

SP ةمزح ربع لماشلا لاصتالا نم ققحتلا عطاقملا هيچوتل

تايوتحمل

[ةمدقملا](#)

[ةيساسألا تابلطتملا](#)

[تابلطتملا](#)

[ةمدختسملا تانوكملا](#)

[ةيساسأ تامولعم](#)

[ايچولوبوط](#)

[يلوأل ققحتلا](#)

[BGP نيوكت](#)

[ةحيرشلا هيچوت نيوكت](#)

[ةيئاهنلا ققحتلا تايولعم](#)

ةمدقملا

عطاقملا هيچوت ةمدخ رقوم ربع لماشلا لاصتالا نم ققحتلل ةيلمعلال دنتسملا اذه فص ي
Cisco IOS®XR جم انرب مادختساب (SP).

ةيساسألا تابلطتملا

تابلطتملا

ةيلاتلا عيضاوملاب ةفرعم كي دل نوكت ناب Cisco ي صوت:

- يساسألا IP هيچوت ةفرعم
- Cisco IOS و Cisco IOS XR رماو رطس ةفرعم

ةمدختسملا تانوكملا

ةيلاتلا ةيدامل تانوكملا وجماربلل تارادصلل دل دنتسملا اذه يف ةدراول تامولعملال دنتست:

- Cisco IOS XR جم انرب عم هجوملا
- Cisco IOS جم انرب عم هجوملا

ةصاخ ةيلمعم ةئيبي يف ةدوجوملا ةزهجال نم دنتسملا اذه يف ةدراول تامولعملال عاشن امت
تنالك اذ. (يضايرتفا) حوسمم نيوكتب دنتسملا اذه يف ةمدختسملا ةزهجال عيمج تادب
رما يال لمتمحمل ريثأتلل كمهف نم دكأتف، ليغشتلا ديقتك تكبش.

ةيساسأ تامولعم

عاطق هيچوت ةباحس عاشنل يساسألا نيوكتلا حيضوت وه دنتسملا اذه نم ضرغل
Cisco IOS XR تاهجوم يلع ةيانهن يلع ةيانهن نم لاصتالا نم ققحتلا ةيفي و.


```
*> 172.16.20.0/30 0.0.0.0 0 32768 ?
*> 192.168.1.0 0.0.0.0 0 32768 ?
```

Total number of prefixes 5

1-يې

ةباحس ي ف هنع نالعإل نكمي نآلا، لاصتا هيدلو 10.55.55.55/32 ةئدابلا هجوملا اذه ىقلت
ةمدخلال دوزم:

```
RP/0/RP0/CPU0:PE-1#show run vrf
```

```
Fri Jan 27 15:07:10.465 UTC
vrf Yellow
address-family ipv4 unicast
import route-target
200:200
!
export route-target
200:200
!
```

```
RP/0/RP0/CPU0:PE-1#show run router bgp
```

```
Fri Jan 27 14:54:33.488 UTC
router bgp 8181
  bgp router-id 10.2.2.2
  address-family ipv4 unicast
  !
  address-family vpnv4 unicast
  !
  neighbor 10.3.3.3
    remote-as 8181
    update-source Loopback0
    address-family vpnv4 unicast
    route-policy PASS in
    route-policy PASS out
  !
  !
vrf Yellow
  rd 200:200
  address-family ipv4 unicast
  !
  neighbor 172.16.20.1
    remote-as 65535
    address-family ipv4 unicast
    route-policy PASS in
    route-policy PASS out
    as-override
  !
```

```
RP/0/RP0/CPU0:PE-1#show bgp vrf Yellow ipv4 unicast neighbors 172.16.20.1 routes
```

```
Fri Jan 27 14:54:48.433 UTC
BGP VRF Yellow, state: Active
BGP Route Distinguisher: 200:200
VRF ID: 0x60000001
BGP router identifier 10.2.2.2, local AS number 8181
Non-stop routing is enabled
BGP table state: Active
Table ID: 0xe0000001 RD version: 73
BGP main routing table version 73
BGP NSR Initial initsync version 2 (Reached)
BGP NSR/ISSU Sync-Group versions 0/0
```

```

Status codes: s suppressed, d damped, h history, * valid, > best
              i - internal, r RIB-failure, S stale, N Nexthop-discard
Origin codes: i - IGP, e - EGP, ? - incomplete
  Network          Next Hop          Metric LocPrf Weight Path
Route Distinguisher: 200:200 (default for vrf Yellow)
*> 10.1.1.1/32      172.16.20.1          0          0 65535 ?
*> 10.11.11.11/32   172.16.20.1          10880       0 65535 ?
*> 10.55.55.55/32 172.16.20.1 0 0 65535 ?
*> 172.16.20.0/30   172.16.20.1          0          0 65535 ?
*> 192.168.1.0/24   172.16.20.1          0          0 65535 ?
Processed 5 prefixes, 5 paths

```

```

RP/0/RP0/CPU0:PE-1#ping vrf Yellow 10.55.55.55
Fri Jan 27 14:55:06.077 UTC
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.55.55.55, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 4/5/7 ms

```

ي-2 | يس

هجوم لثة لثامم ة قيرطبو و CE-2 هجوم نم (LAN) ة ل حملا ة ك ب ش ل ل ب ا ج 66 اع ا ج ر ت س ا ل ا ي ك ا ي
 PE-2 ر و ا ج م ل ا ه ج و م ل ا ي ل ا eBGP ر ب ع ة ئ د ا ب ل ا ن ع ه ج و م ل ا ا ذ ه ن ل ع ي ، CE-1.

```

CE-2#show run | section r b
router bgp 65535
  bgp router-id 10.5.5.5
  bgp log-neighbor-changes
  redistribute connected
  redistribute eigrp 10
  neighbor 172.16.50.1 remote-as 8181

```

```

CE-2#show ip bgp neighbors 172.16.50.1 advertised-routes
BGP table version is 15, local router ID is 10.5.5.5
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
              r RIB-failure, S Stale, m multipath, b backup-path, f RT-Filter,
              x best-external, a additional-path, c RIB-compressed,
              t secondary path,
Origin codes: i - IGP, e - EGP, ? - incomplete
RPKI validation codes: V valid, I invalid, N Not found

```

Network	Next Hop	Metric	LocPrf	Weight	Path
*> 10.5.5.5/32	0.0.0.0	0		32768	?
*> 10.22.22.22/32	192.168.4.1	10880		32768	?
*> 10.66.66.66/32	0.0.0.0	0		32768	?
*> 172.16.50.0/30	0.0.0.0	0		32768	?
*> 192.168.4.0	0.0.0.0	0		32768	?

Total number of prefixes 5

ي-2 ب

ة م د خ ل ا د و ز م ة ب ا ح س ن ع ن ا ل ع ا ل ا ي ل ع ا ر د ا ق ن ا ل ا ح ب ص ا و 10.66.66.66/32 ة ئ د ا ب ل ا ه ج و م ل ا ا ذ ه ي ق ل ت

```

RP/0/RP0/CPU0:PE-2#show run vrf
Fri Jan 27 15:07:51.117 UTC
vrf Yellow
address-family ipv4 unicast
import route-target
200:200
!
```

```
export route-target
200:200
!
```

```
RP/0/RP0/CPU0:PE-2#show run router bgp
```

```
Fri Jan 27 14:59:56.957 UTC
router bgp 8181
  bgp router-id 10.4.4.4
  address-family ipv4 unicast
  !
  address-family vpnv4 unicast
  !
  neighbor 10.3.3.3
    remote-as 8181
    update-source Loopback0
    address-family vpnv4 unicast
      route-policy PASS in
      route-policy PASS out
  !
  !
  vrf Yellow
    rd 200:200
    address-family ipv4 unicast
    !
    neighbor 172.16.50.2
      remote-as 65535
      address-family ipv4 unicast
        route-policy PASS in
        route-policy PASS out
      as-override
    !
```

```
RP/0/RP0/CPU0:PE-2#show bgp vrf Yellow ipv4 unicast neighbors 172.16.50.2 routes
```

```
Fri Jan 27 15:00:10.383 UTC
BGP VRF Yellow, state: Active
BGP Route Distinguisher: 200:200
VRF ID: 0x60000001
BGP router identifier 10.4.4.4, local AS number 8181
Non-stop routing is enabled
BGP table state: Active
Table ID: 0xe0000001  RD version: 64
BGP main routing table version 64
BGP NSR Initial initsync version 2 (Reached)
BGP NSR/ISSU Sync-Group versions 0/0
```

```
Status codes: s suppressed, d damped, h history, * valid, > best
               i - internal, r RIB-failure, S stale, N Nexthop-discard
```

```
Origin codes: i - IGP, e - EGP, ? - incomplete
```

Network	Next Hop	Metric	LocPrf	Weight	Path
Route Distinguisher: 200:200 (default for vrf Yellow)					
*> 10.5.5.5/32	172.16.50.2	0		0	65535 ?
*> 10.22.22.22/32	172.16.50.2	10880		0	65535 ?
*> 10.66.66.66/32	172.16.50.2	0		0	65535 ?
*> 172.16.50.0/30	172.16.50.2	0		0	65535 ?
*> 192.168.4.0/24	172.16.50.2	0		0	65535 ?

```
Processed 5 prefixes, 5 paths
```

```
RP/0/RP0/CPU0:PE-2#ping vrf Yellow 10.66.66.66
```

```
Fri Jan 27 15:00:26.020 UTC
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.66.66.66, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 3/26/120 ms
```

PE-2 و PE-1، Provider التامول عم ة لاج

iBGP و IGP ة ئيه لى ع OSPF نيوك ت متي ، ضرع ل اذه لول

ب-1

راسم ل س كاع وه ك ل ذ 10.3.3.3 لى ل iBGP لم عم ة س ل ج و ل ي غ ش ت ل ا دي ق OSPF راج .

```
RP/0/RP0/CPU0:PE-1#show run router ospf
```

```
Fri Jan 27 15:09:23.910 UTC
```

```
router ospf 1
```

```
router-id 10.2.2.2
```

```
area 0
```

```
!
```

```
interface GigabitEthernet0/0/0/1
```

```
!
```

```
!
```

```
!
```

```
RP/0/RP0/CPU0:PE-1#show ospf neighbor
```

```
Fri Jan 27 15:09:31.435 UTC
```

```
* Indicates MADJ interface
```

```
# Indicates Neighbor awaiting BFD session up
```

```
Neighbors for OSPF 1
```

Neighbor ID	Pri	State	Dead Time	Address	Interface
10.3.3.3	1	FULL/BDR	00:00:37	172.16.30.2	GigabitEthernet0/0/0/1

Neighbor is up for 16:59:30

```
Total neighbor count: 1
```

```
RP/0/RP0/CPU0:PE-1#show bgp vpnv4 unicast summary
```

```
Fri Jan 27 15:09:37.760 UTC
```

```
BGP router identifier 10.2.2.2, local AS number 8181
```

```
BGP generic scan interval 60 secs
```

```
Non-stop routing is enabled
```

```
BGP table state: Active
```

```
Table ID: 0x0 RD version: 0
```

```
BGP main routing table version 73
```

```
BGP NSR Initial initsync version 2 (Reached)
```

```
BGP NSR/ISSU Sync-Group versions 0/0
```

```
BGP scan interval 60 secs
```

```
BGP is operating in STANDALONE mode.
```

Process	RcvTblVer	bRIB/RIB	LabelVer	ImportVer	SendTblVer	StandbyVer
Speaker	73	73	73	73	73	0

Neighbor	Spk	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	St/PfxRcd
10.3.3.3	0	8181	1010	997	73	0	0	16:24:45	5

رفوم ل ا ه جوم

ناري ج ل ا عم راسم ل س كاع و IBGP لم عم ة س ل ج ءاش ن ا متي هن ا دي ك ا ت ان ن ك مي ، زا ه ج ل ا ذه لى ع 10.2.2.2 و 10.4.4

```
RP/0/RP0/CPU0:Provider#show run router ospf
```

```
Fri Jan 27 15:19:33.250 UTC
```

```
router ospf 1
```

```
router-id 10.3.3.3
```

```
area 0
```

```
!  
interface GigabitEthernet0/0/0/1  
!  
interface GigabitEthernet0/0/0/2  
!
```

```
RP/0/RP0/CPU0:Provider#show run router bgp
```

```
Fri Jan 27 15:11:08.321 UTC
```

```
router bgp 8181  
  bgp router-id 10.3.3.3  
  address-family ipv4 unicast  
  !  
  address-family vpnv4 unicast  
  !  
  neighbor-group IBGP  
    remote-as 8181  
    update-source Loopback0  
  !  
  neighbor 10.2.2.2  
    use neighbor-group IBGP  
    address-family vpnv4 unicast  
    route-policy PASS in  
    route-reflector-client  
    route-policy PASS out  
    next-hop-self  
  !  
  !  
  neighbor 10.4.4.4  
    use neighbor-group IBGP  
    address-family vpnv4 unicast  
    route-policy PASS in  
    route-reflector-client  
    route-policy PASS out  
    next-hop-self  
  !
```

```
RP/0/RP0/CPU0:Provider#show bgp vpnv4 unicast summary
```

```
Fri Jan 27 15:11:19.263 UTC
```

```
BGP router identifier 10.3.3.3, local AS number 8181
```

```
BGP generic scan interval 60 secs
```

```
Non-stop routing is enabled
```

```
BGP table state: Active
```

```
Table ID: 0x0 RD version: 0
```

```
BGP main routing table version 25
```

```
BGP NSR Initial initsync version 1 (Reached)
```

```
BGP NSR/ISSU Sync-Group versions 0/0
```

```
BGP scan interval 60 secs
```

```
BGP is operating in STANDALONE mode.
```

Process	RcvTblVer	bRIB/RIB	LabelVer	ImportVer	SendTblVer	StandbyVer
Speaker	25	25	25	25	25	0

Neighbor	Spk	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	St/PfxRcd
10.2.2.2	0	8181	998	1011	25	0	0	16:26:27	5
10.4.4.4	0	8181	997	1009	25	0	0	16:24:25	5

بي-2

راسم ال س ك اع وه كلذ 10.3.3.3 لى IBGP لمع ةس ل ج و ل ي غ ش ت ل ا د ي ق OSPF راج

```
RP/0/RP0/CPU0:PE-2#show run router ospf
```

```
Fri Jan 27 15:12:47.741 UTC
```

```
router ospf 1  
  router-id 10.4.4.4
```

```
area 0
!  
interface GigabitEthernet0/0/0/2  
!
```

RP/0/RP0/CPU0:PE-2#**show ospf neighbor**

Fri Jan 27 15:12:55.229 UTC

* Indicates MADJ interface

Indicates Neighbor awaiting BFD session up

Neighbors for OSPF 1

Neighbor ID	Pri	State	Dead Time	Address	Interface
10.3.3.3	1	FULL/DR	00:00:35	172.16.40.1	GigabitEthernet0/0/0/2

Neighbor is up for 17:01:21

Total neighbor count: 1

RP/0/RP0/CPU0:PE-2#**show bgp vpnv4 unicast summary**

Fri Jan 27 15:13:01.911 UTC

BGP router identifier 10.4.4.4, local AS number 8181

BGP generic scan interval 60 secs

Non-stop routing is enabled

BGP table state: Active

Table ID: 0x0 RD version: 0

BGP main routing table version 64

BGP NSR Initial initsync version 2 (Reached)

BGP NSR/ISSU Sync-Group versions 0/0

BGP scan interval 60 secs

BGP is operating in STANDALONE mode.

Process	RcvTblVer	bRIB/RIB	LabelVer	ImportVer	SendTblVer	StandbyVer
Speaker	64	64	64	64	64	0

Neighbor	Spk	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	St/PfxRcd
10.3.3.3	0	8181	1011	998	64	0	0	16:26:08	5

RP/0/RP0/CPU0:PE-2#**ping 10.2.2.2 source loopback0**

Fri Jan 27 15:13:09.728 UTC

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 10.2.2.2, timeout is 2 seconds:

!!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 9/21/67 ms

RP/0/RP0/CPU0:PE-2#**ping 10.3.3.3 source loopback0**

Fri Jan 27 15:13:16.696 UTC

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 10.3.3.3, timeout is 2 seconds:

!!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 5/6/7 ms

ةح يرش ل ه ي ج وت ني وكت

ب-1

RP/0/RP0/CPU0:PE-1#**show run router ospf**

Fri Jan 27 16:15:56.479 UTC

router ospf 1

router-id 10.2.2.2

segment-routing mpls

area 0

segment-routing mpls

interface Loopback0

prefix-sid index 15

!

رفوم


```
RP/0/RP0/CPU0:Provider#show run router ospf
```

```
Fri Jan 27 16:17:09.471 UTC
```

```
router ospf 1
  router-id 10.3.3.3
  segment-routing mpls
  area 0
    segment-routing mpls
    interface Loopback0
      prefix-sid index 16
    !
```

2-ي ب

```
RP/0/RP0/CPU0:PE-2#show run router ospf
```

```
Fri Jan 27 16:18:11.090 UTC
```

```
router ospf 1
  router-id 10.4.4.4
  segment-routing mpls
  area 0
    segment-routing mpls
    interface Loopback0
      prefix-sid index 17
    !
```

ةيئاهنللا ققحتللا تايلم ع

جارخ! رهظي CE-2 هجومللا ىل ع دوجومللا 66 ةهجاوولا ع اچرتسا ىل لوصولا CE-1 ل نكمي ةئدابلا ىل اوهيجوت مت ام دنع ةيمستلا ل وحم راسم ذخت ةمزحللا نأ ىل لالاتلا Traceroute رورم ءانثا ةئدابلا 16017 ةوطخللا فرعم مدختسي قصلملا نأ ةظحال نكمي امك 10.66.66.66. هجوملاب PE-2:

```
CE-1#ping 10.66.66.66 source loopback0
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 10.66.66.66, timeout is 2 seconds:
```

```
Packet sent with a source address of 10.1.1.1
```

```
!!!!
```

```
Success rate is 100 percent (5/5), round-trip min/avg/max = 9/13/32 ms
```

```
CE-1#traceroute 10.66.66.66 source loopback0
```

```
Type escape sequence to abort.
```

```
Tracing the route to 10.66.66.66
```

```
VRF info: (vrf in name/id, vrf out name/id)
```

```
 1 172.16.20.2 6 msec 5 msec 5 msec
```

```
 2 172.16.30.2 [MPLS: Labels 16017/24003 Exp 0] 12 msec 13 msec 16 msec 3 172.16.40.2 [MPLS:
```

```
Label 24003 Exp 0] 15 msec 13 msec 12 msec
```

```
 4 172.16.50.2 [AS 8181] 13 msec 11 msec *
```

تم اقو 16000 ميق دنع تادب تايمستلا نإف، ق لطملا رايخلا مدختسي مل نيوكتلا نأ امب عطقملا هيجوتل اهن نيوكت مت يئلا ةئدابلا رصنع قاحلاب.

```
RP/0/RP0/CPU0:PE-1#show cef 10.3.3.3/32
```

```
Fri Jan 27 21:32:42.813 UTC
```

```
10.3.3.3/32, version 43, labeled SR, internal 0x1000001 0x8110 (ptr 0xe3f6a00) [1], 0x600
```

```
(0xe593918), 0xa20 (0xee6e4b8)
```

```
Updated Jan 26 23:21:30.314
```

```

remote adjacency to GigabitEthernet0/0/0/1
Prefix Len 32, traffic index 0, precedence n/a, priority 1
gateway array (0xe3fbda8) reference count 3, flags 0x68, source rib (7), 0 backups
    [3 type 4 flags 0x8401 (0xeeb1648) ext 0x0 (0x0)]
LW-LDI[type=1, refc=1, ptr=0xe593918, sh-ldi=0xeeb1648]
gateway array update type-time 1 Jan 26 23:21:30.314
LDI Update time Jan 26 23:21:30.315
LW-LDI-TS Jan 26 23:21:30.315
via 172.16.30.2/32, GigabitEthernet0/0/0/1, 8 dependencies, weight 0, class 0 [flags 0x0]
path-idx 0 NHID 0x0 [0xf427148 0xf4271e0]
next hop 172.16.30.2/32
remote adjacency
    local label 16016      labels imposed {ImplNull}

Load distribution: 0 (refcount 3)

Hash OK Interface Address
0 Y GigabitEthernet0/0/0/1 remote

```

RP0/RP0/CPU0:PE-1#**show cef 10.4.4.4/32**

Fri Jan 27 21:29:36.990 UTC

10.4.4.4/32, version 45, labeled SR, internal 0x1000001 0x8110 (ptr 0xe3f65c0) [1], 0x600 (0xe593e70), 0xa28 (0xee6e508)

Updated Jan 26 23:21:47.181

remote adjacency to GigabitEthernet0/0/0/1

Prefix Len 32, traffic index 0, precedence n/a, priority 1

gateway array (0xe3fbe90) reference count 3, flags 0x68, source rib (7), 0 backups
 [2 type 5 flags 0x8401 (0xeeb16a8) ext 0x0 (0x0)]

LW-LDI[type=5, refc=3, ptr=0xe593e70, sh-ldi=0xeeb16a8]

gateway array update type-time 1 Jan 26 23:21:47.182

LDI Update time Jan 26 23:21:47.182

LW-LDI-TS Jan 26 23:21:47.182

via 172.16.30.2/32, GigabitEthernet0/0/0/1, 6 dependencies, weight 0, class 0 [flags 0x0]

path-idx 0 NHID 0x0 [0xf4271e0 0x0]

next hop 172.16.30.2/32

remote adjacency

local label 16017 labels imposed {16017}

Load distribution: 0 (refcount 2)

```

Hash OK Interface Address
0 Y GigabitEthernet0/0/0/1 remote

```

CE-1: هجوم الـ الـ دوجوم الـ 55 عاچرت س الـ الـ ل لوصول الـ CE-2 ل اضي ا نكمي، رخآ الـ بناج الـ نمو

CE-2#**ping 10.55.55.55 source loopback66**

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 10.55.55.55, timeout is 2 seconds:

Packet sent with a source address of 10.66.66.66

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 11/12/15 ms

CE-2#**traceroute 10.55.55.55 source loopback66**

Type escape sequence to abort.

Tracing the route to 10.55.55.55

VRF info: (vrf in name/id, vrf out name/id)

1 172.16.50.1 6 msec 5 msec 4 msec

2 172.16.40.1 [MPLS: Labels 16015/24003 Exp 0] 9 msec 16 msec 10 msec

3 172.16.30.1 [MPLS: Label 24003 Exp 0] 10 msec 13 msec 8 msec

4 172.16.20.1 [AS 8181] 11 msec 7 msec *

MPLS تاي مست

رورم ةكرح لېوحتل عطاقم لاهي جوت تاي مست مادختسا نم دكأتال اننكمي، لياتل جارخال ي
ةياهن لىلة ياهن نم تانايال

RP/0/RP0/CPU0:PE-1#show mpls forwarding

Fri Jan 27 20:32:13.697 UTC

Local Label	Outgoing Label	Prefix or ID	Outgoing Interface	Next Hop	Bytes Switched
16016	Pop	SR Pfx (idx 16)	Gi0/0/0/1	172.16.30.2	126880
16017	16017	SR Pfx (idx 17)	Gi0/0/0/1	172.16.30.2	17292
24000	Pop	SR Adj (idx 0)	Gi0/0/0/1	172.16.30.2	0
24001	Aggregate	172.16.20.0/30[V]	Yellow		11384
24002	Unlabelled	192.168.1.0/24[V]	Gi0/0/0/0	172.16.20.1	0
24003	Unlabelled	10.55.55.55/32[V]	Gi0/0/0/0	172.16.20.1	0
24004	Unlabelled	10.11.11.11/32[V]	Gi0/0/0/0	172.16.20.1	0
24005	Unlabelled	10.1.1.1/32[V]	Gi0/0/0/0	172.16.20.1	0

RP/0/RP0/CPU0:Provider#show mpls forwarding

Fri Jan 27 20:33:14.878 UTC

Local Label	Outgoing Label	Prefix or ID	Outgoing Interface	Next Hop	Bytes Switched
16015	Pop	SR Pfx (idx 15)	Gi0/0/0/1	172.16.30.1	151687
16017	Pop	SR Pfx (idx 17)	Gi0/0/0/2	172.16.40.2	147701
24000	Pop	SR Adj (idx 0)	Gi0/0/0/1	172.16.30.1	0
24001	Pop	SR Adj (idx 0)	Gi0/0/0/2	172.16.40.2	0

RP/0/RP0/CPU0:PE-2#show mpls forwarding

Fri Jan 27 20:33:49.201 UTC

Local Label	Outgoing Label	Prefix or ID	Outgoing Interface	Next Hop	Bytes Switched
16015	16015	SR Pfx (idx 15)	Gi0/0/0/2	172.16.40.1	25304
16016	Pop	SR Pfx (idx 16)	Gi0/0/0/2	172.16.40.1	128619
24000	Pop	SR Adj (idx 0)	Gi0/0/0/2	172.16.40.1	0
24001	Aggregate	172.16.50.0/30[V]	Yellow		1200
24002	Unlabelled	192.168.4.0/24[V]	Gi0/0/0/3	172.16.50.2	0
24003	Unlabelled	10.66.66.66/32[V]	Gi0/0/0/3	172.16.50.2	0
24004	Unlabelled	10.5.5.5/32[V]	Gi0/0/0/3	172.16.50.2	0
24005	Unlabelled	10.22.22.22/32[V]	Gi0/0/0/3	172.16.50.2	0

CE-2#show ip bgp neighbors 172.16.50.1 advertised-routes BGP table version is 5, local router ID is 5.5.5.5 Status codes: s suppressed, d damped, h history, * valid, > best, i - internal, r RIB-failure, S Stale, m multipath, b backup-path, f RT-Filter, x best-external, a additional-path, c RIB-compressed, t secondary path, Origin codes: i - IGP, e - EGP, ? - incomplete RPKI validation codes: V valid, I invalid, N Not found Network Next Hop Metric LocPrf Weight Path *> 5.5.5.5/32 0.0.0.0 0 32768 ? *> 22.22.22.22/32 192.168.4.1 10880 32768 ? *> 172.16.50.0/30 0.0.0.0 0 32768 ? *> 192.168.4.0 0.0.0.0 0 32768 ? Total number of prefixes 4

ةمچرتل هذه ل و ح

ةلأل تاي نقتل ن م ة و مچ م ادخت ساب دن تسمل اذ ه Cisco ت مچرت
ملاعلاء نأ عي مچ ي ف ن ي م دخت سمل ل معد ي و تح م مي دقت ل ة ي رش ب ل و
امك ة ق ي قد ن و ك ت ن ل ة ي ل ة مچرت ل ض ف أ ن ة ظ حال م ي ج ر ي . ة ص ا خ ل 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 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 (رف و ت م ط بار ل ا) ي ل ص أ ل ا ي ز ي ل ج ن ا ل ا دن تسمل ا