



1. Configure the appropriate hostnames and ip addresses on each device enable the router interfaces you do not have to configure ispr1
2. Configure the loopback interface on each router(loopback interfaces are always in the up state as they are virtual and do not need to rely on failures such as physical interfaces only a path that can get to the virtual interface so its very handy to have you can also set up dhcp servers and things of that nature on them)
3. Configure ospf on each router
4. Configure r1 as an asbr that advertises a default route into the ospf domain
5. Check the routing table of r2,r3, and r4, what default routes were added

R4#INT I0

R4#ip address 4.4.4.4 255.255.255.255

R4#do sh ip int br

Interface	IP-Address	OK?	Method	Status	Protocol
GigabitEthernet0/0	unassigned	YES	unset	administratively down	down
FastEthernet1/0	unassigned	YES	unset	administratively down	down
FastEthernet2/0	unassigned	YES	unset	administratively down	down
Loopback0	4.4.4.4	YES	manual	up	up

R4#Router ospf 4

R4#Network 0.0.0.0 255.255.255.255 area 0

R4#passive-interface g0/0

R4#passive interface

R3#int I0

R3#router ospf 3

R3#ip address 3.3.3.3 255.255.255.255

R3#network 10.0.34.1 0.0.0.0 area 0

```
R3#network 10.0.13.2 0.0.0.0 area 0
R3#passive-interface I0
```

```
r2#int I0
R2#router ospf 2
R2#ip address 2.2.2.2 255.255.255.255
R2#network 10.0.24.1 0.0.0.0 area 0
R2#network 10.0.12.2 0.0.0.0 area 0
R2#passive-interface L0
```

```
R1#int I0
R1#ip address 1.1.1.1 255.255.255.255
R1#router ospf 1
R1#network 10.0.12.1 0.0.0.0 area 0
R1#network 10.0.13.1 0.0.0.0 area 0
R1#passive-interface I0
R1#default-information originate
R1#ip route 0.0.0.0 0.0.0.0 203.0.113.2
```

```
R1#show ip protocols
```

```
Routing Protocol is "ospf 1"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Router ID 1.1.1.1
  It is an autonomous system boundary router
  Redistributing External Routes from,
  Number of areas in this router is 1. 1 normal 0 stub 0 nssa
  Maximum path: 4
  Routing for Networks:
    10.0.12.0 0.0.0.3 area 0
    10.0.13.0 0.0.0.3 area 0
    1.1.1.1 0.0.0.0 area 0
  Passive Interface(s):
    Loopback0
  Routing Information Sources:
    Gateway         Distance      Last Update
    1.1.1.1          110          00:00:31
    2.2.2.2          110          00:01:23
    3.3.3.3          110          00:01:18
    4.4.4.4          110          00:02:38
  Distance: (default is 110)
```

R1#sh ospf database

ni:show ip ospf data

R1#show ip ospf database

OSPF Router with ID (1.1.1.1) (Process ID 1)

Router Link States (Area 0)

Link ID	ADV Router	Age	Seq#	Checksum	Link count
4.4.4.4	4.4.4.4	201	0x80000005	0x000c4f	3
2.2.2.2	2.2.2.2	126	0x80000005	0x00aef1	3
3.3.3.3	3.3.3.3	121	0x80000005	0x00c8b5	3
1.1.1.1	1.1.1.1	74	0x80000006	0x00724e	3

Net Link States (Area 0)

Link ID	ADV Router	Age	Seq#	Checksum
10.0.34.2	4.4.4.4	259	0x80000001	0x00058e
10.0.24.2	4.4.4.4	201	0x80000002	0x00287d
10.0.12.2	2.2.2.2	126	0x80000001	0x00356e
10.0.13.2	3.3.3.3	121	0x80000001	0x00299c

Type-5 AS External Link States

Link ID	ADV Router	Age	Seq#	Checksum	Tag
0.0.0.0	1.1.1.1	55	0x80000001	0x00fecf	1

This is from the perspective of R3:

The screenshot shows the R3 CLI interface with the 'CLI' tab selected. The output of the 'show ip ospf database' command is displayed. It starts with a legend: '* - candidate default, U - per-user static route, o - ODR, P - periodic downloaded static route'. Below this, it states 'Gateway of last resort is 10.0.13.1 to network 0.0.0.0'. The main output lists OSPF entries for various networks, including 1.0.0.0/32, 2.0.0.0/32, 3.0.0.0/32, 4.0.0.0/32, and 10.0.0.0/30, along with their respective advertisement routers and interfaces. The entry for 0.0.0.0/0 is marked as a candidate default route.

```
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route

Gateway of last resort is 10.0.13.1 to network 0.0.0.0

  1.0.0.0/32 is subnetted, 1 subnets
O    1.1.1.1 [110/2] via 10.0.13.1, 00:03:07, FastEthernet1/0
  2.0.0.0/32 is subnetted, 1 subnets
O    2.2.2.2 [110/3] via 10.0.13.1, 00:03:07, FastEthernet1/0
      [110/3] via 10.0.34.2, 00:03:07, FastEthernet2/0
  3.0.0.0/32 is subnetted, 1 subnets
C    3.3.3.3 is directly connected, Loopback0
  4.0.0.0/32 is subnetted, 1 subnets
O    4.4.4.4 [110/2] via 10.0.34.2, 00:05:32, FastEthernet2/0
 10.0.0.0/30 is subnetted, 4 subnets
O    10.0.12.0 [110/2] via 10.0.13.1, 00:03:07, FastEthernet1/0
C    10.0.13.0 is directly connected, FastEthernet1/0
O    10.0.24.0 [110/2] via 10.0.34.2, 00:04:33, FastEthernet2/0
C    10.0.34.0 is directly connected, FastEthernet2/0
O*E2 0.0.0.0/0 [110/1] via 10.0.13.1, 00:02:11, FastEthernet1/0
```

You can see ospf shared its routes with each other gotta love dynamic routing!