

The Troubleshooting Task

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1 Fault 1

1.1 Device: Switch S6

1.2 Troubleshooting Process:

The ping command was used to send data between the devices using their IP address to test if they could communicate with each other (Odom, 2020). Unfortunately, the communication between personal computers(PCs) and the router failed. The issue might be related to connections or hardware configuration. All ports are turned on and connected, but each port configuration must be checked using the show run command to see the whole device configuration (Cisco, 2022). Using the show run command, I entered the interface configuration, and the port GigabitEthernet0/1 (G0/1) was configured, but the fault was from connecting GigabitEthernet0/2 (Gig0/2) instead of GigabitEthernet0/1. In the IP scheme, it was shown that Gig0/1 must be linked, not Gig0/2. As a result, the router was not connected to the switch.

1.3 Solution

The issue was solved by by changing the used physical port between the router and the switch from G0/2 to G0/1.

2 Fault 2

2.1 Device: Switch S11

2.2 Troubleshooting Process:

The communication between devices failed using the ping command, and the connections were all made correct on each device. Using the show run command on router and switch, the switch port that connects the switch with the router was not in trunk mode. Therefore, the router could not communicate with the other devices because it was configured with multiple virtual LANs (VLANs), and to be able to communicate between

multiple VLANs on the same network, the switch port must be set as a trunk link (ciscopress, 2022).

2.3 Solution

The port was fixed by putting it into trunking mode.

These commands were used to fix the fault: - Enable - Configure terminal - Interface GigabitEthernet0/1 - Switchport mode trunk

3 Fault 3

3.1 Device: Router 9

3.2 Troubleshooting Process:

communication between the router and the PC on VLAN 24 was Successful, but trying to ping the PC from other devices failed. The IP address for the PC was set by Dynamic Host Configuration Protocol (DHCP). Therefore, the DHCP pool for the VLAN 24 must be checked (Solutions, 2022). By looking at the DHCP server configuration for VLAN 24 using the show run command on the router, the default router, which is the VLAN 24 IP address, was entered wrong. It must be 172.16.154.1, not 10.0.0.1. So the router was giving the PC on the VLAN 24 the wrong default gateway to the router. As a result, other networks could not communicate with the PC.

3.3 Solution

This routing problem was solved by correcting the VLAN default router by using the correct IP address of VLAN 24 on the router.

These commands were used to fix the fault: - Enable - Configure terminal - Ip dhcp pool VL24 - Default-router 172.16.154.1

4 Fault 4

4.1 Device: Router 8

4.2 Troubleshooting Process:

The devices could not share data with devices on VLAN 18. The VLAN 18 configuration and the connections were made correctly, but the trunking link for VLAN 18 that connects the router with the switch had the wrong IP address, which is called GigabitEthernet0/0.18 ([ciscopress, 2022](#)).

4.3 Solution

The issue was fixed by by correcting the IP address for VLAN 18 on G0/0.18 port.

These commands were used to fix the fault: - Enable - Configure terminal - Interface GigabitEthernet0/0.18 - Ip address 172.16.157.129 255.255.255.224

5 Fault 5

5.1 Device: Router 7

5.2 Troubleshooting Process:

Router 7 could not access ISP L3-3 switch, and to enable the communication between these two devices, there must be a static route between them. By looking into the router 7 setting using the show run command, there was no IP route set for the G0/0 port ([Blog, 2022](#)).

5.3 Solution

Setting up the ip route for this router to enable the negotiation between Router 7 and L3-3 using **ip route 0.0.0.0 0.0.0.0 [next-hop ip address/ exit interface]** ([Blog, 2022](#)).

These commands were used to fix the fault: - Enable - Configure terminal - Interface GigabitEthernet0/0 - Ip route 0.0.0.0 0.0.0.0 6.0.0.1

6 Fault 6

6.1 Device: Router 4

6.2 Troubleshooting Process:

Use the ping commands and show run to check device configuration. Router 4 can communicate with only the direct connected ISP L3-2 but can not communicate with others. Therefore, it is a routing issue due to configuration faults. This issue is probably due to an error in advertising the default route to other neighbours by giving the default route to the neighbour's routers, which use Border Gateway Protocol as a Routing Information Protocol ([Richardson, 2022](#)).

6.3 Solution

To solve this issue, a default route must be generated from router 4 by giving the Open Shortest Path First (OSPF) command. This command applies the default route from within the router to all the routers that communicate with ([Richardson, 2022](#)).

These commands were used to fix the fault: - Enable - Configure terminal - Router OSPF 1 - Default-information originate

7 Fault 7

7.1 Device: Router 3

7.2 Troubleshooting Process:

The router from other subnets could not ping the PC on VLAN 4 with IP address 10.0.0.2, but from within the subnet, the data could go through. However, the connection of devices was accurate, and the configuration of PCs and the VLANs were all correct. Therefore, checking the network's advertising protocol on the router is needed now because other routers could not find the network. Finally, using the show run command to check the network's information, The network mask for VLAN 4 was advertised incorrectly as 0.0.63.255, while the correct mask is 255.192.0.0 ([router-switch, 2022](#)).

7.3 Solution

The issue was fixed by correcting the network's subnet mask that was advertised within the OSPF 1.

These commands were used to fix the fault: - Enable - Configure terminal - Router OSPF 1 - Network 10.0.0.0 255.192.0.0 area 0

8 Fault 8

8.1 Device: ISP L3-4

8.2 Troubleshooting Process:

L3-4 was unable to communicate with other VLANs. Therefore, the show VLAN brief command was used to check the VLAN configuration. The interfaces are configured for each VLAN. For example, VLAN 400 used only two ports in the switch, which is G1/0/7 and G1/0/8. Port G1/0/12 is not configured for VLAN 400, so it will not allow the VLAN 400 to access other VLANs. Each VLAN is configured on a range of ports, this range of ports is the only way to allow communication between different VLANs (Odom, 2020).

8.3 Solution

The fault was solved by changing the connection port between L3-3 and L3-4 to G1/0/7 instead of G1/0/12.

9 Fault 9

9.1 Device: ISP L3-1

9.2 Troubleshooting Process:

All VLAN 100 communication failed. The VLAN and the range of ports were checked using the show VLAN brief command. Looking more into the configuration of the VLAN interface, using show run command, the interface of VLAN 100 was missing the IP address and the mask (Techhub, 2022).

9.3 Solution

The fault was solved by entering the IP address and the subnet mask of VLAN 100.

These commands were used to fix the fault: - Enable - Configure terminal - Interface Vlan 100 - Ip address 3.0.0.1 255.255.255.252

10 Fault 10

10.1 Device: Network 1.0.0.5

10.2 Troubleshooting Process:

The device was not configured yet and without IP address it was not communicating with any other device on the network.

10.3 Solution

The IP address and the default gateway must be entered in the device configuration. Using these steps to complete it:

Device configuration -> Desktop tap -> Ip configuration -> IP : 1.0.0.5 Default Gateway: 1.0.0.1

References

Blog, C. (2022) *Static routing / CCNA Blog*. Available at: <https://www.ccnablog.com/static-routing/> (Accessed: 27 June 2022).

Cisco (2022) *Cisco Content Hub - show running-config - show running-config isakmp*. Available at: https://content.cisco.com/chapter.sjs?uri=/searchable/chapter/www.cisco.com/content/en/us/td/docs/security/fwsm/fwsm32/command/reference/fwsm_ref/s5.html.xml (Accessed: 27 June 2022).

ciscopress (2022) *VLAN Trunks (3.2.2) > Cisco Networking Academy's Introduction to VLANs / Cisco Press*. Available at: <https://www.ciscopress.com/articles/article.asp?p=2181837&seqNum=7>.

Odom, W. (2020) *CCNA 200-301. Volume 1*. Hoboken, New Jersey: Cisco Press.

Richardson, S. (2022) *Originating a Default Route with OSPF - Policy Routing*. Cisco Certified Expert. Available at: <https://www.ccexpert.us/policy-routing/originating-a->

[default-route-with-ospf.html](#) (Accessed: 26 June 2022).

router-switch (2022) *How to Troubleshoot OSPF? – Router Switch Blog*. Available at: <https://blog.router-switch.com/2012/07/how-to-troubleshoot-ospf/> (Accessed: 27 June 2022).

Solutions, O.C. (2022) *What is DHCP? How to troubleshoot DHCP Examples*. What is DHCP? How to troubleshoot DHCP Examples. Available at: <https://www.orbit-computer-solutions.com/network-troubleshooting-dhcp/>.

Techhub (2022) *Viewing the configuration of interfaces*. Available at: https://techhub.hpe.com/eginfolib/networking/docs/switches/common/16-02/5200-1658_BOG/content/ch07s07.html (Accessed: 27 June 2022).