Student notes for

David Bombal's

Packet Tracer Labs Course

David Bombal

THANK YOU!

These student notes have been kindly shared by @DJninjaNZ

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These are not official student notes and are not officially supported, but are shared with the hope that they will help you with your CCNA studies.

If you want to share your notes with others on the course, please submit them to sales@ConfigureTerminal.com and we will review them for addition to the course.

Remember: You will probably learn more by making notes like these and sharing them for the benefit of others.

All the best!

David Bombal

Contents

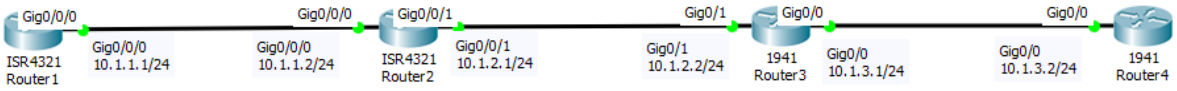
Brief

This lab is for troubleshooting OSPF and reviewing how you can advertise specific networks or subnets or everything with one command.

Lab requirements

OSPF T-Shoot

1. Configure R1 to ping R4
    a. Check strategically from left to right or right to left
    b. Or start from the centre routes and work out
        i. Check all interfaces are advertised first and that the network commands are correct
        ii. Check the areas are correct for each router
        iii. Check the OSPF neighbour adjacency
        iv. Router-ids check for incorrectly configured
        v. Ping 1.1.1.1 from R4
        vi. Ping 4.4.4.4 from R1 to verify full network convergence



Here we have four routers that we will check which could be incorrectly configured or not configured at all.IMPORTANT: packet tracer does have problems if you think everything is correct save all running configs to startup configs then save and restart the program.

Configurations and Verification

OSPF T Shoot– 1 explained

Step 1:

R1#show ipospfneighbor

Neighbor ID Pri State Dead Time Address Interface
2.2.2.2 1 FULL/DR 00:00:35 10.1.1.2 GigabitEthernet0/0/0
//Full DR is what we want to see and can confirm connectivity

R1#ping 2.2.2.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2.2.2.2, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/1 ms

R1#show ipospf interface

Loopback0 is up, line protocol is up
Internet address is 1.1.1.1/32, Area 1
Process ID 1, Router ID 1.1.1.1, Network Type LOOPBACK, Cost: 1
Loopback interface is treated as a stub Host
GigabitEthernet0/0/0 is up, line protocol is up
Internet address is 10.1.1.1/24, Area 1
Process ID 1, **Router ID 1.1.1.1**, Network Type BROADCAST, Cost: 1
Transmit Delay is 1 sec, State BDR, Priority 1
Designated Router (ID) 2.2.2.2, Interface address 10.1.1.2
Backup Designated Router (ID) 1.1.1.1, Interface address 10.1.1.1
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
Hello due in 00:00:02
Index 2/2, flood queue length 0
Next 0x0(0)/0x0(0)
Last flood scan length is 1, maximum is 1
Last flood scan time is 0 msec, maximum is 0 msec
Neighbor Count is 1, Adjacent neighbor count is 1
Adjacent with neighbor 2.2.2.2 (Designated Router)
Suppress hello for 0 neighbor(s)

//Here we can see that the loopback0 and g0/0/0 interfaces are advertised in area 1 this router has a router-id of 1.1.1.1 nd the next djacent router is 2.2.2.2 and it is a (DR) Designated router. Now we can move onto R2

R2#show ipospfneighbor

Neighbor ID Pri State Dead Time Address Interface
1.1.1.1 1 FULL/BDR 00:00:32 10.1.1.1 GigabitEthernet0/0/0

//Here we can see only one neighbour so the adjacency with R3 is not working not even in DRother state we know that there is misconfiguration either with interfaces advertised / networks advertised / wrong area or no connectivity. Can check connectivity by pinging interface IP on R3

R2#ping 10.1.2.2

```
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.1.2.2, timeout is 2 seconds:
.!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 0/0/0 ms
//Here we can see connectivity is fine now checking advertised interfaces
R2#show ipospf interface
Loopback0 is up, line protocol is up
Internet address is 2.2.2.2/32, Area 0
Process ID 1, Router ID 2.2.2.2, Network Type LOOPBACK, Cost: 1
Loopback interface is treated as a stub Host
GigabitEthernet0/0/1 is up, line protocol is up
Internet address is 10.1.2.1/24, Area 0
Process ID 1, Router ID 2.2.2.2, Network Type BROADCAST, Cost: 1
Transmit Delay is 1 sec, State DR, Priority 1
Designated Router (ID) 2.2.2.2, Interface address 10.1.2.1
No backup designated router on this network
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
Hello due in 00:00:03
Index 2/2, flood queue length 0
Next 0x0(0)/0x0(0)
Last flood scan length is 1, maximum is 1
Last flood scan time is 0 msec, maximum is 0 msec
Neighbor Count is 0, Adjacent neighbor count is 0
Suppress hello for 0 neighbor(s)
GigabitEthernet0/0/0 is up, line protocol is up
Internet address is 10.1.1.2/24, Area 1
Process ID 1, Router ID 2.2.2.2, Network Type BROADCAST, Cost: 1
Transmit Delay is 1 sec, State DR, Priority 1
Designated Router (ID) 2.2.2.2, Interface address 10.1.1.2
Backup Designated Router (ID) 1.1.1.1, Interface address 10.1.1.1
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
Hello due in 00:00:03
Index 3/3, flood queue length 0
Next 0x0(0)/0x0(0)
Last flood scan length is 1, maximum is 1
Last flood scan time is 0 msec, maximum is 0 msec
Neighbor Count is 1, Adjacent neighbor count is 1
Adjacent with neighbor 1.1.1.1 (Backup Designated Router)
Suppress hello for 0 neighbor(s)
//Here we can see loopback 0 is in area 0 g0/0/1 is in area 0, g0/0/0 is in area 1 and running with process ID 1
which is all correct

R3#show run
!
interface Loopback0
ip address 3.3.3.3 255.255.255.255
ipospf 1 area 2
!
interface GigabitEthernet0/0
ip address 10.1.3.1 255.255.255.0
ipospf 1 area 2
!
interface GigabitEthernet0/1
ip address 10.1.2.2 255.255.255.0
ipospf 1 area 2
!
```

router ospf 1

//Here we are troubleshooting with show run we can see loopback is configured in area 2 which is wrong it should be area 0 we can also see g0/1 is configured in area 2 which should be area 0

R3(config-if)#int g0/1
R3(config-if)#ipospf 1 area 0
R3(config-if)#int lo0
R3(config-if)#ipospf 1 area 0

R4#show run
!
interface Loopback0
ip address 4.4.4.4 255.255.255.255
ipospf 1 area 2
!
interface GigabitEthernet0/0
ip address 10.1.3.2 255.255.255.0
duplex auto
speed auto
!

//Interface g0/0 not assigned to area 0
R4(config)#int g0/0
R4(config-if)#ipospf 1 area 2

At this point I had to save all the running configurations and save the packet tracer file then restart the program.

Verification commands and outputs

R2#show ipospfneighbor
Neighbor ID Pri State Dead Time Address Interface
3.3.3.3 1 FULL/DR 00:00:36 10.1.2.2 GigabitEthernet0/0/1
1.1.1.1 1 FULL/BDR 00:00:36 10.1.1.1 GigabitEthernet0/0/0

R3#show ipospfneighbor
Neighbor ID Pri State Dead Time Address Interface
2.2.2.2 1 FULL/BDR 00:00:38 10.1.2.1 GigabitEthernet0/1
4.4.4.4 1 FULL/DR 00:00:38 10.1.3.2 GigabitEthernet0/0

R4#traceroute 1.1.1.1
Type escape sequence to abort.
Tracing the route to 1.1.1.1

1 10.1.3.1 1 msec 0 msec 0 msec
2 10.1.2.1 0 msec 0 msec 1 msec
3 10.1.1.1 0 msec 0 msec 0 msec

R1#show ip route
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, E - EGP
i - IS-IS, 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

Gateway of last resort is not set

1.0.0.0/32 is subnetted, 1 subnets
C 1.1.1.1/32 is directly connected, Loopback0
2.0.0.0/32 is subnetted, 1 subnets
O IA 2.2.2.2/32 [110/2] via 10.1.1.2, 00:02:26, GigabitEthernet0/0/0
3.0.0.0/32 is subnetted, 1 subnets
O IA 3.3.3.3/32 [110/3] via 10.1.1.2, 00:02:26, GigabitEthernet0/0/0
4.0.0.0/32 is subnetted, 1 subnets
O IA 4.4.4.4/32 [110/4] via 10.1.1.2, 00:02:11, GigabitEthernet0/0/0
10.0.0.0/8 is variably subnetted, 4 subnets, 2 masks
C 10.1.1.0/24 is directly connected, GigabitEthernet0/0/0
L 10.1.1.1/32 is directly connected, GigabitEthernet0/0/0
O IA 10.1.2.0/24 [110/2] via 10.1.1.2, 00:02:26, GigabitEthernet0/0/0
O IA 10.1.3.0/24 [110/3] via 10.1.1.2, 00:02:11, GigabitEthernet0/0/0
```

OSPF T Shoot - 2

R3(config)#router ospf 1

R3(config-router)#no router-id

R3#clear ipospf process

R3#wr

R3#reload //may need to reload if this doesn't work or save all configs save pkt file and restart packet tracer this worked for me

Verification commands and outputs

R1#ping 4.4.4.4

```
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 4.4.4.4, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/1 ms
```

R1#traceroute 4.4.4.4

```
Type escape sequence to abort.
Tracing the route to 4.4.4.4

1 10.1.1.2 0 msec 0 msec 0 msec
2 10.1.2.2 0 msec 0 msec 0 msec
3 10.1.3.2 0 msec 0 msec 0 msec
```

OSPF T Shoot - 3
R3(config)#router ospf 1 **R3(config-router)#no network 10.1.0.0 0.0.0.255 area 0** **R3(config-router)#network 10.1.2.0 0.0.0.255 area 0**
Verification commands and outputs **R1#traceroute 4.4.4.4** Type escape sequence to abort. Tracing the route to 4.4.4.4 1 10.1.1.2 0 msec 0 msec 0 msec 2 10.1.2.2 0 msec 0 msec 0 msec 3 10.1.3.2 0 msec 0 msec 0 msec

Extra Examples and Resources

Cisco OSPF

https://www.cisco.com/c/en/us/support/docs/ip/open-shortest-path-first-ospf/12151-trouble-main.html

https://www.cisco.com/c/en/us/td/docs/security/asa/asa82/configuration/guide/config/route_ospf.html

https://www.cisco.com/c/en/us/support/docs/ip/open-shortest-path-first-ospf/7039-1.html

https://www.cisco.com/c/en/us/support/docs/ip/open-shortest-path-first-ospf/13699-29.html