2.6.6 Packet Tracer – Verify Single-Area OSPFv2

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ITI-Cybersecurity-Summer-2025
July 19, 2025

Objectives

- Identify and verify the status of OSPF neighbors.
- Determine how the routes are being learned in the network.
- Explain how the neighbor state is determined.
- Examine the settings for the OSPF process ID.
- Add a new LAN into an existing OSPF network and verify connectivity.

Part 1: Verify the existing OSPFv2 network operation

R1

Q1: How did router R1 receive the default route?
R1 received the default route via OSPF as an external type 2 (E2) route.

Q2: From which router did R1 receive the default route?
R1 received the default route from R2 via 172.16.3.2.

Q3: How can you filter the output of `show ip route` to show only OSPF routes?
Use the command `show ip route ospf`.

Q4: Which routers have formed adjacencies with router R1?
R1 has adjacencies with R2 and R3.

Q5: What are the router IDs and state of the routers shown in the command output?
Depends on simulation, but typically both are FULL state.

Q6: Are all of the adjacent routers shown in the output?
Yes, all active OSPF adjacents are listed.

Q7: Ping to ISP Router from PC1
Ping is successful if routing is properly configured and OSPF converged. Otherwise, use `clear ip ospf process`.

R2

Q8: How did router R2 learn the default route to the ISP?
R2 learned the default route from static redistribution or default-information originate from another router.

Q9: What type of OSPF network is attached to interface G0/0?
Broadcast.

Q10: Are OSPF hello packets being sent out this interface? Explain.
Yes. OSPF sends Hello packets on broadcast networks to establish and maintain neighbor relationships.

Q11: Is ping from PC2 to R3's S0/0/1 successful?
Yes, assuming OSPF is converged and interfaces are up.

R3

Q12: Router R3 is routing for which networks?
R3 advertises networks such as 192.168.1.0, 192.168.11.0, 192.168.10.4/30, and others listed in its configuration.

Q13: What is the neighbor priority shown for the OSPF neighbor routers?
Default OSPF priority is 1.

Q14: Is ping to ISP from PC3 successful?
Yes, assuming correct routing and connectivity.

Part 2: Add the new Branch Office LAN to the OSPFv2 network

R4

Q15: Which interface is configured to not send OSPF update packets?
Likely a passive-interface (e.g., G0/0/1) to prevent OSPF Hello messages on end-user LANs.

Connecting R4

Q16: What state is displayed for router R3 when connected to R4?
FULL (once adjacency is formed).

Q17: Why is the state of router R4 different than the state of R1 and R2?
It may differ temporarily during convergence or due to priority settings. Also depends on interface type (e.g., point-to-point vs broadcast).

Q18: Is ping from Laptop to PC2 successful?
Yes, if OSPF has propagated the route and all interfaces are up.

End of Lab Report