel Status :

  Tunnel State              : Up
  Destination Address Route : 192.168.101.1/32
  Next Hop IP               : 192.168.100.1
  Next Hop Interface        : vlan-100
  Next Hop IP Link Status   : Up
  Source Address            : 192.168.101.2
```

Ensure local and remote MAC addresses are learnt.

```
3810# sh mac-address vlan 10

 Status and Counters - Address Table - VLAN 10

  MAC Address       Port
  ----------------- ------
  d89403-f8989f     1/9
  548028-fde700     VxLAN_Tunnel01
```

SERVER CONNECTIVITY VERIFICATION

Verify servers are able to communicate on the same subnet.

```
Server1#ping 10.1.1.11
PING 10.1.1.11 (10.1.1.11) 100(128) bytes of data.
108 bytes from 10.1.1.11: icmp_seq=1 ttl=255 time=0.865 ms
108 bytes from 10.1.1.11: icmp_seq=2 ttl=255 time=0.719 ms
108 bytes from 10.1.1.11: icmp_seq=3 ttl=255 time=0.731 ms



Server1#sh arp
IPv4 Address     MAC               Port         Physical Port    State
--------------------------------------------------------------------------
10.1.1.11        d8:94:03:f8:98:9f  1/1/4        1/1/4            reachable
Total Number Of ARP Entries Listed- 1.
--------------------------------------------------------------------------------
```