

For this lab section, refer to Figure 26-3 on page 916 of the book.

```
R5#sho run
Building configuration...

Current configuration : 2475 bytes
!
! Last configuration change at 23:01:44 UTC Fri Mar 14 2003
! NVRAM config last updated at 03:32:21 UTC Fri Mar 14 2003
!
version 12.2
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname R5
!
!
ip subnet-zero
!
!
!
!
interface Loopback5
 description OSPF Loopback
 ip address 5.5.5.5 255.255.255.255
!
interface Loopback55
 description BGP Loopback
 ip address 5.5.5.55 255.255.255.255
!
interface Loopback555
 ip address 130.100.55.1 255.255.255.0
!
interface Ethernet0
 ip address 130.100.26.5 255.255.255.224
!
interface Serial0
 ip address 140.100.45.5 255.255.255.192
 ip ospf authentication message-digest
 ip ospf message-digest-key 5 md5 cisco
 ip ospf network point-to-point
!
interface Serial1
 ip address 140.100.56.5 255.255.255.192
 ip access-group 100 in
 ip ospf authentication message-digest
 ip ospf message-digest-key 5 md5 cisco
 ip ospf network point-to-point
 clockrate 64000
```

```

!
router eigrp 5
 network 130.100.55.0 0.0.0.255
 no auto-summary
 eigrp log-neighbor-changes
!
router ospf 123
 router-id 5.5.5.5
 log-adjacency-changes detail
 area 0 authentication message-digest
 area 45 authentication message-digest
 area 45 virtual-link 4.4.4.4 authentication message-digest
 area 45 virtual-link 4.4.4.4 message-digest-key 5 md5 cisco
 area 56 authentication message-digest
 area 56 virtual-link 6.6.6.6 authentication message-digest
 area 56 virtual-link 6.6.6.6 message-digest-key 5 md5 cisco
 redistribute eigrp 5 subnets
 network 5.5.5.5 0.0.0.0 area 45
 network 5.5.5.55 0.0.0.0 area 45
 network 140.100.45.0 0.0.0.63 area 45
 network 140.100.56.0 0.0.0.63 area 56
!
router bgp 456
 no synchronization
 bgp router-id 5.5.5.5
 bgp log-neighbor-changes
 network 5.5.5.55 mask 255.255.255.255
 neighbor 140.100.45.4 remote-as 456
 neighbor 140.100.45.4 route-reflector-client
 neighbor 140.100.45.4 next-hop-self
 neighbor 140.100.56.6 remote-as 456
 neighbor 140.100.56.6 route-reflector-client
 neighbor 140.100.56.6 next-hop-self
 no auto-summary
!
ip classless
!
!
line con 0
 exec-timeout 0 0
line aux 0
line vty 0 4
 privilege level 15
 no login

```

R5#sho ip eigrp top

IP-EIGRP Topology Table for AS(5)/ID(130.100.55.1)

Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,

 r - reply Status, s - sia Status

P 130.100.55.0/24, 1 successors, FD is 128256
via Connected, Loopback555

R5#**sho ip ospf data**

OSPF Router with ID (5.5.5.5) (Process ID 123)

Router Link States (Area 0)

Link ID	ADV Router	Age	Seq#
Checksum Link count			
1.1.1.1	1.1.1.1	1095 (DNA)	0x80000037 0xF103
2.2.2.2	2.2.2.2	8 (DNA)	0x80000043
0xBB58 3			
3.3.3.3	3.3.3.3	2 (DNA)	0x8000004A
0x98BB 7			
4.4.4.4	4.4.4.4	1 (DNA)	0x8000002C
0x78F3 4			
5.5.5.5	5.5.5.5	17	0x80000077
0x196C 2			
6.6.6.6	6.6.6.6	5 (DNA)	0x80000002
0x4C30 1			

Summary Net Link States (Area 0)

Link ID	ADV Router	Age	Seq#
Checksum			
5.5.5.5	4.4.4.4	11 (DNA)	0x80000001
0xB621			
5.5.5.5	5.5.5.5	1238	0x80000067
0x4964			
5.5.5.55	4.4.4.4	1 (DNA)	0x80000001
0xC0E4			
5.5.5.55	5.5.5.5	1238	0x80000036
0xB5F6			
6.6.6.6	5.5.5.5	17	0x8000000A
0x586E			
6.6.6.6	6.6.6.6	11 (DNA)	0x80000001
0xC942			
8.8.8.8	6.6.6.6	1 (DNA)	0x80000001
0xFB75			
140.100.45.0	4.4.4.4	21 (DNA)	0x80000001
0x4FBE			
140.100.45.0	5.5.5.5	1239	0x80000067
0x643F			
140.100.56.0	5.5.5.5	18	0x8000000A
0xA550			
140.100.56.0	6.6.6.6	11 (DNA)	0x80000001
0x9961			
192.168.2.0	6.6.6.6	11 (DNA)	0x80000001
0x9B8B			

Router Link States (Area 45)

Link ID	ADV Router	Age	Seq#
Checksum Link count			
4.4.4.4	4.4.4.4	1635	0x8000006C
0xC23E 2			
5.5.5.5	5.5.5.5	1239	0x8000006F
0xD4A7 4			

Summary Net Link States (Area 45)

Link ID	ADV Router	Age	Seq#
Checksum			
1.1.1.1	4.4.4.4	1882	0x8000000D
0xD9C1			
1.1.1.1	5.5.5.5	262	0x8000000E
0x3C1A			
2.2.2.2	4.4.4.4	1882	0x8000000D
0xABEB			
2.2.2.2	5.5.5.5	262	0x8000000E 0xE44
3.3.3.3	4.4.4.4	1882	0x8000000D
0xFAD8			
3.3.3.3	5.5.5.5	262	0x8000000E
0x5D31			
4.4.4.4	4.4.4.4	1636	0x80000035
0xF9ED			
4.4.4.4	5.5.5.5	262	0x80000035
0x5E45			
6.6.6.6	4.4.4.4	1882	0x80000009
0xFA90			
6.6.6.6	5.5.5.5	19	0x8000000A
0x586E			
8.8.8.8	4.4.4.4	1882	0x80000009
0x2DC3			
8.8.8.8	5.5.5.5	20	0x8000000A
0x8AA1			
140.100.56.0	4.4.4.4	1882	0x80000009
0x4872			
140.100.56.0	5.5.5.5	20	0x8000000A
0xA550			
150.100.31.0	4.4.4.4	1882	0x8000000D
0xF2A2			
150.100.31.0	5.5.5.5	263	0x8000000E
0x55FA			
150.100.32.0	4.4.4.4	1883	0x8000000D
0x871D			
150.100.32.0	5.5.5.5	263	0x8000000E
0xE975			
150.100.33.0	4.4.4.4	1637	0x80000057
0xF58B			
150.100.33.0	5.5.5.5	263	0x80000035
0x9EC0			

192.168.2.0 0xCCD9	4.4.4.4	1883	0x80000009
192.168.2.0 0x2AB7	5.5.5.5	21	0x8000000A
Summary ASB Link States (Area 45)			
Link ID Checksum	ADV Router	Age	Seq#
3.3.3.3 0x8E1B	4.4.4.4	1883	0x80000037
3.3.3.3 0xB690	5.5.5.5	263	0x80000055
4.4.4.4 0x9038	5.5.5.5	263	0x80000010
5.5.5.5 0x386C	4.4.4.4	1637	0x80000034
Router Link States (Area 56)			
Link ID Checksum	ADV Router	Age	Seq#
5.5.5.5 2	5.5.5.5	21	0x8000007A 0x2CD
6.6.6.6 0x47CB 3	6.6.6.6	1889	0x8000000B
Summary Net Link States (Area 56)			
Link ID Checksum	ADV Router	Age	Seq#
1.1.1.1 0x3C1A	5.5.5.5	264	0x8000000E
1.1.1.1 0xA96D	6.6.6.6	1890	0x80000009
2.2.2.2 0x7B97	5.5.5.5	264	0x8000000E 0xE44
2.2.2.2 0x7B97	6.6.6.6	1890	0x80000009
3.3.3.3 0x5D31	5.5.5.5	264	0x8000000E
3.3.3.3 0xCB83	6.6.6.6	1890	0x80000009
4.4.4.4 0x5E45	5.5.5.5	266	0x80000035
4.4.4.4 0x1B70	6.6.6.6	1891	0x80000009
5.5.5.5 0x4964	5.5.5.5	1244	0x80000067
5.5.5.5 0x6A5D	6.6.6.6	1891	0x80000009
5.5.5.55 0xB7F5	5.5.5.5	1244	0x80000035
5.5.5.55 0x7421	6.6.6.6	1891	0x80000009

8.8.8.8 0x8AA1	5.5.5.5	23	0x8000000A	
8.8.8.8 0xEB7D	6.6.6.6	1891	0x80000009	
140.100.45.0 0x643F	5.5.5.5	1244	0x80000067	
140.100.45.0 0x8538	6.6.6.6	1891	0x80000009	
150.100.31.0 0x55FA	5.5.5.5	266	0x8000000E	
150.100.31.0 0xC24E	6.6.6.6	1891	0x80000009	
150.100.32.0 0xE975	5.5.5.5	266	0x8000000E	
150.100.32.0 0x57C8	6.6.6.6	1891	0x80000009	
150.100.33.0 0x9EC0	5.5.5.5	266	0x80000035	
150.100.33.0 0x5BEB	6.6.6.6	1892	0x80000009	
192.168.2.0 0x2AB7	5.5.5.5	24	0x8000000A	
192.168.2.0 0x8B93	6.6.6.6	1892	0x80000009	
Summary ASB Link States (Area 56)				
Link ID	ADV Router	Age	Seq#	
Checksum				
3.3.3.3 0xB690	5.5.5.5	267	0x80000055	
3.3.3.3 0xB39B	6.6.6.6	1893	0x80000009	
4.4.4.4 0x9038	5.5.5.5	267	0x80000010	
4.4.4.4	6.6.6.6	1893	0x80000009	0x388
5.5.5.5 0x5275	6.6.6.6	1893	0x80000009	
Type-5 AS External Link States				
Link ID	ADV Router	Age	Seq#	
Checksum Tag				
3.3.3.13 0	3.3.3.3	286	0x8000004F	0x22E
3.3.3.23 0x9D88 0	3.3.3.3	286	0x8000004F	
67.67.67.0 0xDDDA 0	4.4.4.4	1887	0x8000000F	
130.100.55.0 0x80DF 0	5.5.5.5	267	0x8000000F	
140.100.9.0 0x5D4A 0	4.4.4.4	1887	0x8000000F	

```
R8#ping 130.100.55.1
```

```
Type escape sequence to abort.  
Sending 5, 100-byte ICMP Echos to 130.100.55.1, timeout is 2  
seconds:  
!!!!  
Success rate is 100 percent (5/5), round-trip min/avg/max =  
32/36/44 ms
```

```
R8#sho ip route os
```

```
1.0.0.0/32 is subnetted, 2 subnets  
O IA 1.1.1.1 [110/11368] via 192.168.2.2, 04:59:30, Tunnel1  
2.0.0.0/32 is subnetted, 2 subnets  
O IA 2.2.2.2 [110/11368] via 192.168.2.2, 04:59:30, Tunnel1  
3.0.0.0/32 is subnetted, 4 subnets  
O IA 3.3.3.3 [110/11304] via 192.168.2.2, 04:59:30, Tunnel1  
O E2 3.3.3.13 [110/20] via 192.168.2.2, 04:59:30, Tunnel1  
O E2 3.3.3.23 [110/20] via 192.168.2.2, 04:59:30, Tunnel1  
4.0.0.0/32 is subnetted, 2 subnets  
O IA 4.4.4.4 [110/11240] via 192.168.2.2, 04:59:30, Tunnel1  
140.100.0.0/16 is variably subnetted, 4 subnets, 2 masks  
O IA 140.100.45.0/26 [110/11239] via 192.168.2.2, 04:59:30, Tunnel1  
O IA 140.100.56.0/26 [110/11175] via 192.168.2.2, 04:59:30, Tunnel1  
O E2 140.100.9.0/27 [110/20] via 192.168.2.2, 04:59:30, Tunnel1  
5.0.0.0/32 is subnetted, 2 subnets  
O IA 5.5.5.5 [110/11176] via 192.168.2.2, 04:59:30, Tunnel1  
6.0.0.0/8 is variably subnetted, 3 subnets, 2 masks  
O IA 6.6.6.6/32 [110/11112] via 192.168.2.2, 04:59:30, Tunnel1  
67.0.0.0/24 is subnetted, 1 subnets  
O E2 67.67.67.0 [110/20] via 192.168.2.2, 04:59:30, Tunnel1  
130.100.0.0/24 is subnetted, 2 subnets  
O E2 130.100.55.0 [110/20] via 192.168.2.2, 04:59:30, Tunnel1  
150.100.0.0/16 is variably subnetted, 3 subnets, 3 masks  
O IA 150.100.32.0/27 [110/11367] via 192.168.2.2, 04:59:30, Tunnel1  
O IA 150.100.33.0/29 [110/11303] via 192.168.2.2, 04:59:30, Tunnel1  
O IA 150.100.31.0/28 [110/11367] via 192.168.2.2, 04:59:30, Tunnel1
```

```
R7#ping 130.100.55.1
```

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

```
Sending 5, 100-byte ICMP Echos to 130.100.55.1, timeout is 2 seconds:
```

```
!!!!
```

```
Success rate is 100 percent (5/5), round-trip min/avg/max = 32/34/40 ms
```

```
R7#sho ip rip da
```

```
0.0.0.0/0      auto-summary
```

```
0.0.0.0/0
```

```
    [1] via 140.100.47.4, 00:00:22, Ethernet0
```

```
1.0.0.0/8      auto-summary
```

```
1.1.1.1/32
```

```
    [1] via 140.100.47.4, 00:00:22, Ethernet0
```

```
2.0.0.0/8      auto-summary
```

```
2.2.2.2/32
```

```
    [1] via 140.100.47.4, 00:00:22, Ethernet0
```

```
3.0.0.0/8      auto-summary
```

```
3.3.3.3/32
```

```
    [1] via 140.100.47.4, 00:00:22, Ethernet0
```

```
3.3.3.13/32
```

```
    [1] via 140.100.47.4, 00:00:22, Ethernet0
```

```
3.3.3.23/32
```

```
    [1] via 140.100.47.4, 00:00:22, Ethernet0
```

```
4.0.0.0/8      auto-summary
```

```
4.4.4.4/32
```

```
    [1] via 140.100.47.4, 00:00:22, Ethernet0
```

```
5.0.0.0/8      auto-summary
```

```
5.5.5.5/32
```

```
    [1] via 140.100.47.4, 00:00:22, Ethernet0
```

```
6.0.0.0/8      auto-summary
```

```
6.6.6.6/32
```

```
    [1] via 140.100.47.4, 00:00:23, Ethernet0
```

```
8.0.0.0/8      auto-summary
```

```
8.8.8.8/32
```

```
    [1] via 140.100.47.4, 00:00:23, Ethernet0
```

```
67.0.0.0/8     auto-summary
```

```
67.67.67.0/24  directly connected, Loopback6727
```

```
130.100.0.0/16  auto-summary
```

```
130.100.55.0/24
```

```
    [1] via 140.100.47.4, 00:00:23, Ethernet0
```

```
140.100.0.0/16  auto-summary
```

```
140.100.9.0/27  directly connected, Loopback444
```

```
140.100.45.0/26
```

```
    [1] via 140.100.47.4, 00:00:23, Ethernet0
```

```
140.100.47.0/26  directly connected, Ethernet0
```

```
140.100.56.0/26
```

```
    [1] via 140.100.47.4, 00:00:23, Ethernet0
```

```
150.100.0.0/16  auto-summary
```



```
150.100.31.0/28
  [1] via 140.100.47.4, 00:00:23, Ethernet0
150.100.32.0/27
  [1] via 140.100.47.4, 00:00:23, Ethernet0
150.100.33.0/29
  [1] via 140.100.47.4, 00:00:24, Ethernet0
192.168.2.0/24    auto-summary
192.168.2.0/24
  [1] via 140.100.47.4, 00:00:24, Ethernet0
```