

■ What are DR, BDR, and DR-Other in OSPF?

In **multi-access networks** like Ethernet (where multiple routers are connected to the same network segment), OSPF uses a **Designated Router (DR)** and a **Backup Designated Router (BDR)** to reduce routing traffic.

- ◆ Instead of every router forming a full mesh of adjacencies (which causes overhead), only DR and BDR manage LSAs.

🔍 Definitions:

| Term | Meaning |
|-------------------------------|--|
| DR (Designated Router) | The main router elected to share LSAs with all others. |
| BDR (Backup DR) | Takes over if DR fails. Listens but does not actively advertise. |
| DR Other | All other routers on the segment. They do not share LSAs with each other — only with the DR and BDR. |

🎯 Why DR/BDR Is Needed?

Without DR/BDR, on a LAN with 10 routers, there would be:

- 45 OSPF adjacencies (full mesh)
With DR/BDR:
 - Only DR and BDR form full adjacencies.
 - DR Others only talk to DR and BDR → total adjacencies = 18 (much better!)

⚙️ DR/BDR Election Process:

1. OSPF Hello packets contain **Router Priority** (default: 1, range: 0–255).
2. Router with **highest priority** becomes **DR**.
3. Second highest becomes **BDR**.
4. If tied, highest **Router ID (RID)** is used as a tie-breaker.
5. **Priority 0 = not eligible** for DR/BDR election.

- ◻ Elections don't preempt: Once elected, DR/BDR stay unless they go down or the interface is reset.

🔧 Example Configuration:

```
R1(config)# interface FastEthernet0/0
```

R1(config-if)# ip ospf priority 100

Set a higher priority to increase the chance of becoming DR.

Neighborship View:

Run this on any router:

show ip ospf neighbor

You'll see roles:

- **FULL/DR**
- **FULL/BDR**
- **2WAY/DROTHER**

Summary Table:

| Role | Description | Forms Full Adjacency? |
|----------|-----------------------------------|-----------------------------|
| DR | Central router that shares LSAs | Yes |
| BDR | Backup router, ready to take over | Yes |
| DR Other | All other routers | No (only 2-way with others) |

Where DR/BDR Is Used:

- **Broadcast networks** (e.g., Ethernet LAN)
- **Non-Broadcast Multi-Access (NBMA)** networks (e.g., Frame Relay)
- **Not used on point-to-point links.**