Lab Report

Performance

Your Score: 0 of 5 (0%)

Elapsed Time: 6 minutes 16 seconds

Task Summary

Actions you were required to perform:

- ✗ Fix the subnet mask on Exec
- ✗ Fix the gateway on Exec
- ✗ Enable the scope on the DHCP Server
- ✗ Fix the 003 Router option on the DHCP Server
- ✗ Configure Exec for DHCP

Explanation

Complete this lab as follows:

1. On CorpServer in the Networking Closet computer, mouse over the **Network** icon in the notification area.
   On CorpServer, the Network icon in the notification area appears normal, which indicates a connection to the local network and to internet. When you mouse over the Network icon, you see the details of this status.
2. In the notification area, right-click the **Network** icon and select **Open the Network and Sharing Center**.
   The Network and Sharing Center diagram confirms that CorpServer is connected to the local network and the internet.
3. Ping **CorpServer** (local workstation) and the ISP to verify connectivity to the internet as follows:
   a. Right-click **Start** and select **Command Prompt (Admin)** to open a command window.
      The ping to CorpServer (local workstation) and the ISP succeed, verifying a valid connection to the internet.
   b. At the command prompt, enter **ipconfig /all** to check the Ethernet configuration.
      Using **ipconfig /all** provides the following information about the vEthernet (External) on CorpServer:
      - DHCP Enabled: No. This tells us that the server is configured with a static IP address and is not enabled for DHCP
      - IPv4 Address: 192.168.0.10
      - Subnet Mask: 255.255.255.0. The server is using the default subnet mask for the Class C IP address range.
      - Default Gateway: 192.168.0.5. The router's internal interface is configured as the default gateway.

   c. At the command prompt, enter **tracert** to see the path to the ISP.
      Using **tracert 65.86.1.1** verifies a path to the ISP through our default gateway.
4. In the Executive Office, check the status of the link and network activity lights as follows:
   a. From the navigation tabs at the top, select **Floor 1 Overview**.
   b. Under Executive Office, select **Hardware**.
   c. Above the workstation, select **Back** to switch to the back view of the workstation.
      The link and network activity lights on the back of the workstation are on and blinking, indicating that there is a physical connection to the switch and there is activity on the connection. This points to a TCP/IP configuration problem.
5. Verify the connectivity on the Exec workstation as follows:
   a. On the Exec monitor, select **Click to view Windows 10**.
   b. In the notification area, mouse over the **Network** icon.
   c. Right-click the **Network** icon and select **Open the Network and Sharing Center**.
      On the Exec workstation, the network icon in the notification area has a yellow warning sign with an exclamation point, which indicates a connection to the local network, but no access to the internet. When you select the Network icon, you see the details of this status. The Network and Sharing Center diagram confirms that Exec is connected to the local network, but has no internet access.

6. On Exec, you are able to ping the local interface on Exec by name (since you don't know the IP address yet), but you can't ping CorpServer or the ISP. This indicates that Exec has a valid connection, but can't communicate with CorpServer or the ISP.
7. Using **ipconfig /all** provides the following information about the Ethernet connection on Exec:
    - DHCP Enabled: No
    - IPv4 Address: 192.168.0.62
    - Subnet Mask: 255.255.255.240
    - Default Gateway: 192.168.0.4

    This information provides us with at least two clues to the problem:
        1. The network is using DHCP, but this workstation is not enabled for DHCP.
        2. Given the workstation's current subnet mask, the IPv4 Address of the workstation and the default gateway are not on the same network. In addition, the subnet mask is not the default subnet mask for the Class C IP address range being used. With 255.255.255.240 as a subnet mask, the network would only include addresses from 192.168.0.48 to 192.168.0.63. The IP address for CorpServer (192.168.0.10) and the ISP fall outside of this range. The information in step 3 confirms that the default subnet mask for the Class C IP address range (255.255.255.0) is being used.
8. After correcting the subnet mask on Exec, there are still no changes to the network icon or the diagram in the Network and Sharing Center.
9. After correcting the subnet mask on Exec, you can now ping CorpServer, but you still can't ping the ISP. This indicates that you only have local connectivity.
10. Use **tracert 65.86.1.1**. The command times out, indicating the following:
    - The ICMP packets are not returning from the first hop (gateway) in its path to the ISP. Exec is not finding the gateway.
    - The gateway address on Exec is not configured correctly. (The gateway address (router) on the network diagram is 192.168.0.5.)
11. After configuring the correct gateway address on Exec, the network icon and the diagram in the Network and Sharing Center confirm that Exec is connected to the internet.
12. Using the **tracert** command again returns a path to the ISP through the gateway. Since we have a valid connection to the internet, we will leave the static address for now while we troubleshoot in Office 1.
13. In Office 1, the link and network activity lights on the back of the workstation are on and blinking. Once again, this points to a TCP/IP configuration problem.
14. On Office1, the network icon and the diagram in the Network and Sharing Center indicate that Office1 is connected to the unidentified network and has no internet access.
15. You are able to ping the local interface, but you can't ping CorpServer or the ISP. This indicates that Office1 has a valid connection to the local network.
16. Using **ipconfig /all** provides the following information about the **Ethernet** connection:
    - DHCP Enabled: Yes. This tells us that the workstation is configured to use a DHCP server.
    - IPv4 Address: This address is in the APIPA range (169.254.0.1 to 169.254.255.254). This means that the workstation assigned itself an IP address instead of receiving one from the DHCP server. The workstation will only be able to communicate with other hosts on the local network that have also configured their own IP address through APIPA.
    - Subnet Mask: 255.255.0.0. This is the default subnet mask for the APIPA address.
    - Default Gateway: The address is blank. This means that communication is limited only to other workstations on the local network.
    - DHCP Server line is not shown. This means that the workstation was unable to contact the DHCP server.
    - DNS Servers line is not shown for IPv4.

    Since DHCP is enabled, the rest of the information should have come from the DHCP server. We can conclude that there is an issue with the DHCP server.
17. On CorpDHCP, launch the DHCP console and activate the scope.
18. On Office1, the **ipconfig /renew** command will request new IP address information from the DHCP server, and it will reconfigure the settings for the Ethernet connection.
19. The **ipconfig /all** command will check the Ethernet configuration. You should notice the line for the default gateway, DNS server, and DHCP server, along with the new IP address, which is now within the DHCP scope for the local network.

20. After activating the DHCP server and receiving a valid IP Address, you can now ping CorpServer from Office1, but you still can't ping the ISP.
21. The **tracert** command times out on Office1, indicating that it can't get to the gateway. As noted above, the gateway should be 192.168.0.5.
22. The **ipconfig /all** command shows the default gateway is set to 192.168.0.2, but we know it should be 192.168.0.5. Since this address is coming from DHCP, we need to check the DHCP server.
23. On CorpDHCP, launch the DHCP console and reconfigure the settings for the DHCP scope.
24. On Office1, the **ipconfig /renew** command will request new IP address information from the DHCP server, and it will reconfigure the settings for the Ethernet connection.
25. Use the **ipconfig /all** command to check the Ethernet configuration. You should notice that the line for the default gateway is now configured correctly.
26. The network icon and the diagram in the Network and Sharing Center indicate that Office1 is connected to the local network and the internet.
27. When you ping the ISP to confirm resolution, the ping succeeds.
28. On Exec, reconfigure the Ethernet connection to use DHCP.
29. The **ipconfig /all** command now shows the IP address, default gateway, DNS server, and DHCP server that were provided by the DHCP server.
30. The network icon and the diagram in the Network and Sharing Center indicate that Exec is connected to the corporate network with full internet access.
31. Use **tracert 65.86.1.1**, which returns a path to the ISP through the gateway. The network is now fully functional, and your troubleshooting is complete.