Lab Answer Key: Module 6: Implementing Dynamic Host Configuration Protocol

Lab: Implementing DHCP

Exercise 1: Implementing DHCP

Task 1: Install the Dynamic Host Configuration Protocol (DHCP) server role

1. Sign in to LON-SVR1 as Admin\Administrator with the password Pa$$w0rd.
2. In Server Manager, click Add roles and features.
3. In the Add Roles and Features Wizard, click Next.
4. On the Select installation type page, click Next.
5. On the Select destination server page, click Next.
6. On the Select server roles page, select the DHCP Server check box.
7. In the Add Roles and Features Wizard, click Add Features, and then click Next.
8. On the Select features page, click Next.
10. On the Confirm installation selections page, click Install.
11. On the Installation progress page, wait until the “Installation succeeded on lon-svr1.adatum.com” message appears, and then click Close.

Task 2: Configure the DHCP scope and options

1. In the Server Manager Dashboard, click Tools, and then click DHCP.
2. In the DHCP console, expand and then right-click \texttt{lon-svr1.adatum.com}, and then click \textit{Authorize}.

3. In the DHCP console, right-click \texttt{lon-svr1.adatum.com}, and then click \textit{Refresh}.

   Notice that the icons next to IPv4 IPv6 changes color from red to green, which means that the DHCP server has been authorized in Active Directory® Domain Services (AD DS).

4. In the DHCP console, in the navigation pane, click \texttt{lon-svr1.adatum.com}, expand and right-click \texttt{IPv4}, and then click \textit{New Scope}.

5. In the New Scope Wizard, click \textit{Next}.

6. On the \textit{Scope Name} page, in the \textit{Name} box, type \textit{Branch Office}, and then click \textit{Next}.

7. On the \textit{IP Address Range} page, complete the page using the following information, and then click \textit{Next}:
   
   • Start IP address: \texttt{172.16.0.100}
   
   • End IP address: \texttt{172.16.0.200}
   
   • Length: \texttt{16}
   
   • Subnet mask: \texttt{255.255.0.0}

8. On the \textit{Add Exclusions and Delay} page, complete the page using the following information:

   • Start IP address: \texttt{172.16.0.190}
   
   • End IP address: \texttt{172.16.0.200}

9. Click \textit{Add}, and then click \textit{Next}.

10. On the \textit{Lease Duration} page, click \textit{Next}.

11. On the \textit{Configure DHCP Options} page, click \textit{Next}.

12. On the \textit{Router (Default Gateway)} page, in the \textit{IP address} box, type \texttt{172.16.0.1}, click \textit{Add}, and then click \textit{Next}.
13. On the **Domain Name and DNS Servers** page, click **Next**.

14. On the **WINS Servers** page, click **Next**.

15. On the **Activate Scope** page, click **Next**.

16. On the **Completing the New Scope Wizard** page, click **Finish**.

**Task 3: Configure the client to use DHCP, and then test the configuration**

1. Sign in to **20410C-LON-CL1** as **Adatum\Administrator** with the password **Pa$$w0rd**.

2. On the **Start** page, type **Control Panel**, and then press Enter.

3. In Control Panel, under Network and Internet, click **View Network Status and Tasks**.

4. In the Network and Sharing Center window, click **Change adapter settings**.

5. In the Network Connections window, right-click **Ethernet**, and then click **Properties**.

6. In the Ethernet Properties window, click **Internet Protocol Version 4 (TCP/IPv4)**, and then click **Properties**.

7. In the **Internet Protocol Version 4 (TCP/IPv4) Properties** dialog box, select the **Obtain an IP address automatically** radio button, select the **Obtain DNS server address automatically** radio button, click **OK**, and then click **Close**.

8. Right-click the **Start** button, and then click **Command Prompt**.

9. In the Command Prompt window, at the command prompt, type the following, and then press Enter:

   ```
   ipconfig /renew
   ```
10. To test the configuration and verify that LON-CL1 has received an IP address from the DHCP scope, at a command prompt, type the following, and then press Enter:

```
ipconfig /all
```

**Note:** This command returns information such as IP address, subnet mask, and DHCP enabled status, which should be Yes.

**Task 4: Configure a lease as a reservation**

1. In the Command Prompt window, at a command prompt, type the following, and then press Enter:

```
ipconfig /all
```

2. Write down the Physical Address of LON-CL1 network adapter.

3. Switch to LON-SVR1.

4. In the Server Manager dashboard, click **Tools**, and then click **DHCP**.

5. In the DHCP console, expand **lon-svr1.adatum.com**, expand **IPv4**, expand **Scope [172.16.0.0] Branch Office**, select and then right-click **Reservations**, and then click **New Reservation**.

6. In the New Reservation window:
   - In the Reservation Name field, type **LON-CL1**.
   - In the IP address field, type **172.16.0.155**.
   - In the MAC address field, type the physical address you wrote down in step 2.
• Click Add, and then click Close.

7. Switch to LON-CL1.

8. In the Command Prompt window, at a command prompt, type the following, and then press Enter:

   ```
   ipconfig /release
   ```

   This causes LON-CL1 to release any currently leased IP addresses.

9. At a command prompt, type the following, and then press Enter:

   ```
   ipconfig /renew
   ```

   This causes LON-CL1 to lease any reserved IP addresses.

10. Verify that the IP address of LON-CL1 is now 172.16.0.155.

    **Results:** After completing this exercise, you should have implemented DHCP, configured DHCP scope and options, and configured a DHCP reservation.

    **Prepare for the optional exercise**

    If you are going to complete the optional lab, revert the 20410C-LON-CL1 and 20410C-LON-SVR1 virtual machines by performing the following steps:

    1. On the host computer, start Hyper-V Manager.
    2. In the Virtual Machines list, right-click 20410C-LON-CL1, and then click Revert.
    3. In the Revert Virtual Machine dialog box, click Revert.
    4. Repeat steps 1 through 3 for 20410C-LON-SVR1.
Exercise 2: Implementing a DHCP Relay Agent (Optional Exercise)

Task 1: Install a DHCP relay agent

1. Sign in to LON-RTR as Adatum\Administrator with the password Pa$$w0rd.
2. In Server Manager, click Tools, and then click Routing and Remote Access.
3. Add the DHCP relay agent to the router by performing the following steps:
   a. In the navigation pane, expand LON-RTR (local), expand IPv4, right-click General, and then click New Routing Protocol.
   b. In the Routing protocols list, click DHCP Relay Agent, and then click OK.

Task 2: Configure a DHCP relay agent

1. In the navigation pane, right-click DHCP Relay Agent, and then click New Interface.
2. In the New Interface for DHCP Relay Agent dialog box, click Ethernet 2, and then click OK.
3. In the DHCP Relay Agent Properties – Ethernet 2 Properties dialog box, click OK.
4. Right-click DHCP Relay Agent, and then click Properties.
5. In the DHCP Relay Agent Properties dialog box, in the Server address box, type 172.16.0.11, click Add, and then click OK.

Task 3: Test the DHCP relay agent with a client
Note: To test how a client receives an IP address from the DHCP relay agent in another subnet, you need to create another DHCP scope.

1. Sign in to LON-SVR1 as Adatum\Administrator with the password Pa$$w0rd.

2. In the Desktop, right-click the PowerShell icon and select Run as administrator.

3. At a Windows PowerShell command prompt, type the following, pressing Enter after each line:

   Add-WindowsFeature -IncludeManagementTools dhcp
   netsh dhcp add securitygroups
   Restart-service dhcpserver
   Add-DhcpServerInDC LON-SVR1 172.16.0.11
   Add-DhcpServerv4Scope -Name "Branch Office 2" -StartRange 10.10.0.100 -EndRange 10.10.0.200 -SubnetMask 255.255.0.0
   Add-Dhcpserverv4ExclusionRange -ScopeID 10.10.0.0 -StartRange 10.10.0.190 -EndRange 10.10.0.200
   Set-DhcpServerv4OptionValue -Router 10.10.0.1
   Set-DhcpServerv4Scope -ScopeID 10.10.0.0 -State Active

4. To test the client, switch to LON-CL2.

5. On the Start screen, type Control Panel, and then press Enter.

6. Under Network and Internet, click View network status and tasks.

7. In the Network and Sharing Center window, click Change Adapter Settings, right-click Ethernet, and then click Properties.

8. In the Ethernet Properties window, click Internet Protocol Version 4 (TCP/IPv4) and then click Properties.
9. In the Internet Protocol Version 4 (TCP/IPv4) Properties dialog box, click **Obtain an IP address automatically**, click **Obtain DNS server address automatically**, click **OK**, and then click **Close**.

10. Right-click the Start button and then click Command Prompt.

11. In the Command Prompt window, at a command prompt, type the following, and then press Enter:

   ```
ipconfig /renew
   ```

12. Verify that IP address and DNS server settings on LON-CL2 are obtained from DHCP Server scope **Branch Office 2**, installed on **LON-SVR1**.

   **Note:** The IP address should be in the following range: **10.10.0.100/16** to **10.10.0.200/16**.

**Results:** After completing this exercise, you should have implemented a DHCP relay agent.

**Prepare for the next module**

After you finish the lab, revert the virtual machines back to their initial state. To do this, complete the following steps:

1. On the host computer, start **Hyper-V Manager**.

2. In the Virtual Machines list, right-click **20410C-LON-DC1**, and then click **Revert**.

3. In the Revert Virtual Machine dialog box, click **Revert**.

4. Repeat steps 2 and 3 for **20410C-LON-SVR1**, **20410C-LON-RTR**, and **20410C-**
LON-CL2.