LAB 11
DEPLOYING AND CONFIGURING THE DHCP SERVICE

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This lab contains the following exercises and ACTIVITIES:

Exercise 11.1	Installing the DHCP Server Role
Exercise 11.2	Creating a DHCPv4 Scope
Exercise 11.3	Creating a DHCPv6 Scope
Exercise 11.4	Testing DHCP
Lab Challenge	Confirming DHCP

BEFORE YOU BEGIN

The lab environment consists of computers connected to a local area network, along with a server that functions as the domain controller for a domain called *adatum.com*. The computers required for this lab are listed in Table 11-1.

Table 11-1
Computers Required for Lab 11

Computer	***Operating System***	***Computer Name***
Domain controller	Windows Server 2016	SERVERA
Member server	Windows Server 2016	SERVERB
Member server	Windows Server 2016	SERVERC

In addition to the computers, you also require the software listed in Table 11-2 to complete Lab 11.

Table 11-2
Software Required for Lab 11

Software	***Location***
Lab 11 student worksheet	Lab11_worksheet.docx (provided by instructor)

Working with Lab Worksheets

Each lab in this manual requires that you answer questions, shoot screen shots, and perform other activities that you will document in a worksheet named for the lab, such as Lab11_worksheet.docx. It is recommended that you use a USB flash drive to store your worksheets, so you can submit them to your instructor for review. As you perform the exercises in each lab, open the appropriate worksheet file, fill in the required information, and save the file to your flash drive.

After completing this lab, you will be able to:

- Install the DHCP Server role
- Create DHCPv4 and DHCPv6 scopes
- Activate the DHCP client on network servers
- Confirm DHCP IP address assignments

Estimated lab time: 60 minutes

Exercise 11.1	Installing the DHCP Server Role
Overview	In this exercise, you use the Add Roles and Features Wizard to install the DHCP Server role on your network domain controller.

Mindset	Is your domain controller capable of taking on the additional role of DHCP server? Check your available server resources and consider the number of DHCP clients on your network.
Completion time	10 minutes

Login SERVERB as **domain** administrator.

1. On the **SERVERB** computer, which has its Server Manager console open, select Manage > Add Roles and Features. The Add Roles and Features Wizard appears, displaying the *Before you begin* page.
2. Click Next. The *Select Installation Type* page appears.
3. Leave the *Role-based or feature-based installation* radio button selected and click Next. The *Select Destination Server* page appears.
4. Click Next to accept the default local server. The *Select Server Roles* page appears.
5. Select the **DHCP Server** check box. The *Add features that are required for DHCP Server?* page appears.
6. Click Add features.
7. Click Next. The *Select features* page appears.
8. Click Next. The *DHCP Server* page appears.
9. Click Next. The *Confirm installation selections* page appears.
10. Click Install. The *Installation Progress* page appears as the wizard installs the selected roles and features (see Figure 11-1).

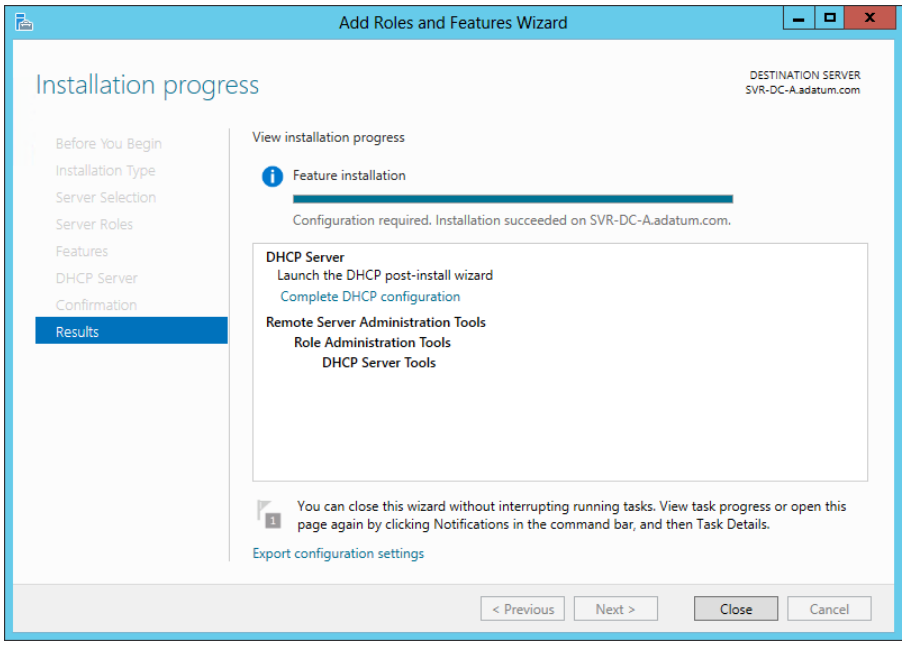
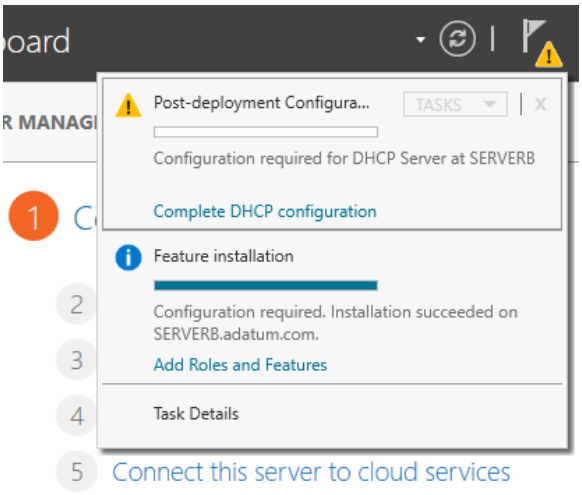


Figure 11-1
The Installation Progress page of the DHCP installation

11. Click *Complete DHCP Configuration*. The **DHCP Post-Install Configuration Wizard** appears, displaying the Description page.

In Sever 2016, click the yellow warning flag on Server Manager, click "Complete DHCP configuration."



12. Click Next. The Authorization page appears.

13. Click **Commit** to use the default Authorization settings. The Summary page appears.

14. Click Close. The DHCP Post-Install Configuration Wizard closes.

15. Click Close. The Add Roles and Features Wizard closes.

End of exercise. Close any open windows before you begin the next exercise.

Exercise 11.2	Creating a DHCPv4 Scope
Overview	A scope is a range of IP addresses that a DHCP server uses to supply clients on a particular subnet with IP addresses. In this exercise, you create a scope for IPv4 addresses on your DHCP server.
Mindset	What IPv4 addressing policies does your organization have in place?
Completion time	15 minutes

1. On SERVERB, in Server Manager, click **Tools** > **DHCP**. The DHCP console appears (see Figure 11-2).

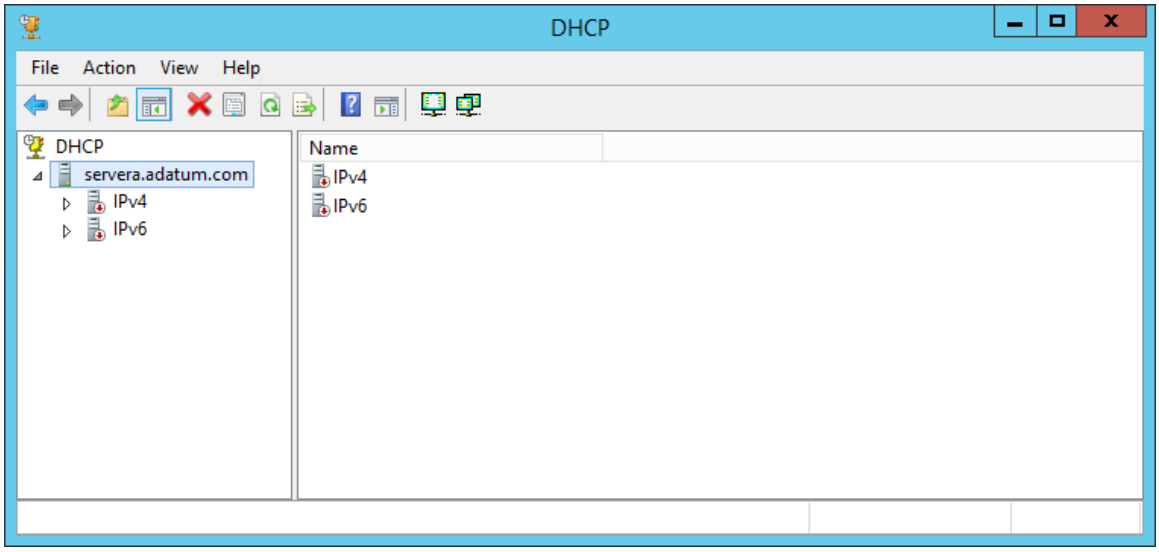


Figure 11-2
The DHCP console

2. Expand the serverb.adatum.com node.

3. Expand and right-click the **IPv4** node and, from the context menu, select **New Scope**. The New Scope Wizard appears.

4. Click Next to bypass the Welcome page. The Scope Name page appears.

5. In the Name text box, type **Basic** and click Next. The IP Address Range page appears.

6. In the Start IP address text box, type **10.10.0.100**.

7. In the End IP address text box, type **10.10.0.199**.

Question 1	*Notice that the wizard automatically adds a value to the Subnet mask text box. Where did this value come from?*

8. In the *Subnet mask* text box, key **255.255.255.0** (or give 24 for the Length). Then click Next. The *Add Exclusions and Delay* page appears.

Question 2	*Why is it necessary to exclude addresses from the range of addresses included in the scope?*

Question 3	*How would it be possible to leave the 10.10.0.1 address as part of the scope and still use it for the DHCP server?*

12. Click *Next*. The *Lease Duration* page appears.

13. Click Next to accept the default value (8 days). The *Configure DHCP Options* page appears.

14. Click Next to accept the *Yes, I want to configure these options now* option. The *Router (Default Gateway)* page appears.

15. In the IP address text box, key **10.10.0.1** and then click **Add**.

16. Click Next to continue. The *Domain Name and DNS Servers* page appears.

10.10.0.1

17. Click Next. The *WINS Servers* page appears.

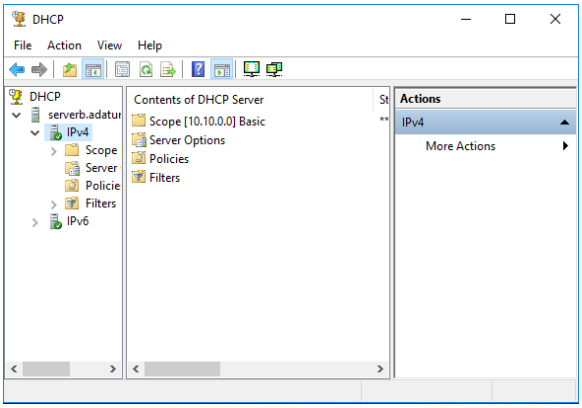
18. Click Next to bypass the page. The *Activate Scope* page appears.

19. Click Next to accept the default *Yes, I want to activate this scope now* option. The *Completing the New Scope Wizard* page appears.

20. Click Finish. The scope is added to the console.

21. Expand the IPv4 node and expand the new scope, and then select the Address Pool folder.

22. **[SCREEN SHOT 1]** Take a screen shot of the DHCP console, showing the contents of the Address Pool folder, by pressing Alt+Prt Scr, and then paste the resulting image into the Lab 11 worksheet file in the page provided by pressing Ctrl+V.



End of exercise. You can leave the windows open for the next exercise.

Exercise 11.3	Creating a DHCPv6 Scope
Overview	In this exercise, you create a DHCP scope to allocate IPv6 addresses to the computers on your network.
Mindset	What IPv6 addressing policies does your organization have in place?
Completion time	15 minutes

1. On SERVERB, in the DHCP console, expand and right-click the **IPv6** node and, from the context menu, select **New Scope**. The New Scope Wizard for IPv6 addresses appears, displaying the Welcome page.

2. Click Next. The *Scope Name* page appears.

3. In the Name text box, type **IPv6**. Then click Next. The *Scope Prefix* page appears (see Figure 11-3).

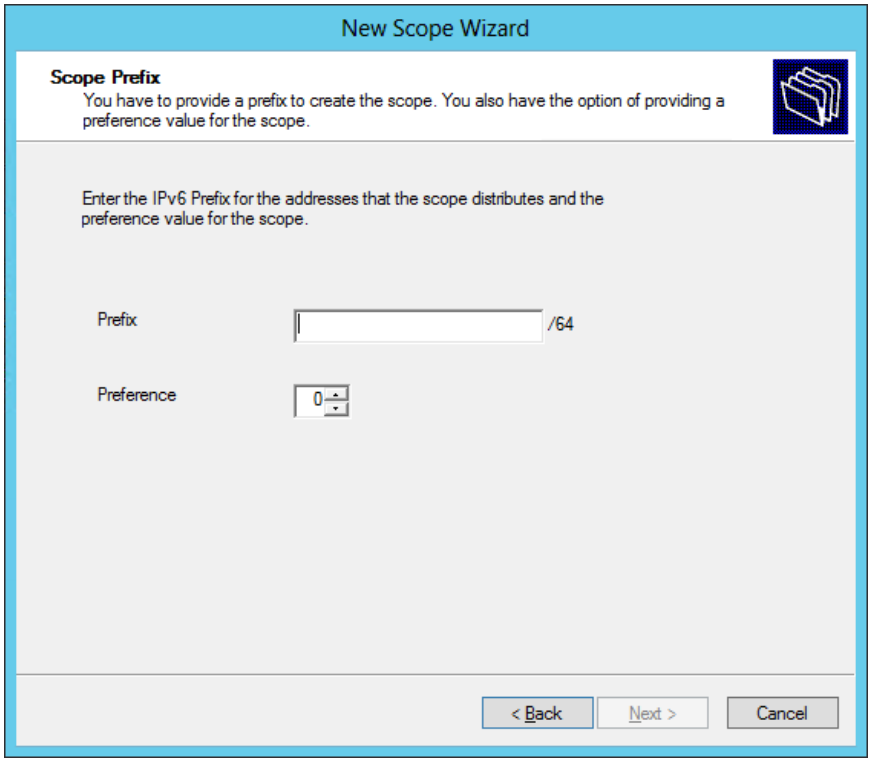


Figure 11-3
The Scope Prefix page in the New Scope Wizard

4. In the Prefix text box, type **fd00::** and click Next. The *Add Exclusions* page appears.

Unique local IPv6 addresses begin with FD00::/8. A unique local IPv6 address is constructed by appending a randomly generated 40-bit hexadecimal string to the FD00::/8 prefix. Its purpose in IPv6 is analogous to IPv4 private network addressing.

5. In the *Start IPv6 address* text box, type **0:0:0:1** and click Add. The address appears in the *Excluded address range* list.

6. Click Next. The *Scope Lease* page appears.

7. Click Next. The *Completing the New Scope Wizard* page appears.

8. Click Finish. The wizard creates the scope.

9. Expand and click the **Scope [fd00:] IPv6** node you just created.

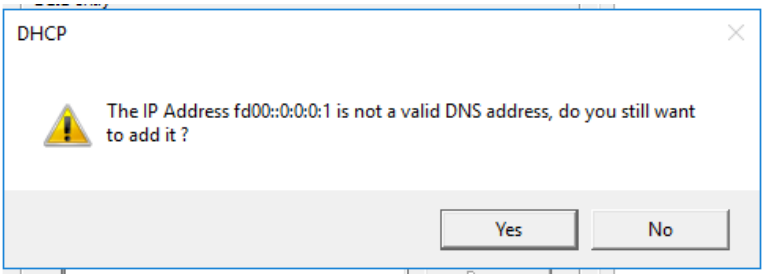
10. Click the Scope Options node, then right-click it, and, from the context menu, select **Configure Options**. The Scope Options dialog box appears.

On my computer, **Configure Options** was disabled in the context menu in my first try. Then I clicked some other items in left pane, went back, and tried again. It became available.

11. Select the check box for the *DNS Recursive Name Server IPv6 Address List* option.

12. In the *New IPv6 address* text box, type **fd00::0:0:0:1** and click Add. Wait for DNS Validation to complete. The address appears in the *Current IPv6 address* list.

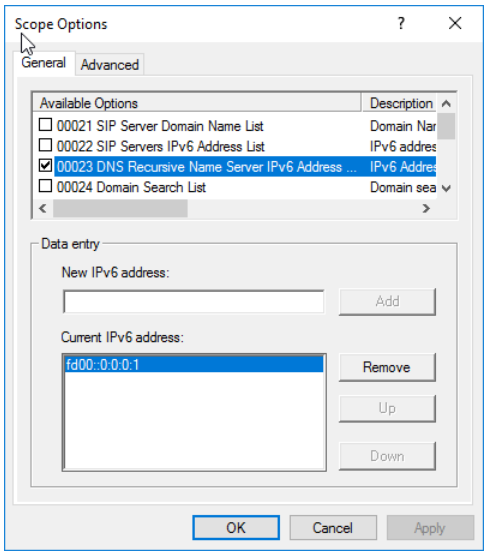
On my computer, it showed



I just clicked Yes and continue.

Question 4	*Where did the fd00::0:0:0:1 address that you supplied for the* DNS Recursive Name Server IPv6 Address List *option come from?*

13. **[SCREEN SHOT 2]** Take a screen shot of the Scope Options dialog box, showing the option you just configured, by pressing Alt+Prt Scr, and then paste the resulting image into the Lab 11 worksheet file in the page provided by pressing Ctrl+V.



14. Click OK to close the Scope Options dialog box.

End of exercise. You can leave the windows open for the next exercise.

Exercise 11.4	Testing DHCP
Overview	In this exercise, you activate the DHCP clients on your network.
Mindset	How do you activate the DHCP clients on a server running Windows 8 or 10?
Completion time	10 minutes

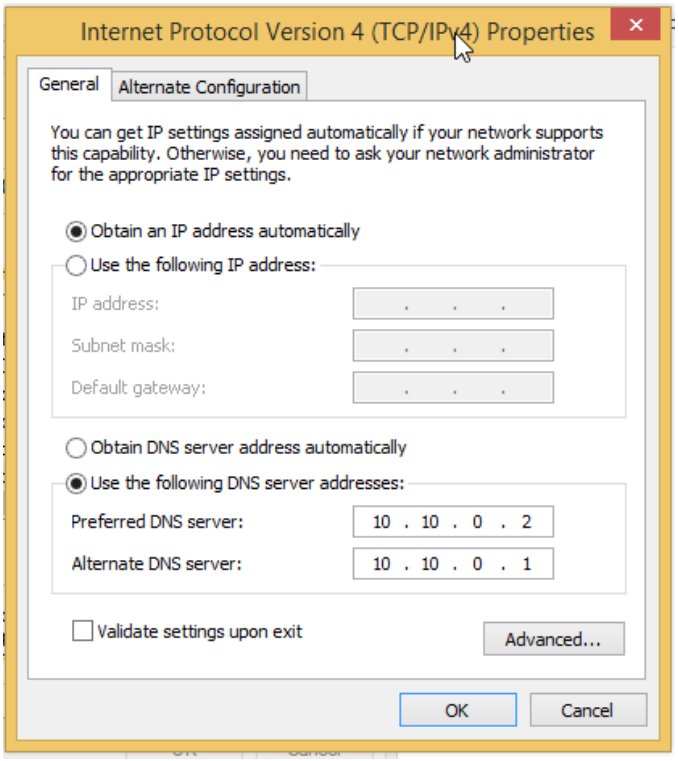
1. On Windows 8 or 10 client machine, your VM should have already joined the Adatum.com domain.

2. Open "Network Connections" (you can open by running **ncpa.cpl** command).

3. Right-click the **Ethernet** icon and, from the context menu, select **Properties**. The Ethernet Properties sheet appears.

4. Double-click **Internet Protocol Version 4 (TCP/IPv4)**. The Internet Protocol Version 4 (TCP/IPv4) Properties sheet appears.

5. Select the *Obtain an IP address automatically* option and the *Obtain DNS server address automatically* option. Then click OK.



6. Double-click Internet Protocol Version 6 (TCP/IPv6). The Internet Protocol Version 6 (TCP/IPv6) Properties sheet appears (see Figure 11-4).

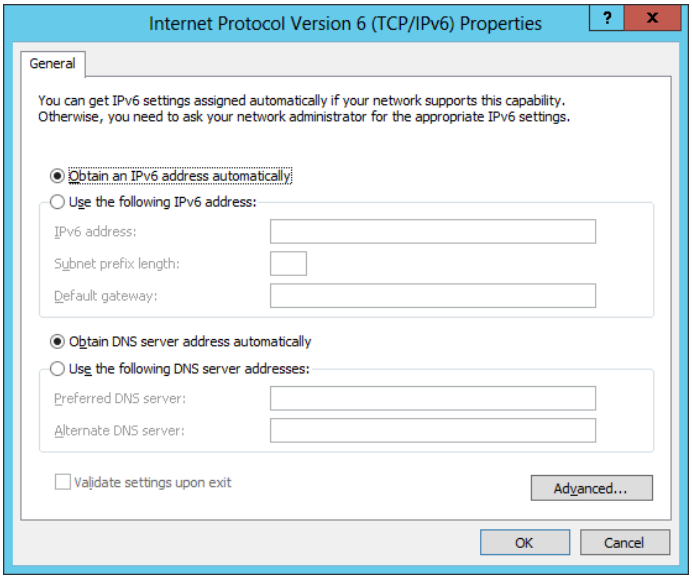


Figure 11-4
The Internet Protocol Version 6 (TCP/IPv6) Properties sheet

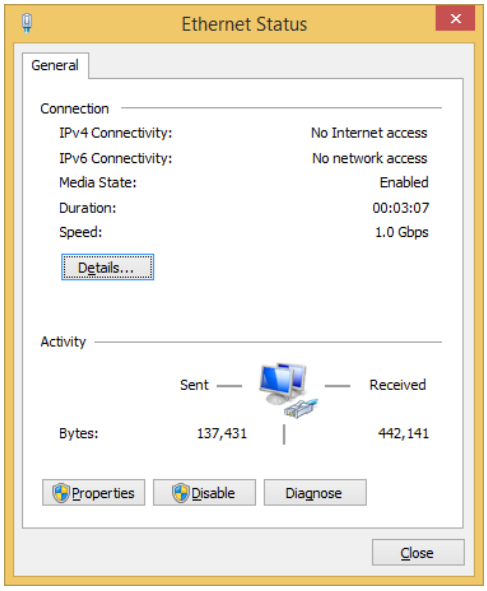
7. Make sure that the *Obtain an IPv6 address automatically* and *Obtain DNS server address automatically* options are selected. Then click OK.

8. Click OK to close the Ethernet Properties sheet.

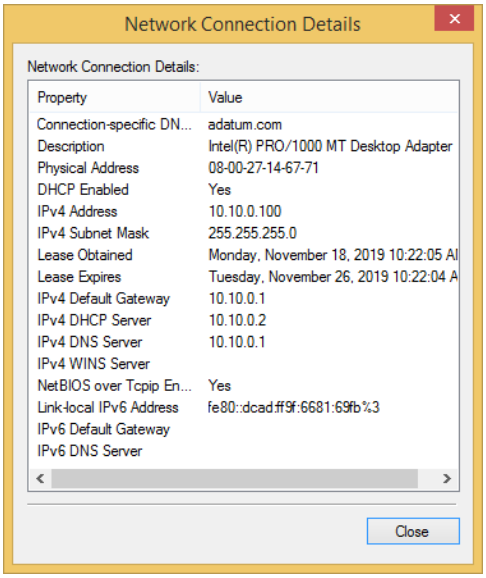
9. Close the Network Connections window.

10. After a while, the Windows 8 or 10 VM should obtain an IP address through the DHCP service running on SERVERB.

In Ethernet Status window, click **Details** button.



You will see “Network Connection Details” window, similar to the output of ipconfig command.



[SCREEN SHOT 3] Take screen shots of the Windows 8 or 10 computer, with the "Network Connection Details" window showing the addresses the computer has obtained through DHCP, by pressing Alt+Prt Scr, and then paste the resulting images into the Lab 11 worksheet file in the page provided by pressing Ctrl+V.

End of exercise. You can leave the windows open for the next exercise.

Lab Challenge	Confirming DHCP
Overview	To complete this challenge, you must demonstrate that the SERVERB and SERVERC computers have both obtained IPv4 and IPv6 addresses from the DHCP server running on SERVERB.
Completion time	10 minutes

End of lab. You can log off or start a different lab. If you want to restart this lab, you'll need to click the End Lab button in order for the lab to be reset.