

CCIE Service Provider Lab Workbook v4.0 (<http://labs.ine.com/workbook/toc/service-provider-v4>) » CCIE SP v4 Advanced Technology Labs - IGP

› OSPFv2 Network Types

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« [OSPFv2 \(/workbook/view/service-provider-v4/task/ospfv2-MjgyNw%3D%3D\)](#) | [OSPFv2 Path Selection \(/workbook/view/service-provider-v4/task/ospfv2-path-selection-MjgyOQ%3D%3D\)](#) »

Last updated: April 23, 2016

Note:

This task assumes that you have already completed the [OSPFv2 \(/workbook/view/service-provider-v4/task/ospfv2-MjgyNw%3D%3D\)](http://labs.ine.com/workbook/view/service-provider-v4/task/ospfv2-MjgyNw%3D%3D) task. Refer to the **Base IPv4 Diagram** in order to complete this task.

Task

- Change the OSPF Network Type of the link between R5 and XR1 to Point-to-Point.

Configuration [Click to collapse](#)

```
R5:
interface GigabitEthernet1.519
 ip ospf network point-to-point

XR1:
router ospf 1
area 0
 interface GigabitEthernet0//0/0.519
 network point-to-point
```

Verification

The link between R5 and XR1 now runs in OSPF Point-to-Point Network Type as opposed to the default Broadcast Network Type.

```

R5#show ip ospf interface GigabitEthernet1.519
GigabitEthernet1.519 is up, line protocol is up
  Internet Address 20.5.19.5/24, Area 0, Attached via Network Statement
  Process ID 1, Router ID 5.5.5.5, Network Type POINT_TO_POINT, Cost: 1
  Topology-MTID   Cost   Disabled   Shutdown   Topology Name
        0         1       no         no         Base
  Transmit Delay is 1 sec, State POINT_TO_POINT
  Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
    oob-resync timeout 40
    Hello due in 00:00:02
  Supports Link-local Signaling (LLS)
  Cisco NSF helper support enabled
  IETF NSF helper support enabled
  Can be protected by per-prefix Loop-Free FastReroute
  Can be used for per-prefix Loop-Free FastReroute repair paths
  Index 3/3, flood queue length 0
  Next 0x0(0)/0x0(0)
  Last flood scan length is 1, maximum is 1
  Last flood scan time is 0 msec, maximum is 0 msec
  Neighbor Count is 1, Adjacent neighbor count is 1
    Adjacent with neighbor 19.19.19.19
  Suppress hello for 0 neighbor(s)

```

```

RP/0/0/CPU0:XR1#show ospf interface GigabitEthernet0/0/0/0.519
Sun Apr 19 17:16:58.396 UTC

GigabitEthernet0/0/0/0.519 is up, line protocol is up
  Internet Address 20.5.19.19/24, Area 0
  Process ID 1, Router ID 19.19.19.19, Network Type POINT_TO_POINT, Cost: 1
  Transmit Delay is 1 sec, State POINT_TO_POINT, MTU 1500, MaxPktSz 1500
  Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
    Hello due in 00:00:05:707
  Index 2/2, flood queue length 0
  Next 0(0)/0(0)
  Last flood scan length is 1, maximum is 3
  Last flood scan time is 0 msec, maximum is 0 msec
  LS Ack List: current length 0, high water mark 16
  Neighbor Count is 1, Adjacent neighbor count is 1
    Adjacent with neighbor 5.5.5.5
  Suppress hello for 0 neighbor(s)
  Multi-area interface Count is 0

```

A Network LSA (LSA Type 2) is no longer generated for the Ethernet link between R5 and XR1. Since there are only two routers on the segment, using network type Point-to-Point simplifies the OSPF database lookup. The most efficient design for this topology would then be to run Network Type Point-to-Point on all router to router Ethernet links.

R5#show ip ospf database

OSPF Router with ID (5.5.5.5) (Process ID 1)

Router Link States (Area 0)

Link ID	ADV Router	Age	Seq#	Checksum	Link count
1.1.1.1	1.1.1.1	1354	0x80000002	0x00B542	2
2.2.2.2	2.2.2.2	1251	0x80000005	0x00E76E	4
3.3.3.3	3.3.3.3	1333	0x80000004	0x00041E	4
4.4.4.4	4.4.4.4	1332	0x80000004	0x008238	5
5.5.5.5	5.5.5.5	144	0x80000006	0x00A3D5	5
6.6.6.6	6.6.6.6	955	0x80000003	0x003A2E	5
19.19.19.19	19.19.19.19	142	0x80000007	0x004248	5
20.20.20.20	20.20.20.20	911	0x80000002	0x006C39	2

Net Link States (Area 0)

Link ID	ADV Router	Age	Seq#	Checksum
10.1.2.2	2.2.2.2	1353	0x80000001	0x0021F5
10.19.20.20	20.20.20.20	912	0x80000001	0x00AC5B
20.2.3.3	3.3.3.3	1347	0x80000001	0x00B34A
20.2.4.4	4.4.4.4	1341	0x80000001	0x00A251
20.3.4.4	4.4.4.4	1341	0x80000001	0x00C826
20.3.6.6	6.6.6.6	1332	0x80000001	0x00A634
20.4.5.5	5.5.5.5	1336	0x80000001	0x00DD02
20.4.6.6	6.6.6.6	1332	0x80000001	0x00CC09
20.5.6.6	6.6.6.6	1332	0x80000001	0x00F2DD
20.6.19.6	6.6.6.6	955	0x80000001	0x001674

RP/0/0/CPU0:XR1#show ospf database

Sun Apr 19 17:18:46.498 UTC

OSPF Router with ID (19.19.19.19) (Process ID 1)

Router Link States (Area 0)

Link ID	ADV Router	Age	Seq#	Checksum	Link count
1.1.1.1	1.1.1.1	1410	0x80000002	0x00b542	2
2.2.2.2	2.2.2.2	1307	0x80000005	0x00e76e	4
3.3.3.3	3.3.3.3	1389	0x80000004	0x00041e	4
4.4.4.4	4.4.4.4	1388	0x80000004	0x008238	5
5.5.5.5	5.5.5.5	201	0x80000006	0x00a3d5	5
6.6.6.6	6.6.6.6	1011	0x80000003	0x003a2e	5
19.19.19.19	19.19.19.19	197	0x80000007	0x004248	5
20.20.20.20	20.20.20.20	967	0x80000002	0x006c39	2

Net Link States (Area 0)

Link ID	ADV Router	Age	Seq#	Checksum
10.1.2.2	2.2.2.2	1409	0x80000001	0x0021F5

10.19.20.20	20.20.20.20	967	0x80000001 0x00ac5b
20.2.3.3	3.3.3.3	1403	0x80000001 0x00b34a
20.2.4.4	4.4.4.4	1397	0x80000001 0x00a251
20.3.4.4	4.4.4.4	1397	0x80000001 0x00c826
20.3.6.6	6.6.6.6	1388	0x80000001 0x00a634
20.4.5.5	5.5.5.5	1391	0x80000001 0x00dd02
20.4.6.6	6.6.6.6	1388	0x80000001 0x00cc09
20.5.6.6	6.6.6.6	1388	0x80000001 0x00f2dd
20.6.19.6	6.6.6.6	1011	0x80000001 0x001674

```
RP/0/0/CPU0:XR1#show ospf database router self-originate
```

```
Sun Apr 19 17:19:15.136 UTC
```

```
OSPF Router with ID (19.19.19.19) (Process ID 1)
```

```
Router Link States (Area 0)
```

```
LS age: 226
```

```
Options: (No TOS-capability, DC)
```

```
LS Type: Router Links
```

```
Link State ID: 19.19.19.19
```

```
Advertising Router: 19.19.19.19
```

```
LS Seq Number: 80000007
```

```
Checksum: 0x4248
```

```
Length: 84
```

```
Number of Links: 5
```

```
Link connected to: a Stub Network
```

```
(Link ID) Network/subnet number: 19.19.19.19
```

```
(Link Data) Network Mask: 255.255.255.255
```

```
Number of TOS metrics: 0
```

```
TOS 0 Metrics: 1
```

```
Link connected to: another Router (point-to-point)
```

```
(Link ID) Neighboring Router ID: 5.5.5.5
```

```
(Link Data) Router Interface address: 20.5.19.19
```

```
Number of TOS metrics: 0
```

```
TOS 0 Metrics: 1
```

```
Link connected to: a Stub Network
```

```
(Link ID) Network/subnet number: 20.5.19.0
```

```
(Link Data) Network Mask: 255.255.255.0
```

```
Number of TOS metrics: 0
```

```
TOS 0 Metrics: 1
```

```
Link connected to: a Transit Network
```

```
(Link ID) Designated Router address: 20.6.19.6
```

```
(Link Data) Router Interface address: 20.6.19.19
```

```
Number of TOS metrics: 0
```

```
TOS 0 Metrics: 1
```

```
Link connected to: a Transit Network
```

```
(Link ID) Designated Router address: 10.19.20.20
(Link Data) Router Interface address: 10.19.20.19
Number of TOS metrics: 0
TOS 0 Metrics: 1
```

Prior to making the change, XR1 was originating the Type-2 LSA for the LAN segment between R5 and XR1.

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```
RP/0/0/CPU0:XR1#show ospf database network self-originate
Sun Apr 19 17:20:25.522 UTC

OSPF Router with ID (19.19.19.19) (Process ID 1)
```

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(/workbook/view/service-provider-v4/task/ospfv2-path-selection-MjgyOQ%3D%3D) »