OSPF Characteristics

- OSPF is a Link State routing protocol
- It supports large networks
- It has very fast convergence time
- Messages are sent using multicast
- OSPF is an open standard protocol
- It uses Dijkstra's Shortest Path First algorithm to determine the best path to learned networks

OSPF vs EIGRP vs RIP

- RIP has scalability limitations so it is not typically used in production networks
- It is suitable for small networks or lab/test environments
- The choice for most companies for their IGP comes down to EIGRP or OSPF

OSPF vs EIGRP vs RIP (Cont.)

- OSPF is the most commonly used
- It supports large networks and has always been an open standard. It is supported on all vendors equipment
- EIGRP can be simpler to implement and troubleshoot
- It was historically a Cisco proprietary protocol
- It is now an open standard but there is still limited support on other vendor's equipment

Link State Routing Protocols

- In Link State routing protocols, each router describes itself and its interfaces to its directly connected neighbours
- This information is passed unchanged from one router to another
- Every router learns the full picture of the network including every router, its interfaces and what they connect to
- OSPF routers use LSA Link State Advertisements to pass on routing updates

OSPF Operations

1. Discover neighbours
2. Form adjacencies
3. Flood Link State Database (LSDB)
4. Compute Shortest Path
5. Install best routes in routing table
6. Respond to network changes

OSPF Packet Types

- **Hello**: A router will send out and listen for Hello packets when OSPF is enabled on an interface, and form adjacencies with other OSPF routers on the link
- **DBD DataBase Description**: Adjacent routers will tell each other the networks they know about with the DBD packet
- **LSR Link State Request**: If a router is missing information about any of the networks in the received DBD, it will send the neighbour an LSR

OSPF Packet Types (Cont.)

- **LSA Link State Advertisement**: A routing update
- **LSU Link State Update**: Contains a list of LSA's which should be updated, used during flooding
- **LSAck**: Receiving routers acknowledge LSAs