

OSPF Router Types:

OSPF utilizes different types of OSPF routers, which are determined by the role, & location of a router within an OSPF domain. There are four types of OSPF routers, which are determined by a router's function and/or location within an OSPF area. To verify a device's OSPF Router Type, use the `show ip ospf` command. This command tells if an OSPF router is an ABR or ASBR. It will not identify internal or Backbone routers, but if an OSPF router is not an ABR or ASBR, then it is an internal router. If it is not an ABR or an ASBR and it is in area 0, then it is a Backbone Router.

Internal Router:

An Internal Router have all "OSPF Interfaces" belong to the same OSPF area. These types of routers have a single link-state database because they belong to only one area.

Backbone Router:

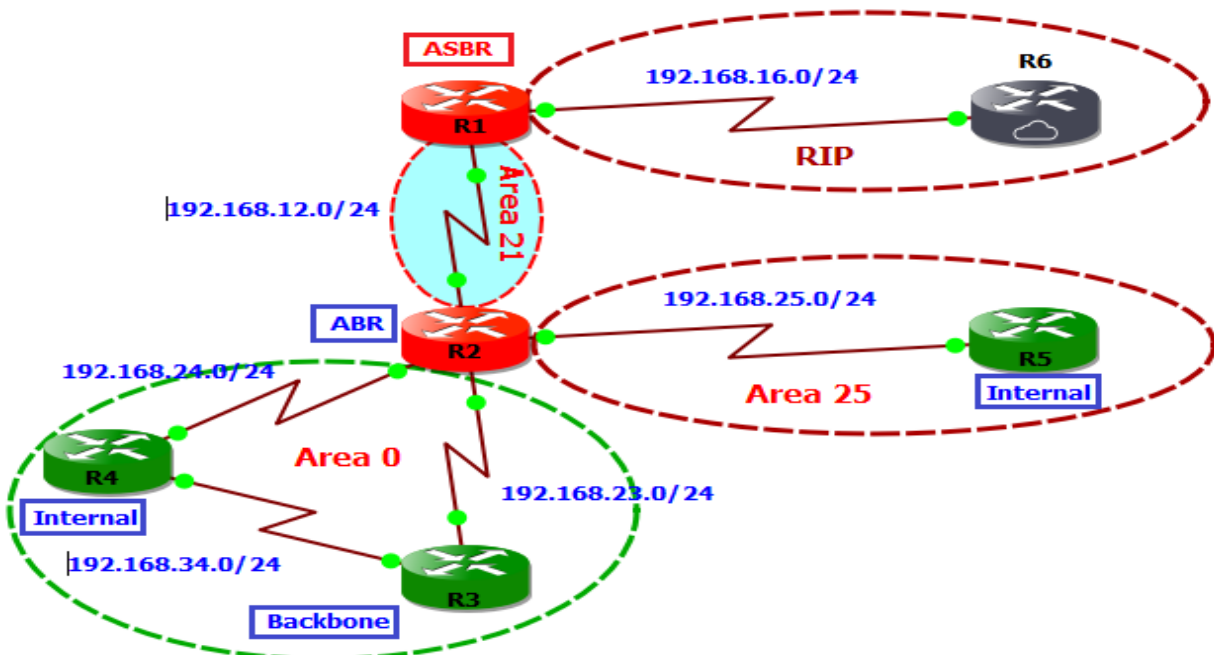
The area 0 is known as Backbone Area and the routers in area 0 are known as Backbone Routers. If the routers exist partially in the area 0 then also it is a Backbone Router.

Area Border Router (ABR):

ABR have at least one OSPF interface belongs to area 0 and at least one OSPF interface belong to a Non-Backbone Area (Area other than area 0). To check run `show ip protocols` command. The ABRs therefore maintain multiple link-state databases.

Autonomous System Boundary Router (ASBR):

A Router is said to be ASBR if it is one interface is in OSPF Domain and Other interface in any other Routing Domain such as RIP, EIGRP or BGP. These routers perform redistribution. ASBRs run both OSPF and another routing protocol. ASBRs advertise the exchanged external routing information throughout their AS.



Routers Configuration	
R1 Configuration	R2 Configuration
router ospf 1 network 192.168.12.0 0.0.0.255 area 21 redistribute rip metric 500 subnets router rip network 192.168.16.0 version 2 no auto redistribute ospf 1 metric 5	router ospf 1 network 192.168.12.0 0.0.0.255 area 21 network 192.168.25.0 0.0.0.255 area 25 network 192.168.23.0 0.0.0.255 area 0 network 192.168.24.0 0.0.0.255 area 0
R3 Configuration	R4 Configuration
router ospf 1 network 192.168.23.0 0.0.0.255 area 0 network 192.168.34.0 0.0.0.255 area 0	router ospf 1 network 192.168.24.0 0.0.0.255 area 0 network 192.168.34.0 0.0.0.255 area 0
R5 Configuration	R6 Configuration
router ospf 1 network 192.168.25.0 0.0.0.255 area 25	router rip network 192.168.16.0 version 2 no auto
R2#show ip ospf	R2#show ip ospf sec It
R1#show ip ospf	R1#show ip ospf sec It is
R1#show ip protocols	R2#show ip protocols

```
R1#show ip protocols
*** IP Routing is NSF aware ***

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 192.168.16.1
  It is an autonomous system boundary router
  Redistributing External Routes from,
```

```
R1#show ip ospf
Routing Process "ospf 1" with ID 192.168.16.1
Start time: 00:01:32.436, Time elapsed: 00:07:25.888
Supports only single TOS(TOS0) routes
Supports opaque LSA
Supports Link-local Signaling (LLS)
Supports area transit capability
Event-log enabled, Maximum number of events: 1000, Mode: cyclic
It is an autonomous system boundary router
```

```
R2#show ip protocols
```

```
*** IP Routing is NSF aware ***
```

```
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 192.168.25.2
```

```
It is an area border router
```

```
R2#show ip ospf
```

```
Routing Process "ospf 1" with ID 192.168.25.2
```

```
Start time: 00:02:08.864, Time elapsed: 00:11:16.752
```

```
Supports only single TOS(TOS0) routes
```

```
Supports opaque LSA
```

```
Supports Link-local Signaling (LLS)
```

```
Supports area transit capability
```

```
Event-log enabled, Maximum number of events: 1000, Mode: cyclic
```

```
It is an area border router
```

```
R3#show ip ospf
```

```
Routing Process "ospf 1" with ID 192.168.34.3
```

```
Start time: 00:01:56.264, Time elapsed: 00:12:24.280
```

```
Cisco NSF helper support enabled
```

```
Reference bandwidth unit is 100 mbps
```

```
Area BACKBONE(0)
```

```
R5#show ip ospf
```

```
Routing Process "ospf 1" with ID 192.168.25.5
```

```
Start time: 00:02:05.428, Time elapsed: 00:15:37.772
```

```
Supports only single TOS(TOS0) routes
```

```
Reference bandwidth unit is 100 mbps
```

```
Area 25
```