# Week 3 Windows Server Activities – Configuring Server

Activities

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**How to Create Screenshots:** Please use the Windows Snip and Sketch Tool or the Snipping Tool. Paste a screenshot of just the program you are working on. If you are snipping a virtual machine, make sure your focus is outside the virtual machine before you snip.

1. Press and hold down the **Windows key** & **Shift**, then type **S.** This brings up the on-screen snipping tool.
2. Click and Drag your mouse around whatever you want to snip.
3. Release the mouse button. This places the snip into the Windows Clipboard.
4. Go into Word or wherever you want to paste the snip. Hold down **CTRL**, then type **V** to paste the snip.

# Activity 3-1: Getting to Know Server Manager

Time Required: Approximately 15 minutes

Objective: Get additional practice using Server Manager.

Description: Server Manager is a one-stop tool for managing a server. In this activity, you open Server Manager and survey its possibilities. This activity is just an introduction; you’ll use Server Manager more in this chapter and in chapters that follow.

1. Logon to **Server1**. Open **Server Manager**, if it is not already open by clicking Start and clicking the Server Manager tile. (Or you can click Start and click Server Manager under the S application listings.)
2. Notice the options listed in the left pane, including the roles that are installed, such as File and Storage Services.
3. In the left pane, ensure that Dashboard is selected. Scroll the right pane to view the boxes under Roles and Server Groups.
4. Record the names of the boxes you see and whether any of the boxes are highlighted in red.
5. **Insert a screenshot.** If a box is highlighted in red, click the category of the error (there can be more than one), which is prefaced with a red box with a number inside, such as Services, to see a Detail View window that provides information about the error. Close the Detail View window by clicking Cancel.

Click or tap here to enter text.

1. In the left pane, click File and Storage Services, which should be installed by default.
2. Ensure that Servers is selected in the left pane.
3. Scroll to view all the boxes in the right pane.
4. **List the boxes you see in the right pane.**

Click or tap here to enter text.

1. **How would you determine what role service is installed for the File and Storage Services role?**

Click or tap here to enter text.

1. In the left pane click Volumes. The right pane now shows information about the drives on the server, such as if a drive is fixed (installed in the computer), drive capacity and free space, information about how drives are shared, and information about a disk, such as disk type and allocation. Click a volume, such as C: and notice the Shares and Disk information.
2. In the left pane, click Disks under Volumes and scroll the right pane, if necessary, to view additional disk information.
3. In the left pane, click Storage Pools under Volumes. Notice a server can have virtual disks (such as on a virtual machine) and physical disks set up for storage pools.
4. Under the title bar at the top of the Server Manager window, click Manage to view this menu’s options. Notice that you can use this menu to add or remove roles and features, to add servers to manage from Server Manager, and to create server groups for managing servers for specific purposes, such as managing in one group all servers used for research or all servers used for marketing.
5. Click Server Manager Properties on the Manage menu.
6. In the Server Manager Properties dialog box, what selection can you make so that Server Manager is not started each time you sign in?

Click or tap here to enter text.

1. Click Cancel in the Server Manager Properties dialog box.
2. Click Tools under the title bar in the Server Manager window. This menu enables you to start any of the tools that are also available from clicking Start and clicking the Windows Administrative Tools folder. If, for example, you found that the Local Server box on Dashboard is highlighted in red because a service is not running, you can determine which service has stopped via Dashboard—and then you can click Services on the Tools menu to view all a server’s installed services and start the service that has stopped.
3. Notice there is a Help option you can click under the title bar that enables you to access help for using Server Manager. Click Help to view the different options for obtaining help.
4. Click the back arrow as many times as needed at the top of the Server Manager window, so that you go back to the main Server Manager view that lists server roles in the left pane. Leave Server Manager open for the next activity.

# Activity 3-2: Working with Windows Services

Time Required: 15 minutes

Objective: Check the status of services and configure services.

Required Tools and Equipment: Server1

Description: Use the Services MMC and PowerShell to view and modify services.

1. Start Server1 🡪 log on as Administrator.
2. Open **Server Manager** 🡪 **Tools** 🡪 **Services** from the menu.
3. Scroll down and double-click Print Spooler. In the Print Spooler Properties dialog box, click the Startup type list arrow to see the available options. Make sure Automatic is selected.
4. Click the Stop button to stop the Print Spooler service.
5. Insert a screenshot.

Click or tap here to enter text.

1. Click the Log On tab, where you configure how a service logs on to the system.
2. Click the Recovery tab. Explore the available options for what should happen if the service fails.
3. Click the Dependencies tab. You see a list of other components that must be functioning for Print Spooler to run. Click OK. Notice that in the Service MMC, the Status column is blank, indicating that the service isn’t running.
4. Open a PowerShell command prompt by clicking the PowerShell icon on the taskbar. Type  
   **Get-Service -DisplayName Pr\***   
   and press Enter. You see a list of services with a display name beginning with Pr, including the Print Spooler service. Its name is simply Spooler.
5. **Insert a screenshot:**

Click or tap here to enter text.

Note: The Pr\* in the command uses the \* wildcard character, which means “any combination of characters can follow Pr in the service name.”

1. At the PowerShell prompt 🡪 Type **Start-Service Spooler** 🡪press Enter.
2. **Insert a screenshot:**

Click or tap here to enter text.

1. Type **Get-Service Spooler** and press Enter. The Print Spooler service is running again.
2. **Insert a screenshot:**

Click or tap here to enter text.

1. Close PowerShell. Click the Refresh icon in the Services MMC to see that Print Spooler’s status is Running.
2. Close the Services MMC. Stay logged on if you’re continuing to the next activity; otherwise, log off or shut down Server1.

# Activity 3-3: Installing Active Directory Domain Services

Time Required: Approximately 30 minutes

Objective: Install Active Directory.

Required Tools and Equipment: Server1

Description: To make a Windows server a domain controller, you must install the Active Directory Domain Services role. In this activity, you learn how to install the role. You’ll need to sign into Windows Server as Administrator. Additionally, make sure that all other programs and windows are closed before you start (because the computer will reboot when you finish the installation)

1. Logon to Server1. Open Server Manager, if it is not already open.
2. Ensure that Dashboard is selected in the left pane.
3. In the right pane, click **Add roles and features**.
4. If you see the Before you begin window, click Next.
5. In the Select installation type window, ensure that Role-based or feature-based installation is selected. Click Next.
6. Be sure Server1 is selected in the Select destination server window. Click Next.
7. Click the box for Active Directory Domain Services.
8. In the Add Roles and Features Wizard dialog box, notice the tools to be installed with the Active Directory installation. Click Add Features.
9. Click DNS Server. In the Add Roles and Features Wizard dialog box, click Add Features.
10. Make sure the box for Active Directory Domain Services and DNS Server is checked and click Next.
11. Click Next in the Select features window.
12. Read the information about Active Directory Domain Services.
13. Notice that Group Policy Management is checked.
14. **How many domain controllers are recommended as a minimum for a single domain?**

Click or tap here to enter text.

1. Click Next.
2. In the Confirm installation selections window, click Install.
3. Wait a few minutes until the installation is completed.
4. **Insert a screenshot of the installation progress:**

Click or tap here to enter text.

1. Review the information in the Installation progress window, which also shows whether the installation succeeded.
2. Click Close.
3. After the Active Directory Domain Services role is installed, you need to promote the server to a domain controller and configure the AD DS role. Return to Server Manager. Notice there is an exclamation point inside a yellow caution symbol to the left of Manage just under the title bar in Server Manager.
4. Click the exclamation point and then click **Promote this server to a domain controller**. The Active Directory Domain Services Configuration Wizard opens.
5. Select **Add a new forest**. Enter a root domain name, **mydomain.local** and click Next.
6. Click the Forest functional level drop-down list arrow. Notice that you can select from different forest functional levels: Windows Server 2008, Windows Server 2008 R2, Windows Server 2012, Windows Server 2012 R2, and Windows Server 2016. For this activity, select Windows Server 2016. Ensure that the Domain functional level box also is selected for Windows Server 2016.
7. Insert a screenshot.

Click or tap here to enter text.

1. Enter **Password01** for the password for the Directory Services Restore Mode (DSRM), which is used to restore Active Directory, if needed. Confirm the password and click Next.
2. Don’t specify DNS delegation. Click Next.
3. Additional Options 🡪 verify the NetBIOS name, **mydomain** and click Next.
4. In the Paths window leave the database, log files, and SYSVOL folder paths as the defaults.
5. Click Next in the Paths window.
6. Review the selections you have made and click Next.
7. The wizard performs a prerequisite check to verify your configuration for what Microsoft calls best practices. For example, if the server is not connected to a network, an error message is shown, and the installation process is stopped until this is resolved. If the server does not have a static IP address, the prerequisites check shows a warning. Also, you may see a warning that the delegation for a DNS server cannot be created, if the DNS server installed is not fully configured. If you see warnings, you can continue to install Active Directory and make a note to fix problems associated with the warnings later, if necessary. If you see an error, you cannot continue with the Active Directory Domain Services installation until the error is corrected.
8. Click **Install**. It will take a few minutes for the installation process to complete. The Installation window will show again, review any warnings.
9. Click Close and wait for the computer to reboot. Sign in after the computer has rebooted.

# Activity 3-4: Adding a New Domain Admin Account

Time Required: 5 minutes

Objective: Add another Domain Admin account to Active Directory.

Required Tools and Equipment: Server1

Description: After active directory is installed and functional, we will add another Domain Admin account to administer the network. An easy way to do that is to copy an existing the Administrator account.

1. Logon to Server1.
2. Open **Active Directory Users and Computers**. Open **mydomain.local**.
3. Right Click 🡪 Create an OU (Organizational Unit) called **Administrators**.
4. Go to the **Users** folder 🡪 Right Click the Administrator account 🡪 Click Copy.
5. Type in your first and last name. Use your first and last name as the username. For example: **williamloring**
6. Click Next. Use **Password01** as your password. Read the next section on the default password policy in Windows Server. Create the user.
7. Go to the **Users** folder.
8. Click the Administrator account with your name that you created earlier. Drag it to the **Administrators** OU. Click **Yes** to the Group Policy question.
9. In the tree of the left pane, click the **Administrators OU** and verify that the account is moved (see the middle pane).
10. **Insert a screenshot of this user in Active Directory:**

Click or tap here to enter text.

1. Use this user from now on to administrate your virtual network.

### Password must meet complexity requirements

This security setting determines whether passwords must meet complexity requirements. Complexity requirements are enforced when passwords are changed or created.

If this policy is enabled, passwords must meet the following minimum requirements when they are changed or created:

1. Passwords must not contain the user's entire samAccountName (Account Name) value or entire displayName (Full Name) value. Both checks are not case sensitive:
   1. The samAccountName is checked in its entirety only to determine whether it is part of the password. If the samAccountName is less than three characters long, this check is skipped.
   2. The displayName is parsed for delimiters: commas, periods, dashes or hyphens, underscores, spaces, pound signs, and tabs. If any of these delimiters are found, the displayName is split and all parsed sections (tokens) are confirmed not to be included in the password. Tokens that are less than three characters in length are ignored, and substrings of the tokens are not checked. For example, the name "Erin M. Hagens" is split into three tokens: "Erin," "M," and "Hagens." Because the second token is only one character long, it is ignored. Therefore, this user could not have a password that included either "erin" or "hagens" as a substring anywhere in the password.
2. Passwords must contain characters from three of the following five categories:
   1. Uppercase characters of European languages (A through Z, with diacritic marks, Greek and Cyrillic characters)
   2. Lowercase characters of European languages (a through z, sharp-s, with diacritic marks, Greek and Cyrillic characters)
   3. Base 10 digits (0 through 9)
   4. Nonalphanumeric characters: ~!@#$%^&\*\_-+=`|\(){}[]:;"'<>,.?/
   5. Any Unicode character that is categorized as an alphabetic character but is not uppercase or lowercase. This includes Unicode characters from Asian languages.

# Activity 3-5: Adding Computers and Servers to the Domain

Time Required: 15 minutes

Objective: Add computer to the domain.

Required Tools and Equipment: Server1 and Win11

Description: After Active Directory is installed and functional, the other computers should be added to the domain for complete client server functionality.

1. Logon to Win11. Change the DNS setting to **10.10.1.10**.
2. Click Start, Type in **Control Panel**, find **System**.
3. Go to Computer name, domain and workgroup settings. Click **Change Settings**.
4. Click **Change**. Click **Domain,** then type **mydomain.local**
5. Click OK. Enter an administrator account username and password for the domain. Click OK.
6. **Insert a screenshot:**

Click or tap here to enter text.

1. Close all windows and reboot the computer.
2. Logon to Server1 with your new administrator account 🡪 open Active Directory Users and Computers.
3. Right Click **mydomain.loca**l 🡪 **New** 🡪 **Organizational Unit**. Type **Workstations**. Click OK.
4. Create another OU named **Servers**.
5. Go to the Computers folder.
6. Drag Win11 into the Workstations OU.
7. **Insert a screenshot of each new OU with showing the items inside.**

Click or tap here to enter text.

# Activity 3-6: Installing and Authorizing a DHCP Server

Time Required: Approximately 10 minutes

Objective: Learn how to install the DHCP role.

Description: DHCP is installed as a server role in Windows Server using Server Manager. You want to assign IP addresses dynamically to client computers. In this activity, you install DHCP.

1. Start Server1 and log on as your administrator account.
2. Open Server Manager, if necessary.
3. Click Manage and click Add Roles and Features.
4. If you see the Before you begin window, click Next.
5. Make sure that Role-based or feature-based installation is selected in the Select installation type window. Click Next.
6. Click the box for **DHCP Server** in the Select server roles window.
7. Click Add Features in the Add Roles and Features Wizard box (to install the DHCP management tool).
8. Click Next in the Select server roles window.
9. Click Next in the Select features window.
10. In the DHCP Server window, read the information. Note the best practices advice to configure at least one static IP address for the DHCP server and to create and store a plan for subnets, scopes, and exclusions. Click Next.
11. Click Install in the Confirm installation selections window.
12. Click Close. Leave Server Manager open.
13. When the DHCP Server installation finishes, click Tools, DHCP from the Server Manager menu to open the DHCP console.
14. Click to expand the server node. Notice that the IPv4 and IPv6 nodes have a red down arrow, indicating that the service is disabled. To authorize the server, right-click the server node and click Authorize.
15. **Insert a screenshot.**

Click or tap here to enter text.

1. Click the server node and click the Refresh toolbar icon. You see a check mark in a green circle on the IPv4 and IPv6 nodes. Right-click the server node. If you need to, you can unauthorize a server after it’s authorized.
2. Point to All Tasks, where you see options for starting, stopping, pausing, resuming, and restarting the DHCP service.
3. Click the IPv4 node. Read the information in the middle pane about adding a scope, which you do in the next activity. Close the DHCP console.
4. Stay logged on to Server1 if you’re continuing to the next activity.

# Activity 3-7: Configuring DHCP Scopes

Time Required: Approximately 15 minutes

Objective: Learn how to configure a DHCP scope.

Description: In this activity, you practice configuring a scope on a DHCP server. Before you start, obtain the address or computer name of a DNS server from your instructor (or use the address of this computer) and ask for a range of addresses for the scope, plus an address to exclude from the scope. You will also need to know the subnet mask. In the later steps of the activity you ensure that the DHCP server is authorized.

**NOTE:** A LAN can have many different private IP address ranges. You can use any of the following combinations. It is typical for the address to end in .1, and sometimes 254. For example: 192.168.52.1 would be a valid gateway. We used 10.10.1.0/24 for the private network addresses for our labs.

|  |  |  |
| --- | --- | --- |
| **Private IP Address Ranges** | **Subnet Mask** | **/ Notation** |
| 10.0.0.1 - 10.255.255.254 | 255.0.0.0, 255.255.0.0, 255.255.255.0 | /8 |
| 172.16.0.1 - 172.31.255.254 | 255.255.0.0, 255.255.255.0 | /12 |
| 192.168.0.1 – 192.168.255.254 | 255.255.255.0 | /24 |

1. Start Server1. Logon as your administrator account.
2. If necessary, open Server Manager.
3. Click Tools and click DHCP.
4. In the tree in the left pane of the DHCP window, double-click the name of the server under DHCP, such as accounting (or click the right-pointing arrow in front of the server name), to view IPv4 and IPv6 listed under the server name.
5. In the left pane, click IPv4 to view the configuration information in the middle pane. Right- click IPv4 and click New Scope.
6. Click Next after the New Scope Wizard starts.
7. Enter a name for the scope so it is easy for you to identify as you maintain it, such as **mydomain.local**, and enter a description for the scope, such as Server2022 subnet. Click Next.
8. Enter the start and end IP addresses, **10.10.1.50** and **10.10.1.99**. To go from field to field, press the period key (when you enter fewer than three numbers).
9. Enter the subnet mask, **255.255.255.0**. Click Next.

**NOTE:** In the Add Exclusions and Delay window, you can exclude an IP address. For instance, there is a device with a static IP address in the DHCP range. In the Start IP address box. Click Add.

1. Click Next. You can now configure the lease duration.
2. What is the default lease time?

Click or tap here to enter text.

1. For what types of situations would this default be appropriate?

Click or tap here to enter text.

1. Change the default lease time to 3 days. Click Next.
2. Ensure that Yes, I want to configure these options now is selected and click Next.
3. The next dialog box offers the ability to enter an IP address for a router (default gateway). **10.10.1.1**. Click Next.
4. Enter the parent domain in which DNS name resolution will occur, mydomain.local (your domain will be entered by default, but you can change it).
5. Enter the name of the DNS server and click Resolve, or enter the DNS server’s IP address. Click Add (unless the IP address is already displayed by default). Click Next.
6. In the next dialog box, you can enter the names and IP addresses of WINS servers. This would be used on networks that have old Windows Server and other older computers in which NetBIOS naming is used and so that these names can be mapped to IP addresses. (Entering the name of your WINS server is optional. If you do, click Resolve and then click Add.) Click Next. (If you see the WINS Servers dialog box, click Next.)
7. Ensure that **Yes, I want to activate this scope now** is selected and then click Next.
8. Click Finish.
9. What now appears in the middle pane of the DHCP window? (You may need to select Address Pool in the left pane under Scope to view this.)

Click or tap here to enter text.

1. Insert a screenshot of your address pool:

Click or tap here to enter text.

1. Include a screenshot of your Scope Options:

Click or tap here to enter text.

1. Your server may be authorized by default, but you will likely have to authorize it. You can verify this by right-clicking the server name in the tree. If you see the menu option Unauthorize, this means your server is already authorized and you should click an open space to close the menu. If instead you see Authorize in the menu, click this option to authorize the server.
2. Leave the DHCP window open for the next activity. Also, leave Server Manager open. When it is installed, a DHCP server is automatically configured to register IP addresses at the DNS server, but you must also provide the DNS server’s IP addresses when you configure each scope. Also, you can manually configure automatic DNS registration through a DHCP server, as you learn in the next activity.
3. Logon to Win11 as your administrator account. Set the IPv4 addressing to Obtain Automatically.
4. Type **ipconfig /all** at the command prompt.
5. Insert a screenshot showing DHCP Enabled Yes.

Click or tap here to enter text.

# Activity 3-8: Working with Exclusions and Reservations

Time Required: 15 minutes

Objective: Create exclusion ranges and reservations and test them.

Required Tools and Equipment: Server1 and Win11

Description: In this activity, you create an exclusion range and verify that the address can’t be leased. You also create a reservation for Win11 and verify that the reserved address is leased by Win11.

1. Log on to Win11 as your administrator account. Check or set the network adapter to obtain IP addressing information automatically. There shouldn’t be any static IP information.
2. Type **ipconfig /all** and press enter. Your IP address should be in the 10.10.1.50 range.
3. **Insert a screenshot:**

Click or tap here to enter text.

1. Type **ipconfig /release** and press Enter. Type **ipconfig /renew** to get a fresh lease on the IP address. The leased address should still be the as the earlier screenshot.
2. Log on to Server1 as your administrator account, and open the DHCP console, if necessary. Click to expand the server node and the IPv4 node, if necessary.
3. If necessary, click to expand the 10.10-Scope scope you created earlier. Right-click Address Pool and click New Exclusion Range.
4. In the Start IP address text box, type 10.10.1.50, and in the End IP address text box, type 10.10.1.60. Click Add and then Close. Click Address Pool to see the exclusion range listed. You see an icon with a red ×.
5. **Insert a screenshot:**

Click or tap here to enter text.

1. On Win11, type **ipconfig /all** at the command prompt and press Enter. In the output, look for the “Lease Obtained” and “Lease Expires” lines under the Ethernet connection to see your lease information.
2. **Insert a screenshot:**

Click or tap here to enter text.

1. Type **ipconfig /renew** and press Enter. You’ll probably see an error message indicating an error while renewing the interface. Because you excluded the address Win11 was using, it was unable to renew the address, but it leased a new one. Type ipconfig and press Enter. You should see that you now have a different IP address outside the exclusion range.
2. **Insert a screenshot:**

Click or tap here to enter text.

1. On Server1, click Address Leases in the DHCP console. Click the Refresh icon if you don’t see any address leases. You should see the lease for Win11. In the right pane, scroll to the right until you see the Unique ID column, which is the MAC address of Win11.
2. You can create a reservation manually or from an existing lease. To create a reservation from Win11’s existing lease, right-click the lease in the right pane and click Add to Reservation. You see a message stating that the lease was converted to a reservation successfully. Click OK.
3. In the left pane, click Reservations. Right-click the new reservation in the right pane and click Properties. You can change the name of the reservation and the MAC address and add a description, but you can’t change the IP address. If you need to change the IP address, you must delete the reservation and create a new one.
4. **Insert a screenshot:**

Click or tap here to enter text.

1. To create a reservation manually, you need the MAC address of the computer you’re creating the reservation for. Select the MAC address of the Win11 reservation and copy it. Change the last character to a different hexadecimal value. This reservation no longer applies to Win11 because you changed the MAC address. Click OK.
2. In the right pane, click empty space and click New Reservation. In the Reservation name text box, type Win11. (The reservation name is just a label and doesn’t affect a reservation’s function, but you can’t have two reservations with the same name.)
3. In the IP address text box, Windows starts the address. Finish it by typing 1.51. Right-click the MAC address text box and click Paste to paste the MAC address of Win11 you copied earlier. Click Add and then Close. Remember that 10.10.1.51 is in the excluded range you created earlier, but as you see in the next step, reservations still work even if they’re in the excluded range.
4. On Win11, type **ipconfig /renew** at the command prompt and press Enter. An error message is displayed. Type **ipconfig** and press Enter. Win11 now has the address 10.10.1.51.
5. **Insert a screenshot:**

Click or tap here to enter text.

# Assignment Submission

Attach this completed document to the assignment in Blackboard.