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Chapter **1**

Installing Windows Server 2025

This chapter presents the procedures that you need to follow to install Windows Server — specifically, Windows Server 2025. Note that although the specific details provided are for Windows Server 2025, installing a previous version is very similar. So you won't have any trouble adapting these procedures if you're installing an older version.

Planning a Windows Server Installation

Before you begin the Setup program to actually install a Windows Server operating system, you need to make several preliminary decisions, as the following sections describe.

Checking system requirements

Before you install a Windows Server operating system, you should make sure that the computer meets the minimum requirements. Table 1-1 lists the official minimum requirements for Windows Server 2025. (The minimums for Windows Server 2016 are the same.) Table 1-1 also lists what I consider to be more realistic minimums if you expect satisfactory performance from the server as a moderately used file server.

TABLE 1-1

Minimum Hardware Requirements for Windows Server 2025 (Standard Edition)

Item	Official Minimum	A More Realistic Minimum
CPU	1.4 GHz	3 GHz
RAM	512MB	4GB
Free disk space	32GB	100GB

Note that there is no 32-bit version of Windows Server 2025. A 64-bit processor is required, but that shouldn't be a problem, as nearly all computers manufactured since around 2007 have 64-bit processors.

Note also that if you're installing Windows Server 2025 on a virtual machine, you'll need at least 800MB of RAM to complete the installation. After Windows Server 2025 is installed, you can back the RAM down to 512MB if you wish.

Reading the release notes

Like all versions of Windows Server, Windows Server 2025 provides a set of release notes that you should read before you start Setup, just to check whether any of the specific procedures or warnings it contains applies to your situation.

The release notes weren't yet available as I was writing this, but you can use your favorite search engine to search the web for "Windows Server 2025 release notes."

Deciding whether to upgrade or install

Windows offers two installation modes: full installation or upgrade installation.

A *full installation* deletes any existing operating system(s) it finds on the computer and configures the new operating system from scratch. If you do a full installation

onto a disk that already has an operating system installed, the full installation offers to keep any existing data files that it finds on the disk.

An *upgrade installation* assumes that you already have a previous Windows Server 2016 installation in place. The operating system is upgraded to Windows Server 2025, preserving as many settings from the previous installation as possible. You cannot upgrade Windows Server 2008 or earlier to Windows Server 2025.

Here are some points to ponder before you perform an upgrade installation:

- » You can't upgrade a client version of Windows to a server version.
- » With an upgrade installation, you don't have to reinstall any applications that were previously installed on the disk.
- » Always perform a full backup before doing an upgrade installation! Or, if you're using a virtualization platform such as VMware or Hyper-V, make a snapshot copy of the VM.

Considering your licensing options

Two types of licenses are required to run a Windows Server operating system: a *server license*, which grants you permission to run a single instance of the server, and *Client Access Licenses* (CALs), which grant users or devices permission to connect to the server. When you purchase Windows Server, you ordinarily purchase a server license plus some number of CALs.

To complicate matters, there are two distinct types of CALs: per-user and per-device. *Per-user* CALs limit the number of users who can access a server simultaneously, regardless of the number of devices (such as client computers) in your organization. By contrast, *per-device* CALs limit the number of unique devices that can access the server, regardless of the number of users in your organization.

Thinking about multiboot

Windows includes a *multiboot* feature that lets you set up the computer so that it has more than one operating system. When you boot up the computer, you can select the operating system you want to boot up from a menu.



TIP

Although you may be tempted to use the multiboot features to maintain previous operating system installations, I recommend against it. A much better alternative is to install Windows Server into a virtual machine using virtualization technology such as Microsoft's Hyper-V or VMware. Virtualization allows you to install

a complete operating system such as Windows Server 2025 within an already-installed operating system. (Note that the Windows Server 2025 installation illustrated in this chapter and throughout this book is installed on a Hyper-V virtual machine running within Windows 10.)

Planning your partitions

Partitioning enables you to divide a physical disk into one or more separate units called *partitions*. Each disk can have up to four partitions. All four of the partitions can be primary partitions. A *primary partition* contains one — and only one — file system. Alternatively, you can create up to three primary partitions and one extended partition, which can be subdivided into one or more logical drives. Then each logical drive can be formatted with a file system.

Windows Server 2025 offers you two file systems: NTFS and ReFS. NTFS is the tried-and-true file system that has been the standard file system for going on 20 years. The partition that Windows Server 2025 boots from must be NTFS. However, other partitions can be either NTFS or ReFS.

Although you can set up partitions for a Windows Server in many ways, the following two approaches are the most common:

- » **Allocate the entire disk as a single partition that will be formatted with NTFS.** The operating system is installed into this partition, and disk space that isn't needed by the operating system or other network applications can be shared.
- » **Divide the disk into two partitions.** Install the operating system and any other related software (such as Exchange Server or a backup utility) on the first partition. If the first partition will contain just the operating system, 100GB is a reasonable size, although you can get by with as little as 32GB if space is at a premium. Then use the second partition for application data or network file shares.



TIP

Note that the disk partitioning scheme is independent of any hardware-based RAID configuration your server may employ. Your server may actually include five physical hard drives that are combined by the hardware disk controller to form a single logical drive, for example. Within this logical drive, you can create one or more operating-system partitions.

Deciding your TCP/IP configuration

Before you install the operating system, you should have a plan for implementing TCP/IP on the network. Here are some of the things you need to decide or find out:

- » What are the IP subnet address and mask for your network?
- » What is the domain name for the network?
- » What is the host name for the server?
- » Will the server obtain its address from DHCP?
- » Will the server have a static IP address? If so, what?
- » Will the server be a DHCP server?
- » What is the Default Gateway for the server (that is, what is the IP address of the network's internet router)?
- » Will the server be a DNS server?



TIP

In almost all cases, you should assign the server a static IP address.

For more information about planning your TCP/IP configuration, see Book 3, Chapter 1.

Choosing workgroups or domains

A *domain* is a method of placing user accounts and various network resources under the control of a single directory database. Domains ensure that security policies are applied consistently throughout a network and greatly simplify the task of managing user accounts on large networks.

A *workgroup* is a simple association of computers on a network that makes it easy to locate shared files and printers. Workgroups don't have sophisticated directory databases, so they can't enforce strict security.

Workgroups should be used only for very small networks with just a few users. Truthfully, any network that is large enough to have a server running Windows Server 2025 is too large to use workgroups. So, if you're installing a Windows Server, you should always opt for domains.

After you decide to use domains, you have to make two basic decisions:

- » **What will the domain name be?** If you have a registered internet domain name, such as `mydomain.com`, you may want to use it for your network's domain name. Otherwise, you can make up any name you want.
- » **What computer or computers will be the domain controllers for the domain?** If this server is the first server in a domain, you must designate it as a domain controller. If you already have a server acting as a domain controller, you can either add this computer as an additional domain controller or designate it a member server.



TIP

You can always change the role of a server from a domain controller to a member server, and vice versa, if the needs of your network change. If your network has more than one server, it's always a good idea to create at least two domain controllers. That way, if one fails, the other one can take over.

Before You Install

After you've made the key planning decisions for your Windows Server installation, but before you actually start the Setup program, you should take a few precautionary steps. The following sections describe what you should do before you perform an upgrade installation.

Note: The first three steps apply only to upgrades. If you're installing a Windows Server on a new system, you can skip those steps.

Backing up

Do a complete backup of the server before you begin. Although Windows Setup is reliable, sometimes, something serious goes wrong, and data is lost.



TIP

You don't have to back up the drive to external media, such as tape. If you can find a network disk share with enough free space, back up to it.

Checking the event logs

Look at the event logs of the existing server computer to check for recurring errors. You may discover that you have a problem with a SCSI device or your current TCP/IP configuration. It's better to find out now rather than in the middle of setup.

Applying updates

Make sure that the server you're upgrading to Windows Server 2025 is current with all the most recent Windows updates. Click Start, search for "Updates," and select Check for Updates. Then apply any updates that are pending.

Disconnecting UPS devices

If you've installed an uninterruptible power supply (UPS) device on the server and connected it to your computer via a USB cable, you should temporarily disconnect the serial cable before you run Setup. When Setup is complete, you can reconnect the UPS device.

Running Setup

Now that you've planned your installation and prepared the computer, you're ready to run the Setup program. The following procedure describes the steps that you must follow to install Windows Server 2025 on a virtual machine using an ISO image of the installation DVD. Before you begin this procedure, you'll need to download the ISO file from Microsoft's website. Search for "Windows Server 2025 Download" to find the download site.

- 1. Configure the new virtual machine with the specifications you want to use, mount the installation ISO file on the virtual DVD drive, and start the VM.**

The Setup program spends a few moments loading files. Then it asks you to select your language, as shown in Figure 1-1.

- 2. Select the correct language, and then click Next.**

You're asked to choose a keyboard format, as shown in Figure 1-2.

- 3. Select your keyboard format, and then click Next.**

You're presented with two setup options, as shown in Figure 1-3. Here, you can install a new instance of Windows Server, or you can repair an existing installation of Windows Server.

- 4. Select Install Windows Server, and then click Next.**

Now you must enter a product key, as shown in Figure 1-4.

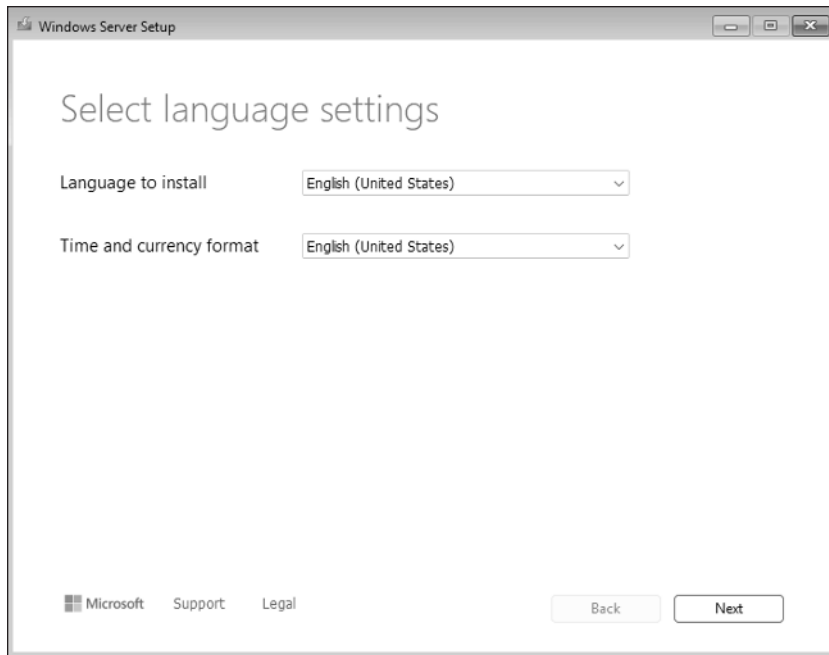


FIGURE 1-1:
Select your language.

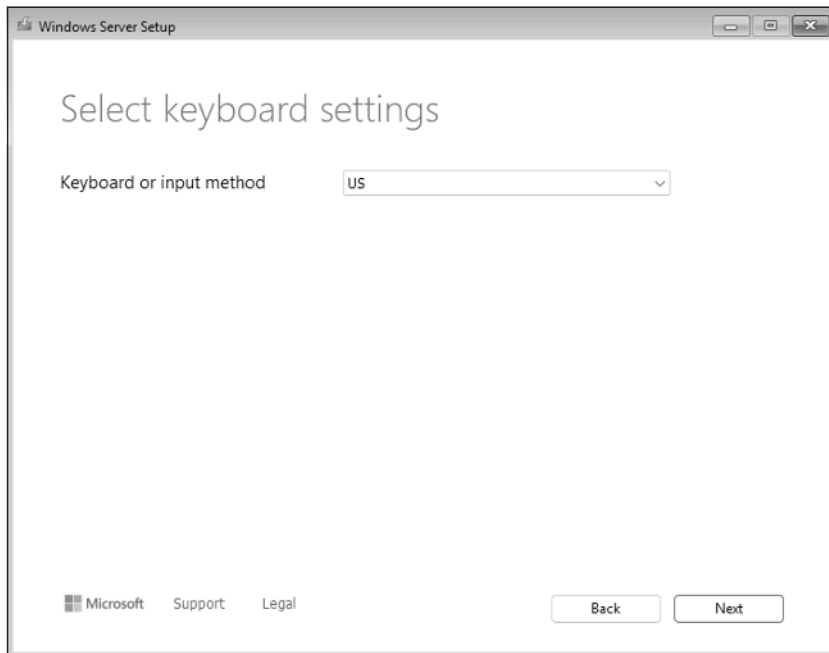


FIGURE 1-2:
Select your
desired keyboard
format.

FIGURE 1-3:
Do you want
to install a new
instance of
Windows Server
or repair an
existing one?

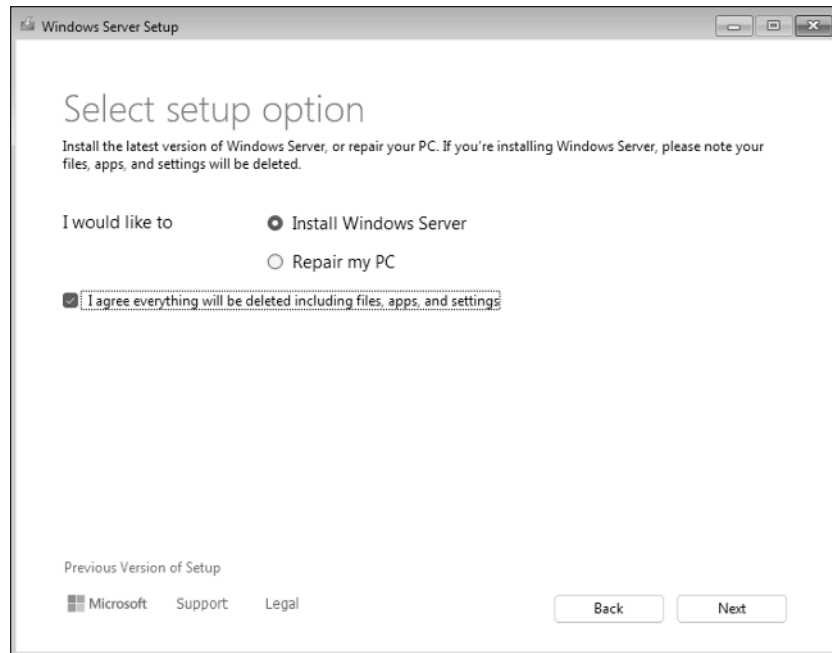
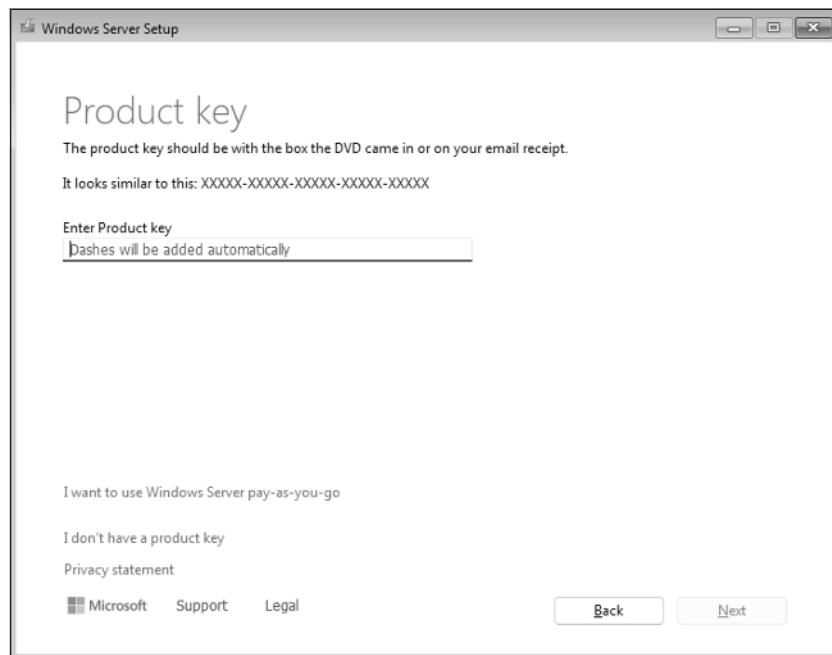


FIGURE 1-4:
Enter a
product key.



5. Enter your product key, and then click Next.

As shown in Figure 1-5, you can choose whether you want to install Windows Server 2025 Standard, which does not have a graphical user interface (GUI), or Windows Server 2025 Standard (Desktop Experience), which has a GUI similar to desktop Windows. I recommend you choose the Desktop Experience.

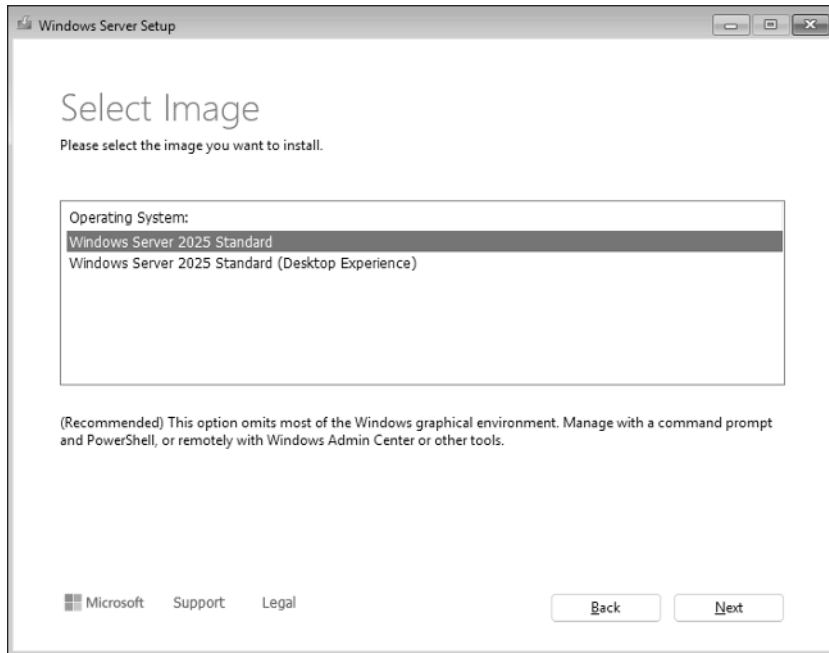


FIGURE 1-5:
Choosing
the Desktop
Experience or the
command-line-
only version.

6. Select the Desktop Experience option, and then click Next.

Now it's time to accept the license. Try to stay awake.

7. Read the license agreement, and then click Next.

The Setup program now asks where you would like to install the operating system, as shown in Figure 1-6. You can accept the default, or you can use the various options on this page to create a new partition to hold Windows Server.

8. Select the disk location for the operating system, and then click Next.

At last, the Setup Program is ready to install Windows. A final confirmation screen appears, awaiting your consent.

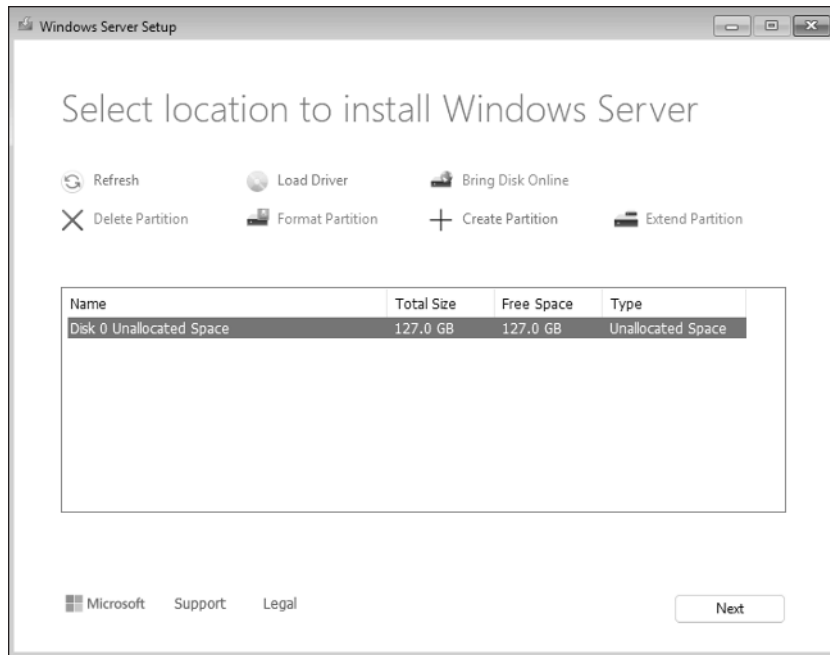


FIGURE 1-6:
Choosing the
operating system
disk location.

9. Take a deep breath, and then click Install.

Windows begins the installation. While it installs, you'll see a progress screen that gives you a hint of how much time remains. Note that the installation may take more than a few minutes and your computer may (or may not) reboot a few times during the installation.

10. Take a walk, get lunch, or read a book. Then come back.

When the installation finally completes, Windows will prompt you for the password to the server's local Administrator account, as shown in Figure 1-7. Pick a good one!

11. Enter the Administrator account password, and then click Finish.

Windows wraps things up. Then it displays its familiar login prompt, shown in Figure 1-8.

12. Use the Administrator's password to log in to your new server.

Congratulations! You've successfully installed Windows Server 2025.

After you successfully log in, Windows displays the helpful Server Manager Dashboard, shown in Figure 1-9.

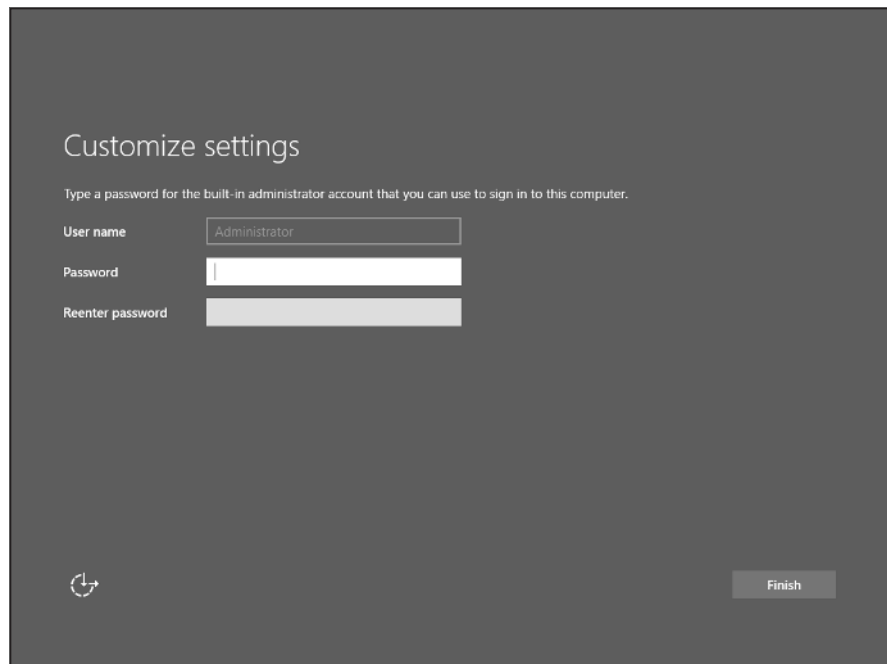


FIGURE 1-7:
Choose a good
password for
the server's
Administrator
account.

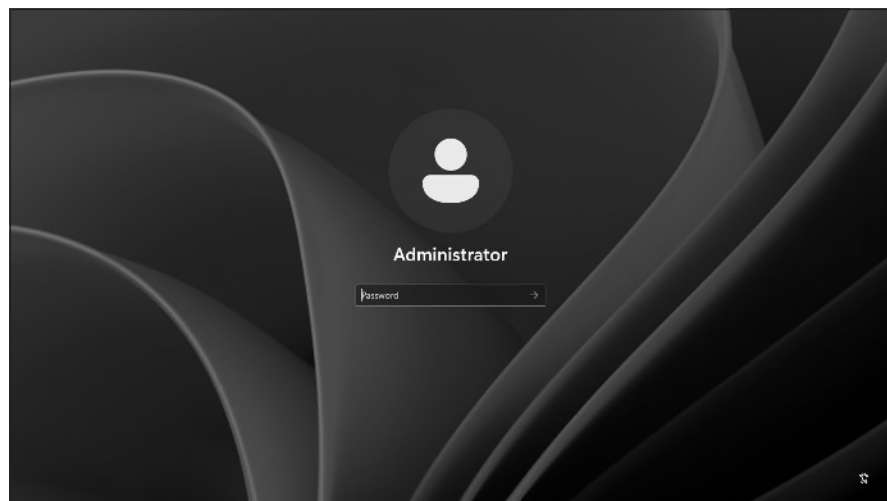
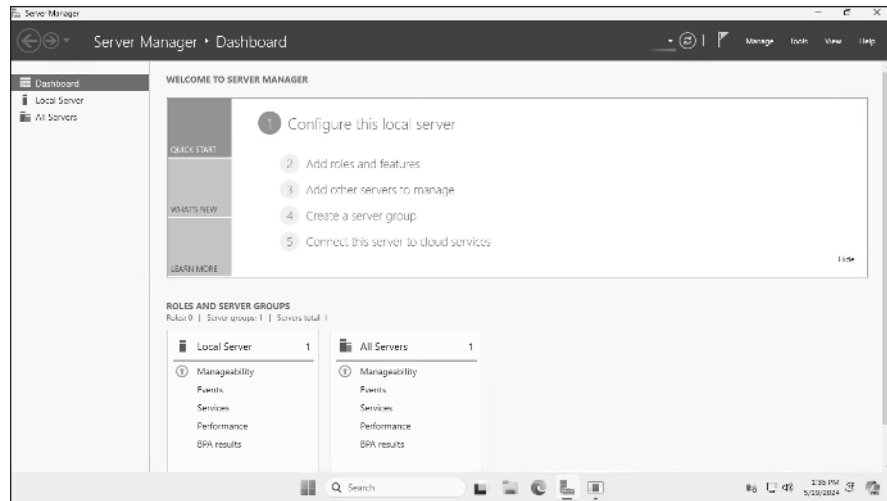


FIGURE 1-8:
It's time to log in!

FIGURE 1-9:
Behold! The
Server Manager
Dashboard
appears!



The Server Manager Dashboard provides links that let you complete the configuration of your server. Specifically, you can

- Click **Configure This Local Server** to configure server settings such as the computer's name and the domain it belongs to, network settings such as the static Internet Protocol (IP) address, and so on.
- Click **Add Roles and Features** to add server roles and features. (For more information, see "Adding Server Roles and Features," later in this chapter.)
- Click **Add Other Servers to Manage** to manage other servers in your network.
- Click **Create a Server Group** to create a customized group of servers.
- Click **Connect This Server to Cloud Services** if you integrate cloud services with your server.

Considering Your Next Steps

After you've finished installing Windows Server, it's time to consider the next steps as you begin to configure the new server for its ultimate role in your organization. I suggest you take the following steps before doing anything else:

1. Rename the server.

By default, the server will have a random name, such as WIN-I42BRD8HT8F. That's probably not going to be the name you want the server known by on

your network. Open File Explorer, right-click This PC, and choose Properties; then change the name to something more meaningful. (This requires a reboot.)

2. Join it to your domain.

While you're at it, you'll want to join the new server to your domain. You can do this at the same time you rename the server. (This, too, requires a reboot.)

3. Apply updates.

The setup image you installed the operating system from is probably not up to date with all the current updates, so be sure to run Windows Update to apply all critical updates. (This may require one or more reboots, depending on the updates.)

4. Deploy your antivirus solution.

Don't let the server (or any other computer) run on your network for more than a few minutes without installing antivirus software. (This may require a reboot, depending on your antivirus software.)

5. Assign a static IP.

By default, new computers use DHCP. For a server, you'll almost always want to assign a static IP (see Book 2, Chapter 5).

Adding Server Roles and Features

Server roles are the roles that your server can play on your network — roles such as file server, web server, or DHCP or DNS server. *Features* are additional capabilities of the Windows operating system itself, such as the .NET Framework or Windows Backup. Truthfully, the distinctions between roles and features are a bit arbitrary. The web server is considered to be a role, for example, but the Telnet server is a feature. Go figure.

The following procedure describes how to install server roles. The procedure for installing server features is similar.

1. Click Add Roles and Features on the Server Manager Dashboard.

The Add Roles and Features Wizard, shown in Figure 1-10, appears.

2. Click Next.

The wizard asks which of two installation types you want to perform. In most cases, you want to leave the default choice (Role-Based or Feature-Based Installation) selected. Select the alternative (Remote Desktop Services Installation) only if you're configuring a remote virtual server.

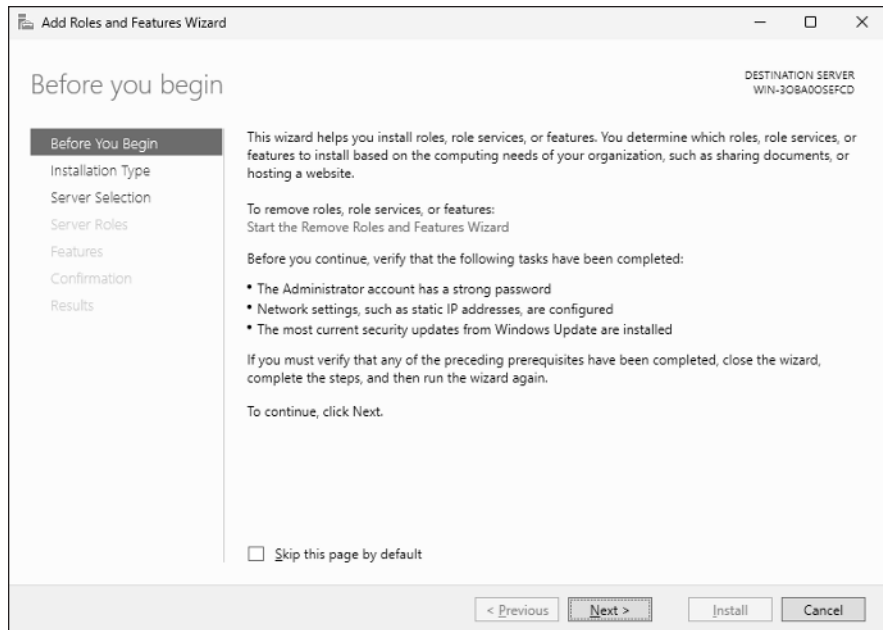


FIGURE 1-10:
The Add Roles
and Features
Wizard.

3. Click Next.

The wizard lets you select the server you want to install roles or features for, as shown in Figure 1-11. In this example, only one server is listed. If you'd chosen Add Other Servers to Manage in the Server Manager Dashboard to add other servers, those servers would appear on this screen as well.

4. Select the server you want to manage and then click Next.

The Select Server Roles screen, shown in Figure 1-12, appears. This screen lets you select one or more roles to add to your server.

5. Select one or more roles to install.

You can click each role to display a brief description of it. If you click DHCP Server, for example, the following text is displayed:

- Dynamic Host Configuration Protocol (DHCP) Server enables you to centrally configure, manage, and provide temporary IP addresses and related information for client computers.

6. Click Next.

The Select Features screen appears, as shown in Figure 1-13. This screen lists additional server features that you can install.

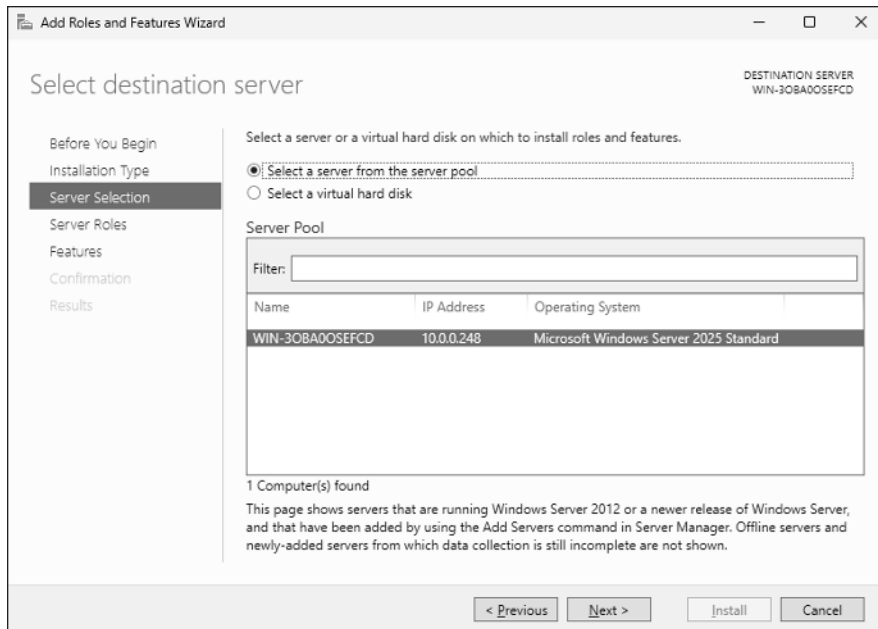


FIGURE 1-11:
Selecting the
server to manage.

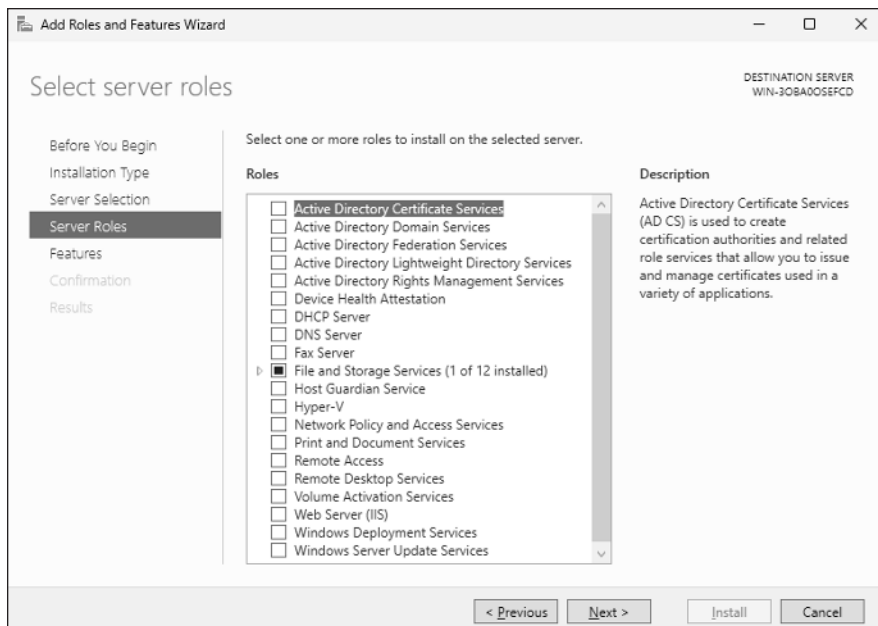


FIGURE 1-12:
The Select Server
Roles screen.

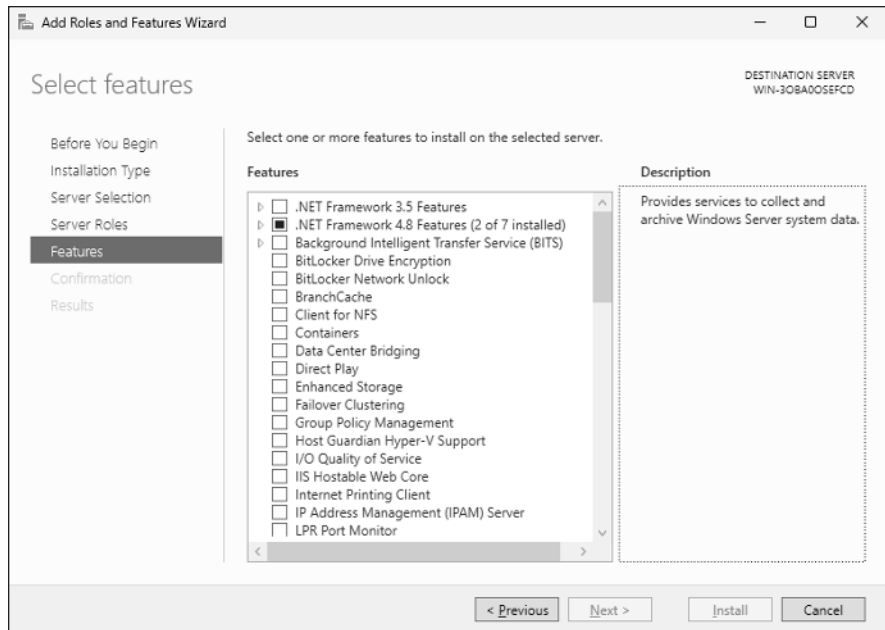


FIGURE 1-13:
The Select
Features screen.

7. Select the features you want to install.

Again, you can select each feature to see a brief text description of the service.

8. Click Next.

A confirmation screen appears, listing the roles and features you've selected.

9. Click Install.

Windows installs the server role and its features. A progress screen is displayed during the installation so that you can gauge the installation's progress. When the installation finishes, a final results screen is displayed.

10. Click OK.

You're done!

