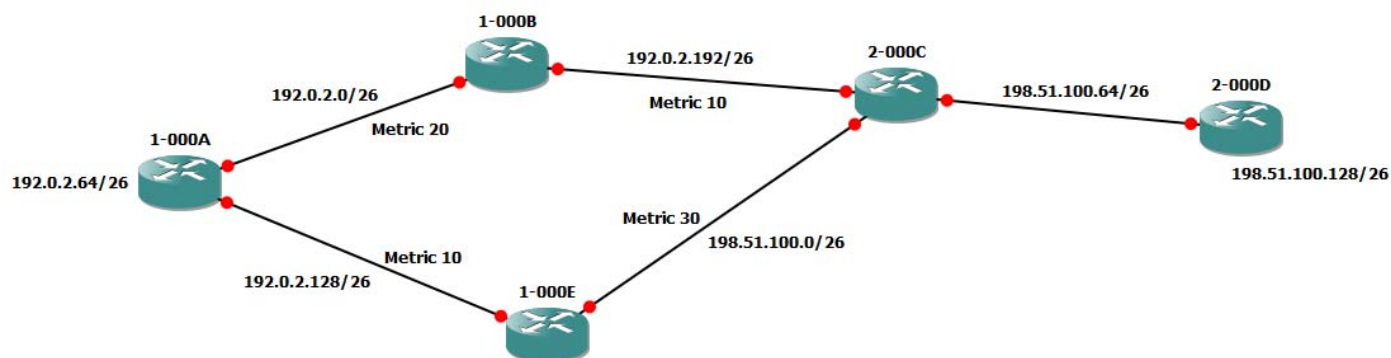


IS-IS Attached Bit and Route Leaking Domains Lab



Without Route Leaking

Show Output

```
1-000A#show isis neighbor
```

System Id	Type	Interface	IP Address	State	Holdtime	Circuit Id
1-000E	L1	Fa0/1	192.0.2.130	UP	24	00
1-000B	L1	Fa0/0	192.0.2.2	UP	25	01

```
1-000A#
```

```
1-000A#show isis database detail
```

IS-IS Level-1 Link State Database:

LSPID	LSP Seq Num	LSP Checksum	LSP Holdtime	ATT/P/OL
1-000A.00-00	* 0x00000003	0x31BF	1087	0/0/0
Area Address: 49.1111				
NLPID: 0xCC				
Hostname: 1-000A				
IP Address: 192.0.2.65				
Metric: 10 IP 192.0.2.0 255.255.255.192				
Metric: 20 IP 192.0.2.128 255.255.255.192				
Metric: 10 IP 192.0.2.64 255.255.255.192				
Metric: 20 IS 1-000E.00				
Metric: 10 IS 1-000B.00				
1-000B.00-00	0x00000003	0xDAE7	770	1/0/0
Area Address: 49.1111				
NLPID: 0xCC				
Hostname: 1-000B				
IP Address: 192.0.2.2				
Metric: 20 IP 192.0.2.0 255.255.255.192				
Metric: 20 IS 1-000A.00				
1-000E.00-00	0x00000003	0x616E	770	1/0/0
Area Address: 49.1111				
NLPID: 0xCC				
Hostname: 1-000E				
IP Address: 192.0.2.130				

```

Metric: 10          IP 192.0.2.128 255.255.255.192
Metric: 10          IS 1-000A.00
IS-IS Level-2 Link State Database:
LSPID                LSP Seq Num  LSP Checksum  LSP Holddtime    ATT/P/OL
1-000A.00-00        * 0x00000002  0x29A5        1085             0/0/0
Area Address: 49.1111
NLPID:              0xCC
Hostname: 1-000A
Metric: 10          IP 192.0.2.0 255.255.255.192
Metric: 10          IP 192.0.2.64 255.255.255.192
Metric: 20          IP 192.0.2.128 255.255.255.192
1-000A#
1-000A#sho ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route

Gateway of last resort is 192.0.2.2 to network 0.0.0.0

192.0.2.0/26 is subnetted, 3 subnets
C      192.0.2.128 is directly connected, FastEthernet0/1
C      192.0.2.64 is directly connected, Loopback0
C      192.0.2.0 is directly connected, FastEthernet0/0
i*L1 0.0.0.0/0 [115/10] via 192.0.2.2, FastEthernet0/0
1-000A#
1-000A#show isis topology

IS-IS paths to level-1 routers
System Id      Metric      Next-Hop      Interface      SNPA
1-000A         --
1-000B         10          1-000B        Fa0/0          c402.32c8.0001
1-000E         20          1-000E        Fa0/1          c405.2f24.0000

IS-IS paths to level-2 routers
System Id      Metric      Next-Hop      Interface      SNPA
1-000A         --
1-000A#
1-000A#
1-000A#traceroute 198.51.100.129

Type escape sequence to abort.
Tracing the route to 198.51.100.129

 0 192.0.2.2 24 msec 8 msec 36 msec
 1 192.0.2.194 36 msec 72 msec 60 msec
 2 198.51.100.66 64 msec 52 msec 88 msec

```

1-000B#show isis neighbor

System Id	Type	Interface	IP Address	State	Holdtime	Circuit Id
2-000C	L2	Fa0/0	192.0.2.194	UP	26	01
1-000A	L1	Fa0/1	192.0.2.1	UP	25	00

1-000B#

1-000B#show isis database detail

IS-IS Level-1 Link State Database:

LSPID	LSP Seq Num	LSP Checksum	LSP Holdtime	ATT/P/OL
1-000A.00-00	0x000000003	0x31BF	1014	0/0/0

Area Address: 49.1111

NLPID: 0xCC

Hostname: 1-000A

IP Address: 192.0.2.65

Metric: 10 IP 192.0.2.0 255.255.255.192

Metric: 20 IP 192.0.2.128 255.255.255.192

Metric: 10 IP 192.0.2.64 255.255.255.192

Metric: 20 IS 1-000E.00

Metric: 10 IS 1-000B.00

1-000B.00-00	* 0x000000003	0xDAE7	702	1/0/0
--------------	---------------	--------	-----	-------

Area Address: 49.1111

NLPID: 0xCC

Hostname: 1-000B

IP Address: 192.0.2.2

Metric: 20 IP 192.0.2.0 255.255.255.192

Metric: 20 IS 1-000A.00

1-000E.00-00	0x000000003	0x616E	698	1/0/0
--------------	-------------	--------	-----	-------

Area Address: 49.1111

NLPID: 0xCC

Hostname: 1-000E

IP Address: 192.0.2.130

Metric: 10 IP 192.0.2.128 255.255.255.192

Metric: 10 IS 1-000A.00

IS-IS Level-2 Link State Database:

LSPID	LSP Seq Num	LSP Checksum	LSP Holdtime	ATT/P/OL
1-000B.00-00	* 0x000000004	0xA4E7	1020	0/0/0

Area Address: 49.1111

NLPID: 0xCC

Hostname: 1-000B

IP Address: 192.0.2.193

Metric: 10 IP 192.0.2.192 255.255.255.192

Metric: 10 IS 2-000C.00

Metric: 20 IP 192.0.2.0 255.255.255.192

Metric: 30 IP 192.0.2.64 255.255.255.192

Metric: 40 IP 192.0.2.128 255.255.255.192

2-000C.00-00	0x000000004	0xA975	698	0/0/0
--------------	-------------	--------	-----	-------

Area Address: 49.2222

NLPID: 0xCC

```

Hostname: 2-000C
IP Address: 198.51.100.2
Metric: 10 IP 192.0.2.192 255.255.255.192
Metric: 30 IP 198.51.100.0 255.255.255.192
Metric: 30 IS 1-000E.00
Metric: 10 IS 1-000B.00
Metric: 10 IP 198.51.100.64 255.255.255.192
Metric: 20 IP 198.51.100.128 255.255.255.192
1-000E.00-00 0x000000003 0x22AF 695 0/0/0
Area Address: 49.1111
NLPID: 0xCC
Hostname: 1-000E
IP Address: 198.51.100.1
Metric: 30 IP 198.51.100.0 255.255.255.192
Metric: 30 IS 2-000C.00
Metric: 20 IP 192.0.2.0 255.255.255.192
Metric: 20 IP 192.0.2.64 255.255.255.192
Metric: 10 IP 192.0.2.128 255.255.255.192
1-000B#
1-000B#
1-000B#show ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2
i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
ia - IS-IS inter area, * - candidate default, U - per-user static route
o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

198.51.100.0/26 is subnetted, 3 subnets
i L2 198.51.100.128 [115/30] via 192.0.2.194, FastEthernet0/0
i L2 198.51.100.0 [115/40] via 192.0.2.194, FastEthernet0/0
i L2 198.51.100.64 [115/20] via 192.0.2.194, FastEthernet0/0
192.0.2.0/26 is subnetted, 4 subnets
C 192.0.2.192 is directly connected, FastEthernet0/0
i L1 192.0.2.128 [115/40] via 192.0.2.1, FastEthernet0/1
i L1 192.0.2.64 [115/30] via 192.0.2.1, FastEthernet0/1
C 192.0.2.0 is directly connected, FastEthernet0/1
1-000B#
1-000B#show isis topology

IS-IS paths to level-1 routers
System Id Metric Next-Hop Interface SNPA
1-000A 20 1-000A Fa0/1 c401.2e2c.0000
1-000B --
1-000E 40 1-000A Fa0/1 c401.2e2c.0000

```

IS-IS paths to level-2 routers

System Id	Metric	Next-Hop	Interface	SNPA
1-000B	--			
2-000C	10	2-000C	Fa0/0	c403.05b4.0001
1-000E	40	2-000C	Fa0/0	c403.05b4.0001

1-000B#

1-000E#show isis neighbor

System Id	Type	Interface	IP Address	State	Holdtime	Circuit Id
1-000A	L1	Fa0/0	192.0.2.129	UP	24	01
2-000C	L2	Fa0/1	198.51.100.2	UP	24	02

1-000E#

1-000E#show isis database detail

IS-IS Level-1 Link State Database:

LSPID	LSP Seq Num	LSP Checksum	LSP Holdtime	ATT/P/OL
1-000A.00-00	0x00000003	0x31BF	857	0/0/0

Area Address: 49.1111

NLPID: 0xCC

Hostname: 1-000A

IP Address: 192.0.2.65

Metric: 10 IP 192.0.2.0 255.255.255.192

Metric: 20 IP 192.0.2.128 255.255.255.192

Metric: 10 IP 192.0.2.64 255.255.255.192

Metric: 20 IS 1-000E.00

Metric: 10 IS 1-000B.00

1-000B.00-00	0x00000003	0xDAE7	541	1/0/0
--------------	------------	--------	-----	-------

Area Address: 49.1111

NLPID: 0xCC

Hostname: 1-000B

IP Address: 192.0.2.2

Metric: 20 IP 192.0.2.0 255.255.255.192

Metric: 20 IS 1-000A.00

1-000E.00-00	* 0x00000003	0x616E	545	1/0/0
--------------	--------------	--------	-----	-------

Area Address: 49.1111

NLPID: 0xCC

Hostname: 1-000E

IP Address: 192.0.2.130

Metric: 10 IP 192.0.2.128 255.255.255.192

Metric: 10 IS 1-000A.00

IS-IS Level-2 Link State Database:

LSPID	LSP Seq Num	LSP Checksum	LSP Holdtime	ATT/P/OL
1-000B.00-00	0x00000004	0xA4E7	857	0/0/0

Area Address: 49.1111

NLPID: 0xCC

Hostname: 1-000B

IP Address: 192.0.2.193

Metric: 10 IP 192.0.2.192 255.255.255.192

Metric: 10 IS 2-000C.00

Metric: 20 IP 192.0.2.0 255.255.255.192

```

Metric: 30          IP 192.0.2.64 255.255.255.192
Metric: 40          IP 192.0.2.128 255.255.255.192
2-000C.00-00      0x00000004  0xA975          539          0/0/0

```

Area Address: 49.2222

NLPID: 0xCC

Hostname: 2-000C

IP Address: 198.51.100.2

Metric: 10 IP 192.0.2.192 255.255.255.192

Metric: 30 IP 198.51.100.0 255.255.255.192

Metric: 30 IS 1-000E.00

Metric: 10 IS 1-000B.00

Metric: 10 IP 198.51.100.64 255.255.255.192

Metric: 20 IP 198.51.100.128 255.255.255.192

```

1-000E.00-00      * 0x00000003  0x22AF          540          0/0/0

```

Area Address: 49.1111

NLPID: 0xCC

Hostname: 1-000E

IP Address: 198.51.100.1

Metric: 30 IP 198.51.100.0 255.255.255.192

Metric: 30 IS 2-000C.00

Metric: 20 IP 192.0.2.0 255.255.255.192

Metric: 20 IP 192.0.2.64 255.255.255.192

Metric: 10 IP 192.0.2.128 255.255.255.192

1-000E#

1-000E#show ip route

Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2

i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2

ia - IS-IS inter area, * - candidate default, U - per-user static route

o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

198.51.100.0/26 is subnetted, 3 subnets

i L2 198.51.100.128 [115/50] via 198.51.100.2, FastEthernet0/1

C 198.51.100.0 is directly connected, FastEthernet0/1

i L2 198.51.100.64 [115/40] via 198.51.100.2, FastEthernet0/1

192.0.2.0/26 is subnetted, 4 subnets

i L2 192.0.2.192 [115/40] via 198.51.100.2, FastEthernet0/1

C 192.0.2.128 is directly connected, FastEthernet0/0

i L1 192.0.2.64 [115/20] via 192.0.2.129, FastEthernet0/0

i L1 192.0.2.0 [115/20] via 192.0.2.129, FastEthernet0/0

1-000E#

1-000E#

1-000E#show isis topology

IS-IS paths to level-1 routers

System Id	Metric	Next-Hop	Interface	SNPA
-----------	--------	----------	-----------	------

1-000A	10	1-000A	Fa0/0	c401.2e2c.0001
1-000B	20	1-000A	Fa0/0	c401.2e2c.0001
1-000E	--			

IS-IS paths to level-2 routers

System Id	Metric	Next-Hop	Interface	SNPA
1-000B	40	2-000C	Fa0/1	c403.05b4.0010
2-000C	30	2-000C	Fa0/1	c403.05b4.0010
1-000E	--			

1-000E#

2-000C#show isis neighbor

System Id	Type	Interface	IP Address	State	Holdtime	Circuit Id
2-000D	L1	Fa0/0	198.51.100.66	UP	21	00
1-000E	L2	Fa1/0	198.51.100.1	UP	28	01
1-000B	L2	Fa0/1	192.0.2.193	UP	22	00

2-000C#

2-000C#show isis database detail

IS-IS Level-1 Link State Database:

LSPID	LSP Seq Num	LSP Checksum	LSP Holdtime	ATT/P/OL
2-000C.00-00	* 0x000000003	0xB641	644	1/0/0

Area Address: 49.2222
NLPID: 0xCC
Hostname: 2-000C
IP Address: 198.51.100.65
Metric: 10 IP 198.51.100.64 255.255.255.192
Metric: 10 IS 2-000D.00

2-000D.00-00	0x000000002	0x6226	638	0/0/0
--------------	-------------	--------	-----	-------

Area Address: 49.2222
NLPID: 0xCC
Hostname: 2-000D
IP Address: 198.51.100.129
Metric: 10 IP 198.51.100.64 255.255.255.192
Metric: 10 IP 198.51.100.128 255.255.255.192
Metric: 10 IS 2-000C.00

IS-IS Level-2 Link State Database:

LSPID	LSP Seq Num	LSP Checksum	LSP Holdtime	ATT/P/OL
1-000B.00-00	0x000000004	0xA4E7	962	0/0/0

Area Address: 49.1111
NLPID: 0xCC
Hostname: 1-000B
IP Address: 192.0.2.193
Metric: 10 IP 192.0.2.192 255.255.255.192
Metric: 10 IS 2-000C.00
Metric: 20 IP 192.0.2.0 255.255.255.192
Metric: 30 IP 192.0.2.64 255.255.255.192
Metric: 40 IP 192.0.2.128 255.255.255.192

2-000C.00-00	* 0x000000004	0xA975	643	0/0/0
--------------	---------------	--------	-----	-------

```

Area Address: 49.2222
NLPID:      0xCC
Hostname: 2-000C
IP Address: 198.51.100.2
Metric: 10      IP 192.0.2.192 255.255.255.192
Metric: 30      IP 198.51.100.0 255.255.255.192
Metric: 30      IS 1-000E.00
Metric: 10      IS 1-000B.00
Metric: 10      IP 198.51.100.64 255.255.255.192
Metric: 20      IP 198.51.100.128 255.255.255.192
1-000E.00-00      0x00000003      0x22AF      640      0/0/0

```

```

Area Address: 49.1111
NLPID:      0xCC
Hostname: 1-000E
IP Address: 198.51.100.1
Metric: 30      IP 198.51.100.0 255.255.255.192
Metric: 30      IS 2-000C.00
Metric: 20      IP 192.0.2.0 255.255.255.192
Metric: 20      IP 192.0.2.64 255.255.255.192
Metric: 10      IP 192.0.2.128 255.255.255.192

```

2-000C#

2-000C#show ip route

```

Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route

```

Gateway of last resort is not set

```

198.51.100.0/26 is subnetted, 3 subnets
i L1 198.51.100.128 [115/20] via 198.51.100.66, FastEthernet0/0
C 198.51.100.0 is directly connected, FastEthernet1/0
C 198.51.100.64 is directly connected, FastEthernet0/0
192.0.2.0/26 is subnetted, 4 subnets
C 192.0.2.192 is directly connected, FastEthernet0/1
i L2 192.0.2.128 [115/40] via 198.51.100.1, FastEthernet1/0
i L2 192.0.2.64 [115/40] via 192.0.2.193, FastEthernet0/1
i L2 192.0.2.0 [115/30] via 192.0.2.193, FastEthernet0/1

```

2-000C#

2-000C#show isis topology

IS-IS paths to level-1 routers

System Id	Metric	Next-Hop	Interface	SNPA
2-000C	--			
2-000D	10	2-000D	Fa0/0	c404.2efc.0001

IS-IS paths to level-2 routers

System Id	Metric	Next-Hop	Interface	SNPA
1-000B	10	1-000B	Fa0/1	c402.32c8.0000
2-000C	--			
1-000E	30	1-000E	Fa1/0	c405.2f24.0001

2-000D#show isis neighbor

System Id	Type	Interface	IP Address	State	Holdtime	Circuit Id
2-000C	L1	Fa0/1	198.51.100.65	UP	24	00

2-000D#

2-000D#show isis database detail

IS-IS Level-1 Link State Database:

LSPID	LSP Seq Num	LSP Checksum	LSP Holdtime	ATT/P/OL
2-000C.00-00	0x00000003	0xB641	479	1/0/0

Area Address: 49.2222

NLPID: 0xCC

Hostname: 2-000C

IP Address: 198.51.100.65

Metric: 10 IP 198.51.100.64 255.255.255.192

Metric: 10 IS 2-000D.00

2-000D.00-00	* 0x00000002	0x6226	475	0/0/0
--------------	--------------	--------	-----	-------

Area Address: 49.2222

NLPID: 0xCC

Hostname: 2-000D

IP Address: 198.51.100.129

Metric: 10 IP 198.51.100.64 255.255.255.192

Metric: 10 IP 198.51.100.128 255.255.255.192

Metric: 10 IS 2-000C.00

IS-IS Level-2 Link State Database:

LSPID	LSP Seq Num	LSP Checksum	LSP Holdtime	ATT/P/OL
2-000D.00-00	* 0x00000002	0x4A49	1191	0/0/0

Area Address: 49.2222

NLPID: 0xCC

Hostname: 2-000D

Metric: 10 IP 198.51.100.64 255.255.255.192

Metric: 10 IP 198.51.100.128 255.255.255.192

2-000D#

2-000D#show ip route

Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2

i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2

ia - IS-IS inter area, * - candidate default, U - per-user static route

o - ODR, P - periodic downloaded static route

Gateway of last resort is 198.51.100.65 to network 0.0.0.0

198.51.100.0/26 is subnetted, 2 subnets

```

C      198.51.100.128 is directly connected, Loopback0
C      198.51.100.64 is directly connected, FastEthernet0/1
i*L1 0.0.0.0/0 [115/10] via 198.51.100.65, FastEthernet0/1
2-000D#
2-000D#show isis topology

```

IS-IS paths to level-1 routers

System Id	Metric	Next-Hop	Interface	SNPA
2-000C	10	2-000C	Fa0/1	c403.05b4.0000
2-000D	--			

IS-IS paths to level-2 routers

System Id	Metric	Next-Hop	Interface	SNPA
2-000D	--			

Configurations

```

!
hostname 1-000A
!
interface Loopback0
 ip address 192.0.2.65 255.255.255.192
 ip router isis
 isis circuit-type level-1
!
interface FastEthernet0/0
 ip address 192.0.2.1 255.255.255.192
 ip router isis
 duplex auto
 speed auto
 isis circuit-type level-1
 isis network point-to-point
 isis three-way-handshake ietf
!
interface FastEthernet0/1
 ip address 192.0.2.129 255.255.255.192
 ip router isis
 duplex auto
 speed auto
 isis circuit-type level-1
 isis network point-to-point
 isis metric 20
 isis three-way-handshake ietf
!
router isis
 net 49.1111.0000.0000.000a.00
!
End

```

```
!  
hostname 1-000B  
!  
interface FastEthernet0/0  
  ip address 192.0.2.193 255.255.255.192  
  ip router isis  
  duplex auto  
  speed auto  
  isis circuit-type level-2-only  
  isis network point-to-point  
  isis three-way-handshake ietf  
  isis csnp-interval 10  
!  
interface FastEthernet0/1  
  ip address 192.0.2.2 255.255.255.192  
  ip router isis  
  duplex auto  
  speed auto  
  isis circuit-type level-1  
  isis network point-to-point  
  isis metric 20  
  isis three-way-handshake ietf  
  isis csnp-interval 10  
!  
router isis  
  net 49.1111.0000.0000.000b.00  
!  
End
```

```
!  
hostname 1-000E  
!  
interface FastEthernet0/0  
  ip address 192.0.2.130 255.255.255.192  
  ip router isis  
  duplex auto  
  speed auto  
  isis circuit-type level-1  
  isis network point-to-point  
  isis three-way-handshake ietf  
!  
interface FastEthernet0/1  
  ip address 198.51.100.1 255.255.255.192  
  ip router isis  
  duplex auto  
  speed auto  
  isis circuit-type level-2-only  
  isis network point-to-point
```

```

isis metric 30
isis three-way-handshake ietf
!
router isis
net 49.1111.0000.0000.000e.00
!
End

!
hostname 2-000C
!
interface FastEthernet0/0
ip address 198.51.100.65 255.255.255.192
ip router isis
duplex auto
speed auto
isis circuit-type level-1
isis network point-to-point
isis three-way-handshake ietf
!
interface FastEthernet0/1
ip address 192.0.2.194 255.255.255.192
ip router isis
duplex auto
speed auto
isis circuit-type level-2-only
isis network point-to-point
isis three-way-handshake ietf
!
interface FastEthernet1/0
ip address 198.51.100.2 255.255.255.192
ip router isis
duplex auto
speed auto
isis circuit-type level-2-only
isis network point-to-point
isis metric 30
isis three-way-handshake ietf
!
router isis
net 49.2222.0000.0000.000c.00
!
End

!
hostname 2-000D
!
interface Loopback0
ip address 198.51.100.129 255.255.255.192
ip router isis

```

```

isis circuit-type level-1
isis tag 120
!
interface FastEthernet0/1
ip address 198.51.100.66 255.255.255.192
ip router isis
duplex auto
speed auto
isis circuit-type level-1
isis network point-to-point
isis three-way-handshake ietf
!
router isis
net 49.2222.0000.0000.000d.00
!
End

```

With Route Leaking

Show Output

1-000A#show isis neighbor

System Id	Type	Interface	IP Address	State	Holdtime	Circuit Id
1-000E	L1	Fa0/1	192.0.2.130	UP	29	00
1-000B	L1	Fa0/0	192.0.2.2	UP	25	01

1-000A#

1-000A#show isis database detail

IS-IS Level-1 Link State Database:

LSPID	LSP Seq Num	LSP Checksum	LSP Holdtime	ATT/P/OL
1-000A.00-00	* 0x00000004	0x2FC0	646	0/0/0
Area Address: 49.1111				
NLPID: 0xCC				
Hostname: 1-000A				
IP Address: 192.0.2.65				
Metric: 10	IP 192.0.2.0 255.255.255.192			
Metric: 20	IP 192.0.2.128 255.255.255.192			
Metric: 10	IP 192.0.2.64 255.255.255.192			
Metric: 20	IS 1-000E.00			
Metric: 10	IS 1-000B.00			
1-000B.00-00	0x00000006	0x7003	1029	1/0/0
Area Address: 49.1111				
NLPID: 0xCC				
Hostname: 1-000B				
IP Address: 192.0.2.2				
Metric: 20	IP 192.0.2.0 255.255.255.192			
Metric: 20	IS 1-000A.00			
Metric: 158	IP-Interarea 198.51.100.128 255.255.255.192			
1-000E.00-00	0x00000005	0x5D70	1107	1/0/0

```

Area Address: 49.1111
NLPID:      0xCC
Hostname: 1-000E
IP Address:  192.0.2.130
Metric: 10      IP 192.0.2.128 255.255.255.192
Metric: 10      IS 1-000A.00
IS-IS Level-2 Link State Database:
LSPID          LSP Seq Num  LSP Checksum  LSP Holdtime  ATT/P/OL
1-000A.00-00    * 0x00000003  0x27A6        756           0/0/0
Area Address: 49.1111
NLPID:      0xCC
Hostname: 1-000A
Metric: 10      IP 192.0.2.0 255.255.255.192
Metric: 10      IP 192.0.2.64 255.255.255.192
Metric: 20      IP 192.0.2.128 255.255.255.192
1-000A#
1-000A#show ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route

Gateway of last resort is 192.0.2.2 to network 0.0.0.0

198.51.100.0/26 is subnetted, 1 subnets
i ia 198.51.100.128 [115/168] via 192.0.2.2, FastEthernet0/0
192.0.2.0/26 is subnetted, 3 subnets
C 192.0.2.128 is directly connected, FastEthernet0/1
C 192.0.2.64 is directly connected, Loopback0
C 192.0.2.0 is directly connected, FastEthernet0/0
i*L1 0.0.0.0/0 [115/10] via 192.0.2.2, FastEthernet0/0
1-000A#
1-000A#show isis topology

IS-IS paths to level-1 routers
System Id      Metric      Next-Hop      Interface      SNPA
1-000A         --
1-000B         10          1-000B        Fa0/0          c402.32c8.0001
1-000E         20          1-000E        Fa0/1          c405.2f24.0000

IS-IS paths to level-2 routers
System Id      Metric      Next-Hop      Interface      SNPA
1-000A         --
1-000A#
1-000A#traceroute 198.51.100.129

Type escape sequence to abort.

```

Tracing the route to 198.51.100.129

```
 1 192.0.2.2 64 msec 16 msec 48 msec
 2 192.0.2.194 40 msec 64 msec 72 msec
 3 198.51.100.66 88 msec 64 msec 68 msec
```

1-000B#show isis neighbor

System Id	Type	Interface	IP Address	State	Holdtime	Circuit Id
2-000C	L2	Fa0/0	192.0.2.194	UP	28	01
1-000A	L1	Fa0/1	192.0.2.1	UP	26	00

1-000B#

1-000B#show isis database detail

IS-IS Level-1 Link State Database:

LSPID	LSP Seq Num	LSP Checksum	LSP Holdtime	ATT/P/OL
1-000A.00-00	0x000000004	0x2FC0	575	0/0/0

Area Address: 49.1111

NLPID: 0xCC

Hostname: 1-000A

IP Address: 192.0.2.65

Metric: 10 IP 192.0.2.0 255.255.255.192

Metric: 20 IP 192.0.2.128 255.255.255.192

Metric: 10 IP 192.0.2.64 255.255.255.192

Metric: 20 IS 1-000E.00

Metric: 10 IS 1-000B.00

1-000B.00-00	* 0x000000006	0x7003	962	1/0/0
--------------	---------------	--------	-----	-------

Area Address: 49.1111

NLPID: 0xCC

Hostname: 1-000B

IP Address: 192.0.2.2

Metric: 20 IP 192.0.2.0 255.255.255.192

Metric: 20 IS 1-000A.00

Metric: 158 IP-Interarea 198.51.100.128 255.255.255.192

1-000E.00-00	0x000000005	0x5D70	1036	1/0/0
--------------	-------------	--------	------	-------

Area Address: 49.1111

NLPID: 0xCC

Hostname: 1-000E

IP Address: 192.0.2.130

Metric: 10 IP 192.0.2.128 255.255.255.192

Metric: 10 IS 1-000A.00

IS-IS Level-2 Link State Database:

LSPID	LSP Seq Num	LSP Checksum	LSP Holdtime	ATT/P/OL
1-000B.00-00	* 0x000000005	0xA2E8	559	0/0/0

Area Address: 49.1111

NLPID: 0xCC

Hostname: 1-000B

IP Address: 192.0.2.193

Metric: 10 IP 192.0.2.192 255.255.255.192

Metric: 10 IS 2-000C.00

```

Metric: 20      IP 192.0.2.0 255.255.255.192
Metric: 30      IP 192.0.2.64 255.255.255.192
Metric: 40      IP 192.0.2.128 255.255.255.192
2-000C.00-00    0x00000006  0xA577      1073      0/0/0

```

Area Address: 49.2222

NLPID: 0xCC

Hostname: 2-000C

IP Address: 198.51.100.2

Metric: 10 IP 192.0.2.192 255.255.255.192

Metric: 30 IP 198.51.100.0 255.255.255.192

Metric: 30 IS 1-000E.00

Metric: 10 IS 1-000B.00

Metric: 10 IP 198.51.100.64 255.255.255.192

Metric: 20 IP 198.51.100.128 255.255.255.192

```

1-000E.00-00    0x00000005  0x1EB1      1015      0/0/0

```

Area Address: 49.1111

NLPID: 0xCC

Hostname: 1-000E

IP Address: 198.51.100.1

Metric: 30 IP 198.51.100.0 255.255.255.192

Metric: 30 IS 2-000C.00

Metric: 20 IP 192.0.2.0 255.255.255.192

Metric: 20 IP 192.0.2.64 255.255.255.192

Metric: 10 IP 192.0.2.128 255.255.255.192

1-000B#

1-000B#show ip route

Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2

i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2

ia - IS-IS inter area, * - candidate default, U - per-user static route

o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

198.51.100.0/26 is subnetted, 3 subnets

i L2 198.51.100.128 [115/30] via 192.0.2.194, FastEthernet0/0

i L2 198.51.100.0 [115/40] via 192.0.2.194, FastEthernet0/0

i L2 198.51.100.64 [115/20] via 192.0.2.194, FastEthernet0/0

192.0.2.0/26 is subnetted, 4 subnets

C 192.0.2.192 is directly connected, FastEthernet0/0

i L1 192.0.2.128 [115/40] via 192.0.2.1, FastEthernet0/1

i L1 192.0.2.64 [115/30] via 192.0.2.1, FastEthernet0/1

C 192.0.2.0 is directly connected, FastEthernet0/1

1-000B#

1-000B#show isis topology

IS-IS paths to level-1 routers

System Id	Metric	Next-Hop	Interface	SNPA
-----------	--------	----------	-----------	------

1-000A	20	1-000A	Fa0/1	c401.2e2c.0000
1-000B	--			
1-000E	40	1-000A	Fa0/1	c401.2e2c.0000

IS-IS paths to level-2 routers

System Id	Metric	Next-Hop	Interface	SNPA
1-000B	--			
2-000C	10	2-000C	Fa0/0	c403.05b4.0001
1-000E	40	2-000C	Fa0/0	c403.05b4.0001

1-000E#show isis neighbor

System Id	Type	Interface	IP Address	State	Holdtime	Circuit Id
1-000A	L1	Fa0/0	192.0.2.129	UP	25	01
2-000C	L2	Fa0/1	198.51.100.2	UP	25	02

1-000E#

1-000E#show isis database detail

IS-IS Level-1 Link State Database:

LSPID	LSP Seq Num	LSP Checksum	LSP Holdtime	ATT/P/OL
1-000A.00-00	0x00000004	0x2FC0	521	0/0/0

Area Address: 49.1111

NLPID: 0xCC

Hostname: 1-000A

IP Address: 192.0.2.65

Metric: 10 IP 192.0.2.0 255.255.255.192

Metric: 20 IP 192.0.2.128 255.255.255.192

Metric: 10 IP 192.0.2.64 255.255.255.192

Metric: 20 IS 1-000E.00

Metric: 10 IS 1-000B.00

1-000B.00-00	0x00000006	0x7003	904	1/0/0
--------------	------------	--------	-----	-------

Area Address: 49.1111

NLPID: 0xCC

Hostname: 1-000B

IP Address: 192.0.2.2

Metric: 20 IP 192.0.2.0 255.255.255.192

Metric: 20 IS 1-000A.00

Metric: 158 IP-Interarea 198.51.100.128 255.255.255.192

1-000E.00-00	* 0x00000005	0x5D70	986	1/0/0
--------------	--------------	--------	-----	-------

Area Address: 49.1111

NLPID: 0xCC

Hostname: 1-000E

IP Address: 192.0.2.130

Metric: 10 IP 192.0.2.128 255.255.255.192

Metric: 10 IS 1-000A.00

IS-IS Level-2 Link State Database:

LSPID	LSP Seq Num	LSP Checksum	LSP Holdtime	ATT/P/OL
1-000B.00-00	0x00000005	0xA2E8	498	0/0/0

Area Address: 49.1111

NLPID: 0xCC

```
Hostname: 1-000B
IP Address: 192.0.2.193
Metric: 10 IP 192.0.2.192 255.255.255.192
Metric: 10 IS 2-000C.00
Metric: 20 IP 192.0.2.0 255.255.255.192
Metric: 30 IP 192.0.2.64 255.255.255.192
Metric: 40 IP 192.0.2.128 255.255.255.192
2-000C.00-00 0x00000006 0xA577 1017 0/0/0
```

```
Area Address: 49.2222
NLPID: 0xCC
Hostname: 2-000C
IP Address: 198.51.100.2
Metric: 10 IP 192.0.2.192 255.255.255.192
Metric: 30 IP 198.51.100.0 255.255.255.192
Metric: 30 IS 1-000E.00
Metric: 10 IS 1-000B.00
Metric: 10 IP 198.51.100.64 255.255.255.192
Metric: 20 IP 198.51.100.128 255.255.255.192
1-000E.00-00 * 0x00000005 0x1EB1 959 0/0/0
```

```
Area Address: 49.1111
NLPID: 0xCC
Hostname: 1-000E
IP Address: 198.51.100.1
Metric: 30 IP 198.51.100.0 255.255.255.192
Metric: 30 IS 2-000C.00
Metric: 20 IP 192.0.2.0 255.255.255.192
Metric: 20 IP 192.0.2.64 255.255.255.192
Metric: 10 IP 192.0.2.128 255.255.255.192
```

1-000E#

1-000E#show ip route

Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2
i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
ia - IS-IS inter area, * - candidate default, U - per-user static route
o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

```
198.51.100.0/26 is subnetted, 3 subnets
i L2 198.51.100.128 [115/50] via 198.51.100.2, FastEthernet0/1
C 198.51.100.0 is directly connected, FastEthernet0/1
i L2 198.51.100.64 [115/40] via 198.51.100.2, FastEthernet0/1
192.0.2.0/26 is subnetted, 4 subnets
i L2 192.0.2.192 [115/40] via 198.51.100.2, FastEthernet0/1
C 192.0.2.128 is directly connected, FastEthernet0/0
i L1 192.0.2.64 [115/20] via 192.0.2.129, FastEthernet0/0
i L1 192.0.2.0 [115/20] via 192.0.2.129, FastEthernet0/0
1-000E#
```

1-000E#show isis topology

IS-IS paths to level-1 routers

System Id	Metric	Next-Hop	Interface	SNPA
1-000A	10	1-000A	Fa0/0	c401.2e2c.0001
1-000B	20	1-000A	Fa0/0	c401.2e2c.0001
1-000E	--			

IS-IS paths to level-2 routers

System Id	Metric	Next-Hop	Interface	SNPA
1-000B	40	2-000C	Fa0/1	c403.05b4.0010
2-000C	30	2-000C	Fa0/1	c403.05b4.0010
1-000E	--			

1-000E#

2-000C#show isis neighbor

System Id	Type	Interface	IP Address	State	Holdtime	Circuit Id
2-000D	L1	Fa0/0	198.51.100.66	UP	22	00
1-000E	L2	Fa1/0	198.51.100.1	UP	23	01
1-000B	L2	Fa0/1	192.0.2.193	UP	26	00

2-000C#

2-000C#show isis database detail

IS-IS Level-1 Link State Database:

LSPID	LSP Seq Num	LSP Checksum	LSP Holdtime	ATT/P/OL
2-000C.00-00	* 0x000000005	0xB243	1012	1/0/0

Area Address: 49.2222

NLPID: 0xCC

Hostname: 2-000C

IP Address: 198.51.100.65

Metric: 10 IP 198.51.100.64 255.255.255.192

Metric: 10 IS 2-000D.00

2-000D.00-00	0x000000004	0x5E28	876	0/0/0
--------------	-------------	--------	-----	-------

Area Address: 49.2222

NLPID: 0xCC

Hostname: 2-000D

IP Address: 198.51.100.129

Metric: 10 IP 198.51.100.64 255.255.255.192

Metric: 10 IP 198.51.100.128 255.255.255.192

Metric: 10 IS 2-000C.00

IS-IS Level-2 Link State Database:

LSPID	LSP Seq Num	LSP Checksum	LSP Holdtime	ATT/P/OL
1-000B.00-00	0x000000005	0xA2E8	448	0/0/0

Area Address: 49.1111

NLPID: 0xCC

Hostname: 1-000B

IP Address: 192.0.2.193

Metric: 10 IP 192.0.2.192 255.255.255.192

Metric: 10 IS 2-000C.00

```

Metric: 20      IP 192.0.2.0 255.255.255.192
Metric: 30      IP 192.0.2.64 255.255.255.192
Metric: 40      IP 192.0.2.128 255.255.255.192
2-000C.00-00    * 0x000000006  0xA577      966      0/0/0

```

Area Address: 49.2222

NLPID: 0xCC

Hostname: 2-000C

IP Address: 198.51.100.2

Metric: 10 IP 192.0.2.192 255.255.255.192

Metric: 30 IP 198.51.100.0 255.255.255.192

Metric: 30 IS 1-000E.00

Metric: 10 IS 1-000B.00

Metric: 10 IP 198.51.100.64 255.255.255.192

Metric: 20 IP 198.51.100.128 255.255.255.192

```

1-000E.00-00    0x000000005  0x1EB1      909      0/0/0

```

Area Address: 49.1111

NLPID: 0xCC

Hostname: 1-000E

IP Address: 198.51.100.1

Metric: 30 IP 198.51.100.0 255.255.255.192

Metric: 30 IS 2-000C.00

Metric: 20 IP 192.0.2.0 255.255.255.192

Metric: 20 IP 192.0.2.64 255.255.255.192

Metric: 10 IP 192.0.2.128 255.255.255.192

2-000C#

2-000C#show ip route

Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2

i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2

ia - IS-IS inter area, * - candidate default, U - per-user static route

o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

198.51.100.0/26 is subnetted, 3 subnets

i L1 198.51.100.128 [115/20] via 198.51.100.66, FastEthernet0/0

C 198.51.100.0 is directly connected, FastEthernet1/0

C 198.51.100.64 is directly connected, FastEthernet0/0

192.0.2.0/26 is subnetted, 4 subnets

C 192.0.2.192 is directly connected, FastEthernet0/1

i L2 192.0.2.128 [115/40] via 198.51.100.1, FastEthernet1/0

i L2 192.0.2.64 [115/40] via 192.0.2.193, FastEthernet0/1

i L2 192.0.2.0 [115/30] via 192.0.2.193, FastEthernet0/1

2-000C#

2-000C#show isis topology

IS-IS paths to level-1 routers

System Id	Metric	Next-Hop	Interface	SNPA
-----------	--------	----------	-----------	------

```

2-000C          --
2-000D          10          2-000D          Fa0/0          c404.2efc.0001

```

IS-IS paths to level-2 routers

System Id	Metric	Next-Hop	Interface	SNPA
1-000B	10	1-000B	Fa0/1	c402.32c8.0000
2-000C	--			
1-000E	30	1-000E	Fa1/0	c405.2f24.0001

2-000D#show isis neighbor

System Id	Type	Interface	IP Address	State	Holdtime	Circuit Id
2-000C	L1	Fa0/1	198.51.100.65	UP	24	00

2-000D#

2-000D#show isis database detail

IS-IS Level-1 Link State Database:

LSPID	LSP Seq Num	LSP Checksum	LSP Holdtime	ATT/P/OL
2-000C.00-00	0x000000005	0xB243	959	1/0/0

Area Address: 49.2222

NLPID: 0xCC

Hostname: 2-000C

IP Address: 198.51.100.65

Metric: 10 IP 198.51.100.64 255.255.255.192

Metric: 10 IS 2-000D.00

2-000D.00-00	* 0x000000004	0x5E28	826	0/0/0
--------------	---------------	--------	-----	-------

Area Address: 49.2222

NLPID: 0xCC

Hostname: 2-000D

IP Address: 198.51.100.129

Metric: 10 IP 198.51.100.64 255.255.255.192

Metric: 10 IP 198.51.100.128 255.255.255.192

Metric: 10 IS 2-000C.00

IS-IS Level-2 Link State Database:

LSPID	LSP Seq Num	LSP Checksum	LSP Holdtime	ATT/P/OL
2-000D.00-00	* 0x000000003	0x484A	848	0/0/0

Area Address: 49.2222

NLPID: 0xCC

Hostname: 2-000D

Metric: 10 IP 198.51.100.64 255.255.255.192

Metric: 10 IP 198.51.100.128 255.255.255.192

2-000D#

2-000D#show ip route

Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2

i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2

ia - IS-IS inter area, * - candidate default, U - per-user static route

o - ODR, P - periodic downloaded static route

Gateway of last resort is 198.51.100.65 to network 0.0.0.0

198.51.100.0/26 is subnetted, 2 subnets

C 198.51.100.128 is directly connected, Loopback0

C 198.51.100.64 is directly connected, FastEthernet0/1

i*L1 0.0.0.0/0 [115/10] via 198.51.100.65, FastEthernet0/1

2-000D#

2-000D#

2-000D#show isis topology

IS-IS paths to level-1 routers

System Id	Metric	Next-Hop	Interface	SNPA
2-000C	10	2-000C	Fa0/1	c403.05b4.0000
2-000D	--			

IS-IS paths to level-2 routers

System Id	Metric	Next-Hop	Interface	SNPA
2-000D	--			

Configurations

```
!  
hostname 1-000A  
!  
interface Loopback0  
 ip address 192.0.2.65 255.255.255.192  
 ip router isis  
 isis circuit-type level-1  
!  
interface FastEthernet0/0  
 ip address 192.0.2.1 255.255.255.192  
 ip router isis  
 duplex auto  
 speed auto  
 isis circuit-type level-1  
 isis network point-to-point  
 isis three-way-handshake ietf  
!  
interface FastEthernet0/1  
 ip address 192.0.2.129 255.255.255.192  
 ip router isis  
 duplex auto  
 speed auto  
 isis circuit-type level-1  
 isis network point-to-point  
 isis metric 20  
 isis three-way-handshake ietf  
!
```

```
router isis
 net 49.1111.0000.0000.000a.00
!
End
```

```
!
hostname 1-000B
!
interface FastEthernet0/0
 ip address 192.0.2.193 255.255.255.192
 ip router isis
 duplex auto
 speed auto
 isis circuit-type level-2-only
 isis network point-to-point
 isis three-way-handshake ietf
 isis csnp-interval 10
```

```
!
interface FastEthernet0/1
 ip address 192.0.2.2 255.255.255.192
 ip router isis
 duplex auto
 speed auto
 isis circuit-type level-1
 isis network point-to-point
 isis metric 20
 isis three-way-handshake ietf
 isis csnp-interval 10
```

```
!
router isis
 net 49.1111.0000.0000.000b.00
 redistribute isis ip level-2 into level-1 distribute-list 100
!
End
```

```
!
hostname 1-000E
!
interface FastEthernet0/0
 ip address 192.0.2.130 255.255.255.192
 ip router isis
 duplex auto
 speed auto
 isis circuit-type level-1
 isis network point-to-point
 isis three-way-handshake ietf
!
interface FastEthernet0/1
```

```
ip address 198.51.100.1 255.255.255.192
ip router isis
duplex auto
speed auto
isis circuit-type level-2-only
isis network point-to-point
isis metric 30
isis three-way-handshake ietf
!
router isis
net 49.1111.0000.0000.000e.00
!
End
```

```
!
hostname 2-000C
!
interface FastEthernet0/0
ip address 198.51.100.65 255.255.255.192
ip router isis
duplex auto
speed auto
isis circuit-type level-1
isis network point-to-point
isis three-way-handshake ietf
!
interface FastEthernet0/1
ip address 192.0.2.194 255.255.255.192
ip router isis
duplex auto
speed auto
isis circuit-type level-2-only
isis network point-to-point
isis three-way-handshake ietf
!
interface FastEthernet1/0
ip address 198.51.100.2 255.255.255.192
ip router isis
duplex auto
speed auto
isis circuit-type level-2-only
isis network point-to-point
isis metric 30
isis three-way-handshake ietf
!
router isis
net 49.2222.0000.0000.000c.00
!
End
```



```
!  
hostname 2-000D  
!  
interface Loopback0  
  ip address 198.51.100.129 255.255.255.192  
  ip router isis  
  isis circuit-type level-1  
  isis tag 120  
!  
interface FastEthernet0/1  
  ip address 198.51.100.66 255.255.255.192  
  ip router isis  
  duplex auto  
  speed auto  
  isis circuit-type level-1  
  isis network point-to-point  
  isis three-way-handshake ietf  
!  
router isis  
  net 49.2222.0000.0000.000d.00  
!  
end
```