EVPN L2 VxLAN

VxLAN L2 EVPN
Topology:
mceclip0.png

Pre-configuration:
Based on default configuration and inital FRR(refer to [Edgecore SONiC] FRRouting and config initialization)
Create VLAN 30 and add Ethernet0 of both Swicthes to VLAN 30. Please refer to VLAN & Inter-VLAN Routing article.
Binding IP to Ethernet52 on switches.(refer to [Edgecore SONiC] Management and front-port IPv4 IPv6 Address)
Procedure :
Step 1. Configure IP address to Loopback0 of both switches.

AS7326-56X:

```
admin@AS7326-56X:~$ sudo config interface ip add Loopback0 1.1.1.1/32
```

AS5835-54X:

```
admin@AS5835-54X:~$ sudo config interface ip add Loopback0 2.2.2.2/32
```

Step 2: Establish BGP Session between Ethernet52 and announce the network.

AS7326-56X:

```
admin@AS7326-56X:~$ vtysh

Hello, this is FRRouting (version 7.2.1-sonic).
Copyright 1996-2005 Kunihiro Ishiguro, et al.

AS7326-56X# configure terminal
AS7326-56X(config)# router bgp 65100
AS7326-56X(config-router)# bgp router-id 1.1.1.1
AS7326-56X(config-router)# neighbor 10.0.0.1 remote-as 65100
AS7326-56X(config-router)# address-family ipv4
AS7326-56X(config-router-af)# network 1.1.1.1/32
AS7326-56X(config-router-af)# end
AS7326-56X# exit
```

AS5835-54X:

```
admin@AS5835-54X:~$ vtysh

Hello, this is FRRouting (version 7.2.1-sonic).
Copyright 1996-2005 Kunihiro Ishiguro, et al.

AS5835-54X# configure terminal
AS5835-54X(config)# router bgp 65100
AS5835-54X(config-router)# bgp router-id 2.2.2.2
AS5835-54X(config-router)# neighbor 10.0.0.0 remote-as 65100
AS5835-54X(config-router)# address-family ipv4
AS5835-54X(config-router-af)# network 2.2.2.2/32
AS5835-54X(config-router-af)# end
AS5835-54X# exit
```

Step 3. Create Vxlan

AS7326-56X:

```
admin@AS7326-56X:~$ sudo config vxlan add vtep 1.1.1.1
admin@AS7326-56X:~$ sudo config vxlan evpn_nvo add nvo vtep
admin@AS7326-56X:~$ sudo config vxlan map add vtep 30 3000
```

AS5835-54X:

```
admin@AS5835-54X:~$ sudo config vxlan add vtep 2.2.2.2
```

```
admin@AS5835-54X:~$ sudo config vxlan evpn_nvo add nvo vtep
admin@AS5835-54X:~$ sudo config vxlan map add vtep 30 3000
Note :

VNI (VxLAN Network Identifier) : virtual extension of VLAN over IP network.
VTEP (VXLAN Tunnel End Point) : an entity that originates and/or terminates
VXLAN tunnels which is specified by a source IP address.
Only one VTEP is allowed on one device. Please use loopback IP address for
VTEP's IP address.
NVO (Network Virtualization Overlay)
Only one NVO is allowed on one device.
VNI (VxLAN Network Identifier) : virtual extension of VLAN over IP network.
Step 4: Announce L2VPN EVPN routes.

AS7326-56X:

admin@AS7326-56X:~$ vtysh

Hello, this is FRRouting (version 7.2.1-sonic).
Copyright 1996-2005 Kunihiro Ishiguro, et al.

AS7326-56X#
AS7326-56X# configure terminal
AS7326-56X(config)# router bgp 65100
AS7326-56X(config-router)# address-family l2vpn evpn
AS7326-56X(config-router-af)# neighbor 10.0.0.1 activate
AS7326-56X(config-router-af)# advertise-all-vni
AS5835-54X:

admin@AS5835-54X:~$ vtysh

Hello, this is FRRouting (version 7.2.1-sonic).
Copyright 1996-2005 Kunihiro Ishiguro, et al.

AS5835-54X#
AS5835-54X# configure terminal
AS5835-54X(config)# router bgp 65100
AS5835-54X(config-router)# address-family l2vpn evpn
AS5835-54X(config-router-af)# neighbor 10.0.0.0 activate
AS5835-54X(config-router-af)# advertise-all-vni


Result:
[CLI] Check vxlan interface configuration.
AS7326-56X:

admin@AS7326-56X:~$ show vxlan interface
VTEP Information:

VTEP Name : vtep, SIP : 1.1.1.1
Source interface : Loopback0
AS5835-54X:

admin@AS5835-54X:~$ show vxlan interface
VTEP Information:

VTEP Name : vtep, SIP : 2.2.2.2
Source interface : Loopback0
[CLI] Check vxlan and VLAN mapping.
AS7326-56X:

admin@AS7326-56X:~$ show vxlan vlanvnimap
+--------+-------+
| VLAN   |   VNI |
```

```
+========+=======+
| Vlan30 |  3000 |
+--------+-------+
Total count : 1
AS5835-54X:

admin@AS5835-54X:~$ show vxlan vlanvnimap
+--------+-------+
| VLAN   |   VNI |
+========+=======+
| Vlan30 |  3000 |
+--------+-------+
Total count : 1
[CLI] Check the status for Vxlan tunneling.
AS7326-56X:(202006.4/202012.2)

admin@AS7326-56X:~$ show vxlan tunnel
+---------+---------+-------------------+--------------+
| SIP     | DIP     | Creation Source   | OperStatus   |
+=========+=========+===================+==============+
| 1.1.1.1 | 2.2.2.2 | EVPN              | oper_up      |
+---------+---------+-------------------+--------------+
Total count : 1
AS7326-56X:(202111.3)

admin@AS7326-56X:~$ show vxlan remotevtep
+---------+---------+-------------------+--------------+
| SIP     | DIP     | Creation Source   | OperStatus   |
+=========+=========+===================+==============+
| 1.1.1.1 | 2.2.2.2 | EVPN              | oper_up      |
+---------+---------+-------------------+--------------+
Total count : 1
AS5835-54X:(202006.4/202012.2)

admin@AS7326-56X:~$ show vxlan tunnel
+---------+---------+-------------------+--------------+
| SIP     | DIP     | Creation Source   | OperStatus   |
+=========+=========+===================+==============+
| 2.2.2.2 | 1.1.1.1 | EVPN              | oper_up      |
+---------+---------+-------------------+--------------+
Total count : 1
AS5835-54X:(202111.3)

admin@AS5835-54X:~$ show vxlan remotevtep
+---------+---------+-------------------+--------------+
| SIP     | DIP     | Creation Source   | OperStatus   |
+=========+=========+===================+==============+
| 2.2.2.2 | 1.1.1.1 | EVPN              | oper_up      |
+---------+---------+-------------------+--------------+
Total count : 1


[CLI] Check the Mac learning.
AS7326-56X:(202006.4/202111.3)

admin@AS7326-56X:~$ show mac
  No.    Vlan  MacAddress         Port                Type
-----  ------  -----------------  ------------------  -------
    1      30  8C:EA:1B:30:DA:50  VxLAN DIP: 2.2.2.2  Static
    2      30  8C:EA:1B:30:DA:4F  Ethernet0           Dynamic
Total number of entries 2
AS7326-56X(202012.2)

admin@AS7326-56X:~$ show mac
```

```
  No.    Vlan  MacAddress         Port       Type
-----  ------  -----------------  ---------  -------
    1      30  8C:EA:1B:30:DA:4F  Ethernet0  Dynamic
Total number of entries 1

admin@AS7326-56X:~$ show vxlan remotemac all
+--------+-------------------+--------------+-------+-------+---------+
| VLAN   | MAC               | RemoteVTEP   | ESI   |   VNI | Type    |
+========+===================+==============+=======+=======+=========+
| Vlan30 | 8c:ea:1b:30:da:50 | 2.2.2.2      |       |  3000 | dynamic |
+--------+-------------------+--------------+-------+-------+---------+
Total count : 1
Note.

"8C:EA:1B:30:DA:50" is synced from remote vtep(2.2.2.2).
"8C:EA:1B:30:DA:4F" is learned locally.
AS5835-54X:(202006.4/202111.3)

admin@AS5835-54X:~$ show mac
  No.    Vlan  MacAddress         Port                Type
-----  ------  -----------------  ------------------  -------
    1      30  8C:EA:1B:30:DA:50  Ethernet0           Dynamic
    2      30  8C:EA:1B:30:DA:4F  VxLAN DIP: 1.1.1.1  Static
Total number of entries 2
AS5835-54X:(202012.2)

admin@AS5835-54X:~$ show mac
  No.    Vlan  MacAddress         Port       Type
-----  ------  -----------------  ---------  -------
    1      30  8C:EA:1B:30:DA:50  Ethernet0  Dynamic
Total number of entries 1

admin@AS5835-54X:~$ show vxlan remotemac all
+--------+-------------------+--------------+-------+-------+---------+
| VLAN   | MAC               | RemoteVTEP   | ESI   |   VNI | Type    |
+========+===================+==============+=======+=======+=========+
| Vlan30 | 8c:ea:1b:30:da:4f | 1.1.1.1      |       |  3000 | dynamic |
+--------+-------------------+--------------+-------+-------+---------+
Total count : 1


[FRR] Check IPv4 BGP session
AS7326-56X:

AS7326-56X# show bgp ipv4 summary
IPv4 Unicast Summary:
BGP router identifier 1.1.1.1, local AS number 65100 vrf-id 0
BGP table version 6
RIB entries 3, using 552 bytes of memory
Peers 1, using 20 KiB of memory
Neighbor        V         AS MsgRcvd MsgSent   TblVer  InQ OutQ  Up/Down
State/PfxRcd
10.0.0.1        4      65100      80      85        0    0    0 01:01:28
1
Total number of neighbors 1
AS5835-54X:

AS5835-54X# show bgp ipv4 summary
IPv4 Unicast Summary:
BGP router identifier 2.2.2.2, local AS number 65100 vrf-id 0
BGP table version 6
RIB entries 3, using 552 bytes of memory
Peers 1, using 20 KiB of memory
Neighbor        V         AS MsgRcvd MsgSent   TblVer  InQ OutQ  Up/Down
```

```
State/PfxRcd
10.0.0.0        4      65100      79      79        0    0    0 01:01:28
1
Total number of neighbors 1
[FRR] Check L2EVPN BGP session
AS7326-56X:

AS7326-56X# show bgp l2vpn evpn summary
BGP router identifier 1.1.1.1, local AS number 65100 vrf-id 0
BGP table version 0
RIB entries 3, using 552 bytes of memory
Peers 1, using 20 KiB of memory
Neighbor        V         AS MsgRcvd MsgSent   TblVer  InQ OutQ  Up/Down
State/PfxRcd
10.0.0.1        4      65100      82      87        0    0    0 01:03:43
3
Total number of neighbors 1
AS5835-54X:

AS5835-54X# show bgp l2vpn evpn summary
BGP router identifier 2.2.2.2, local AS number 65100 vrf-id 0
BGP table version 0
RIB entries 3, using 552 bytes of memory
Peers 1, using 20 KiB of memory
Neighbor        V         AS MsgRcvd MsgSent   TblVer  InQ OutQ  Up/Down
State/PfxRcd
10.0.0.0        4      65100      81      81        0    0    0 01:03:43
3
Total number of neighbors 1
[FRR] Check underlay routing
AS7326-56X:

AS7326-56X# show ip route
Codes: K - kernel route, C - connected, S - static, R - RIP,
O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
T - Table, v - VNC, V - VNC-Direct, A - Babel, D - SHARP,
F - PBR, f - OpenFabric,
> - selected route, * - FIB route, q - queued route, r - rejected route

K>* 0.0.0.0/0 [0/202] via 188.188.1.1, eth0, 00:49:45
C>* 1.1.1.1/32 is directly connected, Loopback0, 00:49:14
B>* 2.2.2.2/32 [200/0] via 10.0.0.1, Ethernet52, 00:42:04
C>* 10.0.0.0/31 is directly connected, Ethernet52, 00:49:13
C>* 188.188.0.0/16 is directly connected, eth0, 00:49:45
AS5835-54X:

AS5835-54X# show ip route
Codes: K - kernel route, C - connected, S - static, R - RIP,
O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
T - Table, v - VNC, V - VNC-Direct, A - Babel, D - SHARP,
F - PBR, f - OpenFabric,
> - selected route, * - FIB route, q - queued route, r - rejected route

K>* 0.0.0.0/0 [0/0] via 188.188.1.1, eth0, 00:49:57
B>* 1.1.1.1/32 [200/0] via 10.0.0.0, Ethernet52, 00:42:25
C>* 2.2.2.2/32 is directly connected, Loopback0, 00:46:34
C>* 10.0.0.0/31 is directly connected, Ethernet52, 00:46:33
C>* 188.188.0.0/16 is directly connected, eth0, 00:49:57
[FRR] Check Vxlan VNI status
AS7326-56X:

AS7326-56X# show evpn vni detail
VNI: 3000
Type: L2
```

```
Tenant VRF: default
VxLAN interface: vtep-30
VxLAN ifIndex: 68
Local VTEP IP: 1.1.1.1
Mcast group: 0.0.0.0
Remote VTEPs for this VNI:
2.2.2.2 flood: HER
Number of MACs (local and remote) known for this VNI: 3
Number of ARPs (IPv4 and IPv6, local and remote) known for this VNI: 3
Advertise-gw-macip: No
AS5835-54X:

AS5835-54X# show evpn vni detail
VNI: 3000
Type: L2
Tenant VRF: default
VxLAN interface: vtep-30
VxLAN ifIndex: 66
Local VTEP IP: 2.2.2.2
Mcast group: 0.0.0.0
Remote VTEPs for this VNI:
1.1.1.1 flood: HER
Number of MACs (local and remote) known for this VNI: 3
Number of ARPs (IPv4 and IPv6, local and remote) known for this VNI: 3
Advertise-gw-macip: No
[FRR] Check the evpn mac learning
AS7326-56X:

AS7326-56X# show evpn mac vni all

VNI 3000 #MACs (local and remote) 3

MAC               Type   Intf/Remote VTEP      VLAN  Seq #'s
8c:ea:1b:30:da:50 remote 2.2.2.2                     1/0
8c:ea:1b:30:da:4f local  Ethernet0             30    0/0
AS5835-54X:

AS5835-54X# show evpn mac vni all

VNI 3000 #MACs (local and remote) 3

MAC               Type   Intf/Remote VTEP      VLAN  Seq #'s
8c:ea:1b:30:da:50 local  Ethernet0             30    0/0
8c:ea:1b:30:da:4f remote 1.1.1.1                     1/0
[FRR] Check the type 2 EVPN route
AS7326-56X:

AS7326-56X# show bgp l2vpn evpn route type macip
BGP table version is 2, local router ID is 1.1.1.1
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal
Origin codes: i - IGP, e - EGP, ? - incomplete
EVPN type-1 prefix: [1]:[EthTag]:[ESI]:[IPlen]:[VTEP-IP]
EVPN type-2 prefix: [2]:[EthTag]:[MAClen]:[MAC]:[IPlen]:[IP]
EVPN type-3 prefix: [3]:[EthTag]:[IPlen]:[OrigIP]
EVPN type-4 prefix: [4]:[ESI]:[IPlen]:[OrigIP]
EVPN type-5 prefix: [5]:[EthTag]:[IPlen]:[IP]

   Network          Next Hop            Metric LocPrf Weight Path
                    Extended Community
Route Distinguisher: 1.1.1.1:2
*> [2]:[0]:[48]:[8c:ea:1b:cc:10:a4]
                    1.1.1.1                              32768 i
                    ET:8 RT:65100:3000
Route Distinguisher: 2.2.2.2:2
```

```
*>i[2]:[0]:[48]:[80:a2:35:5a:22:50]
                    2.2.2.2                         100      0 i
                    RT:65100:3000 ET:8

Displayed 2 prefixes (2 paths) (of requested type)
AS5835-54X:

AS5835-54X# show bgp l2vpn evpn route type macip
BGP table version is 2, local router ID is 2.2.2.2
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal
Origin codes: i - IGP, e - EGP, ? - incomplete
EVPN type-1 prefix: [1]:[EthTag]:[ESI]:[IPlen]:[VTEP-IP]
EVPN type-2 prefix: [2]:[EthTag]:[MAClen]:[MAC]:[IPlen]:[IP]
EVPN type-3 prefix: [3]:[EthTag]:[IPlen]:[OrigIP]
EVPN type-4 prefix: [4]:[ESI]:[IPlen]:[OrigIP]
EVPN type-5 prefix: [5]:[EthTag]:[IPlen]:[IP]

   Network          Next Hop            Metric LocPrf Weight Path
                    Extended Community
Route Distinguisher: 1.1.1.1:2
*>i[2]:[0]:[48]:[8c:ea:1b:cc:10:a4]
                    1.1.1.1                         100      0 i
                    RT:65100:3000 ET:8
Route Distinguisher: 2.2.2.2:2
*> [2]:[0]:[48]:[80:a2:35:5a:22:50]
                    2.2.2.2                              32768 i
                    ET:8 RT:65100:3000

Displayed 2 prefixes (2 paths) (of requested type)
[FRR] Check the type 3 EVPN route
AS7326-56X:

AS7326-56X# show bgp l2vpn evpn route type multicast
BGP table version is 3, local router ID is 1.1.1.1
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal
Origin codes: i - IGP, e - EGP, ? - incomplete
EVPN type-2 prefix: [2]:[EthTag]:[MAClen]:[MAC]:[IPlen]:[IP]
EVPN type-3 prefix: [3]:[EthTag]:[IPlen]:[OrigIP]
EVPN type-4 prefix: [4]:[ESI]:[IPlen]:[OrigIP]
EVPN type-5 prefix: [5]:[EthTag]:[IPlen]:[IP]

Network Next Hop Metric LocPrf Weight Path
Extended Community
Route Distinguisher: 1.1.1.1:2
*> [3]:[0]:[32]:[1.1.1.1]
1.1.1.1 32768 i
ET:8 RT:65100:3000
Route Distinguisher: 2.2.2.2:2
*>i[3]:[0]:[32]:[2.2.2.2]
2.2.2.2 100 0 i
RT:65100:3000 ET:8

Displayed 2 prefixes (2 paths) (of requested type)
AS5835-54X:

AS5835-54X# show bgp l2vpn evpn route type multicast
BGP table version is 3, local router ID is 2.2.2.2
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal
Origin codes: i - IGP, e - EGP, ? - incomplete
EVPN type-2 prefix: [2]:[EthTag]:[MAClen]:[MAC]:[IPlen]:[IP]
EVPN type-3 prefix: [3]:[EthTag]:[IPlen]:[OrigIP]
EVPN type-4 prefix: [4]:[ESI]:[IPlen]:[OrigIP]
EVPN type-5 prefix: [5]:[EthTag]:[IPlen]:[IP]
```

```
Network Next Hop Metric LocPrf Weight Path
Extended Community
Route Distinguisher: 1.1.1.1:2
*>i[3]:[0]:[32]:[1.1.1.1]
1.1.1.1 100 0 i
RT:65100:3000 ET:8
Route Distinguisher: 2.2.2.2:2
*> [3]:[0]:[32]:[2.2.2.2]
2.2.2.2 32768 i
ET:8 RT:65100:3000

Displayed 2 prefixes (2 paths) (of requested type)
```