

# في احوال ص او EVPN/VxLAN عا طخ ا فاش ك تس ا ة دد ع ت م ل ا ع ق ا و م ل ا د ا د ع ا

## ت ا ي و ت ح م ل ا

[ة م د ق م ل ا](#)

[ة ي س ا س ا ل ا ت ا ب ل ط ت م ل ا](#)

[ت ا ب ل ط ت م ل ا](#)

[ة م د خ ت س م ل ا ت ا ن و ك م ل ا](#)

[ط خ م ل ا](#)

[م ك ح ت ل ا ي و ت س م ن م ق ق ح ت ل ا](#)

[ت ا ن ا ي ل ا ي و ت س م ن م ق ق ح ت ل ا](#)

[ت ا ن ا ي ل ا ي و ت س م ن م ق ق ح ت ل ا](#)

[Port ASIC, Slice, و Srcld ن م ق ق ح ت ل ل ELAM ط ا ق ت ل ا](#)

## ة م د ق م ل ا

ة ع س و م ل ا LAN ة ك ب ش VPN/ ت ن ر ث ي ا ل ا ة ك ب ش عا ط خ ا فاش ك تس ا ج ه ن د ن ت س م ل ا ا ذ ه ف ص ي  
ع ق ا و م ل ا د د ع ت م د ا د ع ا ي ف ا ح ا ل ص ا و (EVPN/VxLAN) ة ي ر ه ا ط ل ا

## ة ي س ا س ا ل ا ت ا ب ل ط ت م ل ا

### ت ا ب ل ط ت م ل ا

ة ي ل ل ا ل ا ع ي ض ا و م ل ا ب ة ف ر ع م ك ي د ل ن و ك ت ن ا ب Cisco ي ص و ت

- Multiprotocol Label Switching (MPLS) Layer 3 VPN
- د و د ح ل - ت ا ل و ك و ت و ر ب ل ا د د ع ت م ة ر ا ب ع ل ا ل و ك و ت و ر ب (MP-BGP)
- EVPN

### ة م د خ ت س م ل ا ت ا ن و ك م ل ا

ة ي ل ل ا ل ا ة ي د ا م ل ا ت ا ن و ك م ل ا و ج م ا ر ب ل ا ت ا ر ا د ص ا ي ل ا د ن ت س م ل ا ا ذ ه ي ف ة د ر ا و ل ا ت ا م و ل ع م ل ا د ن ت س ت

ع ق و م ل ا ق ا ر و ا ة ف ا ك	N9K-C9336C-FX2	NXOS: 10.2(3)
S1_SPINE1	N9K-C9364C	NXOS: 10.2(4)
S1_SPINE2	N9K-C9364C	NXOS: 9.3(5)
S1_border Gateway1, S2_border Gateway2, S2_border Gateway1	N9K-C9332C	NXOS: 9.3(9)
S1_Border Gateway2	N9K-C9332C	NXOS:



HOST\_3#

show ip int brief

IP Interface Status for VRF "default"(1)  
Interface IP Address Interface Status

Vlan100 192.168.100.103 protocol-up/link-up/admin-up

Vlan200 192.168.200.103 protocol-up/link-up/admin-up  
HOST\_3#

External\_Router#  
External\_Router#

show ip int brie

IP Interface Status for VRF "default"(1)  
Interface IP Address Interface Status

Vlan100 192.168.100.102 protocol-up/link-up/admin-up  
Vlan200 192.168.200.102 protocol-up/link-up/admin-up

Lo10 10.2.3.4 protocol-up/link-up/admin-up

External\_Router#

HOST\_3#  
HOST\_3#

ping 10.2.3.4 source 192.168.100.103

PING 10.2.3.4 (10.2.3.4) from 192.168.100.103: 56 data bytes  
64 bytes from 10.2.3.4: icmp\_seq=0 ttl=250 time=1.153 ms  
64 bytes from 10.2.3.4: icmp\_seq=1 ttl=250 time=0.569 ms  
64 bytes from 10.2.3.4: icmp\_seq=2 ttl=250 time=0.562 ms  
64 bytes from 10.2.3.4: icmp\_seq=3 ttl=250 time=0.525 ms  
64 bytes from 10.2.3.4: icmp\_seq=4 ttl=250 time=0.527 ms  
--- 10.2.3.4 ping statistics ---  
5 packets transmitted, 5 packets received, 0.00% packet loss  
round-trip min/avg/max = 0.525/0.667/1.153 ms  
HOST\_3#

<#root>

S2-Leaf1#

show bgp l2vpn evp vrf vrf\_2

BGP routing table information for VRF default, address family L2VPN EVPN  
BGP table version is 4420, Local Router ID is 10.103.0.5  
Status: s-suppressed, x-deleted, S-stale, d-dampened, h-history, \*-valid, >-best  
Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist, I-injected  
Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup, 2 - best2  
Network Next Hop Metric LocPrf Weight Path  
Route Distinguisher: 10.103.0.5:5 (L3VNI 4000502)  
\*>i[5]:[0]:[0]:[24]:[192.168.100.0]/224  
10.100.100.2 100 0 300 100 i

```

*>i[5]:[0]:[0]:[32]:[10.2.3.4]/224
    10.100.100.2                    100          0 300 100 65111 i

*>i[5]:[0]:[0]:[32]:[10.100.100.1]/224
    10.100.100.2                    100          0 300 100 i

*>i[5]:[0]:[0]:[32]:[10.100.100.2]/224
    10.100.100.2                    100          0 300 100 i

```

S2-Leaf2#

```
show bgp l2vpn evpn vrf vrf_2
```

BGP routing table information for VRF default, address family L2VPN EVPN  
 BGP table version is 4389, Local Router ID is 10.103.0.8  
 Status: s-suppressed, x-deleted, S-stale, d-dampened, h-history, \*-valid, >-best  
 Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist, I-injected  
 Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup, 2 - best2

Network	Next Hop	Metric	LocPrf	Weight	Path
Route Distinguisher: 10.103.0.8:5 (L3VNI 4000502)					
*>i[5]:[0]:[0]:[24]:[192.168.100.0]/224	10.100.100.2		100	0 300 100	i
*>i[5]:[0]:[0]:[32]:[10.2.3.4]/224	10.100.100.2		100	0 300 100 65111	i
*>i[5]:[0]:[0]:[32]:[10.100.100.1]/224	10.100.100.2		100	0 300 100	i
*>i[5]:[0]:[0]:[32]:[10.100.100.2]/224	10.100.100.2		100	0 300 100	i

S2-Leaf2#

S2-leaf3#

```
show bgp l2vpn evpn vrf vrf_2
```

BGP routing table information for VRF default, address family L2VPN EVPN  
 BGP table version is 4196, Local Router ID is 10.103.0.9  
 Status: s-suppressed, x-deleted, S-stale, d-dampened, h-history, \*-valid, >-best  
 Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist, I-injected  
 Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup, 2 - best2

Network	Next Hop	Metric	LocPrf	Weight	Path
Route Distinguisher: 10.103.0.9:5 (L3VNI 4000502)					
*>i[5]:[0]:[0]:[24]:[192.168.100.0]/224	10.100.100.2		100	0 300 100	i
*>i[5]:[0]:[0]:[32]:[10.2.3.4]/224	10.100.100.2		100	0 300 100 65111	i
*>i[5]:[0]:[0]:[32]:[10.100.100.1]/224	10.100.100.2		100	0 300 100	i
*>i[5]:[0]:[0]:[32]:[10.100.100.2]/224	10.100.100.2		100	0 300 100	i

S2-Leaf4#

S2-Leaf4#

```
show bgp l2vpn evpn vrf vrf_2
```

BGP routing table information for VRF default, address family L2VPN EVPN  
BGP table version is 4381, Local Router ID is 10.102.0.10  
Status: s-suppressed, x-deleted, S-stale, d-dampened, h-history, \*-valid, >-best  
Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist, I-injected  
Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup, 2 - best2

Network Next Hop Metric LocPrf Weight Path  
Route Distinguisher: 10.102.0.10:5 (L3VNI 4000502)

\*>i[5]:[0]:[0]:[24]:[192.168.100.0]/224  
10.100.100.2 100 0 300 100 i

\*>i[5]:[0]:[0]:[32]:[10.2.3.4]/224  
10.100.100.2 100 0 300 100 65111 i

\*>i[5]:[0]:[0]:[32]:[10.100.100.1]/224  
10.100.100.2 100 0 300 100 i

\*>i[5]:[0]:[0]:[32]:[10.100.100.2]/224  
10.100.100.2 100 0 300 100 i

S2-Leaf4#

S2-Leaf4#

<#root>

S2-Spine1#

show bgp l2vpn evpn

BGP routing table information for VRF default, address family L2VPN EVPN  
BGP table version is 1235, Local Router ID is 10.103.0.3  
Status: s-suppressed, x-deleted, S-stale, d-dampened, h-history, \*-valid, >-best  
Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist, I-injected  
Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup, 2 - best2

Network Next Hop Metric LocPrf Weight Path

Route Distinguisher: 200:4000502

\* i[5]:[0]:[0]:[24]:[192.168.100.0]/224

10.100.100.2 100 0 300 100

\*>i 10.100.100.2 100 0 300 100 i

\* i[5]:[0]:[0]:[32]:[10.2.3.4]/224

10.100.100.2 100 0 300 100 65111 i

\*>i 10.100.100.2 100 0 300 100 65111 i

\* i[5]:[0]:[0]:[32]:[10.100.100.1]/224

10.100.100.2 100 0 300 100 i

\*>i 10.100.100.2 100 0 300 100 i

\* i[5]:[0]:[0]:[32]:[10.100.100.2]/224

10.100.100.2 100 0 300 100 i

\*>i 10.100.100.2 100 0 300 100 i

<#root>

S2-BG1#

show ip int brie

IP Interface Status for VRF "default"(1)

Interface	IP Address	Interface Status
Lo0	10.31.1.3	protocol-up/link-up/admin-up
Lo1	10.135.135.135	protocol-up/link-up/admin-up
Lo100	10.100.100.2	protocol-up/link-up/admin-up
Eth1/1	192.168.17.12	protocol-up/link-up/admin-up
Eth1/3	10.150.152.1	protocol-up/link-up/admin-up

S2-BG1#

show ip route 10.2.3.4 vrf vrf\_2

IP Route Table for VRF "vrf\_2"

'\*' denotes best ucast next-hop  
'\*\*' denotes best mcast next-hop  
'[x/y]' denotes [preference/metric]  
'%<string>' in via output denotes VRF <string>

10.2.3.4/32, ubest/mbest: 1/0

\*via 10.100.100.1%default, [20/0], 04:09:46, bgp-200, external, tag 300, segid: 4000502 tunnelid: 0xa64

S2-BG1#

S2-BG1#

show bgp l2vpn evpn

BGP routing table information for VRF default, address family L2VPN EVPN

BGP table version is 6206, Local Router ID is 10.31.1.3

Status: s-suppressed, x-deleted, S-stale, d-dampened, h-history, \*-valid, >-best

Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist, I-injected

Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup, 2 - best2

Network	Next Hop	Metric	LocPrf	Weight	Path
Route Distinguisher: 100:4000502					
*>e[5]:[0]:[0]:[24]:[192.168.100.0]/224	10.100.100.1			0 300 100	i
*>e[5]:[0]:[0]:[32]:[10.2.3.4]/224	10.100.100.1			0 300 100 65111	i
*>e[5]:[0]:[0]:[32]:[10.100.100.1]/224	10.100.100.1			0 300 100	i
*>e[5]:[0]:[0]:[32]:[10.100.100.2]/224	10.100.100.1			0 300 100	i

<#root>

S2-BG2#

show ip int brief

IP Interface Status for VRF "default"(1)

Interface	IP Address	Interface Status
Lo0	10.31.1.4	protocol-up/link-up/admin-up
Lo1	10.136.136.136	protocol-up/link-up/admin-up
Lo100	10.100.100.2	protocol-up/link-up/admin-up
Eth1/1	192.168.18.12	protocol-up/link-up/admin-up
Eth1/3	10.150.153.1	protocol-up/link-up/admin-up
S2-BG2#		
S2-BG2#		
S2-BG2#		

show ip route 10.2.3.4 vrf vrf\_2

IP Route Table for VRF "vrf\_2"

'\*' denotes best ucast next-hop  
'\*\*' denotes best mcast next-hop  
'[x/y]' denotes [preference/metric]  
'%<string>' in via output denotes VRF <string>

10.2.3.4/32, ubest/mbest: 1/0

\*via 10.100.100.1%default, [20/0], 04:15:13, bgp-200, external, tag 300, segid: 4000502 tunnelid: 0

S2-BG2#

S2-BG2#

show bgp l2vpn evpn

BGP routing table information for VRF default, address family L2VPN EVPN

BGP table version is 5455, Local Router ID is 10.31.1.4

Status: s-suppressed, x-deleted, S-stale, d-dampened, h-history, \*-valid, >-best

Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist, I-injected

Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup, 2 - best2

Network	Next Hop	Metric	LocPrf	Weight	Path
Route Distinguisher: 100:4000502					
*>e[5]:[0]:[0]:[24]:[192.168.100.0]/224	10.100.100.1			0 300 100	i
*>e[5]:[0]:[0]:[32]:[10.2.3.4]/224	10.100.100.1			0 300 100 65111	i
*>e[5]:[0]:[0]:[32]:[10.100.100.1]/224	10.100.100.1			0 300 100	i
*>e[5]:[0]:[0]:[32]:[10.100.100.2]/224	10.100.100.1			0 300 100	i

<#root>

Router\_Server#

show ip int brief

IP Interface Status for VRF "default"(1)

Interface	IP Address	Interface Status
-----------	------------	------------------

```

Lo0                10.32.1.1        protocol-up/link-up/admin-up
Eth2/1             10.150.150.2     protocol-up/link-up/admin-up
Eth2/2             10.150.151.2     protocol-up/link-up/admin-up
Eth2/4             10.150.152.2     protocol-up/link-up/admin-up
Eth2/5             10.150.153.2     protocol-up/link-up/admin-up

```

```

Router_Server#
Router_Server#

```

```
show ip route 10.100.100.1
```

```
IP Route Table for VRF "default"
```

```

'*' denotes best ucast next-hop
 '**' denotes best mcast next-hop
 '[x/y]' denotes [preference/metric]
 '%<string>' in via output denotes VRF <string>

```

```
10.100.100.1/32, ubest/mbest: 2/0
```

```

 *via 10.150.150.1, [20/0], 4d22h, bgp-300, external, tag 100
 *via 10.150.151.1, [20/0], 4d22h, bgp-300, external, tag 100

```

```

Router_Server#
Router_Server#
Router_Server#

```

```
show ip route 10.100.100.2
```

```
IP Route Table for VRF "default"
```

```

'*' denotes best ucast next-hop
 '**' denotes best mcast next-hop
 '[x/y]' denotes [preference/metric]
 '%<string>' in via output denotes VRF <string>

```

```
10.100.100.2/32, ubest/mbest: 2/0
```

```

 *via 10.150.152.1, [20/0], 3w5d, bgp-300, external, tag 200
 *via 10.150.153.1, [20/0], 3w5d, bgp-300, external, tag 200

```

```

Router_Server#
Router_Server#

```

```
show bgp l2vpn evpn
```

```
BGP routing table information for VRF default, address family L2VPN EVPN
```

```
BGP table version is 4574, Local Router ID is 10.32.1.1
```

```
Status: s-suppressed, x-deleted, S-stale, d-dampened, h-history, *-valid, >-best
```

```
Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist, I-injected
```

```
Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup, 2 - best2
```

Network	Next Hop	Metric	LocPrf	Weight	Path
Route Distinguisher: 200:4000100					
* e[2]:[0]:[0]:[48]:[6c8b.d3fe.ecb5]:[32]:[192.168.100.103]/272	10.100.100.2	2000		0 200	i
*>e	10.100.100.2	2000		0 200	i
Route Distinguisher: 100:4000502					
*>e[5]:[0]:[0]:[24]:[192.168.100.0]/224	10.100.100.1	2000		0 100	i
* e	10.100.100.1	2000		0 100	i
* e[5]:[0]:[0]:[32]:[10.2.3.4]/224					



```

          10.100.100.1          2000          0 100 65111 i
*>e          10.100.100.1          2000          0 100 65111 i

*>e[5]:[0]:[0]:[32]:[10.100.100.1]/224
          10.100.100.1          2000          0 100 i
* e          10.100.100.1          2000          0 100 i
*>e[5]:[0]:[0]:[32]:[10.100.100.2]/224
>          10.100.100.1          2000          0 100 i
* e          10.100.100.1          2000          0 100 i

```

<#root>

S1\_B2#

S1\_B2#

show ip int brie

```

IP Interface Status for VRF "default"(1)
Interface      IP Address      Interface Status
Lo0            10.31.1.2       protocol-up/link-up/admin-up
Lo1            10.134.134.134  protocol-up/link-up/admin-up
Lo100         10.100.100.1    protocol-up/link-up/admin-up
Eth1/1        192.168.16.12   protocol-up/link-up/admin-up
Eth1/3        10.150.151.1    protocol-up/link-up/admin-up
S1_B2#
S1_B2#

```

sho ip route 192.168.100.103 vrf vrf\_2

```

IP Route Table for VRF "vrf_2"
'*' denotes best ucast next-hop
'***' denotes best mcast next-hop
'[x/y]' denotes [preference/metric]
'%<string>' in via output denotes VRF <string>

```

192.168.100.103/32, ubest/mbest: 1/0

\*via 10.100.100.2%default, [20/0], 4d23h, bgp-100, external, tag 300, segid: 4000502 tunnelid: 0xa6

S1\_B2#

S1\_B2#

show ip route 10.2.3.4 vrf vrf\_2

```

IP Route Table for VRF "vrf_2"
'*' denotes best ucast next-hop
'***' denotes best mcast next-hop
'[x/y]' denotes [preference/metric]
'%<string>' in via output denotes VRF <string>

```

10.2.3.4/32, ubest/mbest: 1/0

\*via 10.102.1.10%default, [200/0], 05:04:19, bgp-100, internal, tag 65111, segid: 4000502 tunnelid:

S1\_B2#

S1\_B2#

S1\_B2#

show bgp l2vpn evpn

BGP routing table information for VRF default, address family L2VPN EVPN  
BGP table version is 5449, Local Router ID is 10.31.1.2  
Status: s-suppressed, x-deleted, S-stale, d-dampened, h-history, \*-valid, >-best  
Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist, I-injected  
Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup, 2 - best2

Network	Next Hop	Metric	LocPrf	Weight	Path
Route Distinguisher: 200:4000100					
*>e[2]:[0]:[0]:[48]:[6c8b.d3fe.df3b]:[32]:[192.168.100.104]/272	10.100.100.2			0 300 200	i
*>e[2]:[0]:[0]:[48]:[6c8b.d3fe.ecb5]:[32]:[192.168.100.103]/272	10.100.100.2			0 300 200	i

<#root>

Route Distinguisher: 200:4000200					
*>e[2]:[0]:[0]:[48]:[6c8b.d3fe.df3b]:[32]:[192.168.100.104]/272	10.100.100.2			0 300 200	i
*>e[2]:[0]:[0]:[48]:[6c8b.d3fe.ecb5]:[32]:[192.168.100.103]/272	10.100.100.2			0 300 200	i

Route Distinguisher: 10.102.0.9:5					
*>i[2]:[0]:[0]:[48]:[cc7f.76fa.118f]:[0]:[0.0.0.0]/216	10.202.202.202		100	0	i
*>i[5]:[0]:[0]:[24]:[192.168.100.0]/224	10.102.1.10		100	0	i
*>i[5]:[0]:[0]:[32]:[10.2.3.4]/224	10.102.1.10		100	0 65111	i
*>i[5]:[0]:[0]:[32]:[10.100.100.2]/224	10.102.1.10		100	0	i

Route Distinguisher: 10.102.0.10:5					
*>i[2]:[0]:[0]:[48]:[cc7f.76c6.a673]:[0]:[0.0.0.0]/216	10.202.202.202		100	0	i
*>i[5]:[0]:[0]:[24]:[192.168.100.0]/224	10.102.1.6		100	0	i
*>i[5]:[0]:[0]:[32]:[10.2.3.4]/224	10.102.1.6		100	0 65111	i
*>i[5]:[0]:[0]:[32]:[10.100.100.1]/224	10.102.1.6		100	0	i

Route Distinguisher: 10.31.1.2:5 (L3VNI 4000502)					
*>l[5]:[0]:[0]:[24]:[192.168.100.0]/224	10.134.134.134		100	0	i
*>l[5]:[0]:[0]:[32]:[10.2.3.4]/224	10.134.134.134		100	0 65111	i
*>l[5]:[0]:[0]:[32]:[10.100.100.1]/224	10.134.134.134		100	0	i
*>l[5]:[0]:[0]:[32]:[10.100.100.2]/224	10.134.134.134		100	0	i

S1\_B2#

<#root>

S1-Bg1#

show ip int brie

IP Interface Status for VRF "default"(1)

Interface	IP Address	Interface Status
Lo0	10.31.1.1	protocol-up/link-up/admin-up
Lo1	10.133.133.133	protocol-up/link-up/admin-up
Lo100	10.100.100.1	protocol-up/link-up/admin-up
Eth1/1	192.168.15.12	protocol-up/link-up/admin-up
Eth1/3	10.150.150.1	protocol-up/link-up/admin-up

S1-Bg1#

S1-Bg1#

show ip route 10.100.100.2 vrf vrf\_2

IP Route Table for VRF "vrf\_2"

'\*' denotes best ucast next-hop  
'\*\*' denotes best mcast next-hop  
'[x/y]' denotes [preference/metric]  
'%<string>' in via output denotes VRF <string>

10.100.100.2/32, ubest/mbest: 1/0

\*via 10.102.1.10%default, [200/0], 4d23h, bgp-100, internal, tag 100, segid: 4000502 tunnelid: 0xa66

S1-Bg1#

S1-Bg1#

show ip route 192.168.100.103 vrf vrf\_2

IP Route Table for VRF "vrf\_2"

'\*' denotes best ucast next-hop  
'\*\*' denotes best mcast next-hop  
'[x/y]' denotes [preference/metric]  
'%<string>' in via output denotes VRF <string>

192.168.100.103/32, ubest/mbest: 1/0

\*via 10.100.100.2%default, [20/0], 4d23h, bgp-100, external, tag 300, segid: 4000502 tunnelid: 0xa64

S1-Bg1#

S1-Bg1#

show ip route 10.2.3.4 vrf vrf\_2

IP Route Table for VRF "vrf\_2"

'\*' denotes best ucast next-hop  
'\*\*' denotes best mcast next-hop  
'[x/y]' denotes [preference/metric]  
'%<string>' in via output denotes VRF <string>

10.2.3.4/32, ubest/mbest: 1/0

\*via 10.102.1.10%default, [200/0], 05:21:41, bgp-100, internal, tag 65111, segid: 4000502 tunnelid:

S1-Bg1#

S1-Bg1#

show bgp l2vpn evpn

BGP routing table information for VRF default, address family L2VPN EVPN

BGP table version is 6654, Local Router ID is 10.31.1.1

Status: s-suppressed, x-deleted, S-stale, d-dampened, h-history, \*-valid, >-best

Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist, I-injected

Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup, 2 - best2

Network	Next Hop	Metric	LocPrf	Weight	Path
Route Distinguisher: 200:4000100					
*>e[2]:[0]:[0]:[48]:[6c8b.d3fe.df3b]:[32]:[192.168.100.104]/272	10.100.100.2			0 300 200	i
*>e[2]:[0]:[0]:[48]:[6c8b.d3fe.ecb5]:[32]:[192.168.100.103]/272	10.100.100.2			0 300 200	i
Route Distinguisher: 200:4000200					
*>e[2]:[0]:[0]:[48]:[6c8b.d3fe.df3b]:[32]:[192.168.200.104]/272	10.100.100.2			0 300 200	i
*>e[2]:[0]:[0]:[48]:[6c8b.d3fe.ecb5]:[32]:[192.168.200.103]/272	10.100.100.2			0 300 200	i
Route Distinguisher: 10.31.1.1:32867 (L2VNI 4000100)					
*>e[2]:[0]:[0]:[48]:[6c8b.d3fe.ecb5]:[32]:[192.168.100.103]/272	10.100.100.2			0 300 200	i
*>i[2]:[0]:[0]:[48]:[6c8b.d3fe.ff09]:[32]:[192.168.100.102]/272	10.202.202.202	100		0	i
* i	10.202.202.202	100		0	i
*>i[2]:[0]:[0]:[48]:[6c8b.d3ff.00a7]:[32]:[192.168.100.100]/272	10.201.201.201	100		0	i
* i	10.201.201.201	100		0	i
*>e[2]:[0]:[0]:[48]:[6c8b.d3fe.ecb5]:[32]:[192.168.200.103]/272	10.100.100.2			0 300 200	i
*>i[2]:[0]:[0]:[48]:[6c8b.d3fe.ff09]:[32]:[192.168.200.102]/272	10.202.202.202	100		0	i
* i	10.202.202.202	100		0	i
*>i[2]:[0]:[0]:[48]:[6c8b.d3ff.00a7]:[32]:[192.168.200.100]/272	10.201.201.201	100		0	i
* i	10.201.201.201	100		0	i
Route Distinguisher: 10.102.0.10:5					
*>i[2]:[0]:[0]:[48]:[cc7f.76c6.a673]:[0]:[0.0.0.0]/216	10.202.202.202	100		0	i
*>i[5]:[0]:[0]:[24]:[192.168.100.0]/224	10.102.1.6	100		0	i
*>i[5]:[0]:[0]:[32]:[10.2.3.4]/224	10.102.1.6	100		0 65111	i
*>i[5]:[0]:[0]:[32]:[10.100.100.1]/224	10.102.1.6	100		0	i

```

Route Distinguisher: 10.31.1.1:5 (L3VNI 4000502)
*>1[5]:[0]:[0]:[24]:[192.168.100.0]/224
    10.133.133.133          100          0 i
*>1[5]:[0]:[0]:[32]:[10.2.3.4]/224
    10.133.133.133          100          0 65111 i
*>1[5]:[0]:[0]:[32]:[10.100.100.1]/224
    10.133.133.133          100          0 i
*>1[5]:[0]:[0]:[32]:[10.100.100.2]/224
    10.133.133.133          100          0 i
S1-Bg1#

```

<#root>

S1-Leaf1#

show ip int brief

```

IP Interface Status for VRF "default"(1)
Interface      IP Address      Interface Status
Lo0            10.102.0.5     protocol-up/link-up/admin-up
Lo1            10.102.1.8     protocol-up/link-up/admin-up
Eth1/2        192.168.17.12  protocol-up/link-up/admin-up
S1-Leaf1#

```

S1-Leaf1#

show bgp l2vpn evpn vrf vrf\_2

```

BGP routing table information for VRF default, address family L2VPN EVPN
BGP table version is 918, Local Router ID is 10.102.0.5
Status: s-suppressed, x-deleted, S-stale, d-dampened, h-history, *-valid, >-best
Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist, I-injected
Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup, 2 - best2

```

Network	Next Hop	Metric	LocPrf	Weight	Path
Route Distinguisher: 10.102.0.5:5 (L3VNI 4000502)					
*>i[2]:[0]:[0]:[48]:[6c8b.d3fe.ecb5]:[32]:[192.168.100.103]/272	10.100.100.1	100		0 300 200	i
*>i[2]:[0]:[0]:[48]:[6c8b.d3fe.ecb5]:[32]:[192.168.200.103]/272	10.100.100.1	100		0 300 200	i
*>i[5]:[0]:[0]:[24]:[192.168.100.0]/224	10.102.1.10	100		0	i
* i	10.102.1.6		100		0 i
*>i[5]:[0]:[0]:[32]:[10.2.3.4]/224	10.102.1.10	100		0 65111	i
* i	10.102.1.6		100		0 65111 i
*>i[5]:[0]:[0]:[32]:[10.100.100.1]/224	10.102.1.6	100		0	i
*>i[5]:[0]:[0]:[32]:[10.100.100.2]/224	10.102.1.10	100		0	i

S1-Leaf1#

S1-Leaf2#

show ip int brie

```

IP Interface Status for VRF "default"(1)
Interface      IP Address      Interface Status
Lo0            10.102.0.8     protocol-up/link-up/admin-up
Lo1            10.102.1.9     protocol-up/link-up/admin-up
Eth1/2        192.168.18.12  protocol-up/link-up/admin-up
S1-Leaf2#
S1-Leaf2#
S1-Leaf2#

```

```
show bgp l2vpn evpn vrf vrf_2
```

```

BGP routing table information for VRF default, address family L2VPN EVPN
BGP table version is 680, Local Router ID is 10.102.0.8
Status: s-suppressed, x-deleted, S-stale, d-dampened, h-history, *-valid, >-best
Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist, I-injected
Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup, 2 - best2
   Network          Next Hop          Metric    LocPrf    Weight Path
Route Distinguisher: 10.102.0.8:5 (L3VNI 4000502)
*>i[2]:[0]:[0]:[48]:[6c8b.d3fe.ecb5]:[32]:[192.168.100.103]/272
      10.100.100.1          100          0 300 200 i
*>i[2]:[0]:[0]:[48]:[6c8b.d3fe.ecb5]:[32]:[192.168.200.103]/272
      10.100.100.1          100          0 300 200 i
*>i[5]:[0]:[0]:[24]:[192.168.100.0]/224
      10.102.1.10          100          0 i
* i          10.102.1.6          100          0 i
* i[5]:[0]:[0]:[32]:[10.2.3.4]/224
      10.102.1.6          100          0 65111 i
*>i          10.102.1.10          100          0 65111 i
*>i[5]:[0]:[0]:[32]:[10.100.100.1]/224
      10.102.1.6          100          0 i
*>i[5]:[0]:[0]:[32]:[10.100.100.2]/224
      10.102.1.10          100          0 i
S1-Leaf3#
S1-Leaf3#

```

```
show ip int brie
```

```

IP Interface Status for VRF "default"(1)
Interface      IP Address      Interface Status
Lo0            10.102.0.9     protocol-up/link-up/admin-up
Lo1            10.102.1.10    protocol-up/link-up/admin-up
Eth1/2        192.168.19.12  protocol-up/link-up/admin-up
S1-Leaf3#
S1-Leaf3#
S1-Leaf3#
S1-Leaf3#

```

```
show bgp l2vpn evpn vrf vrf_2
```

```

BGP routing table information for VRF default, address family L2VPN EVPN
BGP table version is 5431, Local Router ID is 10.102.0.9
Status: s-suppressed, x-deleted, S-stale, d-dampened, h-history, *-valid, >-best
Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist, I-injected

```

Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup, 2 - best2  
Network Next Hop Metric LocPrf Weight Path

Route Distinguisher: 10.102.0.9:5 (L3VNI 4000502)

```
*>i[2]:[0]:[0]:[48]:[6c8b.d3fe.ecb5]:[32]:[192.168.100.103]/272
    10.100.100.1          100          0 300 200 i
* i[5]:[0]:[0]:[24]:[192.168.100.0]/224
    10.102.1.6          100          0 i
*>|          10.102.1.10        100        32768 i
* i[5]:[0]:[0]:[32]:[10.2.3.4]/224
    10.102.1.6          100          0 65111 i
*>1          10.102.1.10        100        0 65111 i
*>i[5]:[0]:[0]:[32]:[10.100.100.1]/224
    10.102.1.6          100          0 i
*>|[5]:[0]:[0]:[32]:[10.100.100.2]/224
    10.102.1.10        100        32768 i
```

S1-Leaf3#

S1\_Leaf4#

S1\_Leaf4#

show ip int brief

IP Interface Status for VRF "default"(1)

Interface	IP Address	Interface Status
Lo0	10.102.0.10	protocol-up/link-up/admin-up
Lo1	10.102.1.6	protocol-up/link-up/admin-up
Eth1/2	192.168.20.12	protocol-up/link-up/admin-up
S1_Leaf4#		
S1_Leaf4#		
S1_Leaf4#		

show bgp l2vpn evpn vrf vrf\_2

BGP routing table information for VRF default, address family L2VPN EVPN

BGP table version is 5118, Local Router ID is 10.102.0.10

Status: s-suppressed, x-deleted, S-stale, d-dampened, h-history, \*-valid, >-best

Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist, I-injected

Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup, 2 - best2

```
Network Next Hop Metric LocPrf Weight Path
Route Distinguisher: 10.102.0.10:5 (L3VNI 4000502)
*>i[2]:[0]:[0]:[48]:[6c8b.d3fe.ecb5]:[32]:[192.168.100.103]/272
    10.100.100.1          100          0 300 200 i
*>i[2]:[0]:[0]:[48]:[6c8b.d3fe.ecb5]:[32]:[192.168.200.103]/272
    10.100.100.1          100          0 300 200 i
*>i[2]:[0]:[0]:[48]:[6c8b.d3ff.00a7]:[32]:[192.168.100.100]/272
    10.201.201.201        100          0 i
* i          10.201.201.201        100          0 i
* i[5]:[0]:[0]:[24]:[192.168.100.0]/224
    10.102.1.10          100          0 i
*>|          10.102.1.6          100        32768 i
*>|[5]:[0]:[0]:[32]:[10.2.3.4]/224
```

```

10.102.1.6                                0 65111 i

* i                                         10.102.1.10                100          0 65111 i

*>| [5]:[0]:[0]:[32]:[10.100.100.1]/224
10.102.1.6                                100          32768 i
*>| [5]:[0]:[0]:[32]:[10.100.100.2]/224
10.102.1.10                               100          0 i
S1_Leaf4#

```

## تانايب الیوتسم نم ققحتال

مزلحلا طاقتل الیولاسأ مهف لجا نم ةددعتم ةزهجا یلع تانايب الیوتسم نم ققحتال رابتلخا متي اهاتان یوتسم و ةفلتلخا لم.

یلع 192.168.100.103 ناو نع روصم ال نم "10.2.3.4" 100 عا جرتسالا یجراخال هجوم ال زوی 3-فیضم ال.

<#root>

HOST\_3#  
HOST\_3#

ping 10.2.3.4 source 192.168.100.103

```

PING 10.2.3.4 (10.2.3.4) from 192.168.100.103: 56 data bytes
64 bytes from 10.2.3.4: icmp_seq=0 ttl=250 time=1.153 ms
64 bytes from 10.2.3.4: icmp_seq=1 ttl=250 time=0.569 ms
64 bytes from 10.2.3.4: icmp_seq=2 ttl=250 time=0.562 ms
64 bytes from 10.2.3.4: icmp_seq=3 ttl=250 time=0.525 ms
64 bytes from 10.2.3.4: icmp_seq=4 ttl=250 time=0.527 ms
--- 10.2.3.4 ping statistics ---
5 packets transmitted, 5 packets received, 0.00% packet loss
round-trip min/avg/max = 0.525/0.667/1.153 ms
HOST_3#

```

یتال ةقروال دیکأ لجا نم 2 و 1 تاحفصل ال نم 2 ع قوم ال یف رزیلانا یل ذخا متي 10.2.3.4 عا جرتسالا یجراخال هجوم ال رورم ال ةکرح هیجوت دیکع ال یقلتل.

<#root>

S2-Leaf1(config-monitor)#

sho clock

Warning: No NTP peer/server configured. Time may be out of sync.  
07:11:37.455 UTC Tue Feb 21 2023



```
Time source is NTP
S2-Leaf1(config-monitor)#
S2-Leaf1(config-monitor)#
```

```
show run section monitor
```

```
show running-config | section monitor
icam monitor scale
monitor session 1
  source interface port-channel100 both
  destination interface sup-eth0
  no shut
S2-Leaf1(config-monitor)#
S2-Leaf2(config-monitor)#
S2-Leaf2(config-monitor)#
```

```
ethalyzer local interface inband display-filter "ip.addr==10.2.3.4 && ip.addr==192.168.100.103 && icmp"
```

```
Capturing on 'ps-inb'
```

```
1385 2023-02-21 07:10:46.424195144 192.168.100.103 → 10.2.3.4 ICMP 102 Echo (ping) request id=0xdd1f, s
1386 2023-02-21 07:10:46.424818423 10.2.3.4 → 192.168.100.103 ICMP 98 Echo (ping) reply id=0xdd1f, s
1387 2023-02-21 07:10:46.425263621 192.168.100.103 → 10.2.3.4 ICMP 102 Echo (ping) request id=0xdd1f,
1388 2023-02-21 07:10:46.425486046 10.2.3.4 → 192.168.100.103 ICMP 98 Echo (ping) reply id=0xdd1f, s
1389 2023-02-21 07:10:46.425856150 192.168.100.103 → 10.2.3.4 ICMP 102 Echo (ping) request id=0xdd1f,
1390 2023-02-21 07:10:46.426095692 10.2.3.4 → 192.168.100.103 ICMP 98 Echo (ping) reply id=0xdd1f, s
1391 2023-02-21 07:10:46.426438174 192.168.100.103 → 10.2.3.4 ICMP 102 Echo (ping) request id=0xdd1f,
1392 2023-02-21 07:10:46.426642605 10.2.3.4 → 192.168.100.103 ICMP 98 Echo (ping) reply id=0xdd1f, s
1393 2023-02-21 07:10:46.427004108 192.168.100.103 → 10.2.3.4 ICMP 102 Echo (ping) request id=0xdd1f,
1394 2023-02-21 07:10:46.427210984 10.2.3.4 → 192.168.100.103 ICMP 98 Echo (ping) reply id=0xdd1f, s
```

```
10
S2-Leaf2(config-monitor)#
S2-Leaf2(config-monitor)#
```

```
sho clock
```

```
Warning: No NTP peer/server configured. Time may be out of sync.
07:12:31.069 UTC Tue Feb 21 2023
Time source is NTP
S2-Leaf2(config-monitor)#
```

بلط هي جوت ةداعإو مالتساب Site 2 Leaf-2 ل دكؤملا (CLI) رمأوالا رطس ةهجاو جارخا موقى  
10.2.3.4. يجراخال هجوملل (ICMP) تنرتنإلا يف مكحتلا لئاسر لوكوتورب

هي جوت ديغت قاروأيا نم ققحتي 1 عقوملا نأ (CLI) رمأوالا رطس ةهجاو لئال لاثملا دكؤى  
10.2.3.4. ةهجولا وحن مزحلا

```
<#root>
```

```
S1-Leaf3(config-monitor)#
S1-Leaf3(config-monitor)#
```

```
ethalyzer local interface inband display-filter "ip.addr==10.2.3.4 && ip.addr==192.168.100.103 && icmp"
```

```
Capturing on 'ps-inb'
```

```
253 2023-02-21 07:10:50.379741403 192.168.100.103 → 10.2.3.4 ICMP 98 Echo (ping) request id=0xdd1f, s
```

```
254 2023-02-21 07:10:50.380357311 10.2.3.4 → 192.168.100.103 ICMP 102 Echo (ping) reply id=0xdd1f, s
255 2023-02-21 07:10:50.380810012 192.168.100.103 → 10.2.3.4 ICMP 98 Echo (ping) request id=0xdd1f, s
256 2023-02-21 07:10:50.381025676 10.2.3.4 → 192.168.100.103 ICMP 102 Echo (ping) reply id=0xdd1f, s
257 2023-02-21 07:10:50.381401968 192.168.100.103 → 10.2.3.4 ICMP 98 Echo (ping) request id=0xdd1f, s
258 2023-02-21 07:10:50.381631838 10.2.3.4 → 192.168.100.103 ICMP 102 Echo (ping) reply id=0xdd1f, s
259 2023-02-21 07:10:50.381984272 192.168.100.103 → 10.2.3.4 ICMP 98 Echo (ping) request id=0xdd1f, s
260 2023-02-21 07:10:50.382176820 10.2.3.4 → 192.168.100.103 ICMP 102 Echo (ping) reply id=0xdd1f, s
261 2023-02-21 07:10:50.382549820 192.168.100.103 → 10.2.3.4 ICMP 98 Echo (ping) request id=0xdd1f, s
262 2023-02-21 07:10:50.382746640 10.2.3.4 → 192.168.100.103 ICMP 102 Echo (ping) reply id=0xdd1f, s
```

```
S1-Leaf3(config-monitor)#
```

```
sho clock
```

```
Warning: No NTP peer/server configured. Time may be out of sync.
```

```
07:11:22.514 UTC Tue Feb 21 2023
```

```
Time source is NTP
```

```
S1-Leaf3(config-monitor)#
```

```
S1-Leaf3(config-monitor)#
```

```
show run section monitor
```

```
show running-config | section monitor
```

```
monitor session 1
```

```
source interface port-channel2 both
```

```
destination interface sup-eth0
```

```
no shut
```

```
S1-Leaf3(config-monitor)#
```

```
S1-Leaf3(config-monitor)#
```

```
show moni sess 1
```

```
session 1
```

```
-----
type           : local
state          : up
acl-name       : acl-name not specified
source intf    :
  rx           : Po2
  tx           : Po2
  both         : Po2
source VLANs   :
  rx           :
  tx           :
  both         :
filter VLANs   : filter not specified
source fwd drops :
destination ports : sup-eth0
source VSANs   :
  rx           :
```

```
S1-Leaf3(config-monitor)#
```

```
S1-Leaf4(config-monitor)#
```

```
ethanalyzer local interface inband display-filter "ip.addr==192.168.100.103" limit-captured-frames 0
```

```
Capturing on 'ps-inb'
```

```
S1-Leaf4(config-monitor)#
```

```
S1_Leaf4(config-monitor)#
```

```
sho clock
```

```
Warning: No NTP peer/server configured. Time may be out of sync.
```

```
07:11:15.187 UTC Tue Feb 21 2023
```

```
Time source is NTP
```

```
S1_Leaf4(config-monitor)#
```

يجري اختبار هجومي على Host-3 لاختبار الاتصال في التاكشيم هجومي هنا ليعمل بيحتسي.  
نأب ديكأت على جاتحي و VXLAN ةينب يف ماري ام على عيش لك نأ نم دكأت ليعمل دي ري  
هذه عا طخأ فاشكتسال تاوطخل. يجري اختبار هجومي وحن رورملا ةكرح هيجوت ةداعأب موقت انتقرو  
يه اهال صا و ةلكشم:

1. وأ IP 10.2.3.4 ناو نع على لوصول ةينكأ نم دكأت و يجري اختبار هجومي وحن لاصلتا رابتحأ أدأب.  
ال.
2. S1-Leaf3 و S1-Leaf4 نم لك على ةنمضملا Logic Analyzer Module (ELAM) تاومجم ذخ  
(رورملا ةكرح قفدت و ططخمل على ادا نسا) اهليغشت مت اذا ام ةفرعمل.
3. يجري اختبار هجومي على طاقنو ةهجاو نم ةمزحل هيجوت ةداعأ نم دكأت، ELAM طاقنلا عم.
4. ام اذا. هيلع درل و ICMP بلط على عالطال اننكمي، رزلي لاناثي الى مادختساب 2- عقوملا  
ديعبال فرط نم ةلكشملا دري .
5. نوكي دق ف، لكاشم هب Host-3 ناك و Host-4 نم هيل لوصول نكمي 10.2.3.4 ناك اذا  
ققحتل عا طخأ و (ACL) لوصول يف مكحتل ةمئاق نم ققحت. فيضم لبا ةصاخ ةلكشم  
ةئزجتال طابترا و (CRC) راركتال نم يرودلا.

```
<#root>
```

```
HOST_3#
```

```
ping 10.2.3.4 source 192.168.100.103
```

```
PING 10.2.3.4 (10.2.3.4) from 192.168.100.103: 56 data bytes
```

```
Request 0 timed out
```

```
Request 1 timed out
```

```
Request 2 timed out
```

```
Request 3 timed out
```

```
Request 4 timed out
```

```
--- 10.2.3.4 ping statistics ---
```

```
5 packets transmitted, 0 packets received, 100.00% packet loss
```

```
HOST_3#
```

```
Host4#
```

```
ping 10.2.3.4 source 192.168.100.104
```

```
PING 10.2.3.4 (10.2.3.4) from 192.168.100.104: 56 data bytes
```

```
64 bytes from 10.2.3.4: icmp_seq=0 ttl=250 time=1.266 ms
```

```
64 bytes from 10.2.3.4: icmp_seq=1 ttl=250 time=0.62 m
```

```
64 bytes from 10.2.3.4: icmp_seq=2 ttl=250 time=0.603 ms
```

```
64 bytes from 10.2.3.4: icmp_seq=3 ttl=250 time=0.474 ms
```

```
64 bytes from 10.2.3.4: icmp_seq=4 ttl=250 time=0.457 ms
```

```
--- 10.2.3.4 ping statistics ---
```

```
5 packets transmitted, 5 packets received, 0.00% packet loss
```

round-trip min/avg/max = 0.457/0.684/1.266 ms

## تانا يابل يوتسم نم ققحتلا

ELAM طاقنلا Port ASIC، Slice، و Srcld نم ققحتلا

<#root>

```
show hardware internal tah interface
```

```
show system internal ethpm info interface
```

```
| i i src
```

<#root>

```
S1-Leaf3(TAH-elam)#
```

```
debug platform internal tah elam asic 0
```

```
S1-Leaf3(TAH-elam)#
```

```
trigger init asic 0 slice 1 in-select 7 out-select 0 use-src-id 8
```

```
Slot 1: param values: asic 0, slice 1, lu-a2d 1, in-select 7, out-select 0, src_id 8
```

```
S1-Leaf3(TAH-elam-insel7)#
```

```
set inner ipv4 src_ip 192.168.100.103
```



```
S1_Leaf4(TAH-elam-inse17)#
```

```
start
```

```
S1_Leaf4(TAH-elam-inse17)#
```

```
report
```

```
ELAM not triggered yet on slot - 1, asic - 0, slice - 1
```

```
S1_Leaf4(TAH-elam-inse17)#
```

دجوي ال نكل، يجرخال هجوم لى لى رورم لة كرح ة قرولا هي جوت ة داع لى هـ ELAM تاجرخم نم ة متاخلا  
ة باجتس لى لى يجرخال هجوم لى قيرف عجار، كذل. يجرخال هجوم لى نم ة باجتس لى

ةمچرتل هذه ل و ح

ةلأل تاي نقتل ن م ة و مچ م ادخت ساب دن تسم ل ا اذ ه Cisco ت مچرت  
م ل ا ل ا ا ن ا ع مچ ي ف ن ي م د خ ت س م ل ل م ع د ي و ت ح م م ي د ق ت ل ة ي ر ش ب ل و  
ا م ك ة ق ي ق د ن و ك ت ن ل ة ل ا ة مچرت ل ض ف ا ن ا ة ظ ح ا ل م ي ج ر ي . ة ص ا خ ل ا م ه ت غ ل ب  
Cisco ي ل خ ت . ف ر ت ح م مچرت م ا ه م د ق ي ي ت ل ا ة ي ف ا ر ت ح ا ل ا ة مچرت ل ا ع م ل ا ح ل ا و ه  
ي ل ا م ا ة ا د ع و ج ر ل ا ب ي ص و ت و ت ا مچرت ل ا ه ذ ه ة ق د ن ع ا ه ت ي ل و ئ س م Cisco  
Systems ( ر ف و ت م ط ب ا ر ل ا ) ي ل ص ا ل ا ي ز ي ل ج ن ا ل ا دن ت س م ل ا