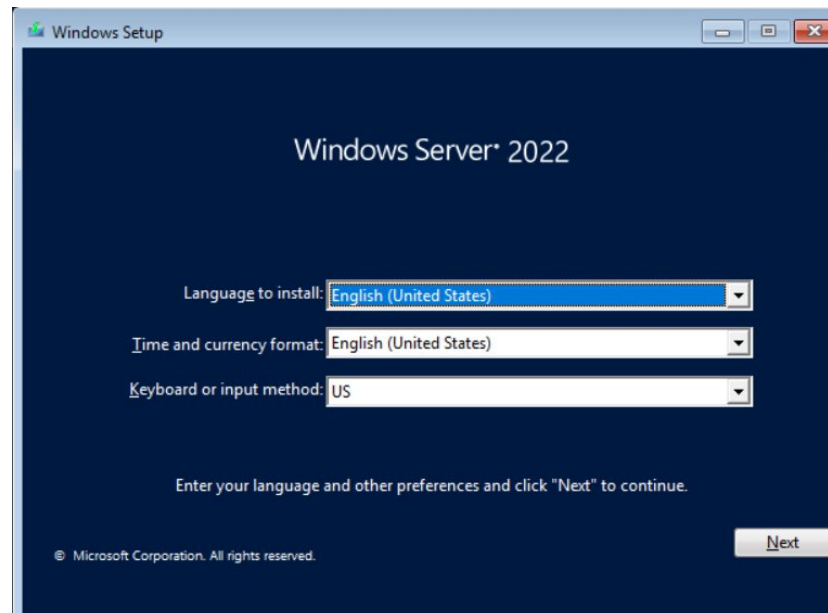


MCA: Windows Server Hybrid Administrator Study Guide: AZ-800 & AZ-801

Chapter 3: Installing Windows Server 2022

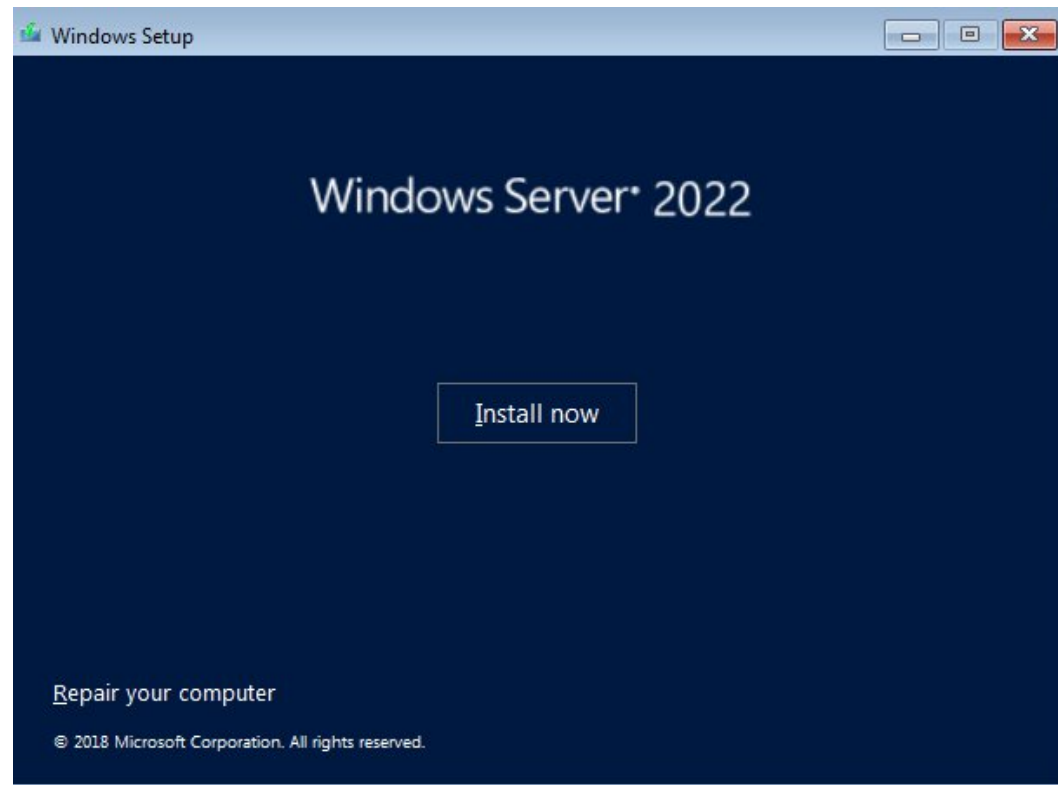
Installing with the Desktop Experience

Will have a Graphical User Interface (GUI) so you will be able to control the applications on the Desktop and the operating system functions with a mouse.
Insert the Windows Server 2022 installation media and restart the machine.



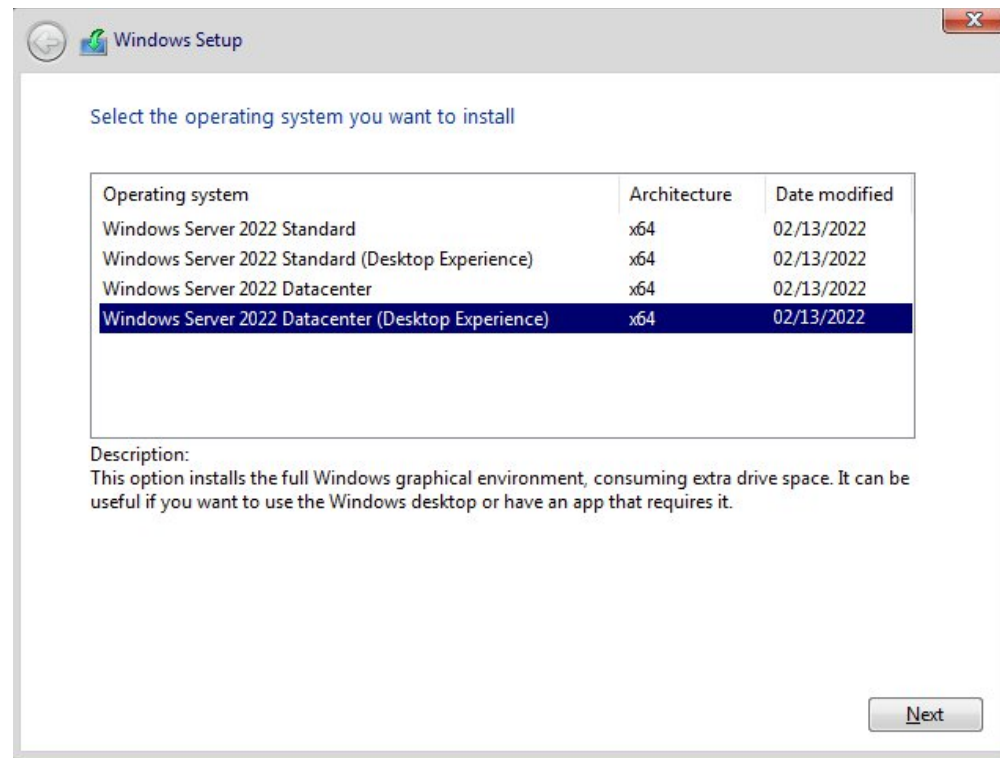
Install Now Screen

Click the Install now button



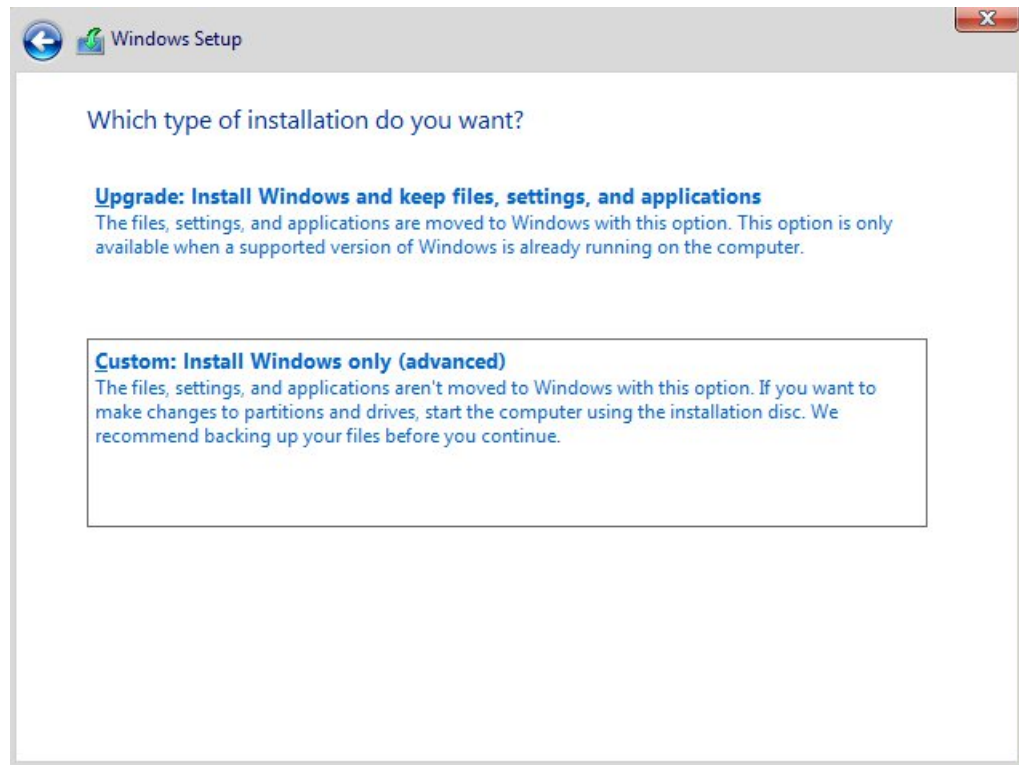
Windows Server Edition

Select The Operating System That You Want To Install screen then appears.



Type of Installation

Select the type of installation you want



Continuing Installation

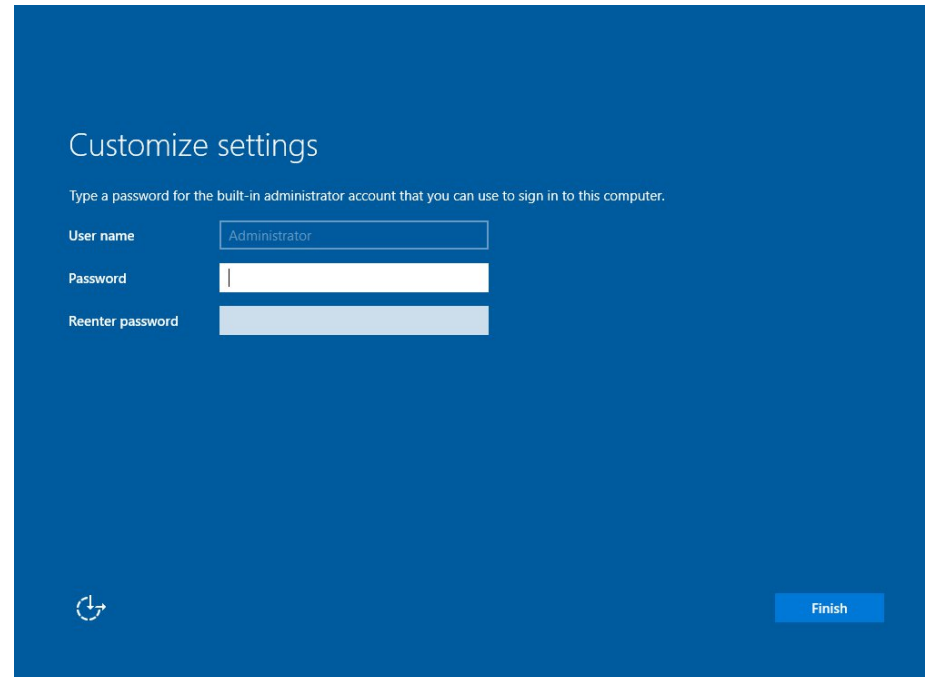
The next screen will ask where you want to install Windows. If the hard disk is already formatted as NTFS, click the drive and then click Next. If the hard disk is not yet set up or formatted, choose the New link and create a partition.

Once the format is done, select the new partition and click Next.

The Installing Windows screen will appear next.

Customize Settings

After the machine has rebooted, a screen requesting the administrator password will appear. Type in your password. The password must meet the password complexity requirements. Click Finish.




Customize settings

Type a password for the built-in administrator account that you can use to sign in to this computer.

User name

Password

Reenter password

 [Finish](#)

Finalizing the Installation

Next, log into the system. Press Ctrl+Alt+Del, and type in the administrator password. The machine will set up the properties of the administrator account.

The Server Manager dashboard automatically appears.

You may receive a message about using the Windows Admin Center. You can just close that message. The

Windows Server 2022 installation is now complete.

Installing Windows Server 2022 Server Core

The Server Core version of server does not have a GUI interface.

Once the system boots up, you need to use Command Prompt or PowerShell commands to configure the system.

The steps are similar to the ones for installing with the Desktop Experience, with a couple of exceptions.

Installing Server Core

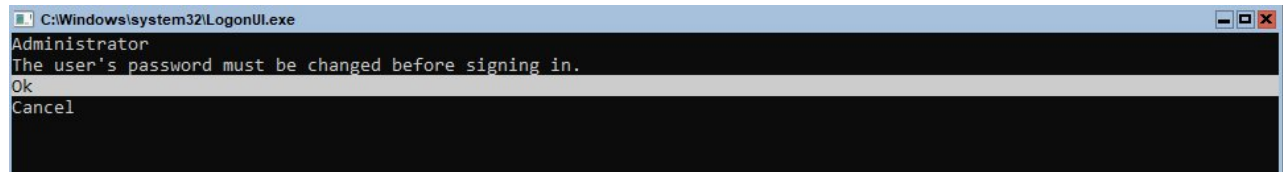
1. Insert the Windows Server 2022 installation media and restart the machine.
2. Windows Server 2022 will prompt you to configure your language, time and currency, and keyboard. Make your selections and click Next.
3. At the next screen, click the Install Now button.
4. Depending on what version of Windows Server 2022 you have, you may be asked to enter a product key. If this screen appears, enter your product key and click Next.
5. The Select The Operating System That You Want To Install screen then appears. Make your selection.

Installing Server Core – Continued (1/4)

6. The license terms screen appears. Check the I Accept The License Terms check box and click Next.
7. At the Which Type Of Installation Do You Want? screen, make your selection.
8. The next screen will asks where to install Windows. If the hard disk is already formatted as NTFS, click the drive and then click Next. If not select the New link and create a partition. Once done, click Next.
9. The Installing Windows screen will appear next. The machine will reboot during this installation.

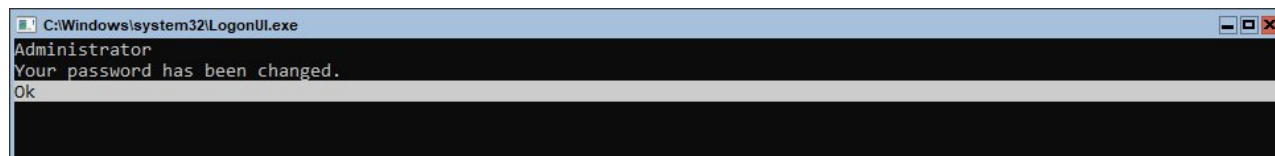
Installing Server Core – Continued (2/4)

10. After rebooting, a screen requesting the administrator password will appear. Click OK and type in a password. The password must meet the password complexity requirements (one capitalized letter, one number, and/or one special character).



Installing Server Core – Continued (3/4)

11. After the password is changed, a screen will appear telling you that the password has changed. Press the Enter key.

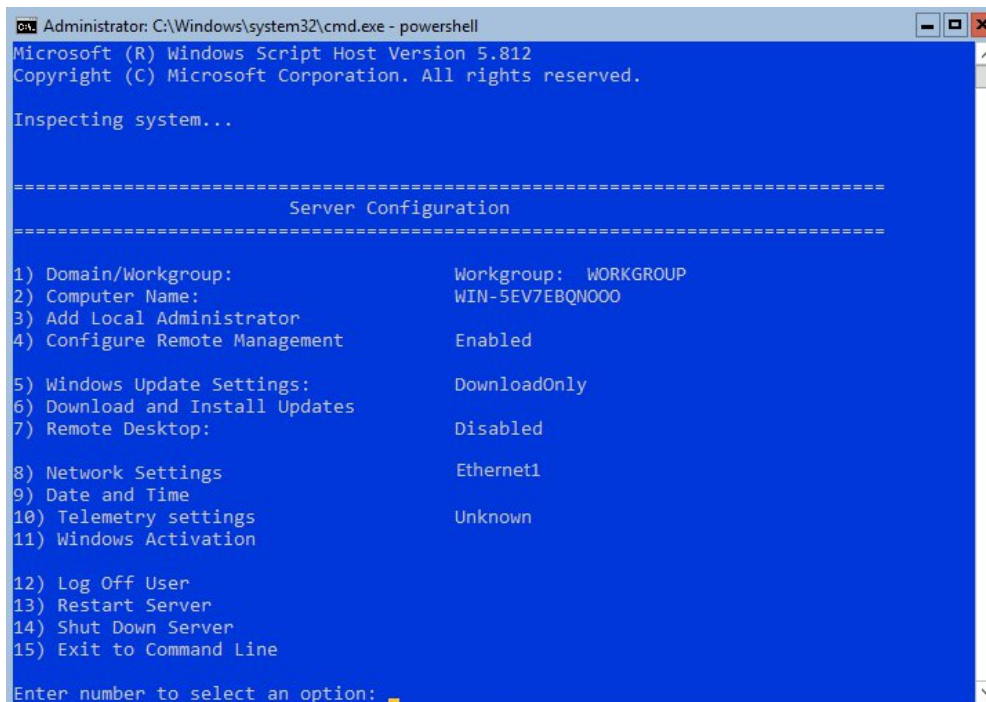


12. You will be automatically logged in. The command prompt will appear. The Windows Server 2022 Server Core installation is now complete.



Installing Server Core – Continued (4/4)

13. To do a quick configuration of Server Core, type PowerShell and press Enter. This will put you into a PowerShell prompt. Type **sconfig** and press Enter. You will now be able to do some basic configuration of the Server Core system.



```
Administrator: C:\Windows\system32\cmd.exe - powershell
Microsoft (R) Windows Script Host Version 5.812
Copyright (C) Microsoft Corporation. All rights reserved.

Inspecting system...

-----
                        Server Configuration
-----

1) Domain/Workgroup:                Workgroup:  WORKGROUP
2) Computer Name:                  WIN-5EV7EBQW000
3) Add Local Administrator
4) Configure Remote Management      Enabled
5) Windows Update Settings:        DownloadOnly
6) Download and Install Updates
7) Remote Desktop:                 Disabled
8) Network Settings                Ethernet1
9) Date and Time
10) Telemetry settings             Unknown
11) Windows Activation

12) Log Off User
13) Restart Server
14) Shut Down Server
15) Exit to Command Line

Enter number to select an option: 
```

Key Management Service (KMS)

- Gives your Windows computers an easy and automated way for them to get activated.
- To configure KMS hosts systems; you must configure and retrieve Volume Activation information. This is done by using a Software License Manager (referred to as SL Manager) script (Slmgr.vbs)

SImgr.vbs Switches

Parameter	Description
/ato	This switch is used for retail and volume system editions with a KMS host key or a Multiple Activation Key (MAK) installed. The /ato command prompts Windows to try to do an online activation.
/cdns	This switch allows an administrator to disable KMS host automatic DNS publishing.
/cpri	Administrators can use this switch to lower the priority of KMS host processes.
/dli	Administrators can use this switch on the KMS host to view the current KMS activation count.
/dlv	When an administrator uses this switch, the license information for the installed operating system is displayed.
/ipk	This command will try to install a 5x5 product key.
/sai activationInterval	This switch allows an administrator to change how often a KMS client attempts to activate itself when it cannot find a KMS host. The default setting is 120 minutes, but you can change the interval by replacing ActivationInterval with the number of minutes you want to set.
/sdns	This switch allows an administrator to enable KMS host automatic DNS publishing.
/spri	This allows an administrator to set the CPU priority of the KMS host processes to Normal.
/sprt PortNumber	Using this switch allows an administrator to change the default TCP communications port on a KMS host from 1688 to whichever port the admin wants to use. To change the default port number, replace the PortNumber switch with the TCP port number to use.
/sri RenewalInterval	This switch allows an administrator to change how often a KMS client attempts to renew its activation by contacting a KMS host. If you need to change the default of 10080 (7 days), just replace RenewalInterval with a number of minutes you want to use.

Automatic Virtual Machine Activation (AVMA)

- Another activation method.
- Main advantage of AVMA is that it works the same way a proof-of-purchase works.
- Allows you to install virtual machines on that Windows Server operating system without the need of using or managing product keys for each virtual machine.
- AVMA requires Windows Server 2022 with the Hyper-V role installed.

Windows Server AVMA Keys

Windows Server 2022	AVMA Key
Datacenter	W3GNR-8DDXR-2TFRP-H8P33-DV9BG
Standard	YDFWN-MJ9JR-3DYRK-FXXRW-78VHK
Windows Server 2019	AVMA Key
Datacenter	H3RNG-8C32Q-Q8FRX-6TDXV-WMBMW
Standard	TNK62-RXVTB-4P47B-2D623-4GF74
Essentials	2CTP7-NHT64-BP62M-FV6GG-HFV28

Active Directory-Based Activation (ADBA)

- Active Directory is just a centralized database of objects for a corporation; that centralized database is called a domain.
- As long as the computers are connected to the domain, the software and products can be activated through the domain.
- ADBA will automatically activate the computers version of Windows either online with Microsoft or through the use of an activation proxy.

Servicing Windows Server 2022

Installation Option	LTSB Servicing	Semi-Annual Servicing
Desktop Experience	Yes	No
Server Core	Yes	Yes
Nano Server	No	Yes

- Long Term Servicing Branch - 5+5 servicing model
- Semi-Annual Channel - will have new releases of the server available twice a year. Each release will be supported for 18 months from the initial release date.

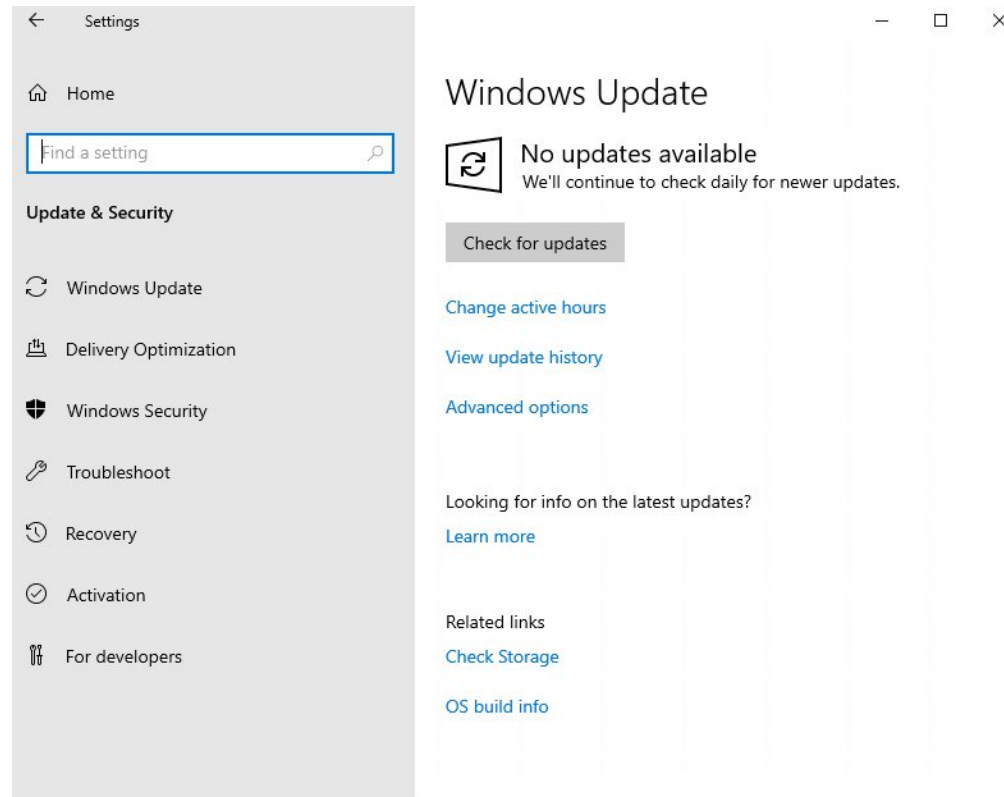
Configuring Windows Server Updates

Two main ways:

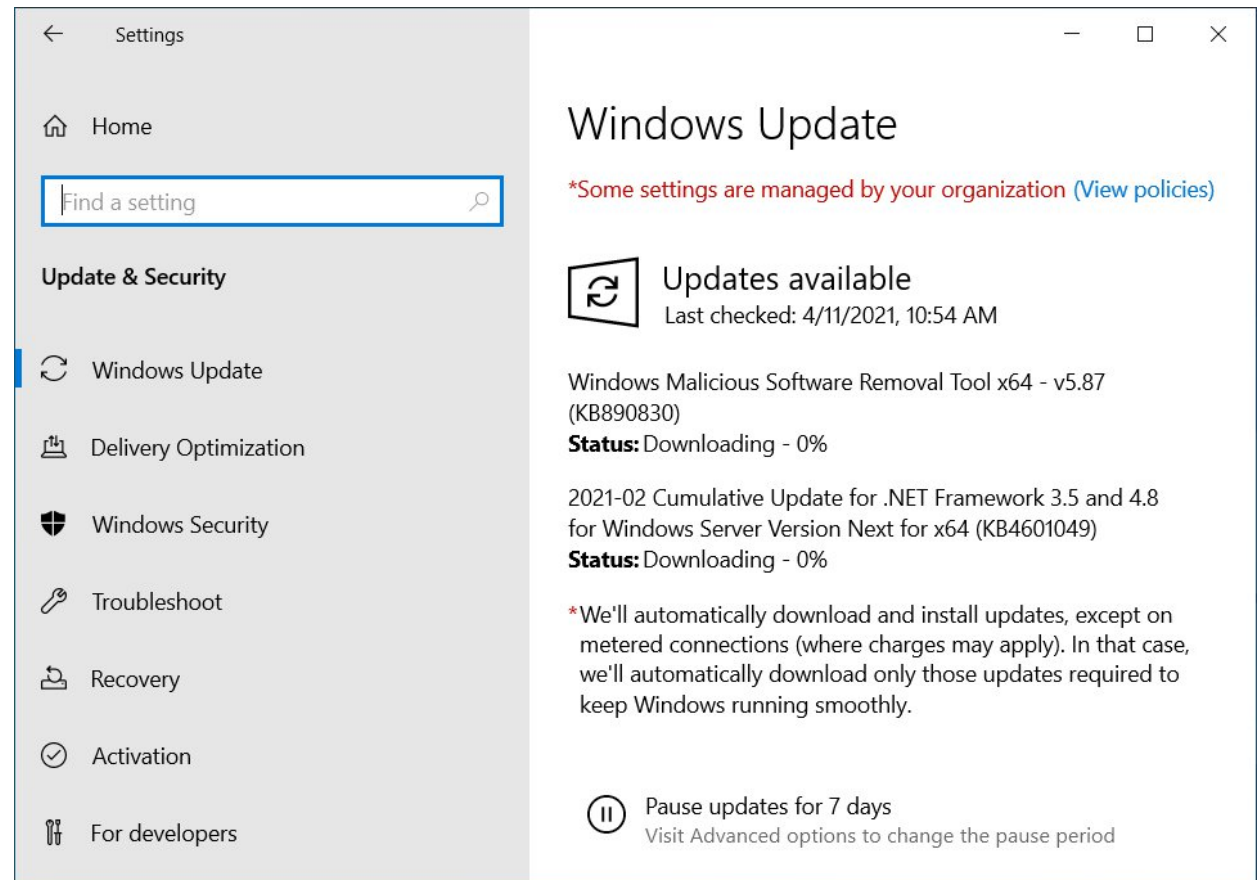
- Windows Update - attaches to the Microsoft website through a user-initiated process, and allows users to update their operating systems by downloading updated files (critical and noncritical software updates).
- Windows Server Update Services (WSUS) - used to deploy a limited version of Windows Update to a corporate server, which in turn provides the updates to client computers within the network. Allows clients that are limited to what they can access through a firewall to be able to keep their operating systems up-to-date.

Windows Update

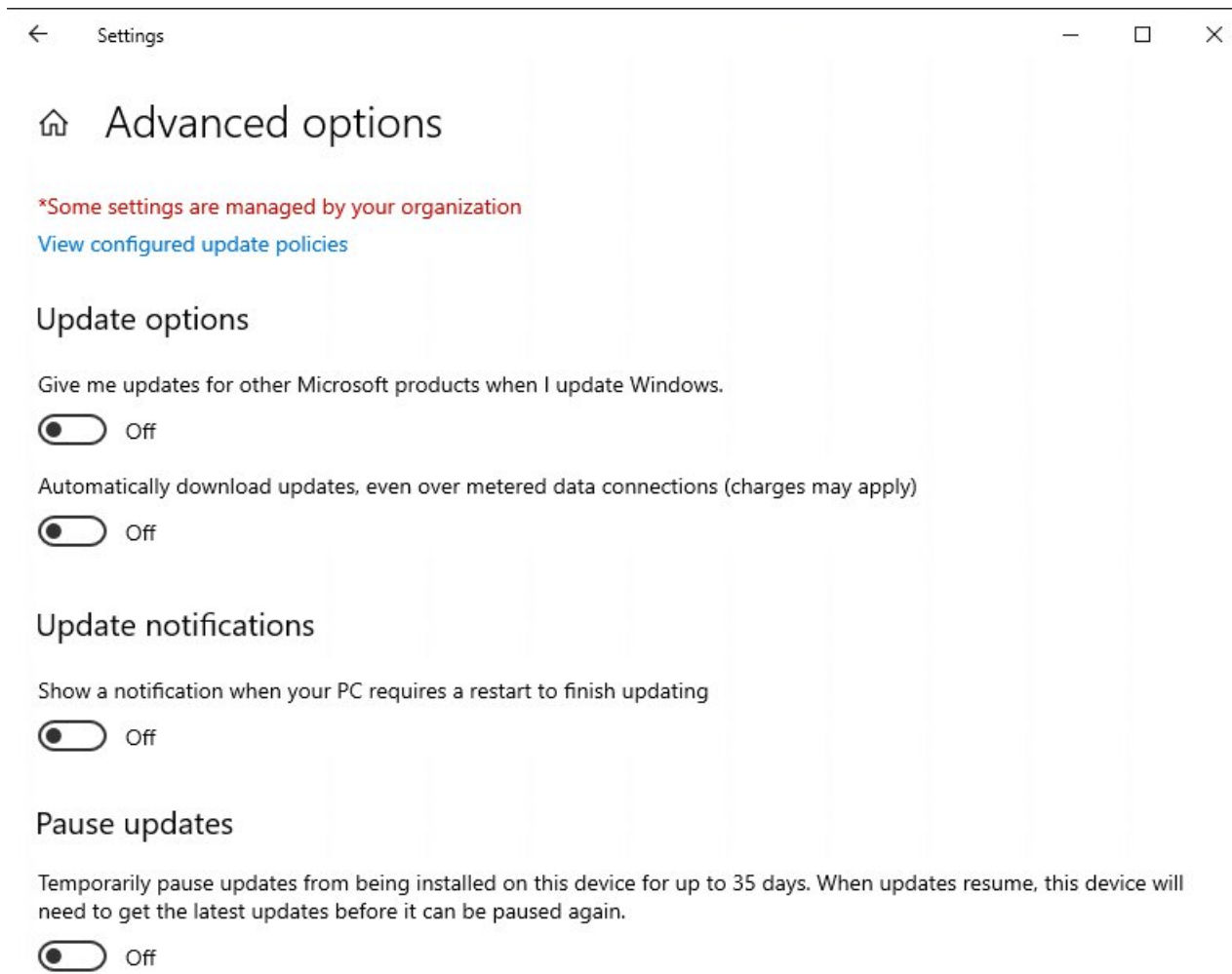
Start ➤ Settings ➤ Update and Security



Viewing the Update Status



Viewing Advanced Options



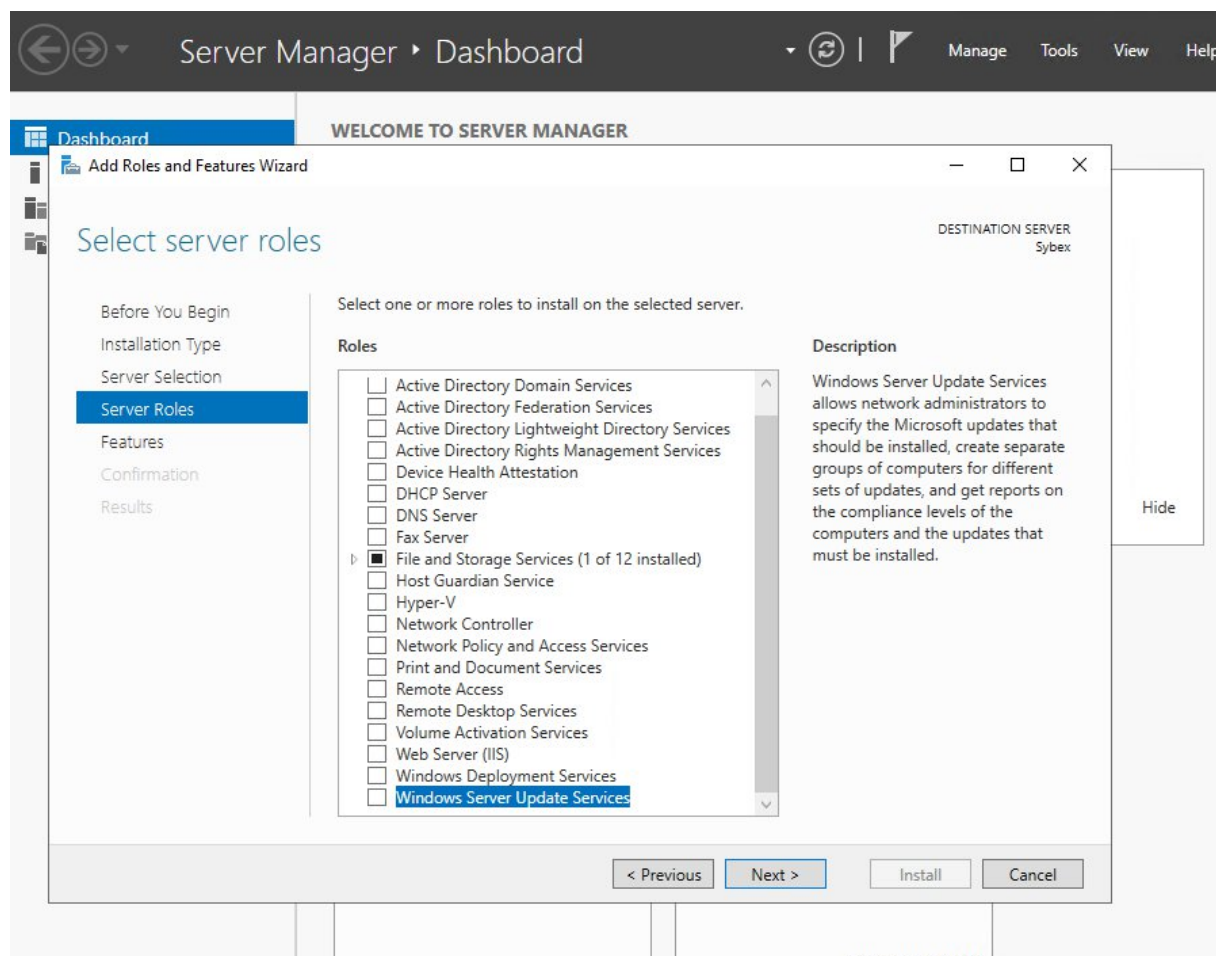
Windows Server Update Services (WSUS)

- Formerly known as Software Update Services (SUS)
- Used to leverage the features of Windows Update within a corporate environment.
- Downloads updates to a corporate server, which in turn provides the updates to the internal corporate clients.
- Allows administrators to test and have full control over what updates are deployed within the corporate environment.
- Designed to work in medium-sized corporate networks that are not using System Center.

WSUS Server Requirements

- Must be running Windows Svr 2008, Windows Svr 2008 R2, Windows Svr 2012, Windows Svr 2012 R2, Windows Svr 2016, or Windows Svr 2022.
- Must have most current security patches applied.
- Must be running IIS 6.0 or newer.
- Must be connected to the network.
- Must have an NTFS partition with 100 MB free disk space and must have 6 GB of free space.
- Must use BITS version 2.0.
- Must use Microsoft Management Console 3.0.
- Must use Microsoft Report Viewer Redistributable 2008 or higher.
- Windows Defender should be enabled on the WSUS server.
- Should run on a dedicated server.

Installing a WSUS Server – Choosing to Install the Role



Installing a WSUS Server – Select the Role Screen

Add Roles and Features Wizard

DESTINATION SERVER
Sybex

Select role services

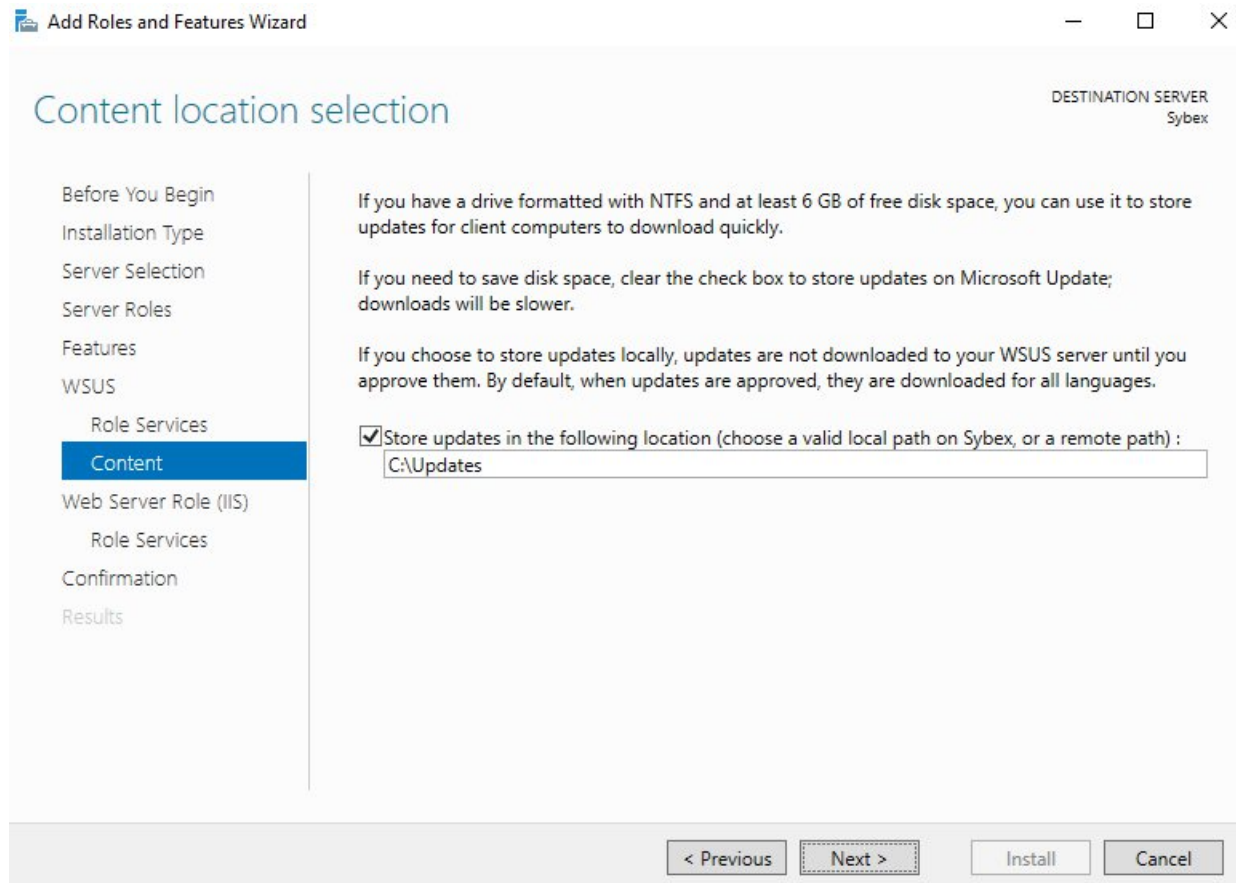
Before You Begin
Installation Type
Server Selection
Server Roles
Features
WSUS
Role Services
Content
Web Server Role (IIS)
Role Services
Confirmation
Results

Select the role services to install for Windows Server Update Services

Role services	Description
<input checked="" type="checkbox"/> WID Connectivity	Installs the database used by WSUS into WID.
<input checked="" type="checkbox"/> WSUS Services	
<input type="checkbox"/> SQL Server Connectivity	

< Previous Next > Install Cancel

Installing a WSUS Server – Content Location Selection Screen



Add Roles and Features Wizard

Content location selection

DESTINATION SERVER
Sybex

Before You Begin
Installation Type
Server Selection
Server Roles
Features
WSUS
Role Services
Content
Web Server Role (IIS)
Role Services
Confirmation
Results

If you have a drive formatted with NTFS and at least 6 GB of free disk space, you can use it to store updates for client computers to download quickly.

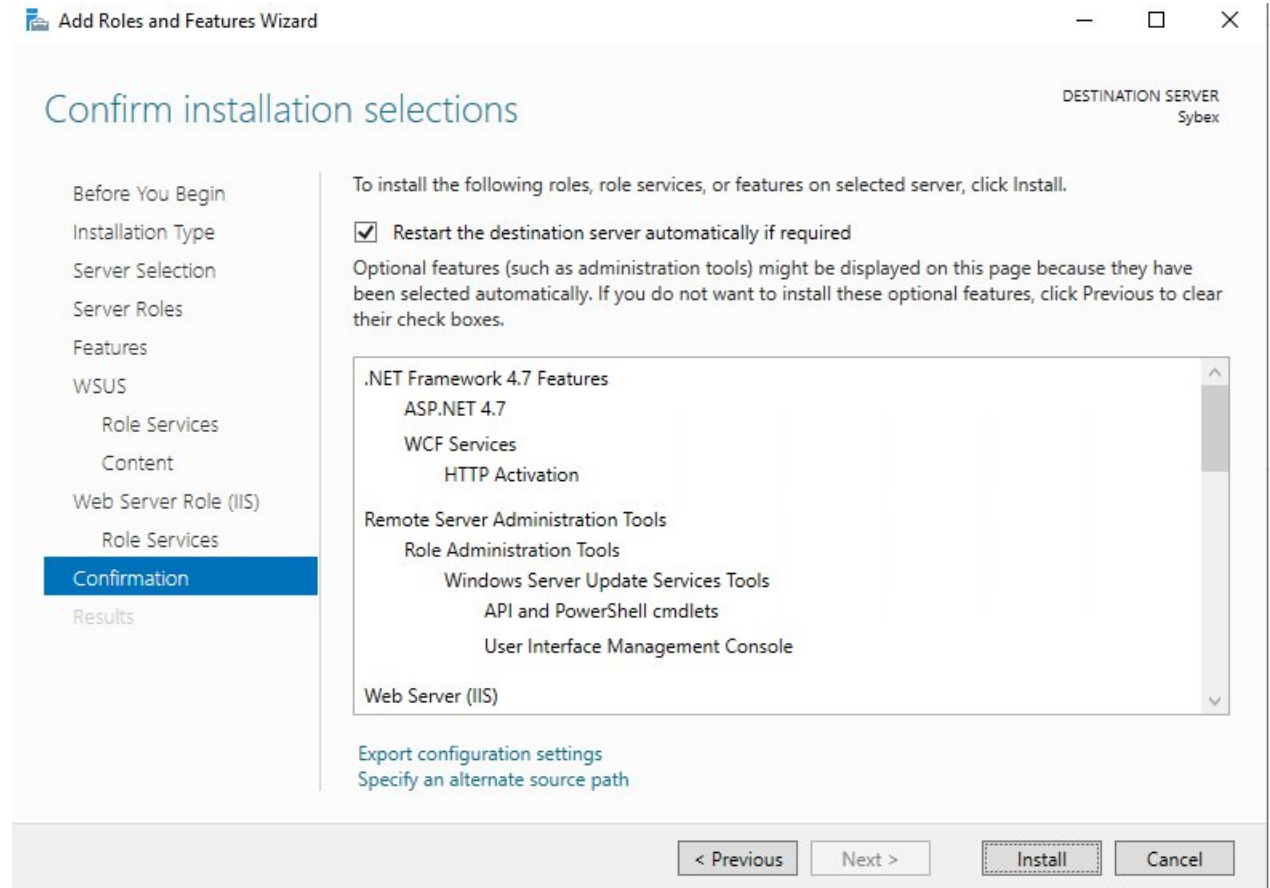
If you need to save disk space, clear the check box to store updates on Microsoft Update; downloads will be slower.

If you choose to store updates locally, updates are not downloaded to your WSUS server until you approve them. By default, when updates are approved, they are downloaded for all languages.

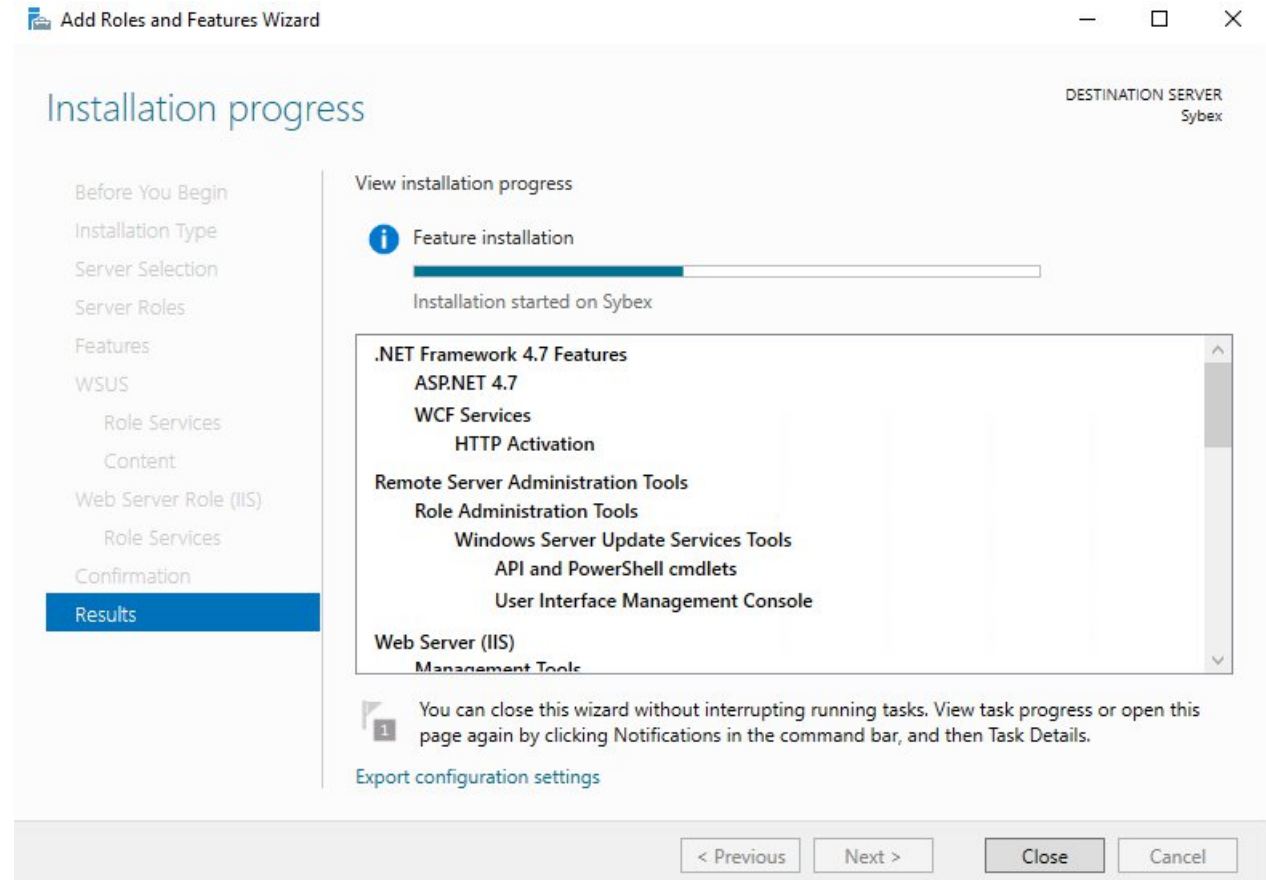
☒ Store updates in the following location (choose a valid local path on Sybex, or a remote path) :
C:\Updates

< Previous Next > Install Cancel

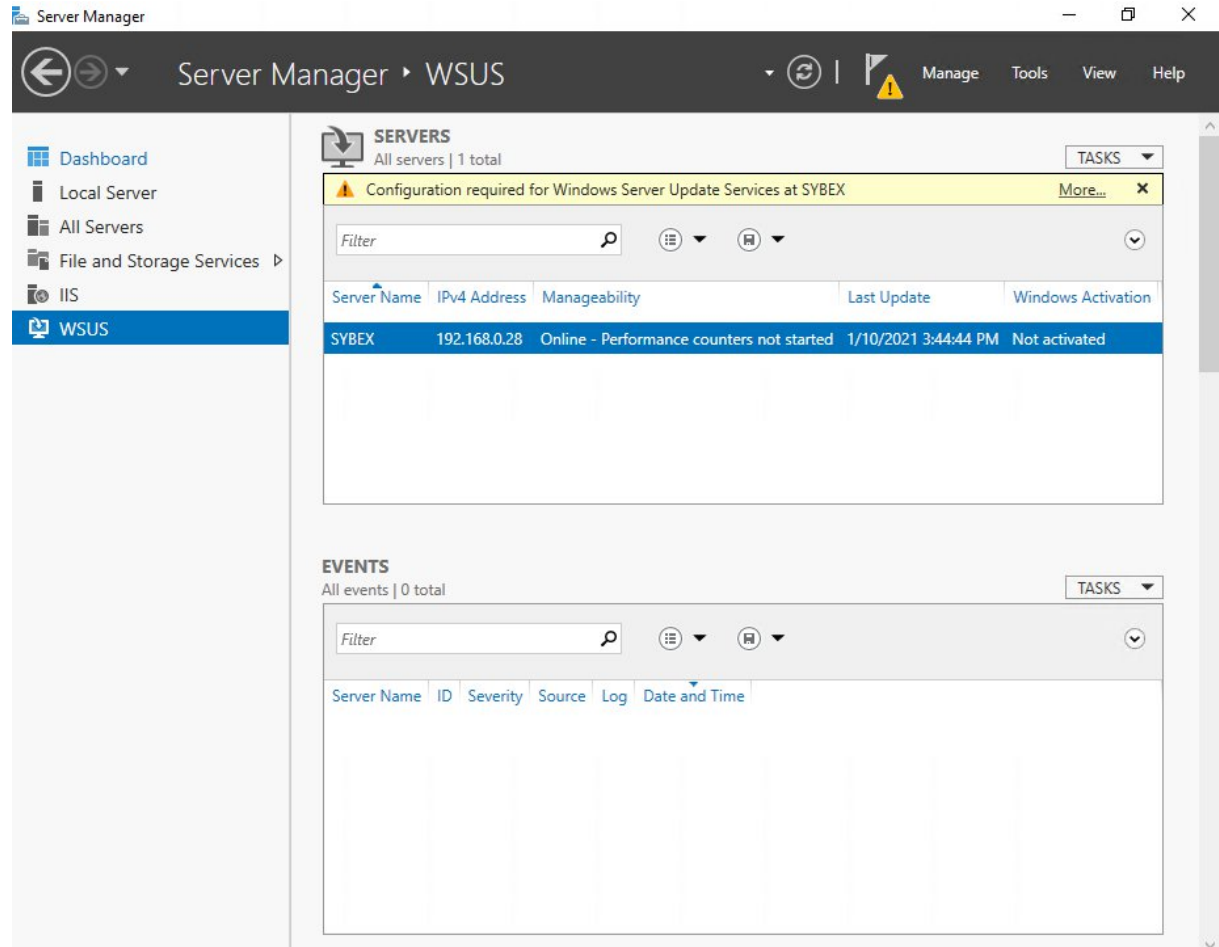
Installing a WSUS Server – Confirmation Screen



Installing a WSUS Server – Installation Progress Screen



Installing a WSUS Server – Status Screen



Server Manager

Server Manager ▸ WSUS

Dashboard
Local Server
All Servers
File and Storage Services ▸
IIS
WSUS

SERVERS
All servers | 1 total

Configuration required for Windows Server Update Services at SYBEX [More...](#)

Filter

Server Name	IPv4 Address	Manageability	Last Update	Windows Activation
SYBEX	192.168.0.28	Online - Performance counters not started	1/10/2021 3:44:44 PM	Not activated

EVENTS
All events | 0 total

Filter

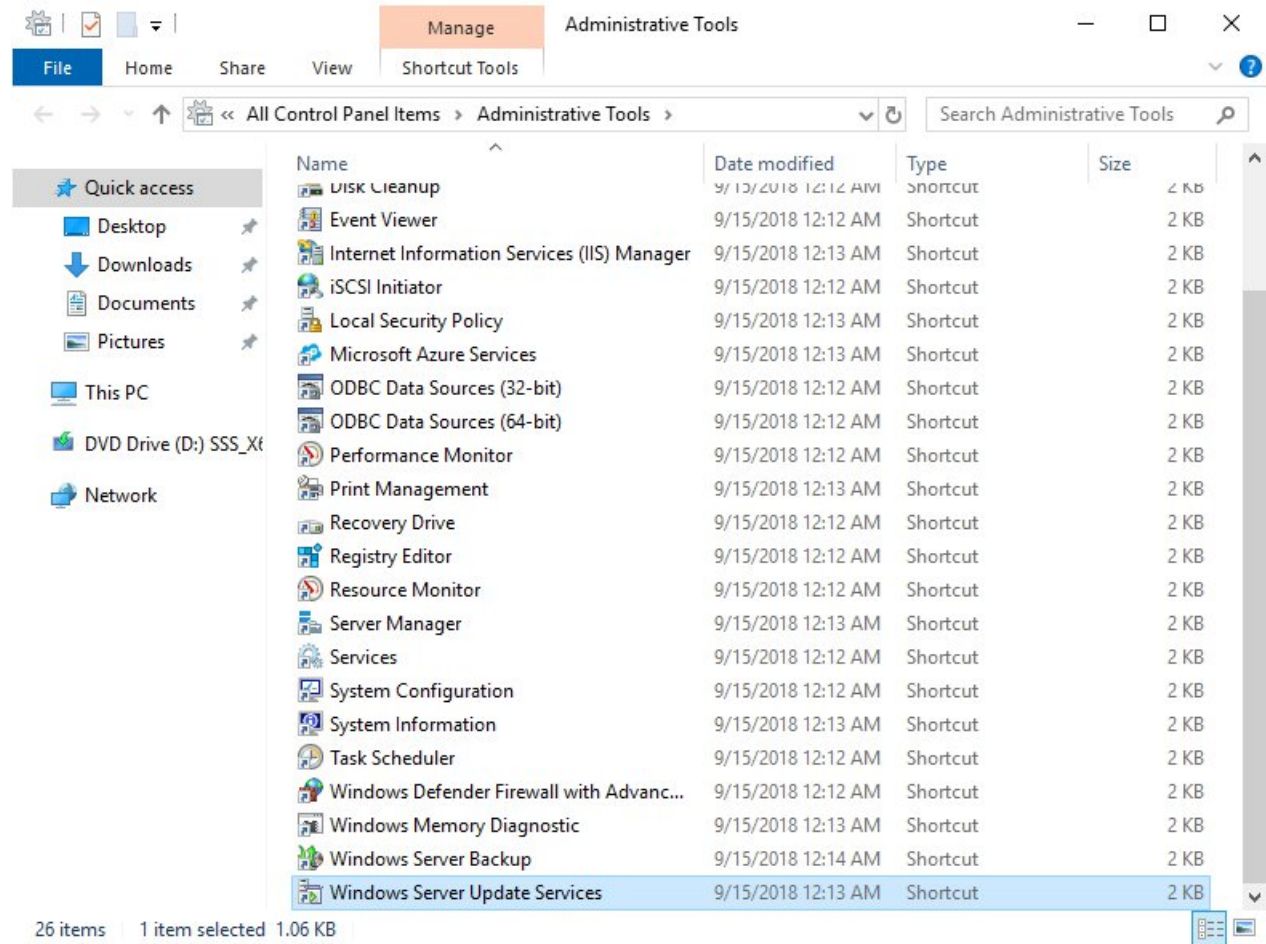
Server Name	ID	Severity	Source	Log	Date and Time
-------------	----	----------	--------	-----	---------------

Configuring a WSUS Server

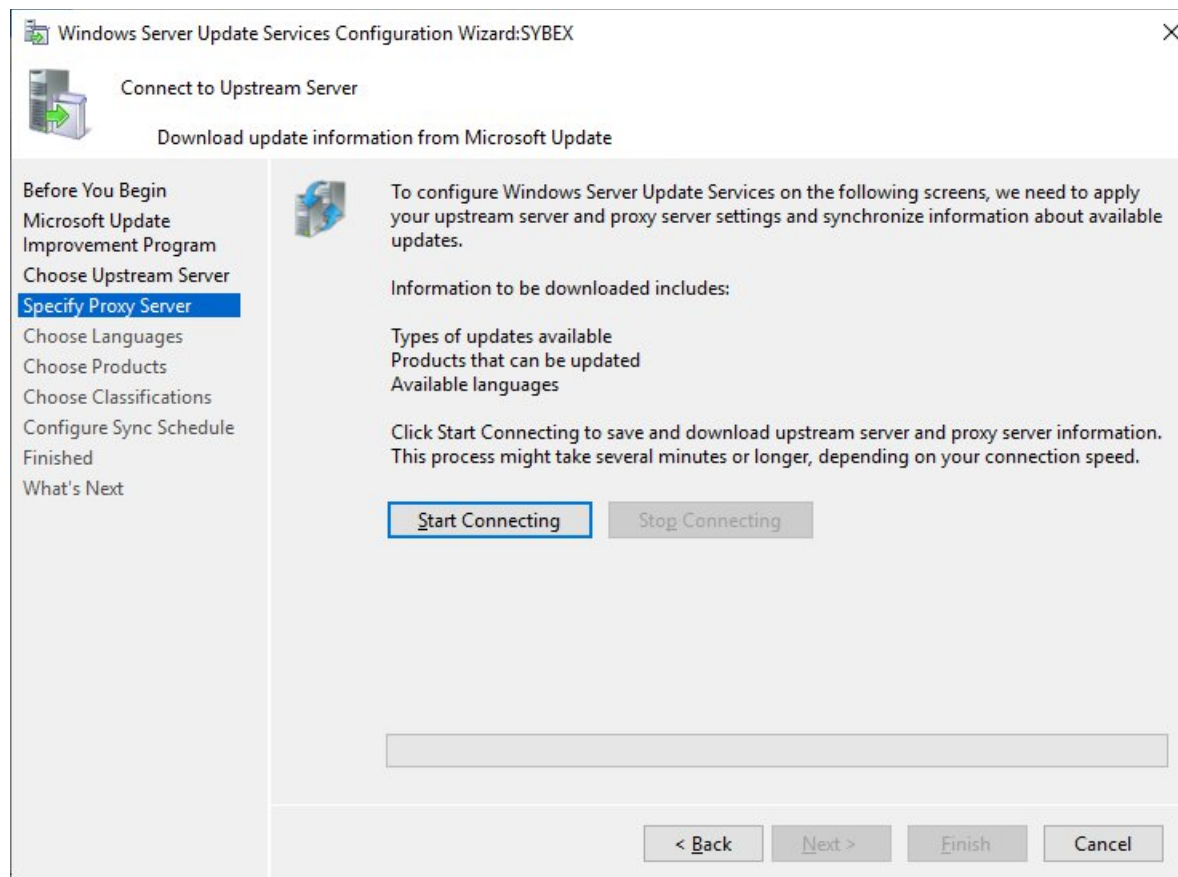
Easiest way is to use the WSUS Server Configuration Wizard. You can configure:

- Update Source and Proxy Server
- Products and Classifications
- Update Files and Languages
- Synchronization Schedule
- Automatic Approvals
- Computers
- Server Cleanup Wizard
- Reporting Rollup
- Email Notifications
- Microsoft Update Improvement Program
- Personalization
- WSUS Server Configuration Wizard

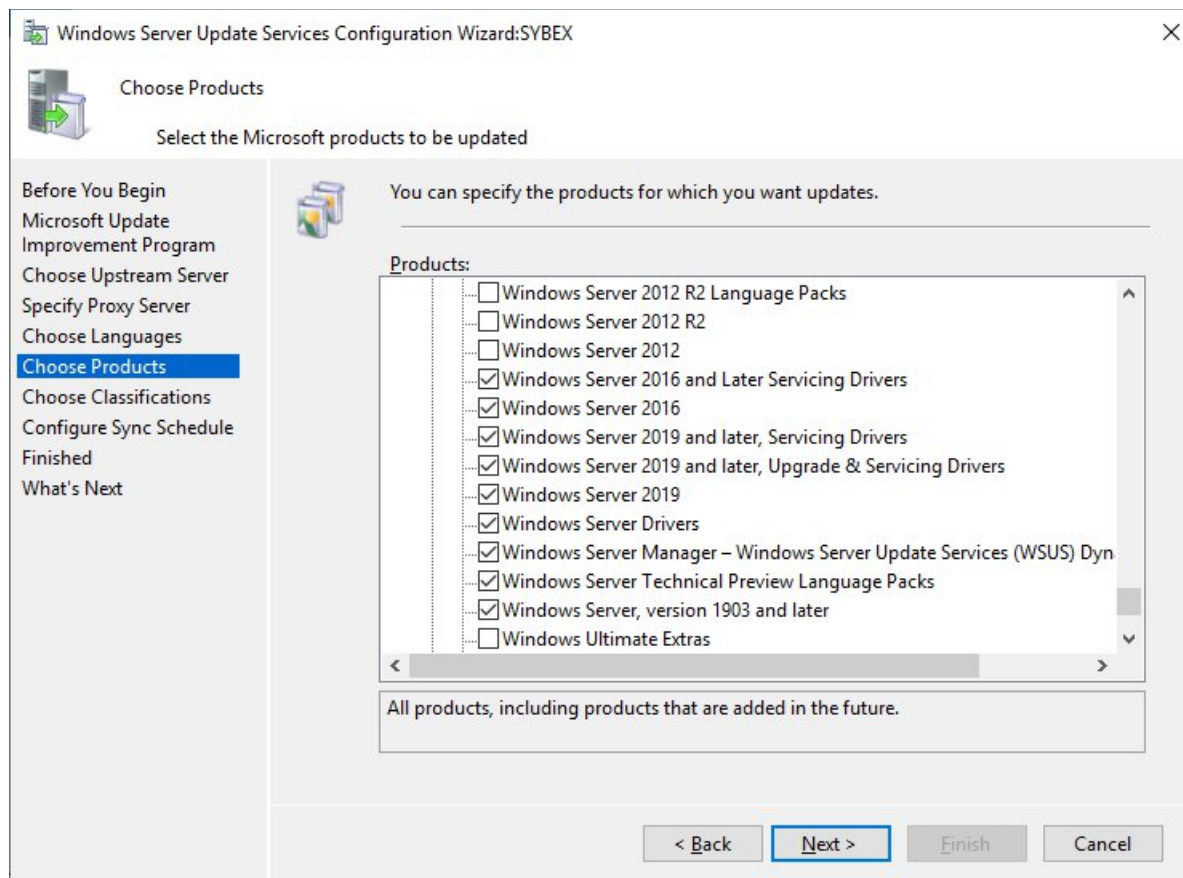
Setting WSUS Server Options – Administrative Tools



Setting WSUS Server Options – Connect to Upstream Server



Setting WSUS Server Options – Choose Products Screen



WSUS Client Requirements

WSUS clients run a special version of Automatic Updates that is designed to support WSUS.

The following enhancements to Automatic Updates are included:

- Clients can receive updates from a WSUS server as opposed to the public Microsoft Windows Update site.
- The administrator can schedule when the downloading of updated files will occur.
- Clients can be configured via Group Policy or through editing the Registry.
- Updates can occur when an administrative account or nonadministrative account is logged on.

WSUS Clients Support

The following client platforms are the only ones that WSUS currently supports:

- Windows 7
- Windows 8
- Windows 10
- Windows 11
- Windows Server 2008 and 2008 R2
- Windows Server 2012 and 2012 R2
- Windows Server 2016
- Windows Server 2019
- Windows Server 2022

Configuring the WSUS Clients

You can configure WSUS clients in two ways. The method depends on whether you use Active Directory in your network.

- Non-Active Directory Network (Non-Enterprise) – configure Automatic Updates through the Control Panel or through the registry – regedit. Defined through
HKEY_LOCAL_MACHINE\Software\Policies\Microsoft\Windows\WindowsUpdate\AU
- In an Active Directory Network (Enterprise) – using Active Directory, you would typically see Automatic Updates configured through Group Policy.

Automatic Updates - Selected Registry Keys and Values

Registry key	Options for values
NoAutoUpdate	0: Automatic Updates are enabled (default).
	1: Automatic Updates are disabled.
	2: Notify of download and installation.
	3: Autodownload and notify of installation.
	4: Autodownload and schedule installation.
	5: Automatic Updates is required, but end users can configure.
ScheduledInstallDay	1: Sunday.
	2: Monday.
	3: Tuesday.
	4: Wednesday.
	5: Thursday.
	6: Friday.
	7: Saturday.
UseWUServer	0: Use public Microsoft Windows Update site.
	1: Use server specified in WU <code>Server</code> entry.

Configure Client-Side Targeting

- Administrators can use a GPO to enable client-side targeting. Client machines can be automatically added into the proper computer group once the client computer connects to the WSUS server.
- Can enable client-side targeting on the WSUS server by clicking the Use Group Policy Or Registry Settings On Client Computers option on the Computers Options page.

WSUS Administration Commands

PowerShell Command	Description
Add-WsusComputer	This command allows an administrator to add a client computer to a WSUS target group.
Approve-WsusUpdate	This allows an administrator to approve an update that can then be applied to clients.
Deny-WsusUpdate	This allows an administrator to deny an update.
Get-WsusClassification	Administrators can use this command to get the list of all WSUS classifications available on the server.
Get-WsusComputer	This command allows administrators to view the WSUS computer object that represents the client computer.
Get-WsusProduct	Administrators can use this command to get the list of all WSUS products available on the server.
Get-WsusUpdate	This command shows you the WSUS update object and the details about that update.
Get-WsusServer	This command allows administrators to view the WSUS update server object.
Invoke-WsusServerCleanup	Allows an administrator to initiate the cleanup process on the WSUS server.
Set-WsusClassification	Sets whether the classifications of updates are enabled on the WSUS server.

Features On Demand

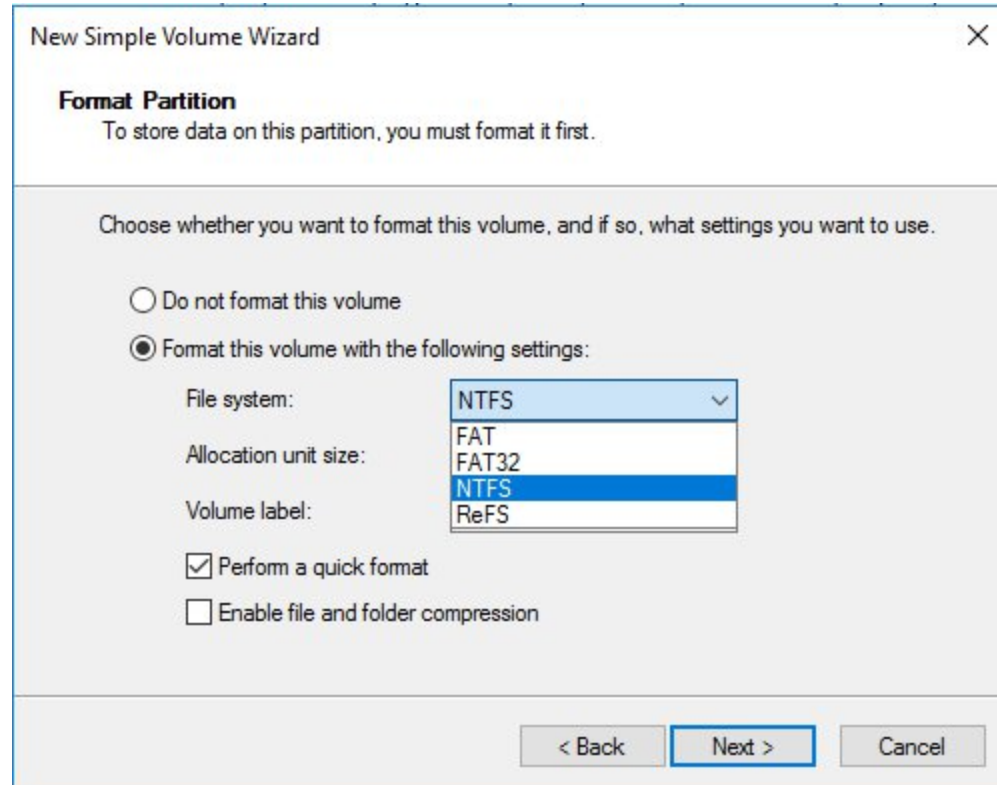
- Can disable a role or feature and remove the role or feature's files
- Administrators can choose what roles and features they want.
- State will be Removed in Server Manager.
- To reinstall a role or feature, must have access to the installation files.

Supported File Systems

Windows Server 2022 platform supports two file systems:

- Windows NT File System (NTFS)
- Resilient File System (ReFS)

Format Options on Windows Server 2022



New Simple Volume Wizard

Format Partition
To store data on this partition, you must format it first.

Choose whether you want to format this volume, and if so, what settings you want to use.

☐ Do not format this volume

☒ Format this volume with the following settings:

File system: NTFS (selected)
Allocation unit size: FAT
Volume label: FAT32
NTFS (selected)
ReFS

☒ Perform a quick format

☐ Enable file and folder compression

< Back Next > Cancel

Resilient File System (ReFS)

- Created to help Windows Server maximize the availability of data and online operation.
- ReFS allows the Windows Server 2022 system to continue to function despite some errors.
- ReFS uses data integrity.

ReFS Features

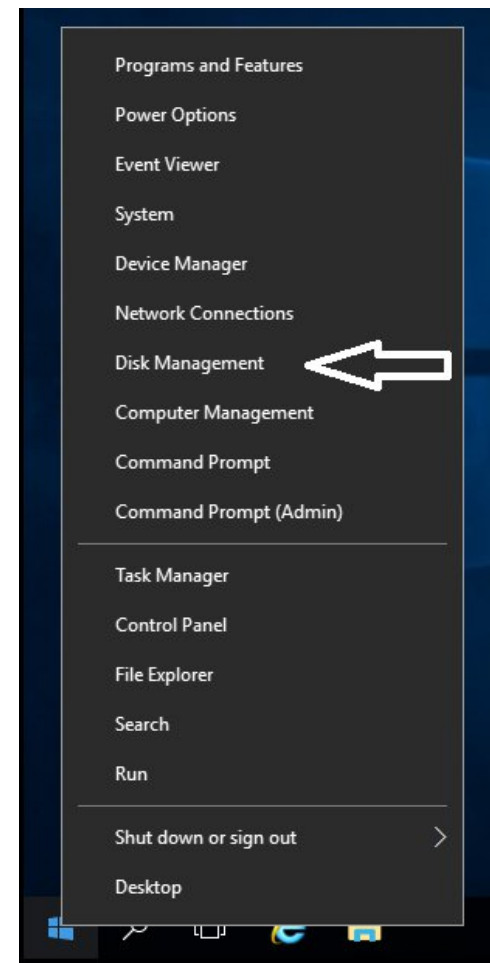
- Higher Data Availability
- Scalability
- Robust Disk Updating
- Data Integrity
- Application Compatibility

NTFS Features

- Disk Quotas
- File System Encryption
- Dynamic Volumes
- Mounted Drives
- Remote Storage
- Self-Healing NTFS
- Security

Setting Up the NTFS Partition

- Disk Management
- Command Line Utility
 - CONVERT
 - c: /fs:ntfs



Storage in Windows Server 2022

Disk Initialization Types:

- Master Boot Record (MBR)
- GUID Partition Table (GPT)

Disk Configuration Types:

- Basic Disks – divided into partitions
- Dynamic Disks – divided into volumes

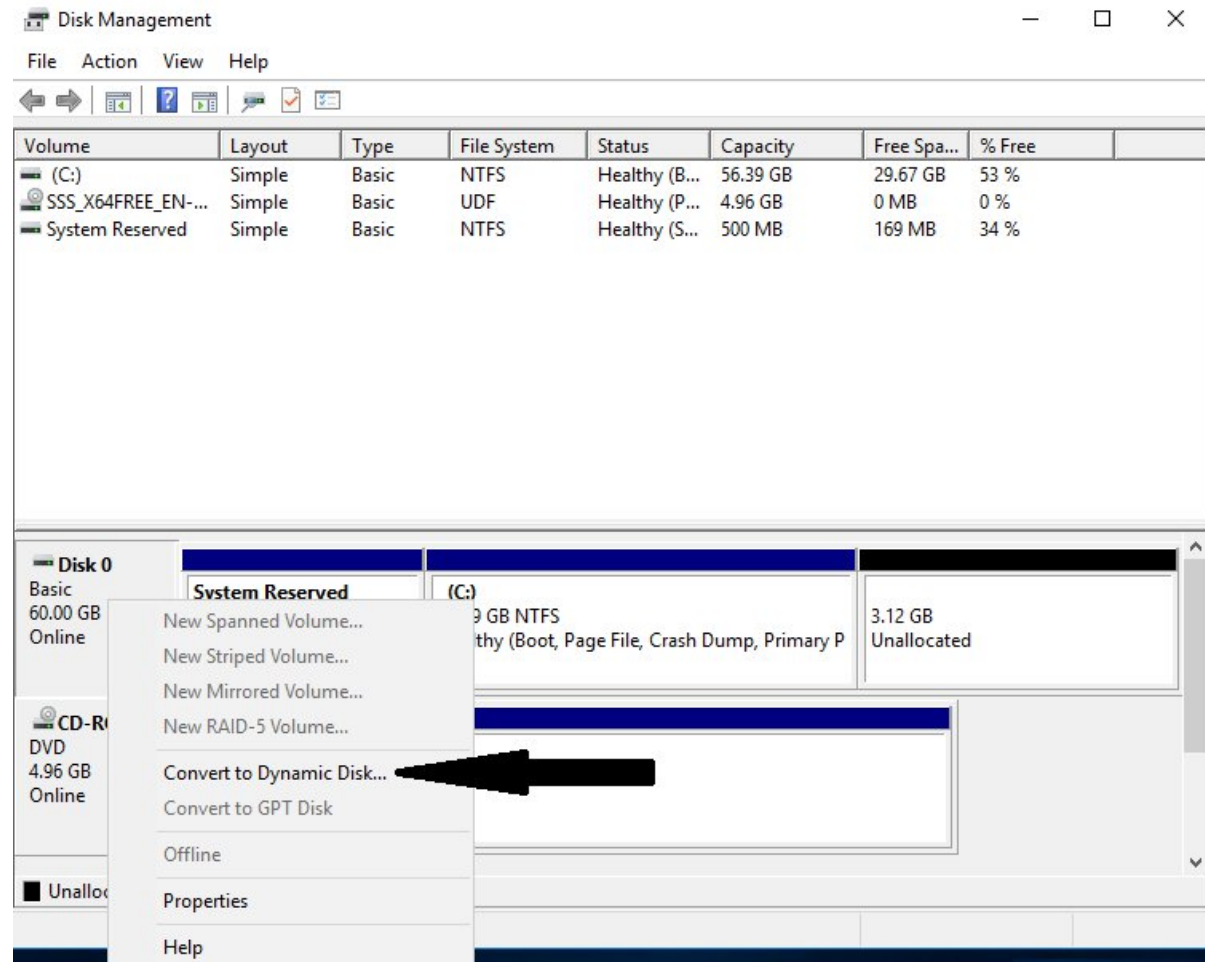
Basic Disk Actions:

- Formatting partitions.
- Marking partitions as active.
- Creating and deleting primary and extended partitions.
- Creating and deleting logical drives.
- Converting from a basic disk to a dynamic disk.

Dynamic Disk Actions:

- Creating and deleting simple, striped, spanned, mirrored, or RAID-5 volumes.
- Removing or breaking a mirrored volume.
- Extending simple or spanned volumes.
- Repairing mirrored or RAID-5 volumes.
- Converting from a dynamic disk to a basic disk after deleting all volumes.

Converting a Basic Disk to a Dynamic Disk



Managing Volumes

- A *volume set* is created from volumes that span multiple drives by using the free space from those drives to construct what will appear to be a single drive.
- Types:
 - Simple
 - Striped
 - Mirrored
 - RAID-5

Storage Spaces

- Virtualize storage by grouping disks into storage pools.
- Can be tuned into virtual disks called storage spaces.
- Managed by using:
 - Windows Storage Management API
 - Server Manager
 - Windows PowerShell
- Three types of resiliency: mirror, parity and simple (no resiliency).

Storage Spaces Advantages

- Availability
- Tiered Storage
- Delegation

Redundant Array of Independent Disks (RAID)^(1/2)

- RAID-0 (Disk Striping)
- RAID-1 (Disk Mirroring)
- RAID-5 Volume (Disk Striping with Parity)

Redundant Array of Independent Disks (RAID) ^(2/2)

RAID Level	RAID Type	Fault Tolerant	Advantages	Minimum Number of Disks	Maximum Number of Disks
0	Disk striping	No	Fast reads and writes	2	32
1	Disk mirroring	Yes	Data redundancy and faster writes than RAID-5	2	2
5	Disk striping with parity	Yes	Data redundancy with less overhead and faster reads than RAID-1	3	32

Creating RAID Sets – New Mirrored Volume

The screenshot shows a Windows-style dialog box titled "New Mirrored Volume" with a close button (X) in the top right corner. The main heading is "Select Disks" with a sub-instruction: "You can select the disks and set the disk size for this volume." Below this, a text prompt says "Select the disks you want to use, and then click Add." The interface is divided into two columns: "Available:" and "Selected:". The "Available:" list contains "Disk 2 30717 MB". The "Selected:" list contains "Disk 1 30717 MB". Between the lists are three buttons: "Add >", "< Remove", and "< Remove All". At the bottom of the dialog, there are three input fields: "Total volume size in megabytes (MB):" with a value of "0", "Maximum available space in MB:" with a value of "30717", and "Select the amount of space in MB:" with a value of "30717" and up/down arrow controls. At the very bottom are three buttons: "< Back", "Next >", and "Cancel".

New Mirrored Volume

Select Disks
You can select the disks and set the disk size for this volume.

Select the disks you want to use, and then click Add.

Available:

Disk 2	30717 MB
--------	----------

Selected:

Disk 1	30717 MB
--------	----------

Buttons: Add > < Remove < Remove All

Total volume size in megabytes (MB): 0

Maximum available space in MB: 30717

Select the amount of space in MB: 30717

Navigation: < Back Next > Cancel

Creating RAID Sets – New Mirrored Volume Created

Disk Management

File Action View Help

Volume	Layout	Type	File System	Status	Capacity	Free Spa...	% Free
(C:)	Mirror	Dynamic	NTFS	Resynchin...	53.25 GB	26.99 GB	51 %
SSS_X64FREE_EN-...	Simple	Basic	UDF	Healthy (P...	4.96 GB	0 MB	0 %
System Reserved	Simple	Dynamic	NTFS	Healthy (S...	500 MB	169 MB	34 %

Disk 0
Dynamic
60.00 GB
Online

System Reserved 500 MB NTFS Healthy (System)	(C:) 53.25 GB NTFS Resynching : (6%) (Boot, Page File, Crash Dum	6.26 GB Unallocated
---	---	------------------------

Disk 1
Dynamic
60.00 GB
Online

(C:) 53.25 GB NTFS Resynching : (6%) (Boot, Page File, Crash Dump)	6.75 GB Unallocated
---	------------------------

Unallocated
 Primary partition
 Simple volume
 Mirrored volume

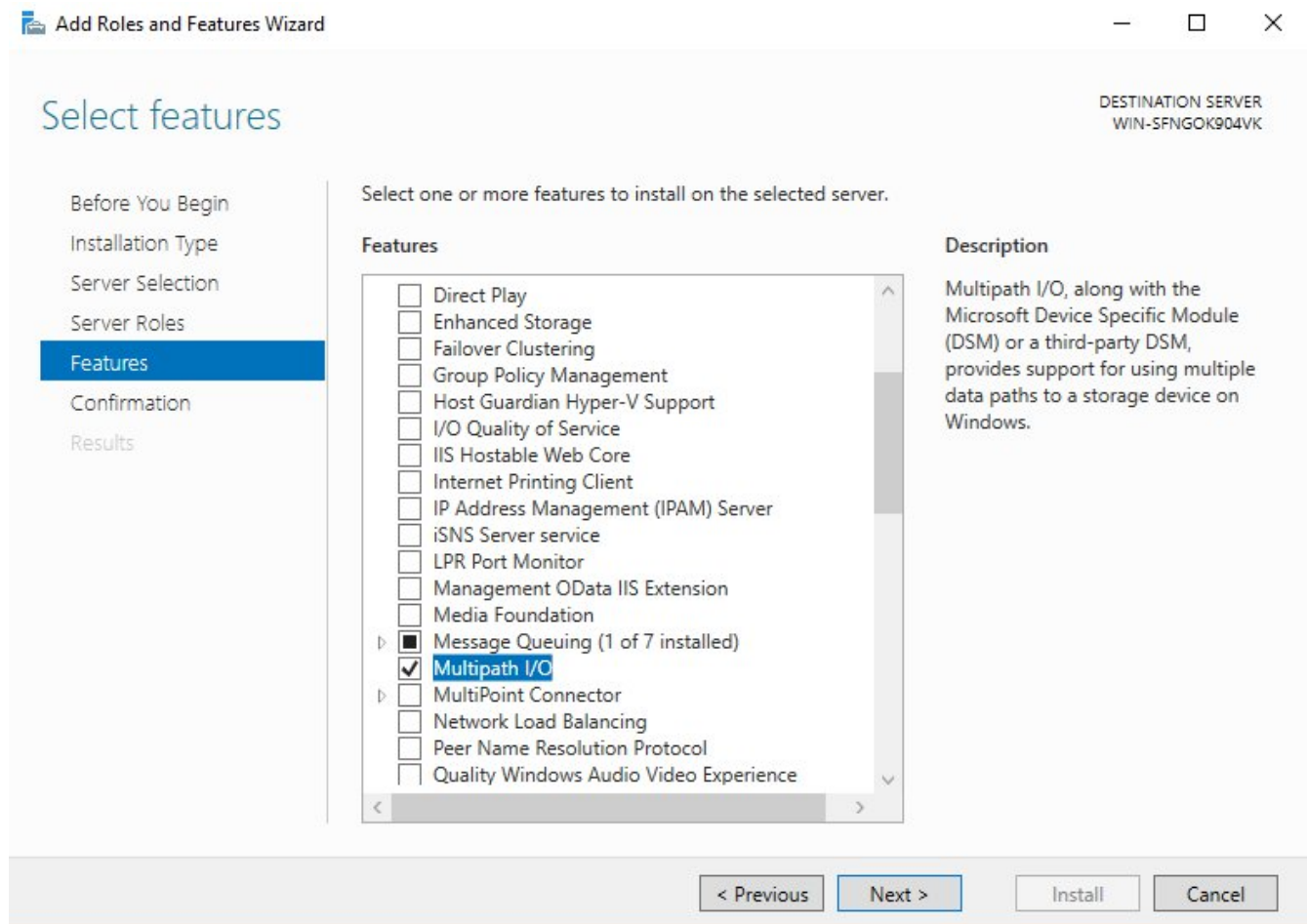
Mount Points

- A *mount point* allows to configure a volume to be accessed from a folder on another existing disk.
- Using Disk Management, a mount point folder can be assigned to a drive instead of using a drive letter.
- Can be used on basic or dynamic volumes that are formatted with NTFS.

Microsoft Multipath I/O (MPIO)

- Windows Server 2022 supports the following load-balancing policies:
 - Failover
 - Failback
 - Round Robin
 - Round Robin with a Subset of Paths
 - Dynamic Least Queue Depth
 - Weighted Path

Installing Microsoft MPIO



Internet Small Computer System Interface (iSCSI)

- iSCSI is an interconnect protocol used to establish and manage a connection between a computer (initiator) and a storage device (target).
- Uses TCP port 3260.
- Each initiator is identified by its iSCSI Qualified Name (iqn).
- Alternative to Fibre Channel storage.

iSCSI - Continued

- iSCSI can use:
 - CHAP or MS-CHAP for authentication
 - IPsec for encryption
- Windows Server 2022 supports two different ways to initiate an iSCSI session.
 - Through the native Microsoft iSCSI software initiator that resides on Windows Server 2022.
 - Using a hardware iSCSI host bus adapter (HBA) that is installed in the computer.

Internet Storage Name Server (iSNS)

- Internet Storage Name Server (iSNS) allows for the central registration of an iSCSI environment because it automatically targets on the network.
- Help find available targets on a large iSCSI network.
- From command prompt:
iscsicli addisnssserver server_name

Thin Provisioning and Trim

- Thin provisioning and trim can be useful features that allow organizations to get the most out of their storage arrays.
- Thin Provisioning – way of providing what is known as just-in-time allocations.
- Trim – automatically reclaims free space that is not being used. Windows Server 2022 provides standardized notifications that will alert administrators when certain storage thresholds are crossed.

Fibre Channel

- *Fibre Channel* storage devices are similar to iSCSI in that they both allow:
 - block-level access to their data sets
 - can provide MPIO policies with the proper hardware configurations
- Fibre Channel requires:
 - a Fibre Channel HBA
 - fiber-optic cables
 - Fibre Channel switches

Network Attached Storage

- A low-cost device for storing data and serving files through the use of an Ethernet LAN connection.
- Accesses data at the file level via a communication protocol such as NFS, CIFS, or even HTTP.
- Only setup required is an IP address and an Ethernet connection.

Virtual Disk Service (VDS)

- VDS is a set of application programming interfaces (APIs) that provide a centralized interface for managing all of the various storage devices.
- VDS includes two software providers: basic and dynamic.
- Windows Server 2022 storage management applications that use VDS:
 - Disk Management snap-in
 - DiskPart
 - DiskRAID

DiskPart Commands

```
Administrator: Command Prompt - diskpart

DISKPART> help

Microsoft DiskPart

ACTIVE          - Mark the selected partition as active.
ADD             - Add a mirror to a simple volume.
ASSIGN         - Assign a drive letter or mount point to the selected volume.
ATTRIBUTES     - Manipulate volume or disk attributes.
ATTACH         - Attaches a virtual disk file.
AUTOMOUNT      - Enable and disable automatic mounting of basic volumes.
BREAK          - Break a mirror set.
CLEAN          - Clear the configuration information, or all information, off the
                disk.
COMPACT        - Attempts to reduce the physical size of the file.
CONVERT        - Convert between different disk formats.
CREATE         - Create a volume, partition or virtual disk.
DELETE         - Delete an object.
DETAIL         - Provide details about an object.
DETACH         - Detaches a virtual disk file.
EXIT           - Exit DiskPart.
EXTEND         - Extend a volume.
EXPAND         - Expands the maximum size available on a virtual disk.
FILESYSTEMS    - Display current and supported file systems on the volume.
FORMAT        - Format the volume or partition.
GPT            - Assign attributes to the selected GPT partition.
HELP           - Display a list of commands.
IMPORT         - Import a disk group.
INACTIVE       - Mark the selected partition as inactive.
LIST           - Display a list of objects.
MERGE          - Merges a child disk with its parents.
ONLINE         - Online an object that is currently marked as offline.
OFFLINE        - Offline an object that is currently marked as online.
RECOVER        - Refreshes the state of all disks in the selected pack.
                Attempts recovery on disks in the invalid pack, and
                resynchronizes mirrored volumes and RAID5 volumes
                that have stale plex or parity data.
REM            - Does nothing. This is used to comment scripts.
REMOVE         - Remove a drive letter or mount point assignment.
REPAIR         - Repair a RAID-5 volume with a failed member.
RESCAN         - Rescan the computer looking for disks and volumes.
RETAIN         - Place a retained partition under a simple volume.
SAN            - Display or set the SAN policy for the currently booted OS.
SELECT         - Shift the focus to an object.
SETID          - Change the partition type.
SHRINK         - Reduce the size of the selected volume.
UNIQUEID       - Displays or sets the GUID partition table (GPT) identifier or
                master boot record (MBR) signature of a disk.

DISKPART>
```

Data Center Bridging (DCB)

- Requirements needed when deploying DCB through Windows Server 2022:
 - The Ethernet adapters installed must be DCB compatible.
 - The Hardware switches that are deployed to the infrastructure must also be DCB compatible.
- DCB can be installed onto a Windows Server two ways:
 - Server Manager
 - Windows PowerShell

Windows PowerShell Cmdlets (1/4)

Cmdlet	Definition
Add-VMHardDiskDrive	Allows you to add a .vhd file to a virtual machine
Block-SmbShareAccess	This cmdlet allows an administrator to add a deny access control entry (ACE) to the security descriptor for the Server Message Block (SMB) share.
Clear-History	Deletes entries from the command history
Close-SmbOpenFile	This allows an administrator to forcibly close an open file by one of the clients of the Server Message Block (SMB) server.
Close-SmbSession	This allows an administrator to forcibly kill a Server Message Block (SMB) session.
Format-table	Shows the results in a table format
Get-Date	Shows the date and time
Get-event	Shows an event in the event queue
Get-Help Install-WindowsFeature	Shows the syntax and accepted parameters for the Install-WindowsFeature cmdlet
Get-NetIPAddress	Shows information about IP address configuration
Get-NfsClientConfiguration	Shows configuration settings for an NFS client.
Get-NfsMappedIdentity	Shows an NFS mapped identity
Get-NfsMappingStore	Shows the configuration settings for the identity mapping store.
Get-NfsNetgroup	Shows the netgroup.
Get-NfsSession	Shows the information about client systems that are currently connected to a shares on an NFS server.
Get-NfsShare	Shows an NFS share on the NFS server.
Get-NfsSharePermission	Shows you the NFS shares permissions that are on a NFS server.

Windows PowerShell Cmdlets (2/4)

Cmdlet	Definition
Get-SmbOpenFile	Allows an admin to see basic information about the files that are open on the Server Message Block (SMB) server.
Get-SmbShare	Allows an administrator to see the Server Message Block (SMB) shares on the computer.
Get-WindowsFeature	Shows a list of available and installed roles and features on the local server
Get-WindowsFeature - ServerName	Shows a list of available and installed roles and features on a remote server
Import-Module	Adds modules to the current session
Invoke-command	Runs commands on local or remote computers
New-NfsShare	Allows you to create an NFS file share.
New-event	Creates a new event
New-SmbShare	Allows an admin to create a new SMB share.
New-VHD	Allows you to create a new .vhd file.
Out-file	Sends the job results to a file
Receive-job	Gets the results of a Windows PowerShell background job
Remove-job	Deletes a Windows PowerShell background job
Remove-NfsShare	Allows you to delete an NFS file share.
Remove-SmbShare	Allows an admin to delete an SMB share.
Set-Date	Sets the system time and date on a computer
Set-NetIPAddress	Modifies IP address configuration properties of an existing IP address
Set-NetIPv4Protocol	Modifies information about the IPv4 protocol configuration
Set-SmbShare	Allows an administrator to modify the properties of the Server Message Block (SMB) share.

Windows PowerShell Cmdlets (3/4)

Cmdlet	Definition
Set-VM	This command allows you to configure some virtual machine settings like configuring the locations for snap shot storage and smart paging
Set-VMdvdDrive	Allows you to set a virtual machine to use a DVD or .ISO file.
Set-VMemory	This command allows you to set the RAM for a virtual machine.
Start-job	Starts a Windows PowerShell background job
Stop-job	Stops a Windows PowerShell background job
Trace-command	Configures and starts a trace of a command on a machine
Uninstall- WindowsFeature	Removes a role or feature

Windows PowerShell Cmdlets (4/4)

- There are hundreds of cmdlets available.
- Can retrieve a list of all the cmdlets starting here:

<http://technet.microsoft.com/en-us/scriptcenter/dd772285.aspx>