Verifying NXOS Hardware Tables

This chapter contains the following sections:

Verifying End Point Manager Learning

Use the following commands to verify End Point Manager (EPM) learning.

In the following example, you can use the command to verify that source EP 172.17.15.105 is discovered in site5, leaf101. This output shows that for EP 172.17.15.105, the BD-VNID is 15794150, VRF-VNID is 2195456, and the pcTag or sclass is 16387.

```
leaf101# show sys int epm end mac 0000.5555.1715

MAC : 0000.5555.1715 ::: Num IPs : 1
IP# 0 : 172.17.15.105 ::: IP# 0 flags :
Vlan id : 18 ::: Vlan vnid : 8393 ::: VRF name : msite-tenant-welkin:dev
BD vnid : 15794150 ::: VRF vnid : 2195456
Phy If : 0x1a000000 ::: Tunnel If : 0
Interface : Ethernet1/1
Flags : 0x80004c04 ::: sclass : 16387 ::: Ref count : 5
EP Create Timestamp : 07/30/2017 07:28:40.535135
EP Update Timestamp : 07/30/2017 08:05:56.769126
EP Flags : local|IP|MAC|sclass|timer|
::::


leaf101# show sys int epm end ip 172.17.15.106

MAC : 0000.6666.1716 ::: Num IPs : 1
IP# 0 : 172.17.15.106 ::: IP# 0 flags :
Vlan id : 9 ::: Vlan vnid : 8193 ::: VRF name : msite-tenant-welkin:dev
BD vnid : 16449430 ::: VRF vnid : 2326528
Phy If : 0x1a027000 ::: Tunnel If : 0
Interface : Ethernet1/40
Flags : 0x80005c04 ::: sclass : 16386 ::: Ref count : 5
EP Create Timestamp : 07/31/2017 05:15:24.179330
EP Update Timestamp : 08/01/2017 10:45:06.108770
```

```
EP Flags : local|IP|MAC|host-tracked|sclass|timer|
::::
```

Verifying BGP EVPN Routing Table

Use the following commands to verify the BGP EVPN routing table.

In this example, the end point 172.17.15.105 discovered from leaf101 is published to spine501 via COOP by EPM (Endpoint manager). COOP process on the spine and then syncs the EP to L2vpn EVPN. The command output show us that EP 172.17.15.105 is local to site 5 and being advertised to site 6 by BGP EVPN.

```
spine501# show bgp l2vpn evpn 172.17.15.105 vrf overlay-1
Route Distinguisher: 1:99680230 (L2VNI 15794150)
BGP routing table entry for [2]:[0]:[15794150]:[48]:[0000.5555.1715]:[32]:[172.17.15.105]/272,
 version 719 dest ptr 0xab0a63de
MSITE RD: 1:99680230 (L2VNI 15794150)
Local Route Distinguisher: 5.5.5.4:65005 (L2VNI 1)
Paths: (1 available, best #1)
Flags: (0x00010a 00000000) on xmit-list, is not in rib/evpn
Multipath: eBGP iBGP

 Advertised path-id 1
 Path type: local 0x4000008c 0x0 ref 0, path is valid, is best path
 AS-Path: NONE, path locally originated
 5.5.5.4 (metric 0) from 0.0.0.0 (5.5.5.3)
 Origin IGP, MED not set, localpref 100, weight 32768
 Received label 15794150 2195456
 Extcommunity:
 RT:5:5

 Path-id 1 advertised to peers:
 6.6.6.3

Route Distinguisher: 5.5.5.4:65005 (L2VNI 1)
BGP routing table entry for [2]:[0]:[15794150]:[48]:[0000.5555.1715]:[32]:[172.17.15.105]/272,
 version 719 dest ptr 0xab0a63de
MSITE RD: 1:99680230 (L2VNI 15794150)
Local Route Distinguisher: 5.5.5.4:65005 (L2VNI 1)
Paths: (1 available, best #1)
Flags: (0x00010a 00000000) on xmit-list, is not in rib/evpn
Multipath: eBGP iBGP

 Advertised path-id 1
 Path type: local 0x4000008c 0x0 ref 0, path is valid, is best path
 AS-Path: NONE, path locally originated
 5.5.5.4 (metric 0) from 0.0.0.0 (5.5.5.3)
 Origin IGP, MED not set, localpref 100, weight 32768
 Received label 15794150 2195456
 Extcommunity:
 RT:5:5

 Path-id 1 advertised to peers:
 6.6.6.3
```

```
spine501# show bgp internal evi 15794150

**********************************************
```

```
Global EVI : 1
Number of EVI : 1
L2RIB bound / VNI Req to L2RIB : Yes / 1
VNI Adds / Dels from L2RIB : 9 / 6
Topo global/mpod/wan/avs/msite reg pending: 0/0/0/0/0
Topo global/mpod/wan/avs/msite registered: 1/0/0/0/1
L2RIB is up/registered/local-req: 1/1
L2RIB down: in-prg/up-defer: 0/0
L2RIB register/failures: 1/0
L2RIB deregister/failures: 0/0
L2RIB flow control (#enabled/#disabled): Disabled (0/0)
**********************************************
L2RIB Emulation Library Info
----------------------------
L2RIB Service BGP state UP BIND PEERBIND
Global EVI 134217729, MPOD SHARD shard [0, 0]
Global EVI 134217729, MSITE SHARD shard [0, 4294967295] --- --- The global EVI is same for
 the identical across multi-sites.
Global EVI 134217729, GOLF SHARD shard [0, 0]
Global EVI 134217729, EXT_SRC SHARD shard [0, 0]
 MTS: total 1 bufs 1 free 0 full 0 working
 MTS TX: 408 (Fail 0) RX: 229
 MTS PAUSE: 0 (Flush Fail 0)
Peer service COOP state UP BIND PEERBIND
 BIND TX: 61 RX: 0
 REGISTER TX: 61 RX: 0
 TOPO TX: 0 RX: 21
 MAC TX: 395 RX: 208
 IP TX: 19 RX: 39
 IMET TX: 0 RX: 0
 SMAD TX: 0 RX: 0
Peer service ISIS state DOWN UNBIND PEERUNBIND
 BIND TX: 0 RX: 0
 REGISTER TX: 0 RX: 0
 TOPO TX: 0 RX: 0
 MAC TX: 0 RX: 0
 IP TX: 0 RX: 0
 IMET TX: 0 RX: 0
 SMAD TX: 0 RX: 0
**********************************************
BGP L2VPN/EVPN RD Information for 1:99680230
 L2VNI ID : 15794150 (vni_15794150)
 #Prefixes Local/BRIB : 2 / 4
 #Paths L3VPN->EVPN/EVPN->L3VPN : 0 / 0
**********************************************
==============================================
BGP Configured VNI Information:
 VNI ID (Index) : 15794150 (0)
 RD : 1:99680230
 Export RTs : 1
 Export RT cfg list: 65005:99680230(refcount:1
 Import RTs : 1
 Import RT cfg list: 65006:117112726(refcount:1
 Topo Id : 15794150
 VTEP IP : 0.0.0.0
 VTEP VPC IP : 0.0.0.0
 Enabled : Yes
 Delete Pending : No
 RD/Import RT/Export RT : Yes/Yes/Yes
 Type : 3
 Usage : 2
 L2 stretch enabled : 1
 VRF Vnid : 2195456
 Refcount : 00000003
```

```
 Encap : VxLAN

==============================================
++++++++++++++++++++++++++++++++++++++++++++++
BGP VNI Information for vni_15794150
 L2VNI ID : 15794150 (vni_15794150)
 RD : 1:99680230
 VRF Vnid : 2195456
 Prefixes (local/total) : 2/4
 VNID registered with COOP : Yes
 Enabled : Yes
 Delete pending : 0
 Stale : No
 Import pending : 0
 Import in progress : 0
 Encap : VxLAN
 Topo Id : 15794150
 VTEP IP : 0.0.0.0
 VTEP VPC IP : 0.0.0.0
 Active Export RTs : 1
 Active Export RT list : 65005:99680230
 Config Export RTs : 1
 Export RT cfg list: 65005:99680230(refcount:1
 Export RT chg/chg-pending : 0/0
 Active Import RTs : 1
 Active Import RT list : 65006:117112726
 Config Import RTs : 1
 Import RT cfg list: 65006:117112726(refcount:1
 Import RT chg/chg-pending : 0/0
 IMET Reg/Unreg from L2RIB : 1/0
 MAC Reg/Unreg from L2RIB : 1/0
 MAC IP Reg/Unreg from L2RIB : 1/0
 IP-only Reg/Unreg from L2RIB : 0/0
 SMAD Reg/Unreg from L2RIB : 1/0
 IMET Add/Del from L2RIB : 0/0
 MAC Add/Del from L2RIB : 97/96
 MAC IP Add/Del from L2RIB : 3/2
 SMAD Add/Del from L2RIB : 0/0
 IMET Dnld/Wdraw to L2RIB : 0/0
 IMET Dnld/Wdraw to L2RIB failures : 0/0
 MAC Dnld/Wdraw to L2RIB : 190/189
 MAC Dnld/Wdraw to L2RIB failures : 0/0
 SMAD Dnld/Wdraw to L2RIB : 0/0
 SMAD Dnld/Wdraw to L2RIB failures : 0/0
 MAC-IP/SMAD Msite-RD routes : 4
 MAC-IP WAN-RD routes : 0
 MAC-IP network host routes : 0
 Type : 3
```

Verifying VNID, S-Class, and VTEP Mappings

Use the following command to verify remote site ID.

For VNID and pcTag or s-class translation between sites, the translation should be verified from the destination site. For example, if the packet is sending from site5 to site6, the translation is done by the site6's spine. To verify if the translation is pushed to site5, use the following command.

```
spine501# show dcimgr repo eteps

Remote site=6 :
```

```
Rem Etep=6.6.6.1/32, is_ucast=yes
Rem Etep=6.6.6.2/32, is_ucast=no
```

Use the following command to verify sclass-map between the remote and local site.

```
spine501# show dcimgr repo sclass-maps
------------------------------------------------------------
     Remote            |        Local
site  Vrf       PcTag  |  Vrf      PcTag     Rel-state
------------------------------------------------------------
  6   2326528   32770  |  2195456   49154   [formed]
  6   2326528   16386  |  2195456   16387   [formed]
```

Use the following commands to verify VRF or BD VNID map between remote and local site.

```
spine501# show dcimgr repo vnid-maps detail
------------------------------------------------------------------
     Remote             |           Local
site  Vrf       Bd      |    Vrf      Bd       Rel-state
------------------------------------------------------------------
   6  2326528           |  2195456           [formed]
      0x238000          |  0x218000
------------------------------------------------------------------
   6  2326528  16449430 |  2195456  15794150  [formed]
      0x238000 0xfaff96 |  0x218000 0xf0ffe6
------------------------------------------------------------------
```

```
spine501# show dcimgr repo vnid-maps verbose

Local site=5  Remote site=6:
Loc vrfvnid=2195456 Rem vrfvnid=2326528 rel-state=formed
  BD Vnids:
  Loc vnid=15794150 Rem vnid=16449430 rel-state=formed
```

Use the following commands to verify DCI HAL objects.

```
module-1# show plat int hal objects dci all
Dumping dci objects
## Get Objects for dci remotesite for Asic 0

  OBJECT 0:
Handle                                                  : 23967
siteid                                                  : 0x6
iswan                                                   : Disabled

## Get Objects for dci remotesiteetep for Asic 0

  OBJECT 0:
Handle                                                  : 23970
ucastetep                                               : 6.6.6.1/32
siteid                                                  : 0x6

## Get Objects for dci vnidmap for Asic 0

  OBJECT 0:
Handle                                                  : 23977
isbdvnid                                                : Disabled
localvnid                                               : 0x218000
localgipo                                               : 0.0.0.0/32
remotevnid                                              : 0x238000
remotevrfvnid                                           : 0x238000
```

```
islocalbdctrl                                                   : Disabled
siteid                                                          : 0x6


  OBJECT 1:
Handle                                                          : 23980
isbdvnid                                                        : Enabled
localvnid                                                       : 0xf0ffe6
localgipo                                                       : 225.0.225.160/32
remotevnid                                                      : 0xfaff96
remotevrfvnid                                                   : 0x238000
islocalbdctrl                                                   : Enabled
siteid                                                          : 0x6

## Get Objects for dci remotevrfvnid for Asic 0

  OBJECT 0:
Handle                                                          : 23972
remotevnid                                                      : 0x238000
siteid                                                          : 0x6

## Get Objects for dci sclassmap for Asic 0

  OBJECT 0:
Handle                                                          : 23986
localsclass                                                     : 0x4003  //18387
remotesclass                                                    : 0x4002  //16386
remotevnid                                                      : 0x238000
siteid                                                          : 0x6


  OBJECT 1:
Handle                                                          : 23974
localsclass                                                     : 0x1
remotesclass                                                    : 0x1
remotevnid                                                      : 0x238000
siteid                                                          : 0x6


  OBJECT 2:
Handle                                                          : 23983
localsclass                                                     : 0xc002  //49154
remotesclass                                                    : 0x8002  //32770
remotevnid                                                      : 0x238000
siteid                                                          : 0x6
```

Use the following commands to verify VXLAN objects.

```
module-1# show plat int hal objects vxlan mytep  | egrep -B 13 -A 8 5.5.5.1


 OBJECT 11:
Handle                                                          : 23964
useforvpc                                                       : Disabled
usefornonvpc                                                    : Disabled
useforvteps                                                     : Disabled
proxyforv4                                                      : Disabled
proxyforv6                                                      : Disabled
isdciucastetep                                                  : Enabled
isdcimcastetep                                                  : Disabled
isdcieteplocal                                                  : Enabled
proxyformac                                                     : Disabled
outerbdid                                                       : 0x2
rmac                                                            : 00:0d:0d:0d:0d:0d
```

```
csouterbdid                                                : 0x1
address                                                    : 5.5.5.1/32
encaptype                                                  : iVxlan
id                                                         : 0x1400000b
lid                                                        : 0x0
iftype                                                     : none
ifname                                                     : Lo11
Relation Object ipteptovrf :
  rel-ipteptovrf-l3-l3_vrf-handle                          : 6983
  rel-ipteptovrf-l3-l3_vrf-id                              : 0x2
```

```
module-1# show plat int hal objects vxlan remotetep  | egrep -B 28 -A 8
6.6.6.1

  OBJECT 1:
Handle                                                     : 25810
operst                                                     : up
enablelearning                                             : Disabled
enablebindlearn                                            : Disabled
enablesclasslearn                                          : Disabled
drop                                                       : Disabled
isvpcpeer                                                  : Disabled
islocal                                                    : Disabled
proxyforv4                                                 : Disabled
proxyforv6                                                 : Disabled
proxyformac                                                : Disabled
unicastreplication                                         : Disabled
splithorizongroupid                                        : 0x0
trustqosmarking                                            : Disabled
trustsclass                                                : Disabled
trustlb                                                    : Disabled
trustdl                                                    : 0x1
istepscale                                                 : Disabled
usedfhash                                                  : Disabled
dismark                                                    : Disabled
hwencapidx                                                 : 0x5
srcnat                                                     : Disabled
isingressonly                                              : Disabled
isipn                                                      : Disabled
isdciucastetep                                             : Enabled
isdcimcastetep                                             : Disabled
address                                                    : 6.6.6.1/32
encaptype                                                  : iVxlan
id                                                         : 0x18010004
lid                                                        : 0x0
iftype                                                     : none
ifname                                                     : Tunnel4
Relation Object ipteptovrf :
  rel-ipteptovrf-l3-l3_vrf-handle                          : 6983
  rel-ipteptovrf-l3-l3_vrf-id                              : 0x2
```

Verifying LC Hardware Tables

Use the following commands to verify LC hardware tables.

```
module-1# show platform internal hal dci sclassmap
Non-Sandbox Mode

Sandbox_ID: 0  Asic Bitmap: 0x0
```

```
                     --- DCI Sclass table ---
Site  Remote   Local   Remote    Remote   Local
 ID    Vnid    Sclass  Sclass    Sclass   Sclass  Scope
----+--------+--------+--------+--------+-------
6    2326528     16387     16386      16386       16387      1
6    2326528     1         1          1           1          1
6    2326528     49154     32770      32770       49154      1
next asic
```

```
module-1# show platform internal hal dci vnidmap

Non-Sandbox Mode

Sandbox_ID: 0  Asic Bitmap: 0x0

Site  POD  isBD  Local Remote  ----EPG table----    BD State Table
 ID   ID         vnid   vnid   idx     Localvnid     idx     isBD
--------+-+-+-+----+--------+--------+----+-+-+-+-+----+--+-+----
6   1     0   2195456    2326528  15360     2195456       15360     0
6   1     1   15794150   16449430  15361     15794150       15361     1
```

```
module-1# show platform internal sug tile-table dci-sclass

================================================================================================================

                                    SLICE : 0                                FP : 6
                TILE : 0
================================================================================================================
ENTRY[001208] = tile_entry_dci_sclass_entry_0_key_valid=0x1
                tile_entry_dci_sclass_entry_0_key_scope=0x1
                tile_entry_dci_sclass_entry_0_key_sclass_in=0x1
                tile_entry_dci_sclass_entry_0_data_sclass_out=0x1
ENTRY[001645] = tile_entry_dci_sclass_entry_0_key_valid=0x1
                tile_entry_dci_sclass_entry_0_key_scope=0x1
                tile_entry_dci_sclass_entry_0_key_sclass_in=0x4002
                tile_entry_dci_sclass_entry_0_data_sclass_out=0x4003
ENTRY[001713] = tile_entry_dci_sclass_entry_0_key_valid=0x1
                tile_entry_dci_sclass_entry_0_key_scope=0x1
                tile_entry_dci_sclass_entry_0_key_sclass_in=0x8002
                tile_entry_dci_sclass_entry_0_data_sclass_out=0xc002

================================================================================================================

                                    SLICE : 1                                FP : 6
                TILE : 0
================================================================================================================
ENTRY[001208] = tile_entry_dci_sclass_entry_0_key_valid=0x1
                tile_entry_dci_sclass_entry_0_key_scope=0x1
                tile_entry_dci_sclass_entry_0_key_sclass_in=0x1
                tile_entry_dci_sclass_entry_0_data_sclass_out=0x1
ENTRY[001645] = tile_entry_dci_sclass_entry_0_key_valid=0x1
                tile_entry_dci_sclass_entry_0_key_scope=0x1
                tile_entry_dci_sclass_entry_0_key_sclass_in=0x4002
                tile_entry_dci_sclass_entry_0_data_sclass_out=0x4003
ENTRY[001713] = tile_entry_dci_sclass_entry_0_key_valid=0x1
                tile_entry_dci_sclass_entry_0_key_scope=0x1
                tile_entry_dci_sclass_entry_0_key_sclass_in=0x8002
                tile_entry_dci_sclass_entry_0_data_sclass_out=0xc002
```