

OSPF Routes Types:

Distinguish between different types of routes in routing tables:

OSPF Route:

Typical route marked with **O** in routing table; indicates OSPF as the origin of the route.

Default Route:

A route used to propagate traffic to an External Area; marked with **O*IA**.

Intra-Area Routes:

Routes originated and learned in the same area, i.e. Internal to the Area; marked with **O**.

Inter-Area Routes:

Routes originated in other OSPF areas; marked with **O IA**.

External Routes:

Routes from other Autonomous System (AS), external to the particular OSPF area; appear as **O E1** or **O E2** in a Standard Area and as **O N1** or **O N2** in a NSSA or Totally NSSA Area.

E1 are type 1 routes – used when there are multiple ASBRs advertising a route to the AS; external cost is added to the internal cost of each link [have cumulative cost]

E2 are type 2 routes – used if only one router is advertising a route to the AS; external cost does not change [have static cost]. The same applies to O N1 and O N2 routes.

```
R3#show ip route ospf
```

```
Codes: L - local, C - connected, S - static, R - RTP, 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, + - replicated route
```

Gateway of last resort is not set

```
1.0.0.0/24 is subnetted, 1 subnets  
O E2 1.1.1.0 [110/20] via 192.168.23.2, 00:00:28, FastEthernet0/1  
11.0.0.0/24 is subnetted, 1 subnets  
O E2 11.11.11.0 [110/20] via 192.168.23.2, 00:00:28, FastEthernet0/1  
22.0.0.0/24 is subnetted, 1 subnets  
O E2 22.22.22.0 [110/20] via 192.168.23.2, 00:00:28, FastEthernet0/1  
33.0.0.0/24 is subnetted, 1 subnets  
O E2 33.33.33.0 [110/20] via 192.168.23.2, 00:00:28, FastEthernet0/1  
O IA 192.168.12.0/24 [110/2] via 192.168.23.2, 00:00:28, FastEthernet0/1
```

```
R3#show ip route ospf
```

```
Codes: L - local, 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, + - replicated route
```

Gateway of last resort is 192.168.23.2 to network 0.0.0.0

```
O*IA 0.0.0.0/0 [110/2] via 192.168.23.2, 00:02:28, FastEthernet0/1  
O IA 192.168.12.0/24 [110/2] via 192.168.23.2, 00:02:38, FastEthernet0/1
```