



Ahsay Online Backup Manager

Windows System Backup and Restore Guide

Version 9

Ahsay Systems Corporation Limited

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Revision History

Date	Description	Version
5 September 2023	Updated the format of the guide	9.7
16 April 2024	Ch. 7 – updated diagram to include Tibero Database and Linux Bare Metal	9.9

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1 INTRODUCTION

Ahsay brings you specialized client backup software, namely AhsayOBM, to provide a comprehensive backup solution for your MS Windows System backup. The MS Windows System Backup module of AhsayOBM provides you with a set of tools to protect your mission critical systems / personal computers on Windows operating system platforms.

This includes an image-based / bare-metal backup feature, that leverages Microsoft's native Wbadmin command-line tool ([Wbadmin](#)) for Windows Server 2008 and newer releases. It also has a recovery feature, to ensure that your servers and computers are protected even if they are lost or destroyed entirely. The image can be recovered onto a new device if necessary.

System state backup and restore operations include all system state data, and you cannot choose to backup or restore individual components due to dependencies among the system state components.

System state data is comprised of the following files:

- ▶ Boot files, including the system files, and all files protected by Windows File Protection (WFP)
- ▶ Active Directory (on a domain controller only)
- ▶ SYSVOL (on a domain controller only)
- ▶ Certificate Services (on certification authority only)
- ▶ Cluster database (on a cluster node only)
- ▶ Component Services Class registration database
- ▶ Performance counter configuration information
- ▶ Microsoft Internet Information Services (IIS) meta directory (on an IIS server only)
- ▶ Registry

The size of a set of system state backup data is dependent on the role installed on the server.

Please refer to the following article for more details:

For Windows 2008 and newer releases:

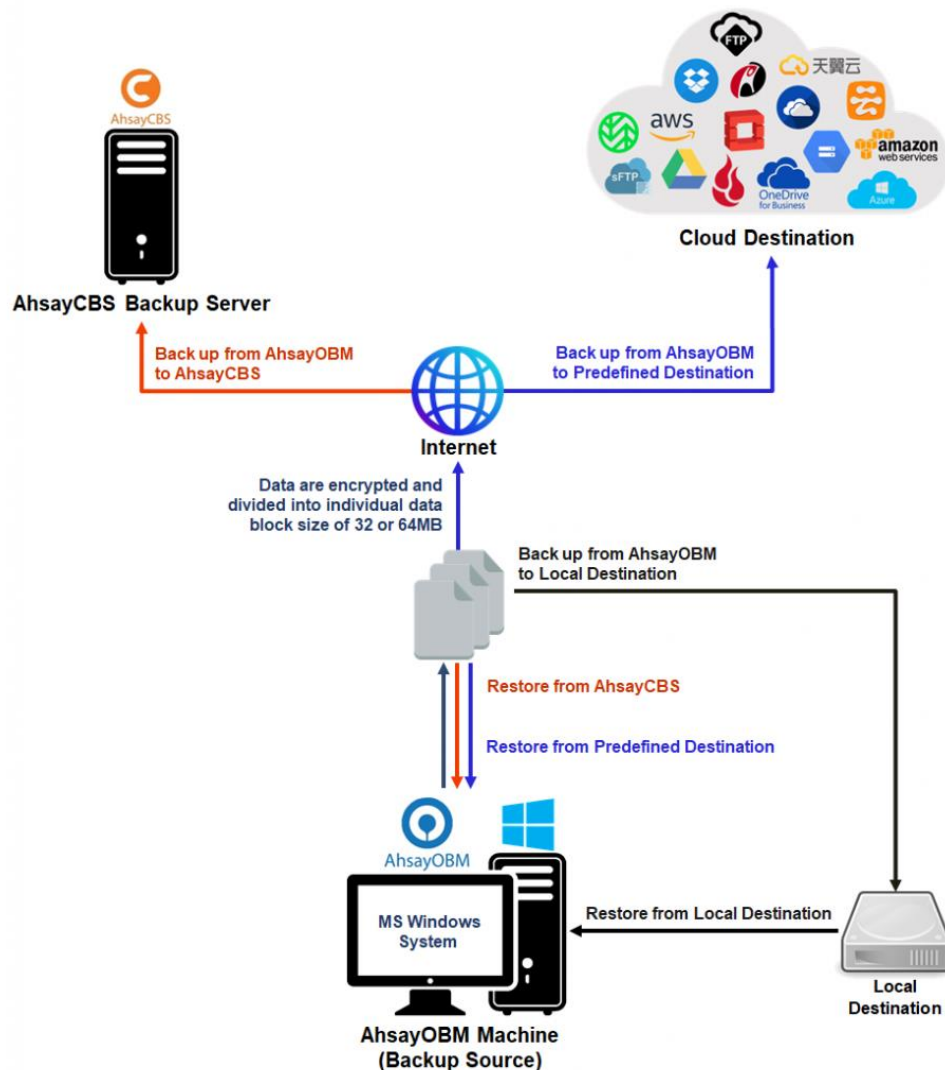
[Backing Up and Restoring System State](#)

We recommend you read first the [AhsayOBM Overview Guide](#). This will help you become familiar with the different functions, settings and features that can be configured in AhsayOBM. It will also be helpful to know the different features that can be customized in the backup set before creating one.

This guide will focus on:

- ▶ How to create a MS Windows System and System State backup set.
- ▶ How to run a backup job.
- ▶ How to recover a MS Windows System and System State backup set including system image restore, recovering server, files and folders, application data, volumes, Operating System or full system, and system state data.

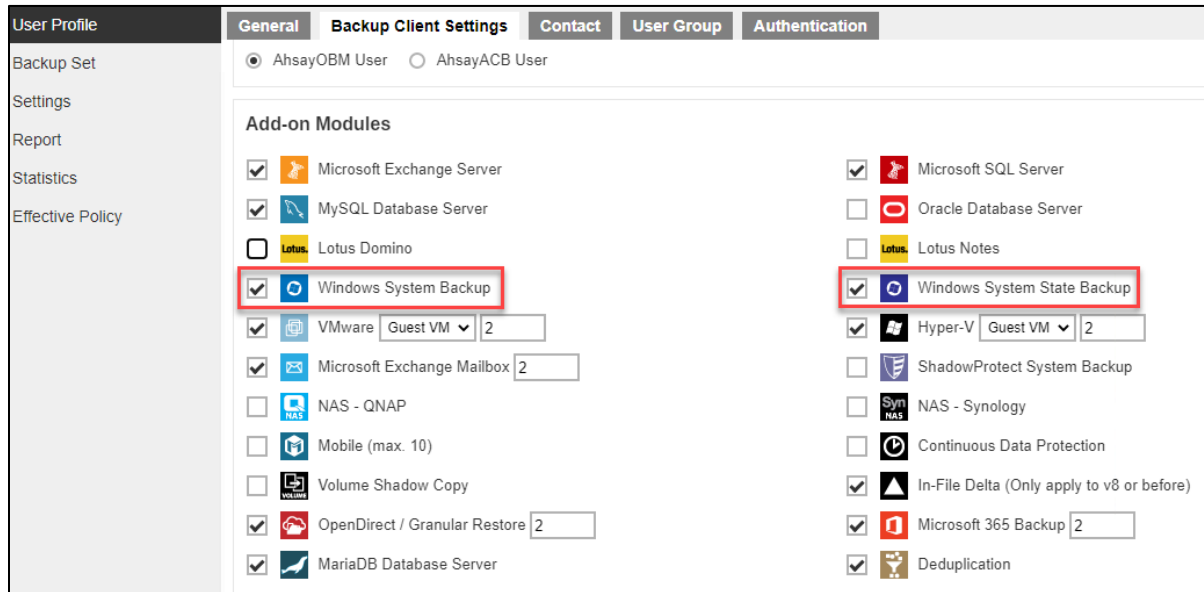
The following high-level system architecture diagram illustrates the major elements involved in the backup process of a MS Windows System backup with AhsayOBM and AhsayCBS.



2 REQUIREMENTS

2.1 AHSAYOBM ADD-ON MODULE CONFIGURATION

Make sure that the Windows System Backup and Windows System State Backup add-on module is enabled in your AhsayOBM user account. Please contact your service provider for more details.



2.2 BACKUP QUOTA REQUIREMENT

Make sure that your AhsayOBM user account has sufficient quota assigned to accommodate the storage for the system state backup for the new backup set and retention policy. Please contact your backup service provider for more details.

2.3 JAVA HEAP SIZE

The default Java heap size setting of AhsayOBM is 2048MB. For Windows System State backup, it is highly recommended to increase the Java heap size setting to at least 4096MB to improve backup and restore performance. The actual heap size used will be dependent on the amount of free memory available on the machine with AhsayOBM installed (machine that is running the backup).

For best performance, consider increasing the memory allocation setting for AhsayOBM (Java heap space).

Refer to this link for more details about the modification of the java heap size setting for AhsayOBM:

[FAQ: How to modify the Java heap size setting of AhsayOBM / AhsayACB?](#)

2.4 LICENSE REQUIREMENT

AhsayOBM licenses are calculated on a per device basis:

- ▶ To back up users with 1 backup client computer (e.g. 1 AhsayOBM installed), 1 AhsayOBM license is required.
- ▶ To back up users with multiple backup client computers, the number of AhsayOBM licenses required is equal to the number of devices. For example, if there are 10 users to be backed up with 3 backup client computers, then 30 AhsayOBM licenses are required. Please contact your backup service provider for more details.

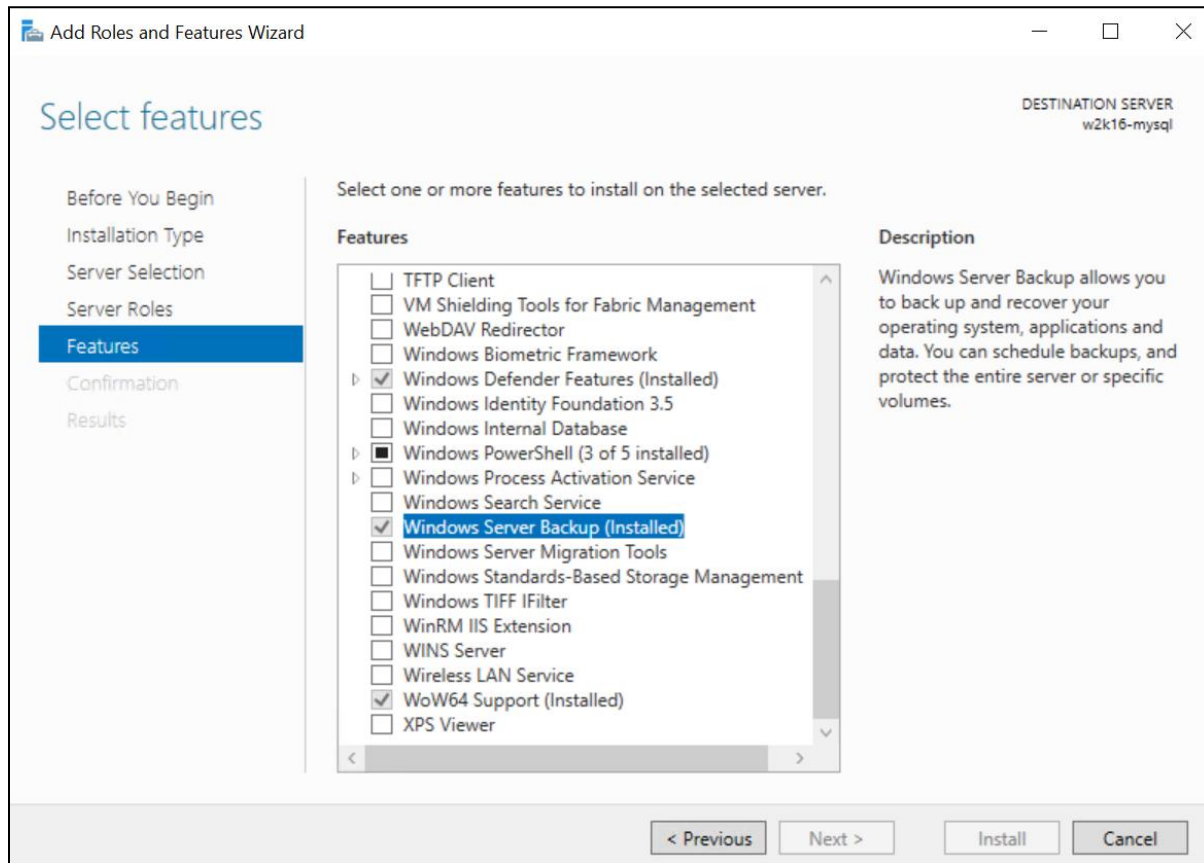
2.5 WINDOWS REQUIREMENT

WINDOWS SERVER BACKUP (WSB) FEATURES

The following Windows Server Backup features must be installed on the computer to be backed up:

- ▶ Windows Server Backup
- ▶ Command Line Tool
- ▶ Windows PowerShell

This can be confirmed in the Server Manager. These features can be added by selecting **Add Roles and Features**.



WINDOWS ACCOUNT PERMISSION

To perform recovery using Windows Server Backup, the operating system account you are using must be a member of the Backup Operators or Administrators group.

SYSTEM VOLUME

The system volume must be formatted with NTFS.

LATEST SERVICE PACKS FROM MICROSOFT

Ensure that you have the latest service packs installed. Updates to the Windows operating system improve its performance and resolve known issues with Windows Server Backup.

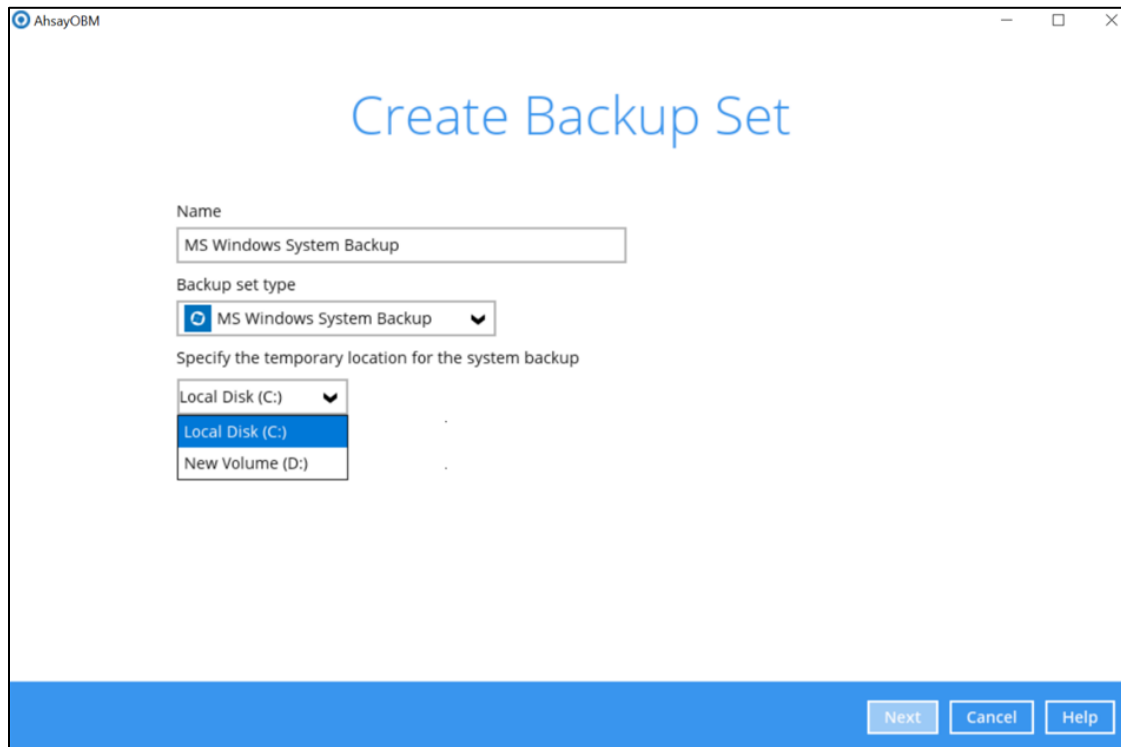
NOTE

Windows XP Home is not supported for the system state backup and restore by AhsayOBM.

As Windows XP and Windows 2003 are no longer supported by Microsoft anymore, Ahsay will provide best effort support.

2.6 TEMPORARY VOLUME

Make sure that the storage location configured for the system image is set to a supported location.



The temporary storage location is required by the WBADMIN utility to temporarily store the image file during the backup job.

The machine requires an additional drive to accommodate the spooling of the System State image file. As you can see in our sample screen shot above, we have two (2) drives in total, "Local Disk C:" and "New Volume D:".

If the machine has only one (1) drive, then one of the following options will need to be implemented to create the temporary volume.

- ▶ A USB drive needs to be connected
- ▶ The existing C: drive will need to be repartitioned to create an additional drive, i.e. D:
- ▶ An extra physical drive will need to be installed
- ▶ Set up a network drive (the least preferred option as it will affect the backup performance)

For more details about the restrictions, please refer to the following link:

[FAQ: Restrictions on the temporary storage location for the Windows System State and System backup image file](#)

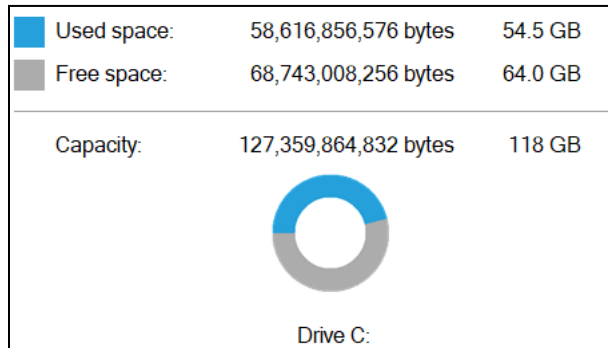
DISK SPACE AVAILABLE IN TEMPORARY STORAGE LOCATION

Make sure that there is sufficient disk space available in the storage location for the backup set.

For a system backup, it will typically require disk space of the total used size of all volumes selected for backup.

NOTE

Used space, not free space of all volumes selected for backup.



MAXIMUM SUPPORTED DISK SIZE

For Windows Vista, or 2008 / 2008 R2 Server, source volumes with size greater than 2 TB (e.g. 2040 GB - 2 MB = 2088958 MB) are not supported.

This limitation is related to the .vhd file size limit.

NOTE

This limitation does not apply to Windows 8 or newer releases of Windows platforms.

2.7 RESTORE CONSIDERATIONS

Please consider the following before performing a MS System and MS System State restore:

- ▶ Windows Account Permission

To perform recovery using Windows Server Backup, the operating system account that you use, must be a member of the Backup Operators or Administrators group.

- ▶ Disk Size

For recovery of operating system to a new hard disk, ensure that the disk that you restore to is at least the size of the disk that contained the volumes that were backed up, regardless of the size of those volumes within.

For example, if there was only one volume of size 100 GB created on a 1 TB disk during backup, then you should use a disk that is at least 1 TB when recovering.

- ▶ Windows Recovery Environment

For recovery of operating system, the processor architecture for a given instance of Windows Recovery Environment and the computer whose system you are trying to restore must match.

For example, Windows Recovery Environment for an x64 based version of the operating system will only work on an x64 based server.

- ▶ Caution on Recovery to Dissimilar Hardware

This recovery method requires the restore target system to have similar hardware and the exact same boot type as the source system from which the backup was taken. Disk adapters are especially sensitive. If using dissimilar hardware, the restored system might not boot.

For example, if the system backup image was taken from a BIOS-based system, the recovery environment must be booted in BIOS mode.

- ▶ BitLocker Drive

For server with BitLocker Drive Encryption enabled, make sure to re-apply BitLocker Drive Encryption to the server after a restore.

This will not happen automatically; it must be enabled explicitly.

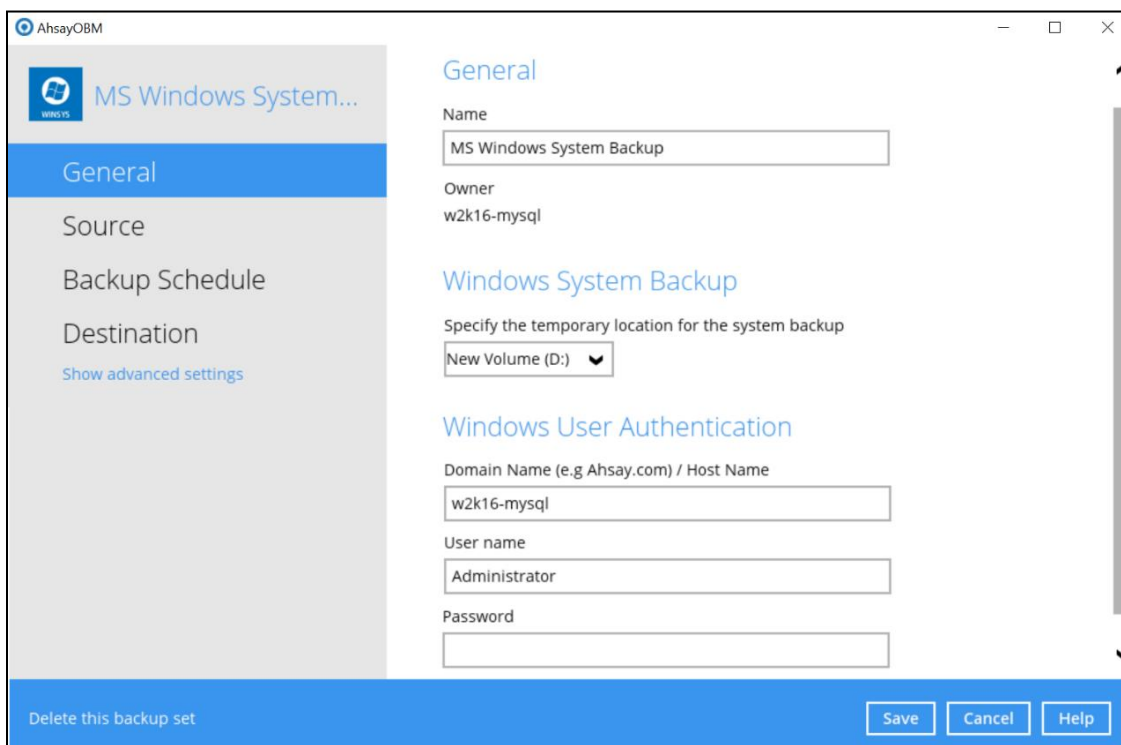
For instructions, refer to the following: [Windows Bitlocker Drive Encryption Step-by-step Guide](#)

3 BEST PRACTICES AND RECOMMENDATIONS

The following are some best practices or recommendations that we strongly recommend, before you start any Microsoft System State backup and restore:

3.1 TEMPORARY DIRECTORY FOLDER LOCATION

For best performance, it is recommended that the temporary storage location of a MS Windows System State backup set is set to a supported local volume, and not to a network volume (e.g. to improve I/O performance). The temporary storage location is highly recommended to be set on a directory with sufficient free disk space and located to another location other than Drive C: (e.g. Drive D:).



The screenshot shows the configuration window for an MS Windows System State backup. The window title is "MS Windows System...". The left sidebar contains a "General" tab and other options like "Source", "Backup Schedule", and "Destination". The main area is divided into sections: "General" with fields for "Name" (MS Windows System Backup) and "Owner" (w2k16-mysql); "Windows System Backup" with a dropdown menu for "Specify the temporary location for the system backup" (New Volume (D:)); and "Windows User Authentication" with fields for "Domain Name (e.g Ahsay.com) / Host Name" (w2k16-mysql), "User name" (Administrator), and "Password". At the bottom, there are buttons for "Delete this backup set", "Save", "Cancel", and "Help".

NOTE

For Windows Server 2008 or newer releases, the restriction on temporary volume ([2.6 Temporary Volume](#)) must also be considered.

3.2 BACKUP DESTINATION

To provide maximum data protection and flexible restore options, it is recommended to configure:

- ▶ At least one offsite or cloud destination
- ▶ At least one local destination for fast recovery

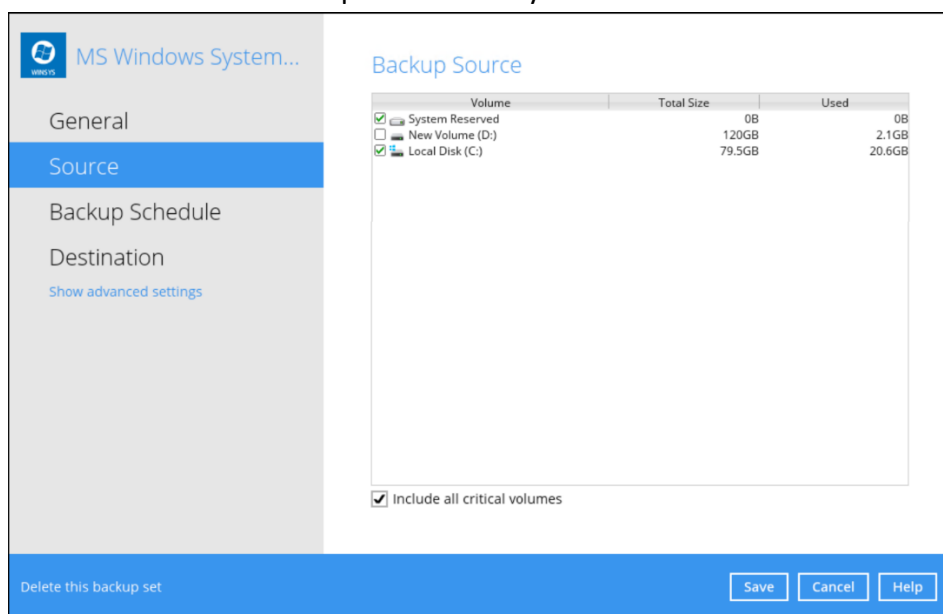
3.3 BACKUP FREQUENCY

MS Windows System State backup should be performed at least once per week.

3.4 PERFORMANCE RECOMMENDATIONS

Consider the following best practices for optimized performance of the backup operations:

- ▶ Enable scheduled backup jobs when system activity is low to achieve the best possible performance.
- ▶ Perform test restores periodically to ensure your backup is set up and performed properly. Performing recovery test can also help identify potential issues or gaps in your recovery plan. It's important that you do not try to make the test easier, as the objective of a successful test is not to demonstrate that everything is flawless. There might be flaws identified in the plan throughout the test and it is important to identify those flaws.
- ▶ It is highly recommended to enable the **Include all critical volumes** option to select all critical volumes for backup automatically.



This will ensure that the backup image can be used for full-system / bare-metal recovery.

3.5 NOT A REPLACEMENT FOR FILE BACKUP

An image-based / bare-metal backup should never be considered a replacement for a nightly data backup plan.

Firstly, image-based backups do not lend themselves easily to recovery of a single file. The nature of image-based backup requires a complete restore of the system image file, even if you only want to recover a single file.

3.6 RESTORE TO ALTERNATE COMPUTER

You can restore a system state backup to the same physical computer from which the system state backup was created, or to a different computer that has the same make, model, and configuration (identical hardware). Microsoft does not support restoring a system state backup from one computer to a second computer of a different make, model, or hardware configuration.

Please refer to the following article for more details:

[How to restore a Windows 7 installation](#)

3.7 PERIODIC BACKUP SCHEDULE

The periodic backup schedule should be reviewed regularly to ensure that the interval is sufficient to handle the data volume on the machine. Over time, data usage pattern may change on a production server, i.e. the number of new files created, the number of files which are updated/deleted, and new users may be added etc.

Consider the following key points to efficiently handle backup sets with periodic backup schedule.

- **Hardware** – to achieve optimal performance, compatible hardware requirements is a must. Ensure you have the backup machine's appropriate hardware specifications to accommodate frequency of backups
 - ▶ so that the data is always backed up within the periodic backup interval
 - ▶ so that the backup frequency does not affect the performance of the production server.
- **Network** – make sure to have enough network bandwidth to accommodate the volume of data within the backup interval.
 - ▶ **Retention Policy** - also make sure to consider the retention policy settings and retention area storage management which can grow because of the changes in the backup data for each backup job.

4 CREATE A MS WINDOWS SYSTEM AND SYSTEM STATE BACKUP SET

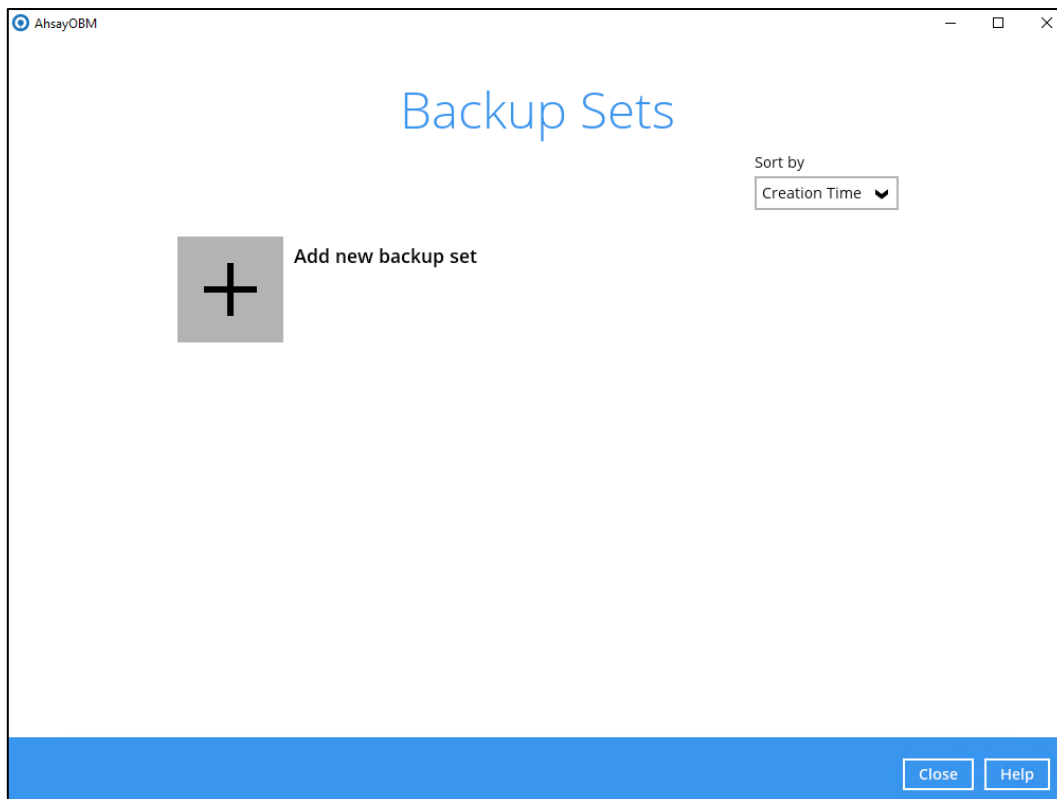
1. Log in to AhsayOBM.

For instructions on how to do this please refer to the [AhsayOBM Login Guide \(GUI\)](#)

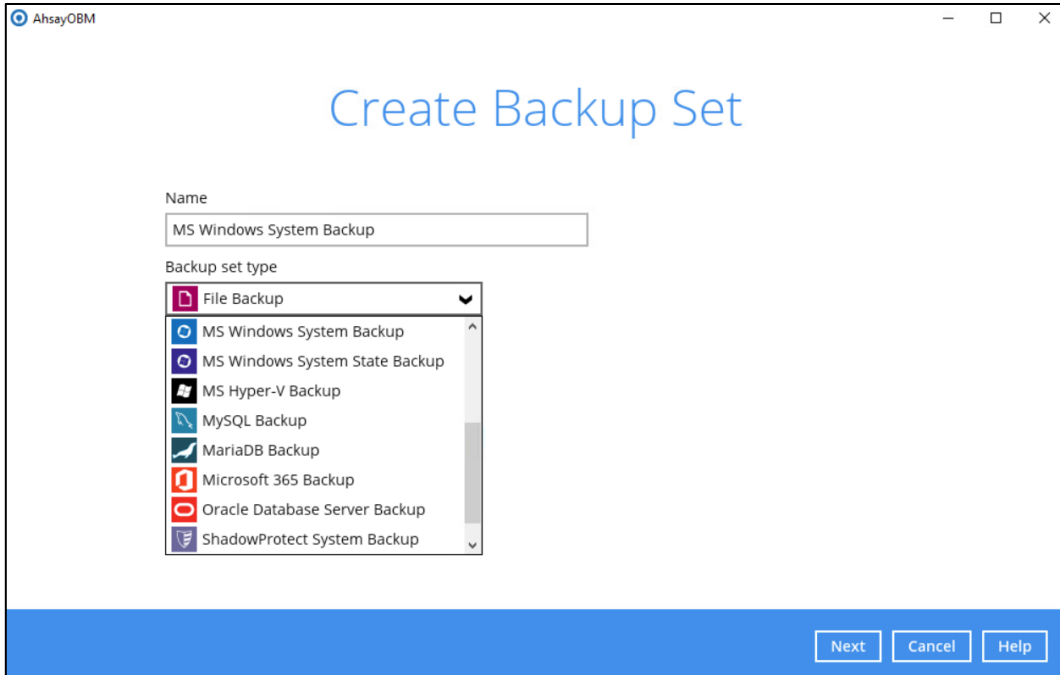
2. In the AhsayOBM main interface, click **Backup Sets**.



3. Create a backup set by clicking  icon before "Add new backup set".

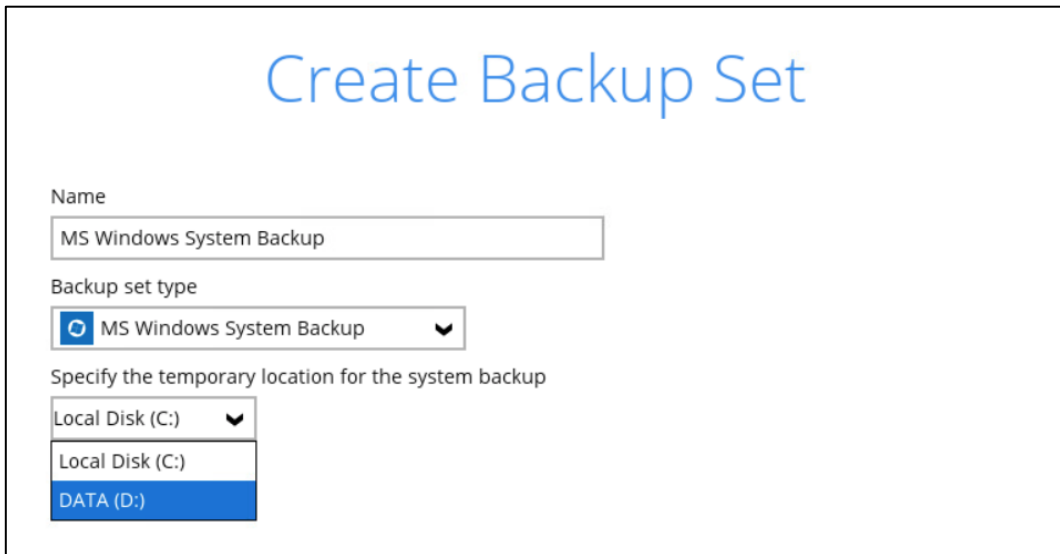


4. Select MS Windows System Backup or MS Windows System State Backup as the “Backup set type”, enter a “Name” for your backup set.



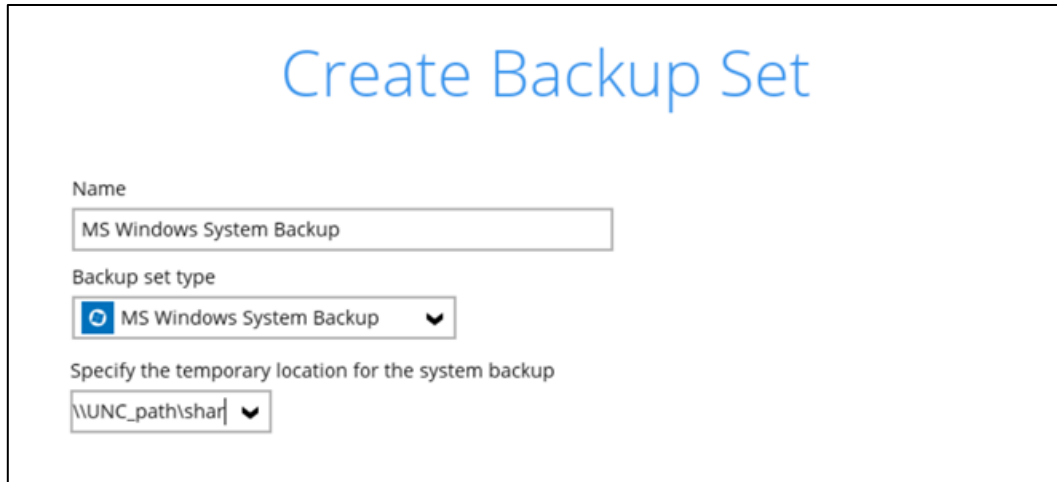
Select the location where you would like to store the system image / system state image before generating the backup data.

Select a local volume from the dropdown menu.



Or

Enter the UNC path to a network volume that is accessible to the client computer.



Create Backup Set

Name
MS Windows System Backup

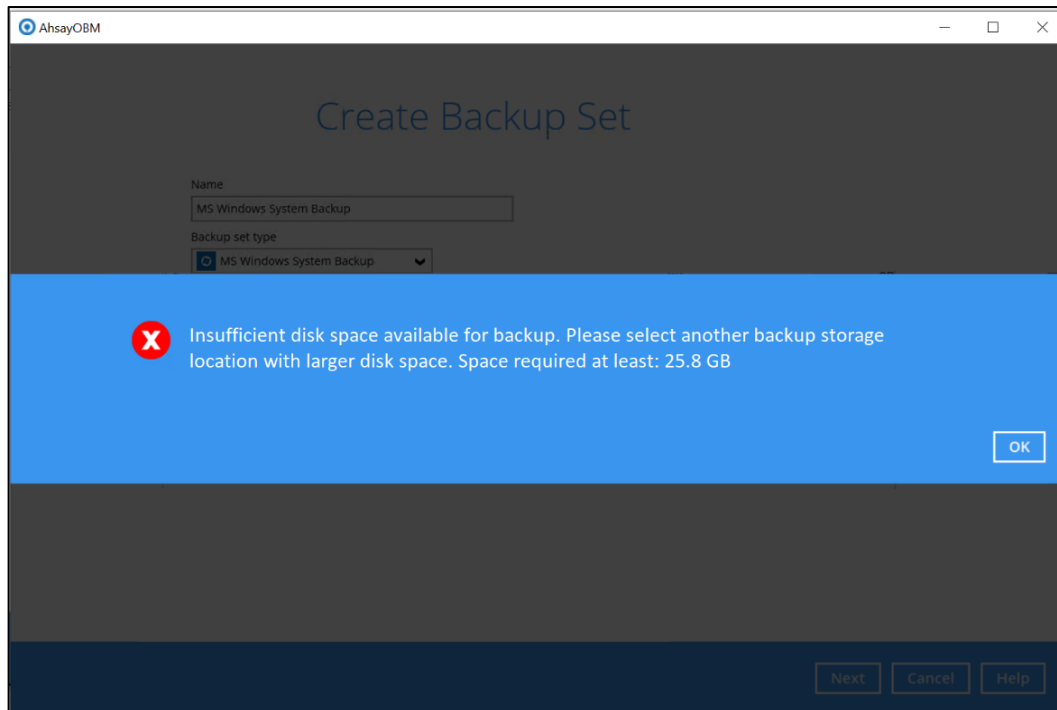
Backup set type
MS Windows System Backup

Specify the temporary location for the system backup
\\UNC_path\share

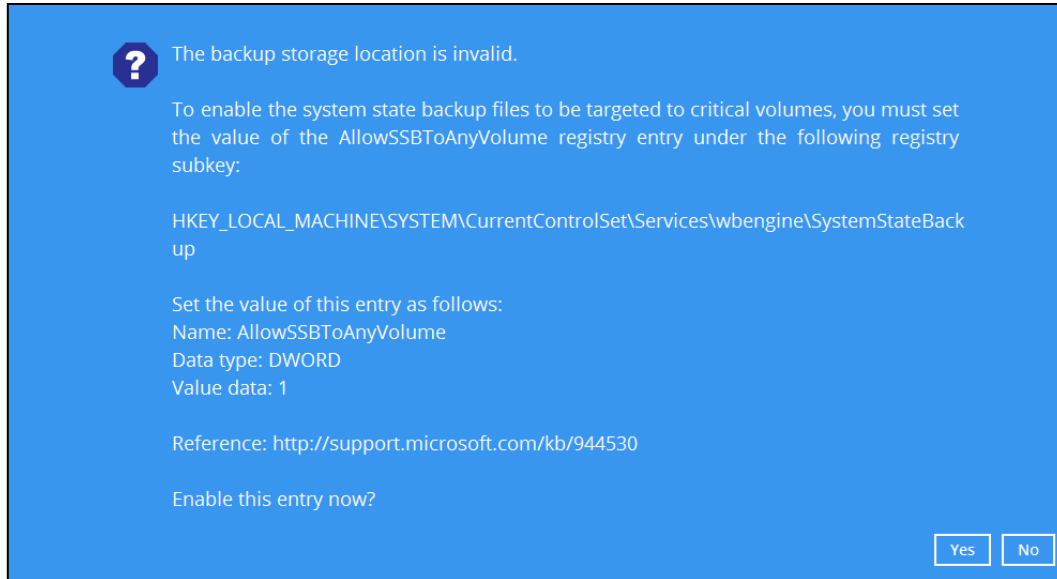
NOTE
Make sure that the storage location configured for the system image is set to a supported location.

Click **Next** to proceed.

For MS Windows System backup: If the disk you selected has insufficient space, then this alert will be display.



For MS Windows System State backup: If the storage location is set to a critical volume (e.g. system volume), the following message will be displayed:



Click **Yes** for AhsayOBM to enable the registry entry, or click **No**, then change the storage location setting to another location.

NOTE

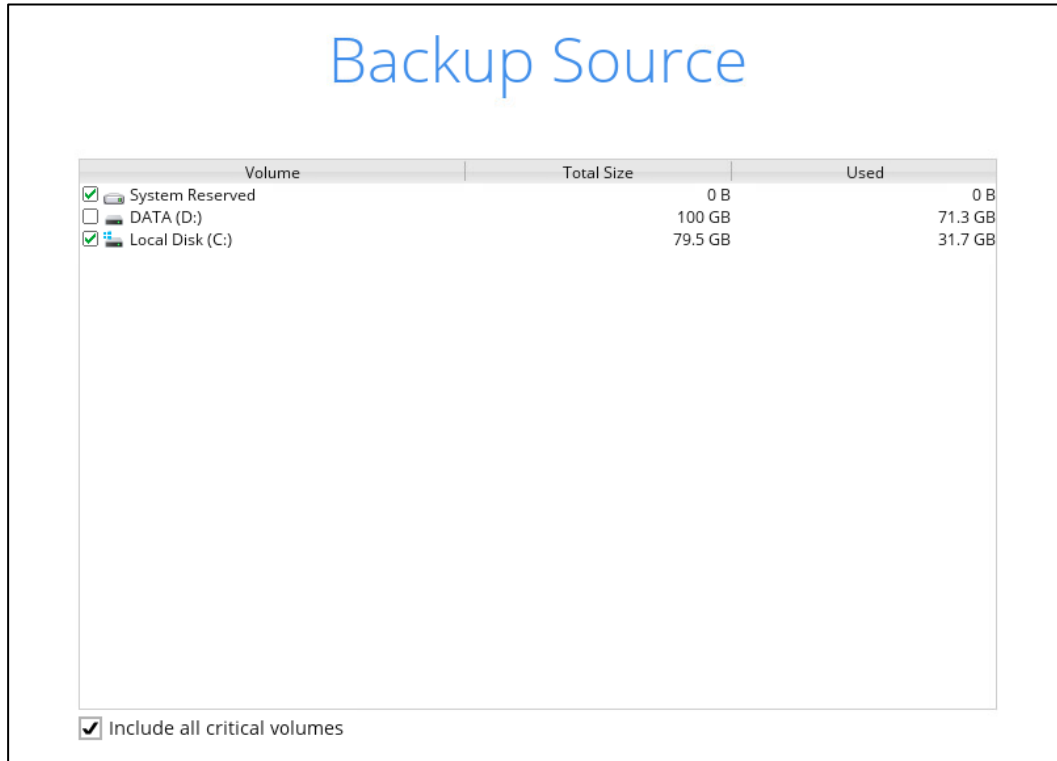
For Windows 2008 Server, the temporary storage location cannot be set to a network path.

Refer to the following link for the details on the restriction:

[FAQ: Restrictions on the temporary storage location for the Windows System State and System backup image file](#)

5. In the “Backup Source” menu, select the volume(s) which you would like to backup.

Tick the **Include all critical volumes** option to select all critical volumes for backup automatically. This will ensure that the backup image can be used for full-system / bare-metal recovery.

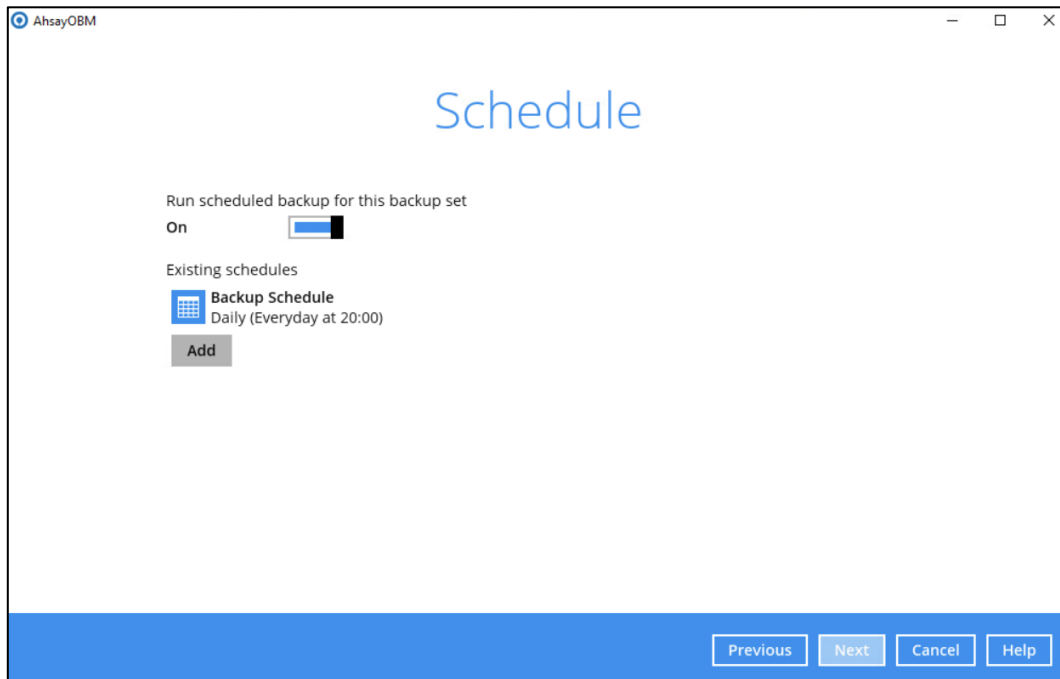


NOTE

The above displayed screen is for MS Windows System Backup only.

Click **Next** to proceed.

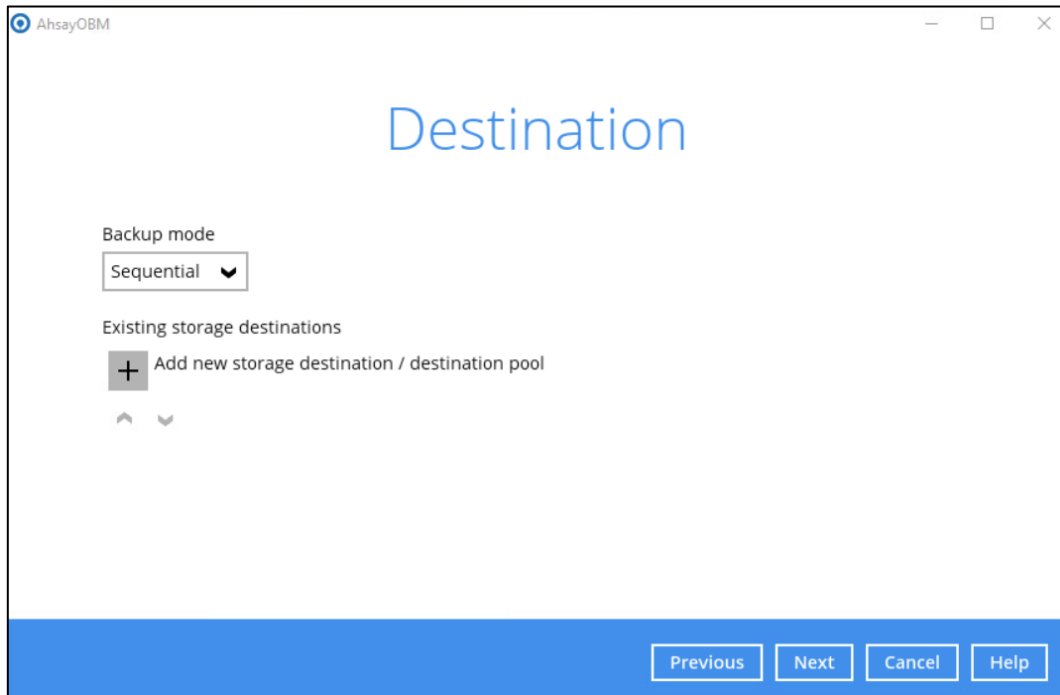
6. In the “Schedule” menu, configure a backup schedule for backup job to run automatically at your specified time interval. Click **Add** to add a new schedule, then click **Next** to proceed afterward.



The screenshot shows the 'New Backup Schedule' configuration window. The title is 'New Backup Schedule'. It has a 'Name' field with the text 'Daily-1'. Below that is a 'Type' dropdown menu set to 'Daily'. The 'Start backup' section has three dropdown menus: 'at', '14', and '29'. The 'Stop' section has a dropdown menu set to 'until full backup completed'. At the bottom, there is a checkbox labeled 'Run Retention Policy after backup' which is currently unchecked.

For details on how to configure the backup schedule settings, you may refer to [AhsayOBM Overview Guide \(GUI\)](#).

7. In the “Destination” menu, select a backup destination where the backup data will be stored. Click the **+** icon before “Add new storage destination / destination pool”.

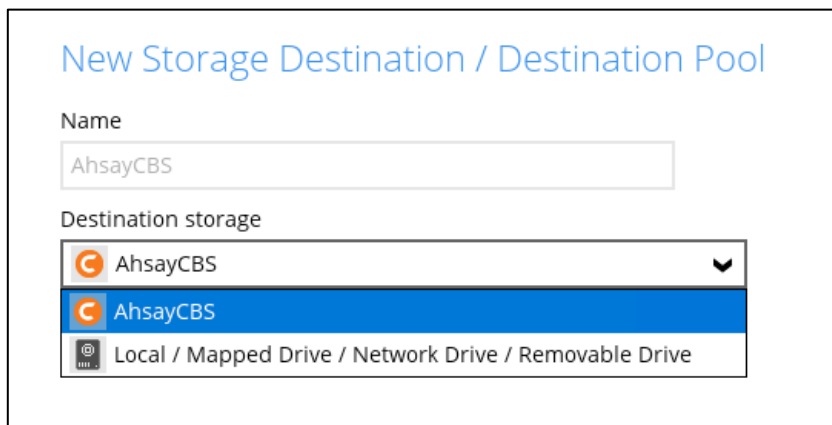


NOTE

For more details on Backup Destination, refer to this link [FAQ: Frequently Asked Questions on Backup Destination](#).

For more details on configuration of cloud storage as backup destination, refer to the [Appendix](#).

8. Select the “Destination storage”.

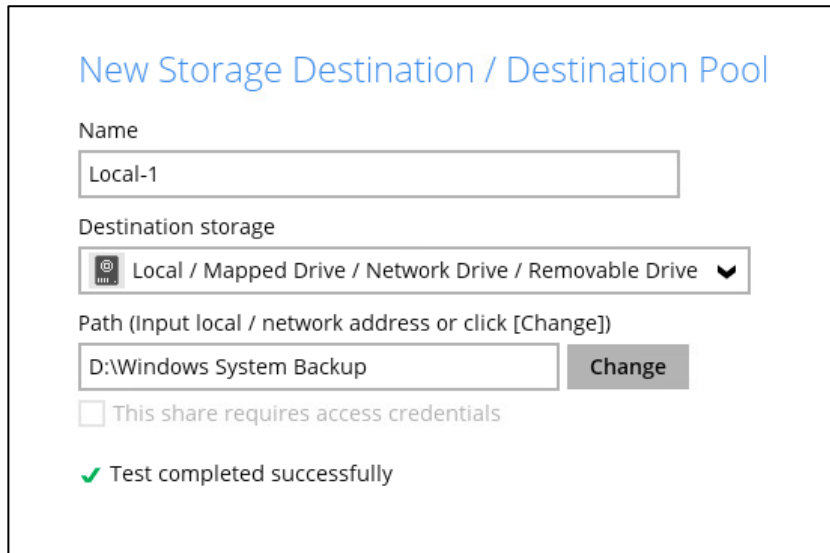


NOTE

Multiple backup destinations can be configured for a single backup set. The backup data will be uploaded to all the destinations you have selected in the order you added them.

You can choose several storage destinations like AhsayCBS, Local / Mapped Drive / Network Drive / Removable Drive, Cloud storage or FTP. Click **OK** to proceed when you are done with the settings.

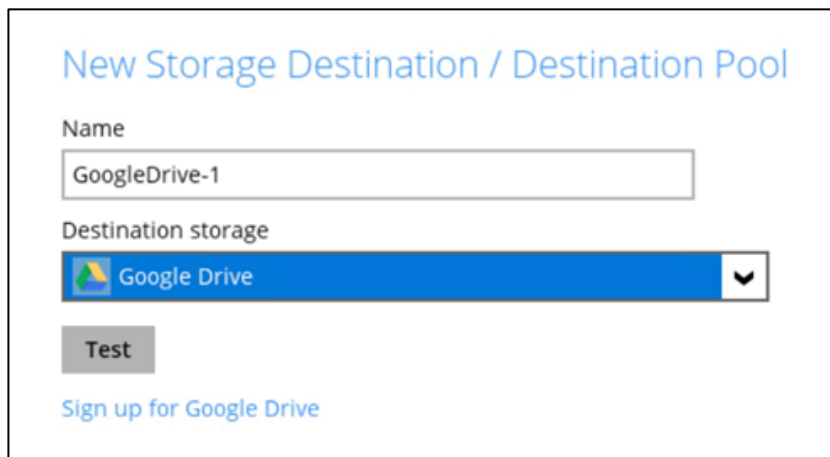
- ▶ If you have chosen the Local / Mapped Drive / Network Drive / Removable Drive option, click **Change** to browse for a directory path where backup data will be stored, then click **Test** to validate the path. “Test completed successfully” shows when the validation is done.



The screenshot shows a dialog box titled "New Storage Destination / Destination Pool". It contains the following fields and options:

- Name:** A text input field containing "Local-1".
- Destination storage:** A dropdown menu with a server icon and the text "Local / Mapped Drive / Network Drive / Removable Drive".
- Path (Input local / network address or click [Change]):** A text input field containing "D:\Windows System Backup" and a "Change" button to its right.
- This share requires access credentials
- ✓ Test completed successfully

- ▶ If you have chosen to store the backup files in another Cloud Storage, click **Test** to log in to the corresponding cloud storage service.



The screenshot shows a dialog box titled "New Storage Destination / Destination Pool". It contains the following fields and options:

- Name:** A text input field containing "GoogleDrive-1".
- Destination storage:** A dropdown menu with the Google Drive logo and the text "Google Drive".
- Test:** A button to test the connection.
- [Sign up for Google Drive](#)

- ▶ If you have chosen the FTP as the destination, enter the the “Host”, “Username” and “Password” details.

New Storage Destination / Destination Pool

Name
FTP-1

Destination storage
FTP FTP

Host Port

Username

Password

(optional) FTP directory to store backup data (default to ~/Ahsay)

Click **Next** to proceed when you are done with the selection.

9. In the “Encryption” window, the default “Encrypt Backup Data” option is enabled with an encryption key preset by the system which provides the most secure protection.

AhsayOBM

Encryption

Encrypt Backup Data
On

Encryption Type
Default

Default
User password
Custom

Previous Next Cancel Help

NOTE

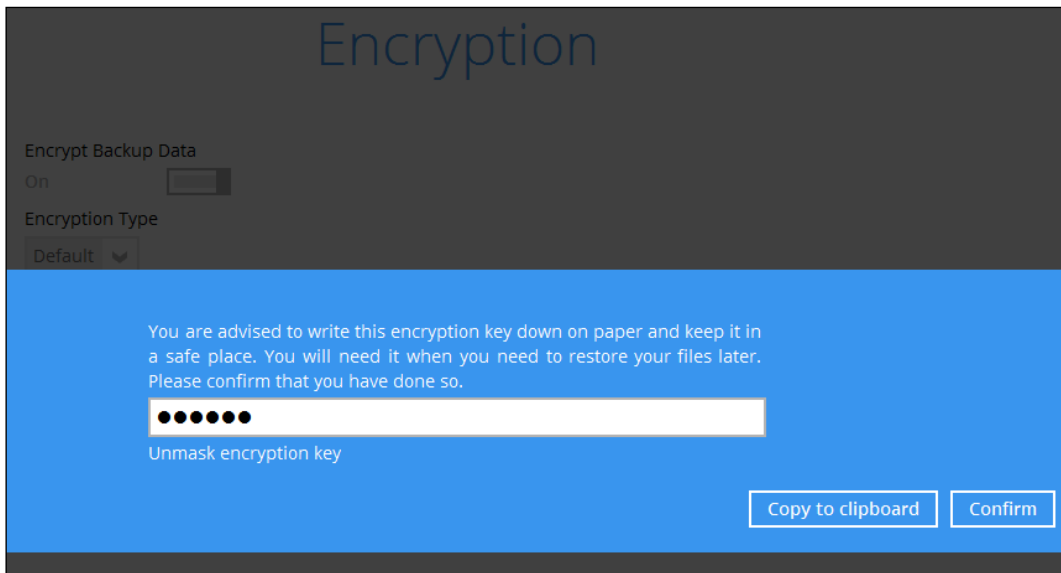
For best practice on managing your encryption key, refer to the following wiki article.

[FAQ: Best practices for managing encryption key for AhsayOBM or AhsayACB](#)

You may refer also to [AhsayOBM Overview Guide \(GUI\)](#) for more details.

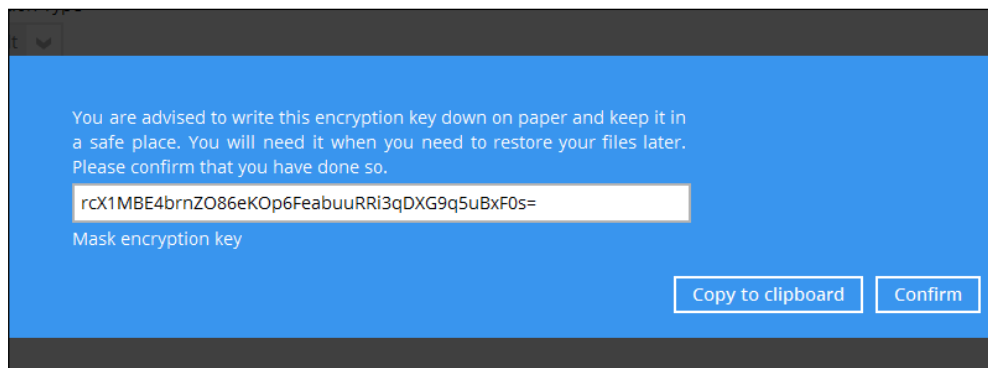
Click **Next** when you are done setting.

10. If you have enabled the Encryption Key feature in the previous step, the following pop-up window shows, no matter which encryption type you have selected.



The pop-up window has the following three options to choose from:

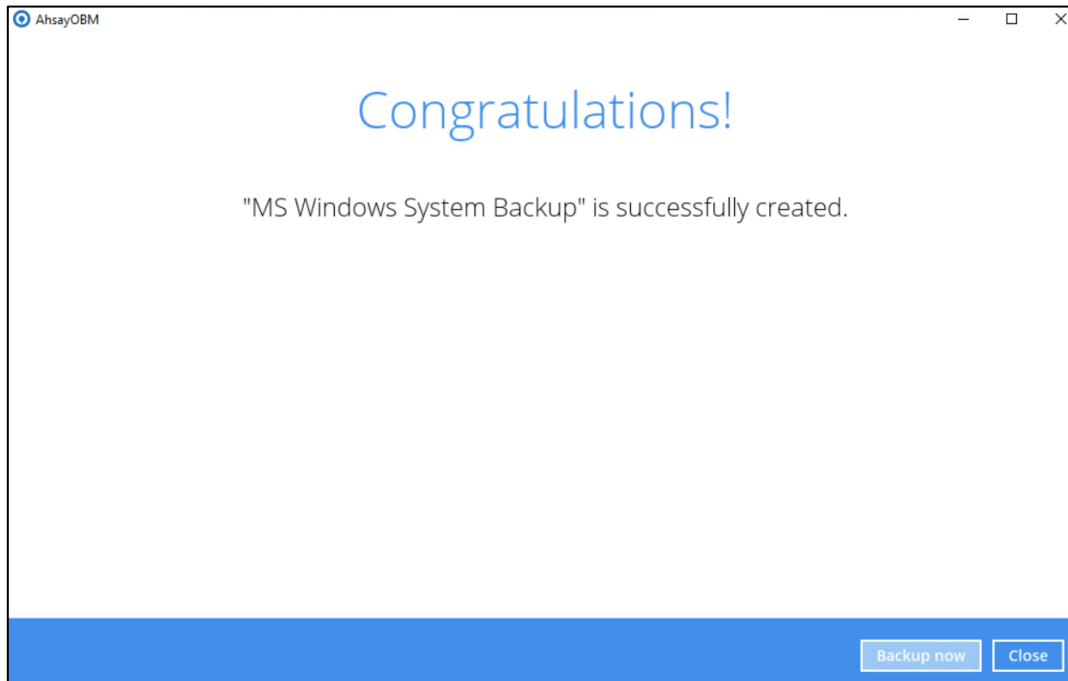
- ▶ **Unmask encryption key** – The encryption key is masked by default. Click this option to show the encryption key.



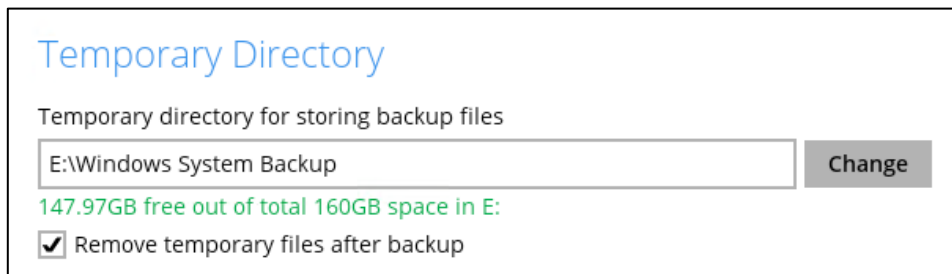
- ▶ **Copy to clipboard** – Click to copy the encryption key, then you can paste it in another location of your choice.
- ▶ **Confirm** – Click to exit this pop-up window and proceed to the next step.

Click **Next** to create the backup set.

11. The following screen is displayed when the new MS Windows System backup set is created successfully.



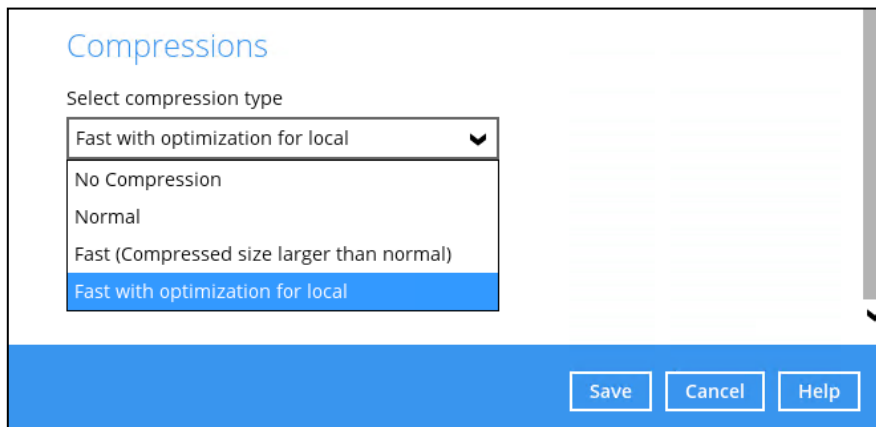
12. It is highly recommended to set the temporary directory to another location other than Drive C: (e.g. Drive E:). To do this, go to **Backup Sets > Others > Temporary Directory** and click the **Change** button to browse for another location.



13. Optional: Select your preferred “Compression type”. By default, the compression type is Fast with optimization for local.

Go to **Others > Compressions**, then select from the following:

- ▶ No Compression
- ▶ Normal
- ▶ Fast (Compressed size larger than normal)
- ▶ Fast with optimization for local



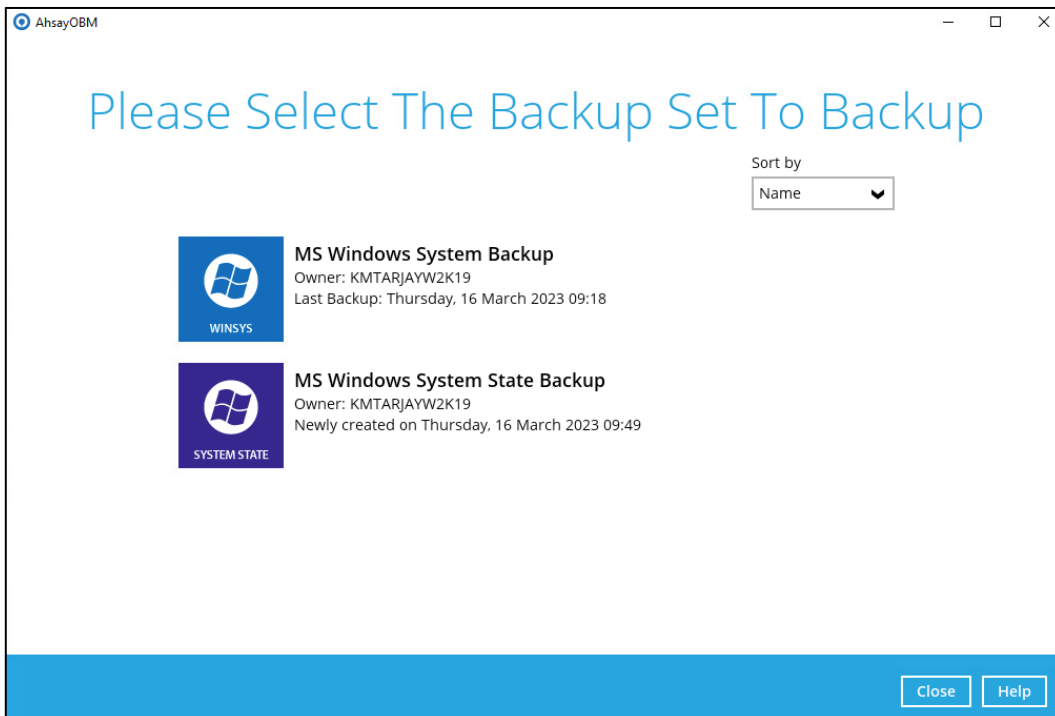
5 RUN BACKUP JOB

Screenshots used for this guide are based on MS Windows System and will include screenshots for MS Windows System State if applicable.

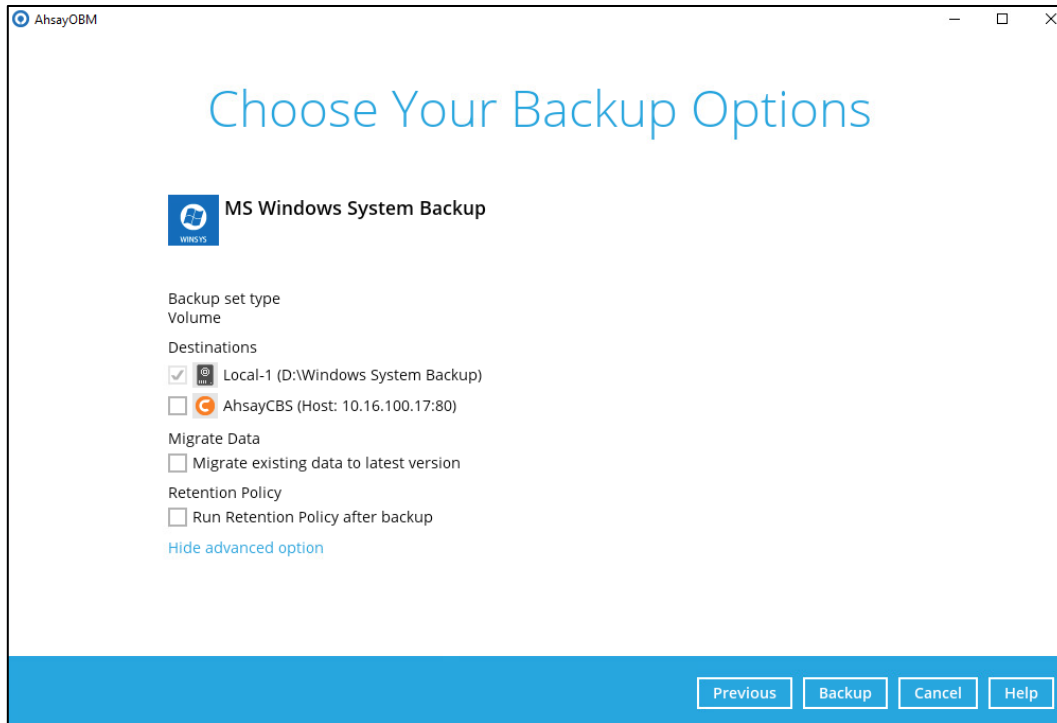
1. Click the **Backup** icon on the main interface of AhsayOBM.



2. Select the backup set which you would like to start a backup for.



3. If you would like to modify the “Destinations”, “Migrate Data”, and “Retention Policy” settings, click **Show advanced option** to view options.

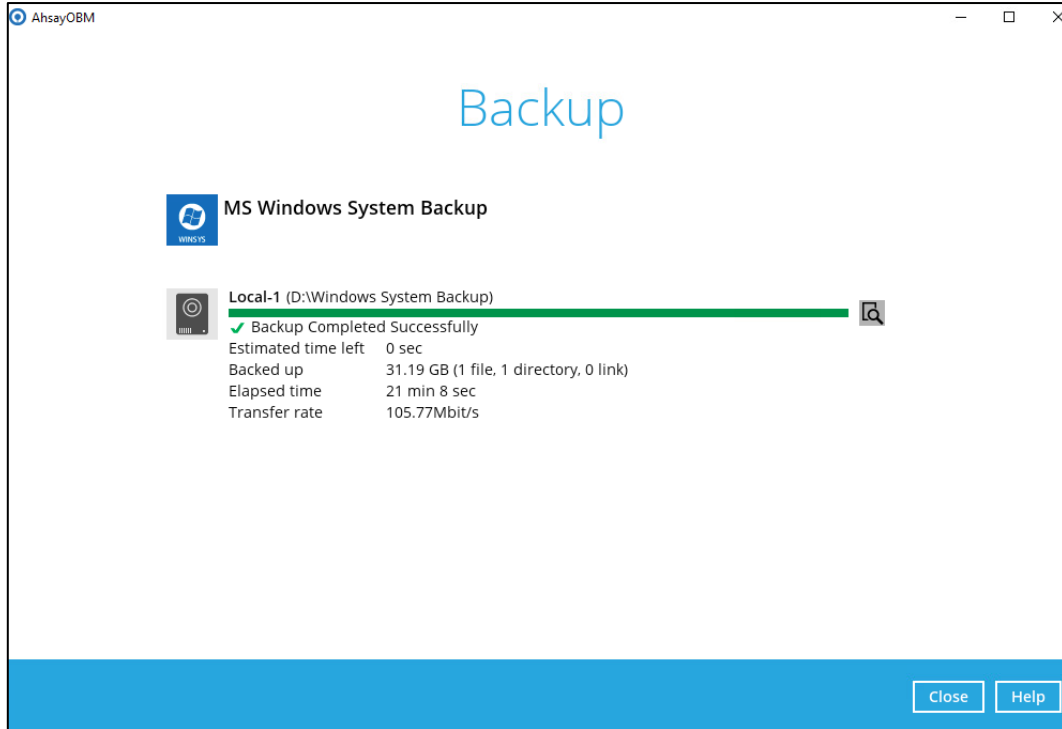



Click **Backup** to start the backup job.

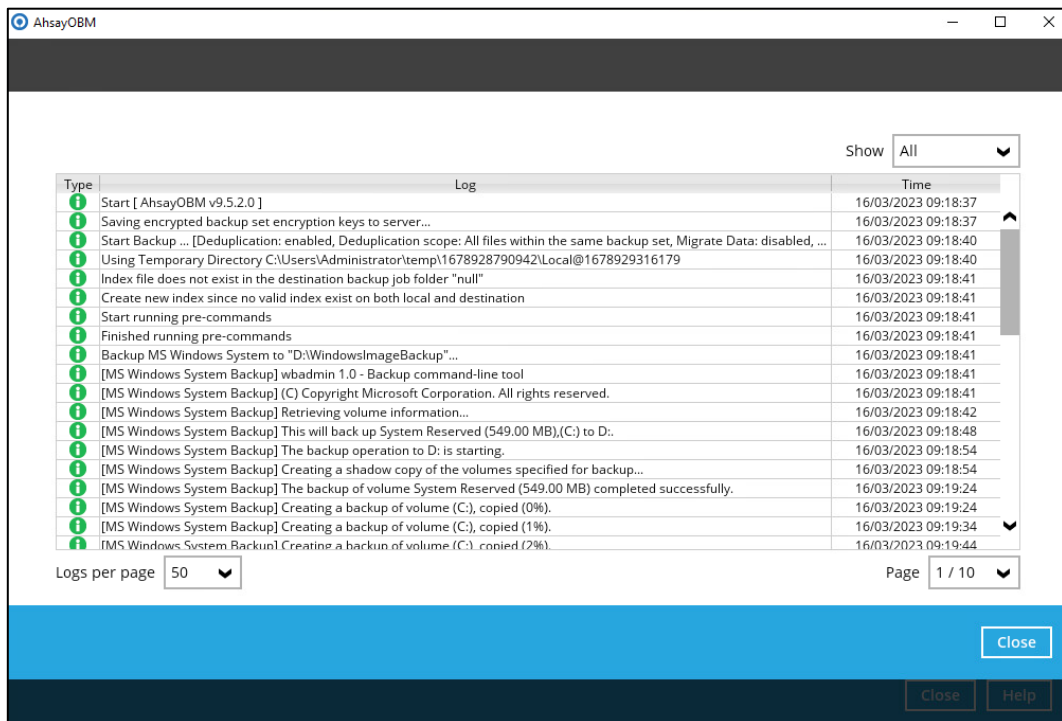
NOTE

The “Migrate Data” option will only be displayed if Deduplication is enabled for the backup set. When the “Migrate Data” option is enabled, the existing data will be migrated to the latest version during a backup job. This option is disabled by default. Backup job(s) for backup sets with Migrate Data enabled may take longer to finish. For more information about this feature, refer to [Ahsay CBS v9 New Features Datasheet](#).

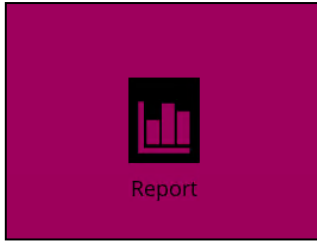
- The following screen is displayed when the data are backed up successfully.



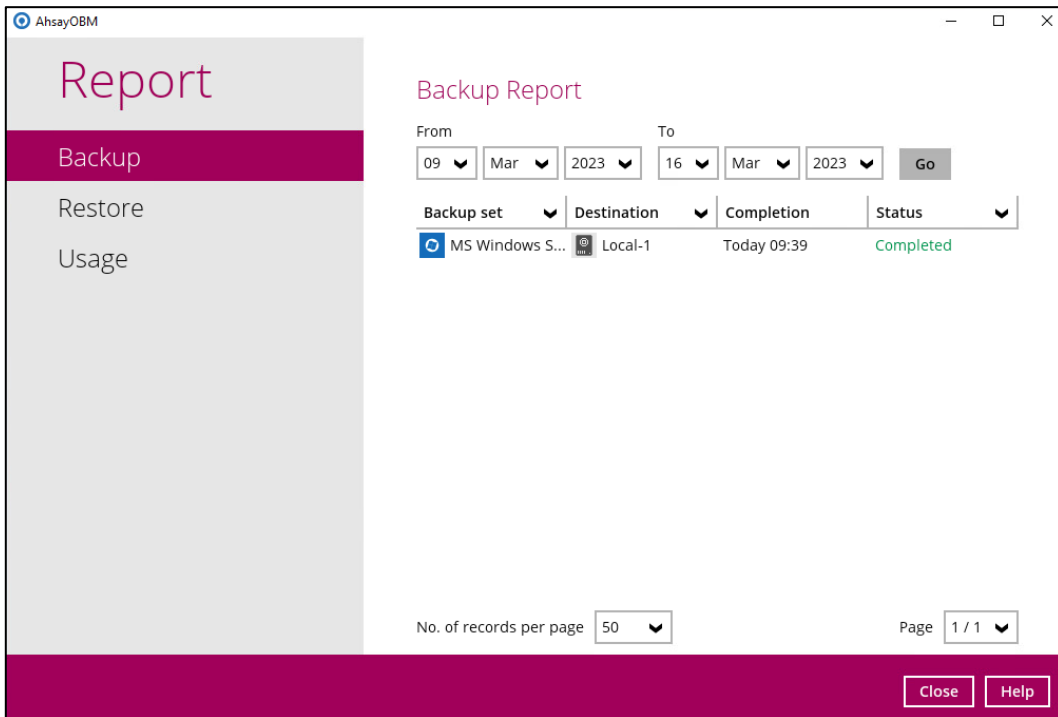
- Check the log of your backup by clicking this icon . It will show you the log of your backup with corresponding date and time.



To view the report, go to **Report > Backup**



In the “Backup Report” screen, you can see the backup set with corresponding destination, completion date and time, and status.



Click the backup report and the summary of the backup will be displayed. You can also click the **View Log** button that will redirect you to the log summary of your backup.

Report

Backup Report

From: 09 Mar 2023 To: 16 Mar 2023 **Go**

Backup set	Destination	Completion	Status
MS Windows System Backup	Local-1	16/03/2023 09:18	Completed successfully

View log

No. of records per page: 50 Page: 1 / 1

Close Help

Report

Backup Report

Backup set: MS Windows System Backup Destination: Local-1

Log: 16/03/2023 09:18 Show: All

Type	Log	Time
i	Start [AhsayOBM v9.5.2.0]	16/03/2023 09:18:37
i	Saving encrypted backup set encryption keys to server...	16/03/2023 09:18:37
i	Start Backup ... [Deduplication: enabled, Deduplication scope: All files within the same backup set, Migrate Data: disabled, ...	16/03/2023 09:18:40
i	Using Temporary Directory C:\Users\Administrator\temp\1678928790942\Local@1678929316179	16/03/2023 09:18:40
i	Index file does not exist in the destination backup job folder "null"	16/03/2023 09:18:41
i	Create new index since no valid index exist on both local and destination	16/03/2023 09:18:41
i	Start running pre-commands	16/03/2023 09:18:41
i	Finished running pre-commands	16/03/2023 09:18:41
i	Backup MS Windows System to "D:\WindowsImageBackup"...	16/03/2023 09:18:41
i	[MS Windows System Backup] wbadm 1.0 - Backup command-line tool	16/03/2023 09:18:41
i	[MS Windows System Backup] (C) Copyright Microsoft Corporation. All rights reserved.	16/03/2023 09:18:41
i	[MS Windows System Backup] Retrieving volume information...	16/03/2023 09:18:42
i	[MS Windows System Backup] This will back up System Reserved (549.00 MB),(C:) to D:.	16/03/2023 09:18:48
i	[MS Windows System Backup] The backup operation to D: is starting.	16/03/2023 09:18:54
i	[MS Windows System Backup] Creating a shadow copy of the volumes specified for backup...	16/03/2023 09:18:54
i	[MS Windows System Backup] The backup of volume System Reserved (549.00 MB) completed successfully.	16/03/2023 09:19:24
i	[MS Windows System Backup] Creating a backup of volume (C:) copied (0%)	16/03/2023 09:19:24

Logs per page: 50 Page: 1 / 10

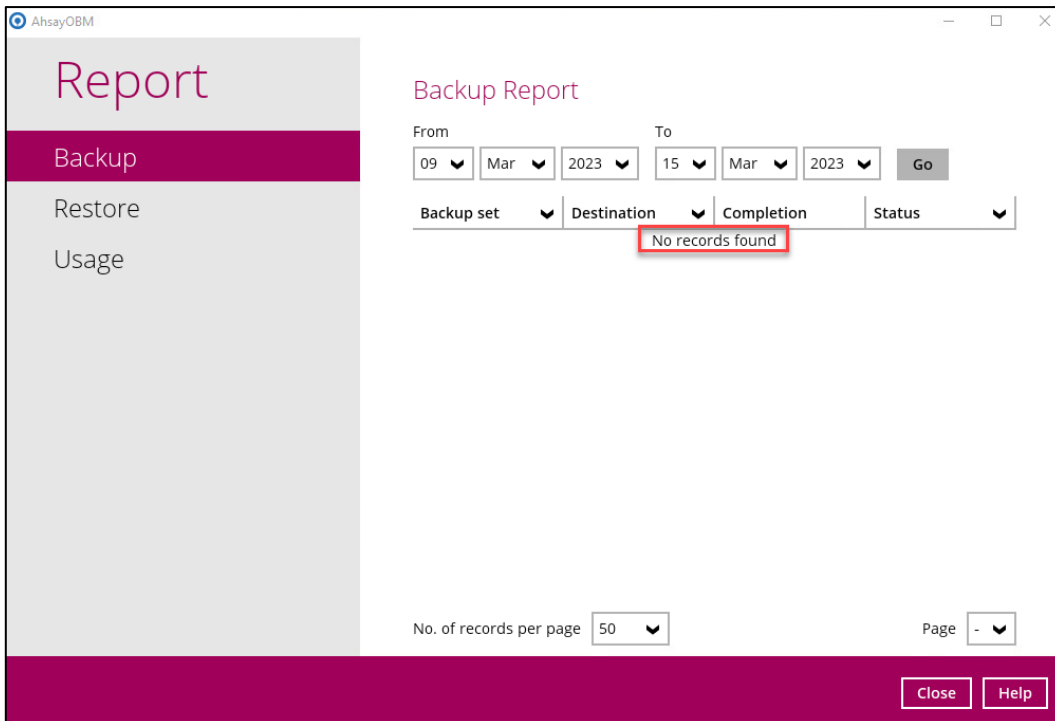
Close

Close Help

You can also search for backup reports from a specific date range. Click the **Go** button to generate the available reports.

From		To				
09	Mar	2023	15	Mar	2023	Go

If this is a valid date range then backup reports will be displayed unless there were no backup running on the specified dates. A message of “No records found” will be indicated.

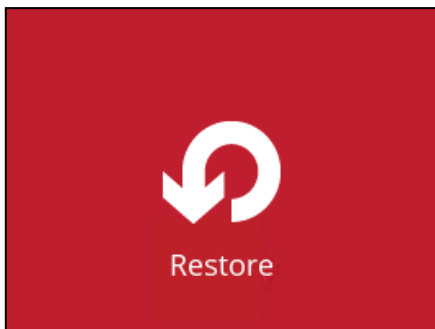


6 RESTORE A BACKUP SET

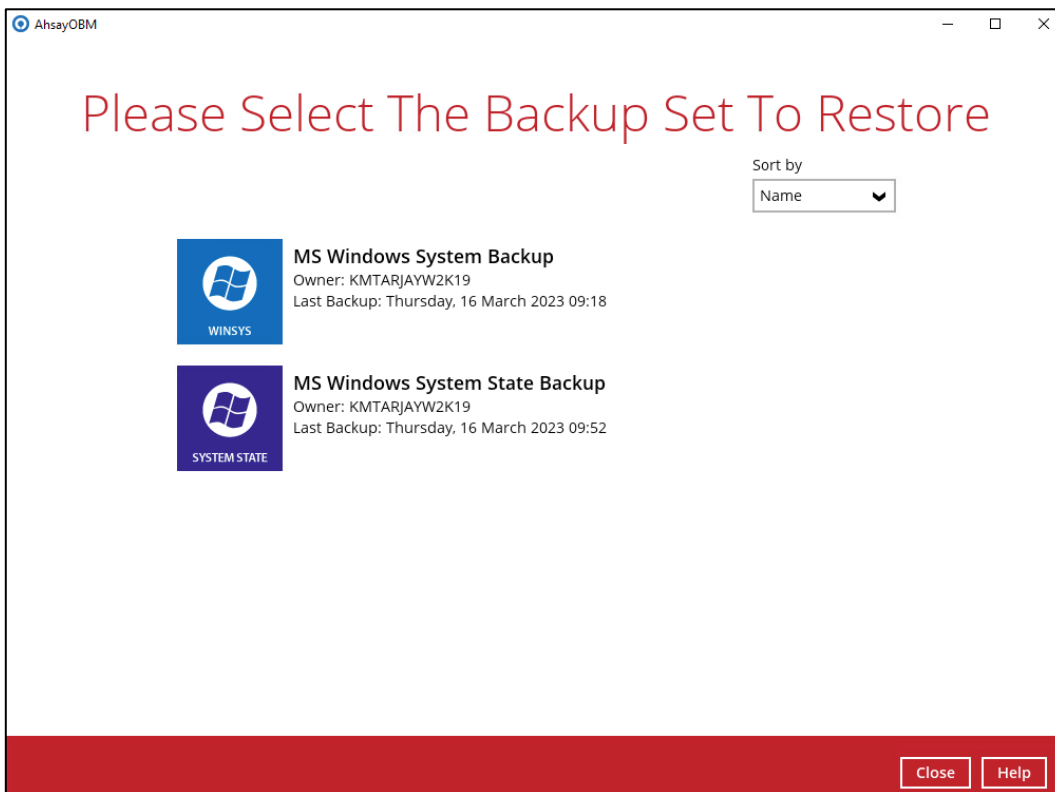
6.1 RESTORE THE SYSTEM IMAGE

Screenshots used for this guide are based on MS Windows System and will include screenshots for MS Windows System State if applicable.

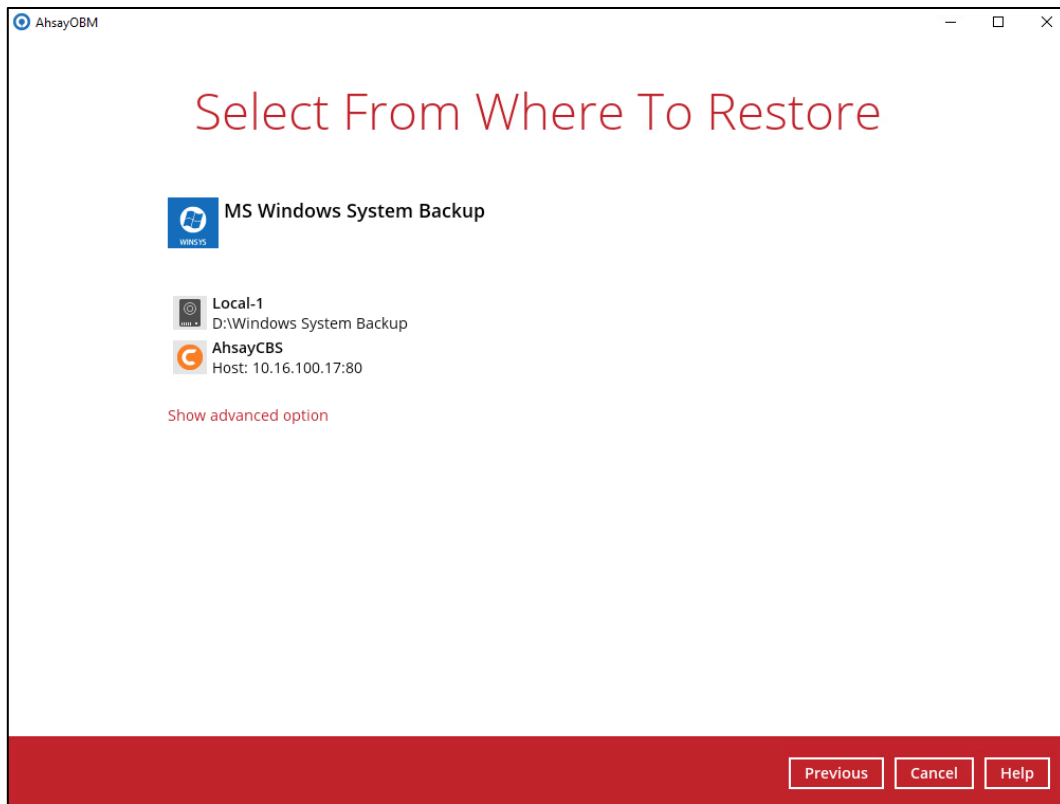
1. Login to AhsayOBM according to the instruction provided in the [AhsayOBM Login Guide \(GUI\)](#).
2. Click the **Restore** icon on the main interface of AhsayOBM.



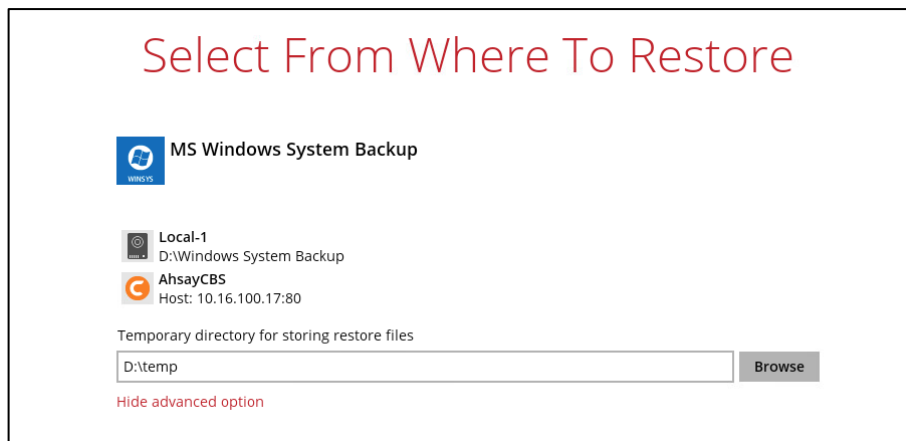
3. Select the backup set that you would like to restore the system image from.



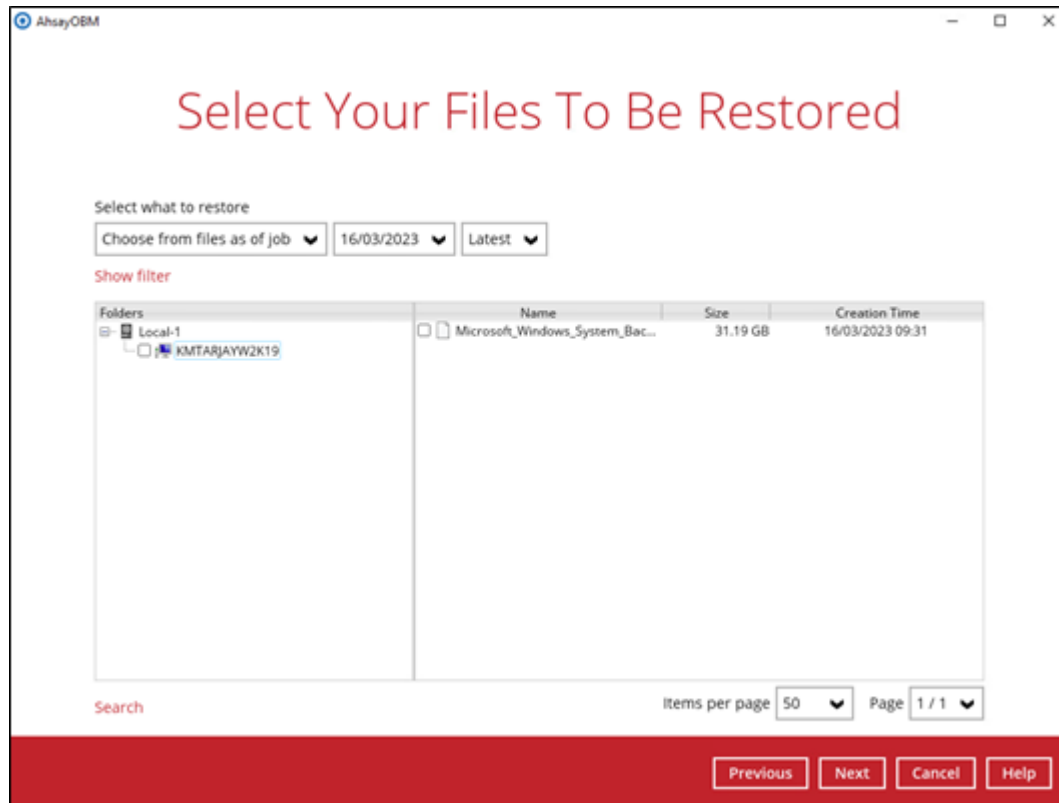
4. Select the backup destination that contains the system image / system state data that you would like to restore.



You can select the temporary directory that will be used by clicking **Show advanced option**, then click **Browse**.

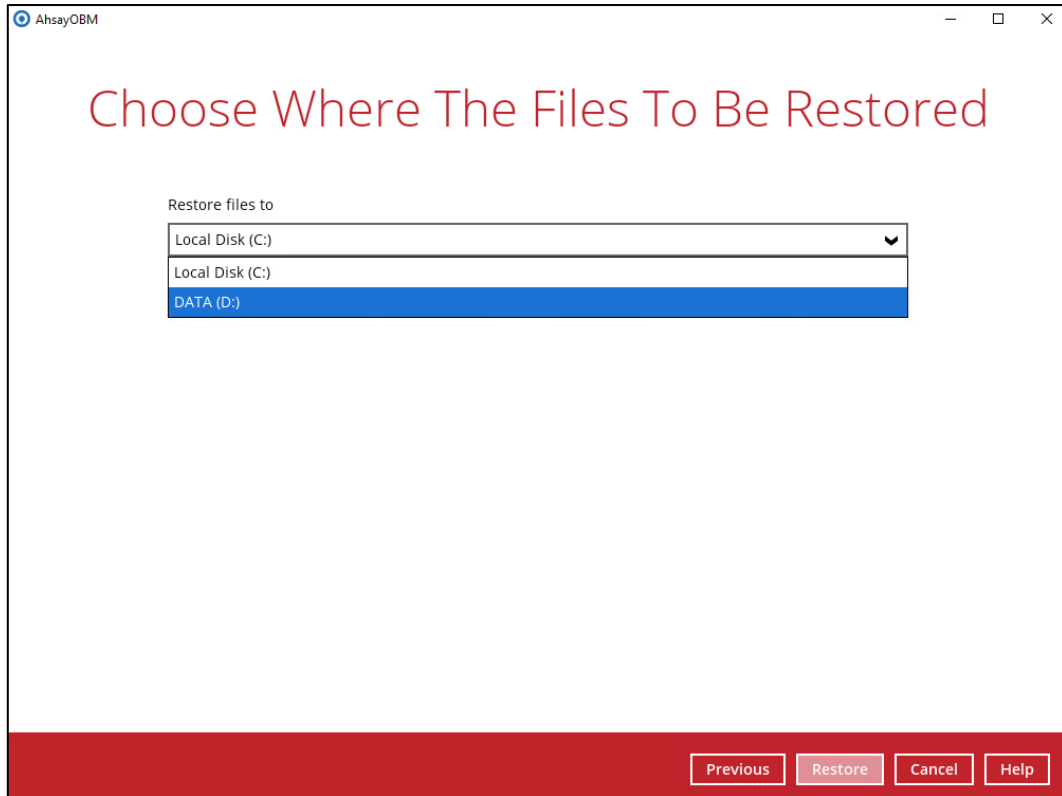


5. Select to restore from a specific backup job, or the latest job available from the “Select what to restore” drop down menu.



Once done with the selection, click **Next** to proceed.

6. Select to restore the system image to a local volume or to a removable drive.



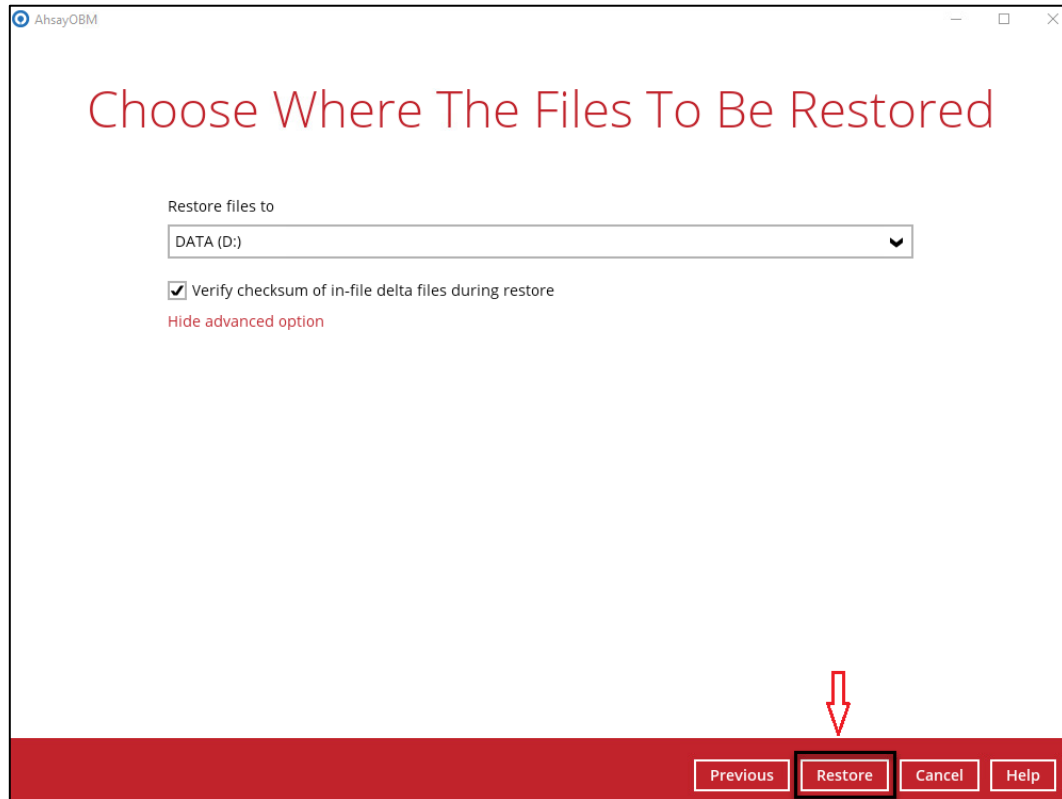
Click **Show advanced option** to configure other restore settings.

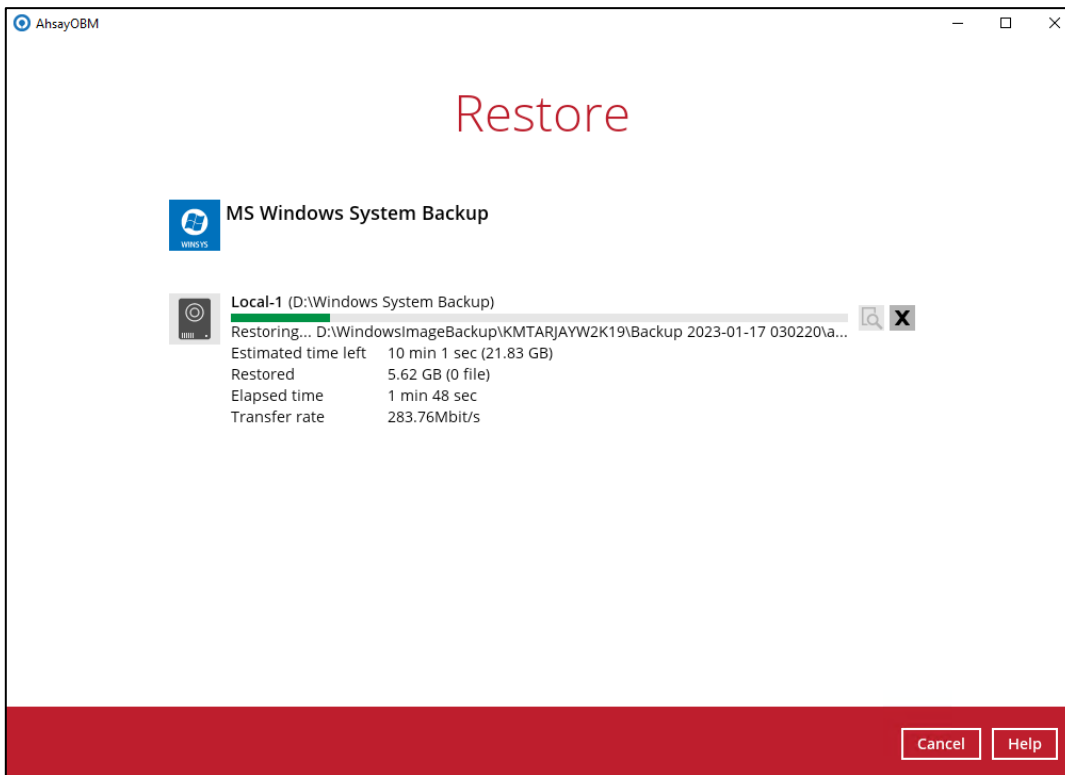


Verify checksum of in-file delta files during restore

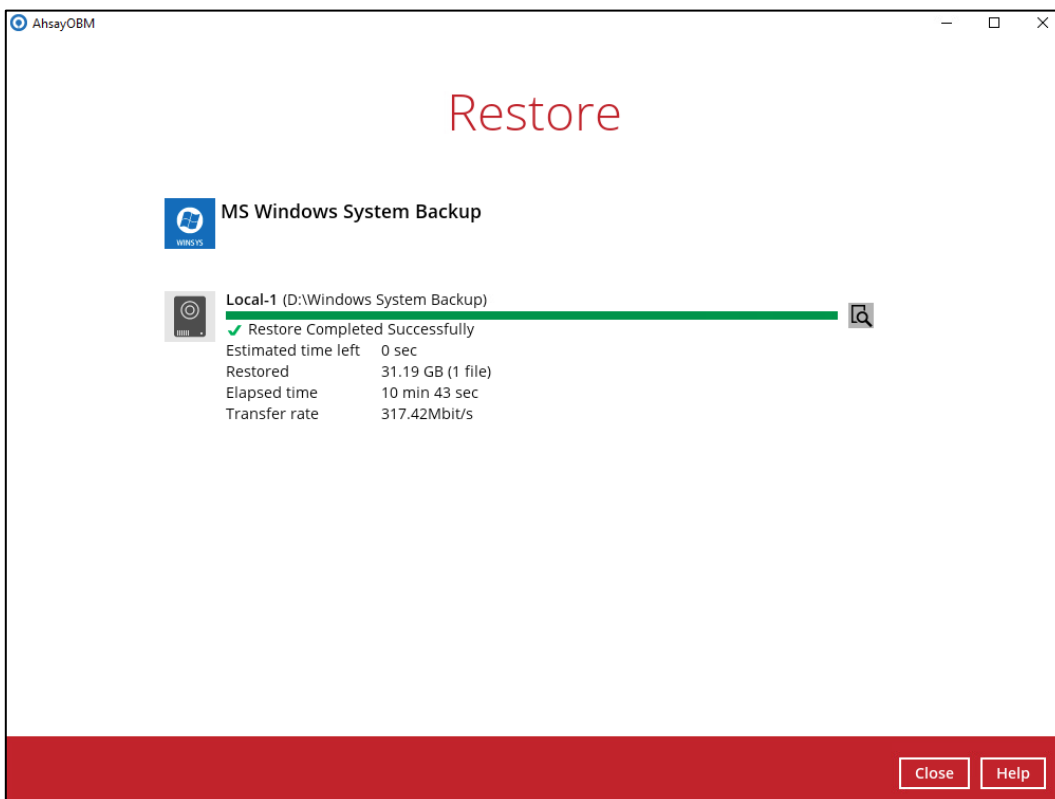
By enabling this option, the checksum of in-file delta files will be verified during the restore process. This will check the data for errors during the restore process and create a data summary of the in-file delta files which will be included in the report.

7. Click **Restore** to start the restoration.

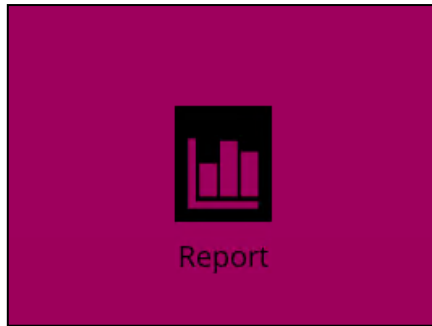




8. The following screen is displayed when the system image files are restored successfully.



To view the report, go to the **Report > Restore**



In the “Restore Report” screen, you can see the backup set with corresponding destination, completion date and time, and status.

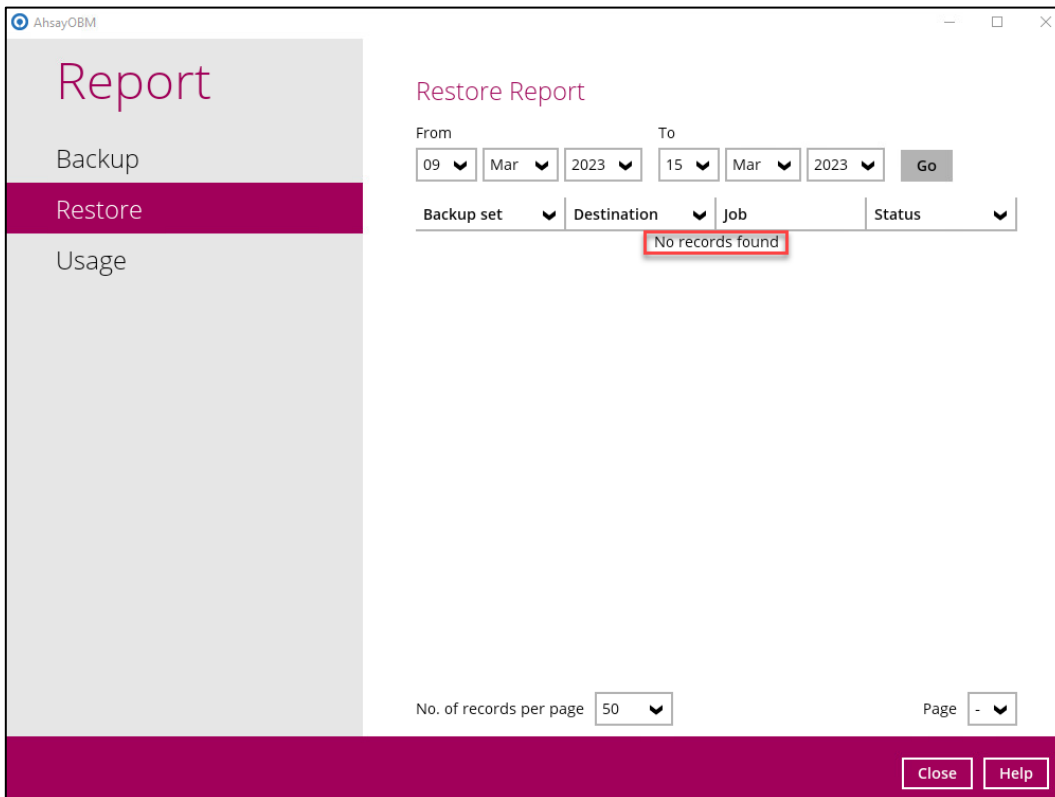
Backup set	Destination	Job	Status
MS Windows S...	Local-1	Today 10:21	Completed

You can also search for restore reports from a specific date range. For example, we have the “From” date which is, 9 Mar 2023 and the “To” date which is, 15 Mar 2023. Then click the **Go** button to generate the available reports.

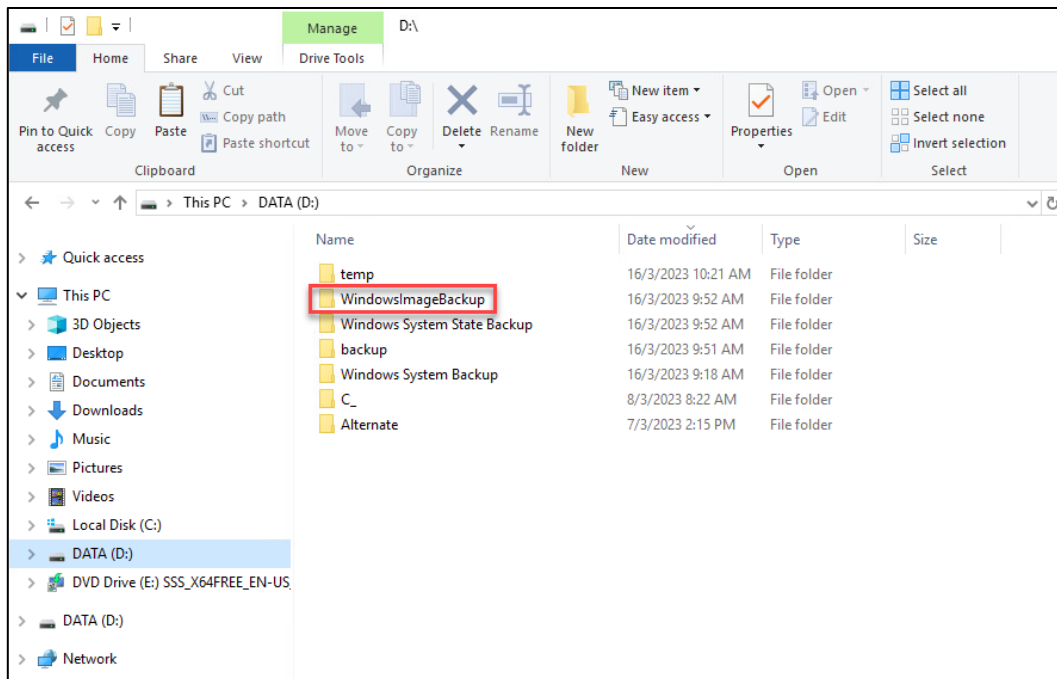


A screenshot of a date range selection form. It features two columns of date pickers. The first column is labeled "From" and contains three dropdown menus with values "09", "Mar", and "2023". The second column is labeled "To" and contains three dropdown menus with values "15", "Mar", and "2023". To the right of these date pickers is a grey button labeled "Go".

If this is a valid range of dates then restore reports will be displayed unless there were no restoration running on the specified dates. A message of “No records found” will be displayed instead.



- The restored system image files are stored in the WindowsImageBackup folder in the restore location.



IMPORTANT

In addition to the system image files, the WindowsImageBackup folder includes catalog files that contain information about all backups done up to the current backup, and Mediald, that contains the identifier for the backup storage location.

This information is required to perform a recovery. Do not alter the directory structure or delete any file / folder within the WindowsImageBackup folder.

- Copy the WindowsImageBackup folder with its content to the server that you want to perform the restore for or copy the folder to a network drive that is accessible to the server that you want to perform the restore for.

WindowsImageBackup folder must be stored at the root level of a volume (e.g. top-most level), unless you are copying the folder to a network drive.

- Continue to the next section which applies to the type of recovery you want to perform:

- ▶ [Windows System / System State Backup Recovery using the Windows Server Backup User Interface](#)
- ▶ [Recover Operating System or Full System for Server and Non-Server Platforms](#)

6.2 RECOVERING YOUR SERVER

For server platforms such as Server 2008 / 2008 R2 / 2012 / 2012 R2, you can recover individual files, folders, volumes, application, application data, operating system, or full-system (bare-metal) with the following tools:

Tool	What you can recover
Recovery wizard (in Windows Server Backup)	Files, folders, volumes, application, and application data.
Windows setup disc / Windows Recovery Environment (Windows RE)	Operating system (critical volume), and full server recovery (all volumes).

NOTE

You can also perform the above tasks using wbadmin command. For the syntax of the command, refer to the following: [Wbadmin](#)

To determine what can be recovered from your restored system image, enter the following command in an elevated command prompt:

```
wbadmin get versions  
[-backupTarget:{<BackupTargetLocation> | <NetworkSharePath>}]
```

Example (system image restored to D: volume):

```
C:\Users\Administrator>wbadmin get versions -backupTarget:d:  
  
wbadmin 1.0 - Backup command-line tool  
  
(C) Copyright Microsoft Corporation. All rights reserved.  
  
Backup time: 17/1/2023 11:02 AM  
Backup target: 1394/USB Disk labeled New Volume (D:)  
Version identifier: 1/17/2023-03:02  
Can recover: Volume(s), File(s), Application(s), Bare Metal Recovery, System State  
Snapshot ID: {593d7d81-f934-4baa-8e80-866650eb04e9}
```

For non-server platforms such as Windows 7 / 8 / 8.1 / 10, you can recover the full-system (bare-metal) with the following tools:

Tool	What you can recover
Advanced startup option (in safe mode)	Full system recovery
Advanced startup option (Windows installation media)	Full system recovery

NOTE

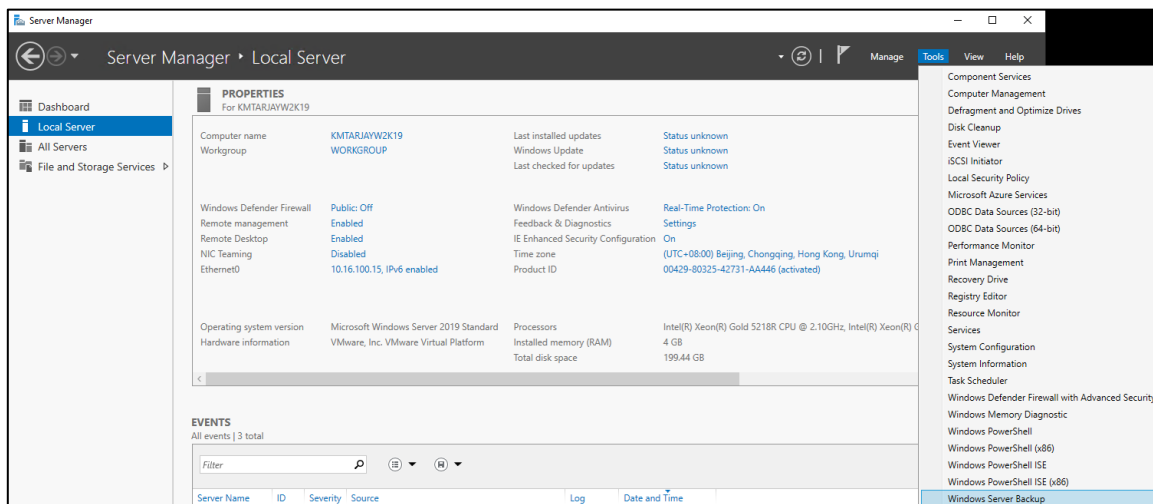
You can also perform the above tasks using wbadmin command. For the syntax of the command, refer to [Wbadwin](#).

For instructions specific to recovering Active Directory Domain Services, refer to [Recovering Active Directory Domain Services](#).

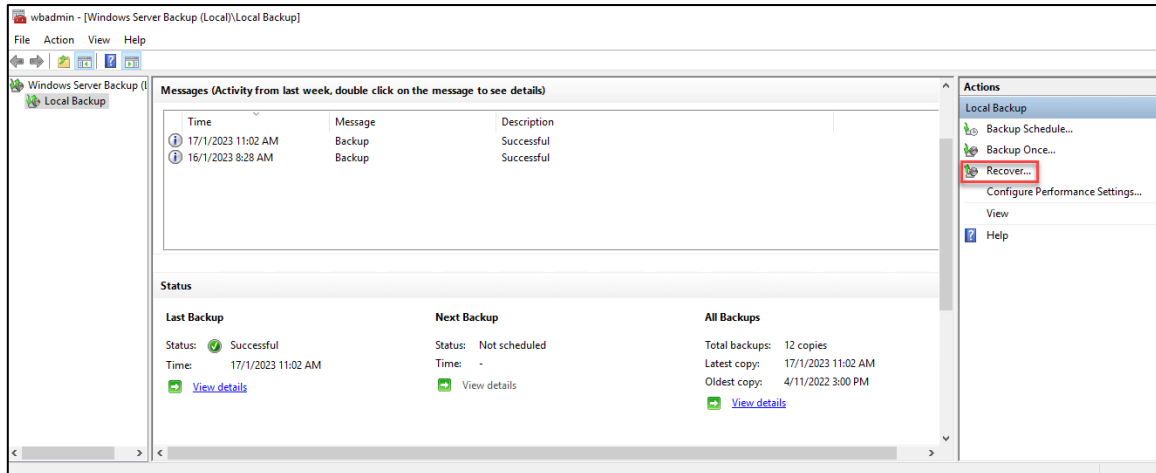
WINDOW SYSTEM / SYSTEM STATE RECOVERY USING THE WINDOWS SERVER BACKUP USER INTERFACE

To recover the Windows System Backup using the Recovery Wizard in the Windows Server Backup user interface, follow the instructions below:

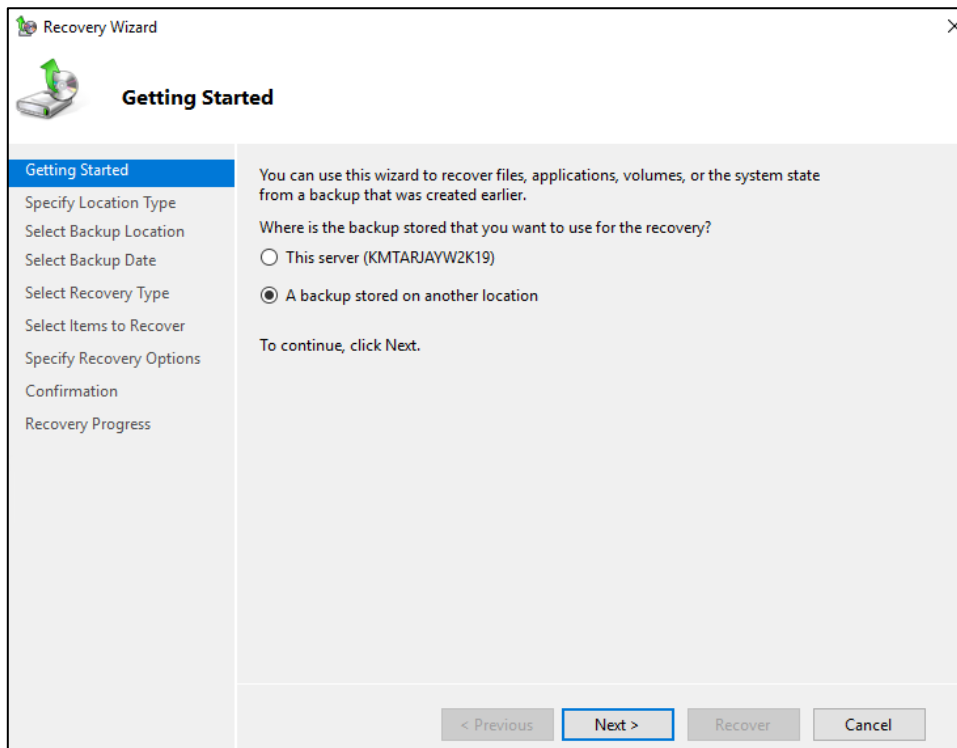
1. Open **Server Manager** then click **Tools** and select **Windows Server Backup**.



2. In the “Actions” panel under “Windows Server Backup”, click **Recover**.

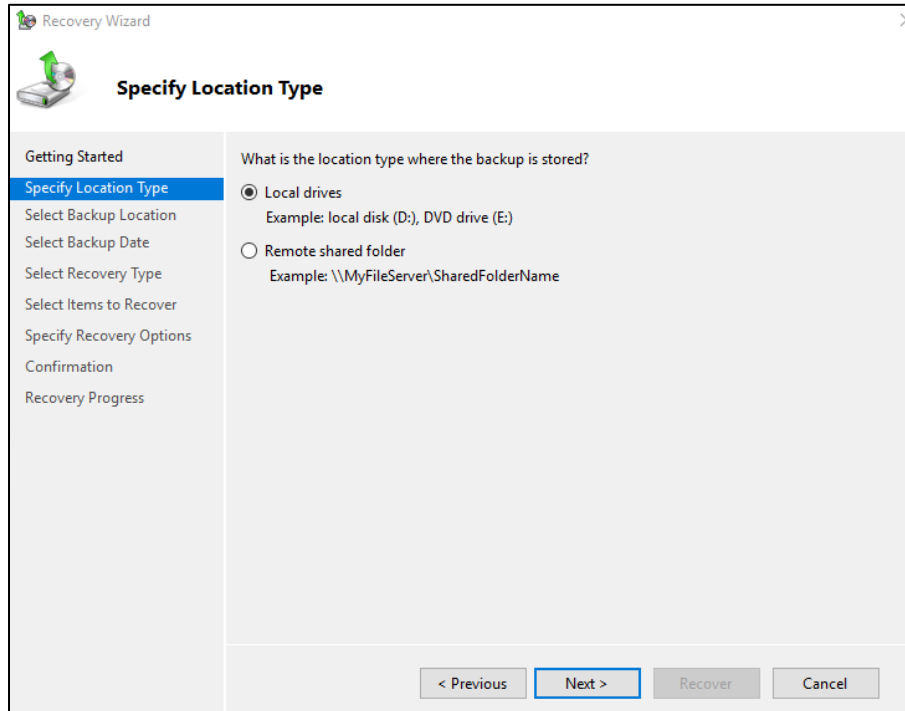


3. On the “Getting Started” page, select A backup stored on another location, then click **Next**.

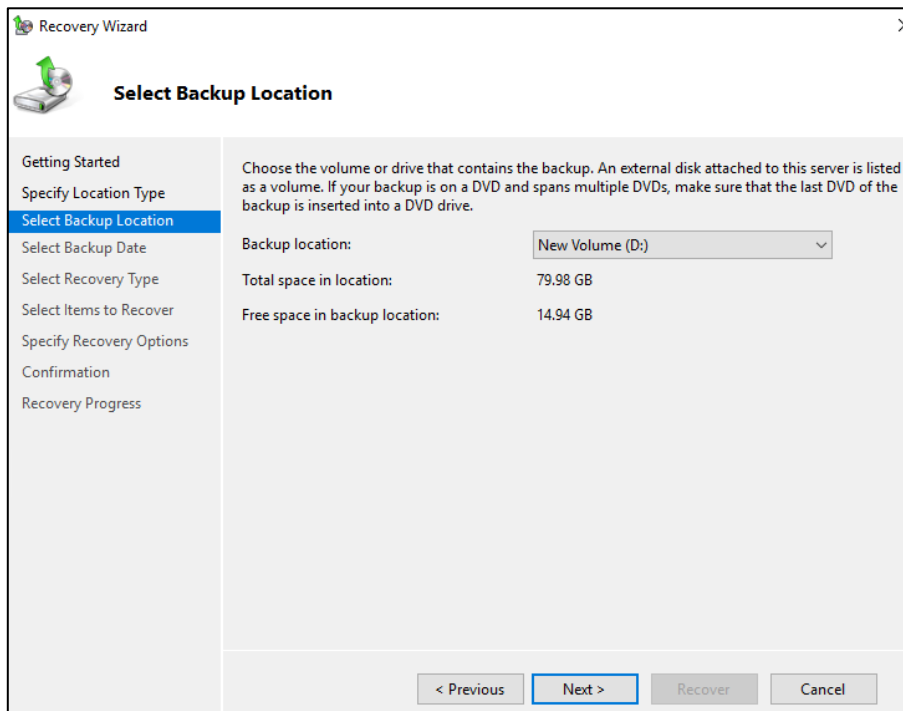


4. On the “Specify Location Type” page, select:

- ▶ Local drives, if the system image was copied to a local volume on the server.
- ▶ Remote shared folder, if the system image was copied to a network path accessible to this server.



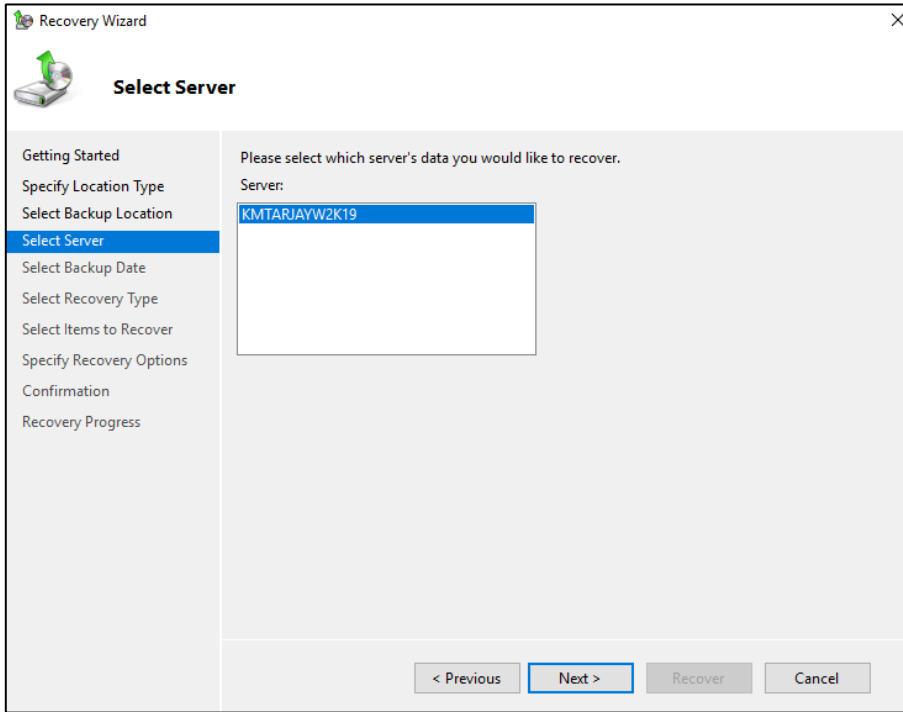
5. On the “Select Backup Location” page, select the volume that contains the system image file.



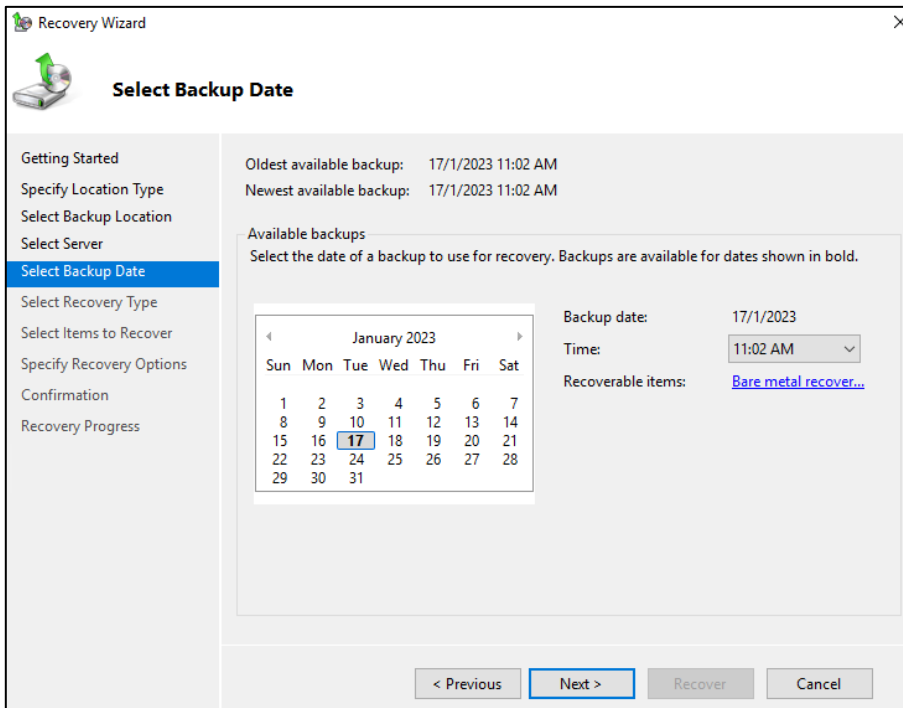
NOTE

Assuming that the WindowsImageBackup folder was copied to the following D:\WindowsImageBackup.

6. On the “Select Server” page, select the server whose data you want to recover.



7. On the “Select Backup Date” page, select the point in time of the backup you want to restore from.

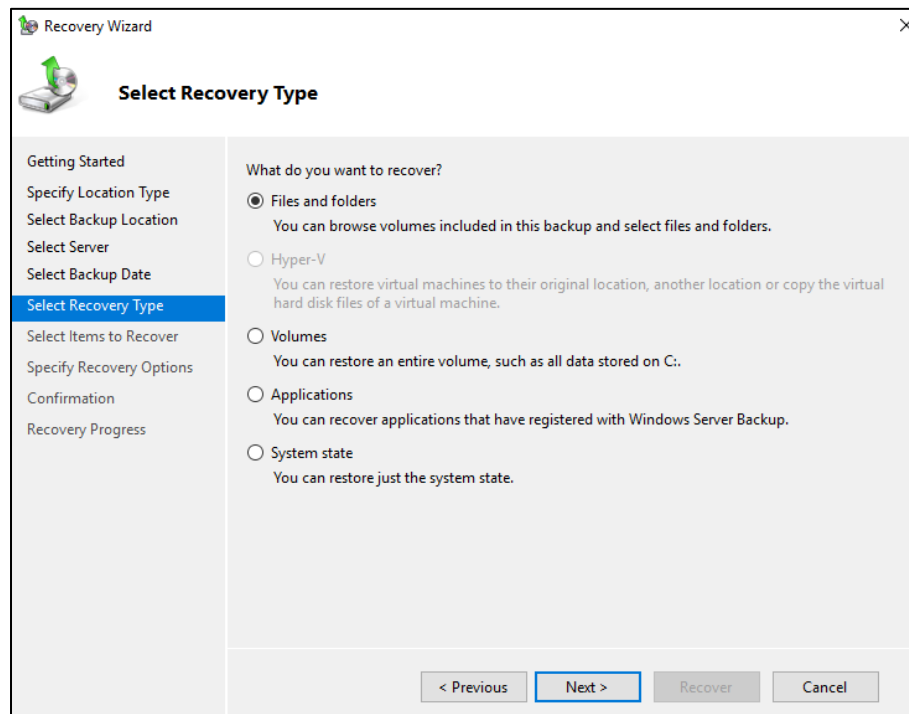


8. On the “Select Recovery Type” page, to recover the following:

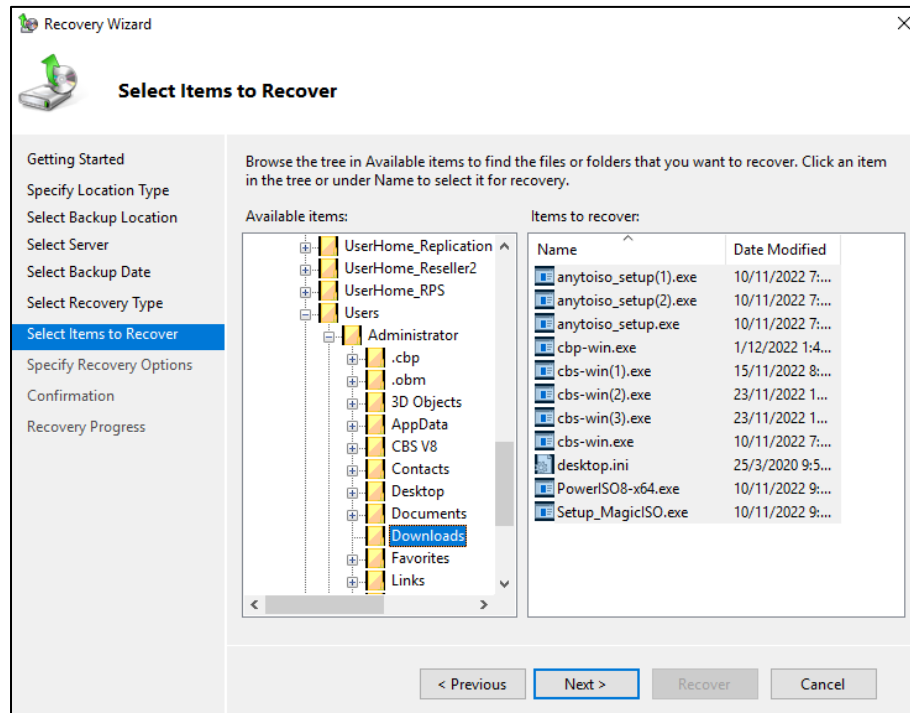
- ▶ [Files and Folders](#)
 - ▶ [Volumes](#)
 - ▶ [Applications](#)
 - ▶ [System State](#)
-

▶ Files and Folders

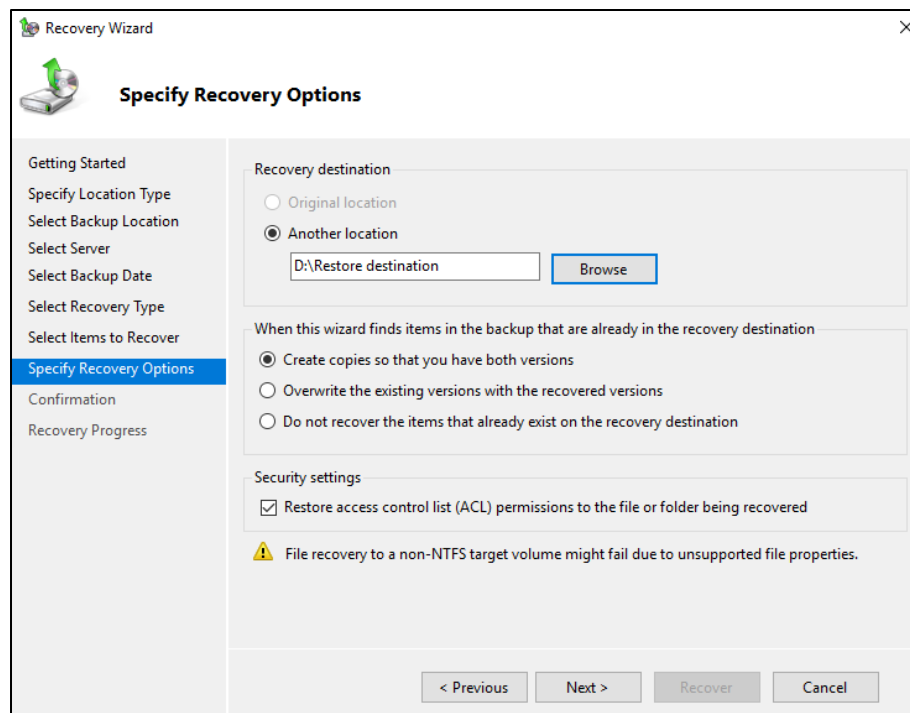
i. Select Files and folders, then click **Next** to proceed.



- ii. On the “Select Items to Recover” page, under “Available items”, expand the list until the folder you want is visible. Click a folder to display the contents in the adjacent pane, click each item that you want to restore.



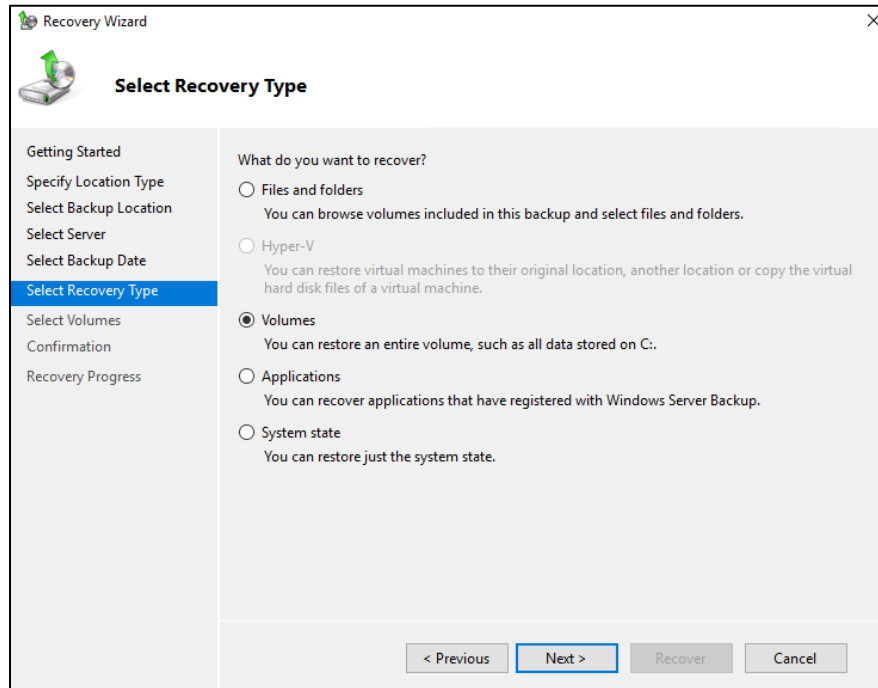
- iii. On the “Specify Recovery Options” page, under “Recovery destination”, select Another location. Type the path to the location or click **Browse** to select it.



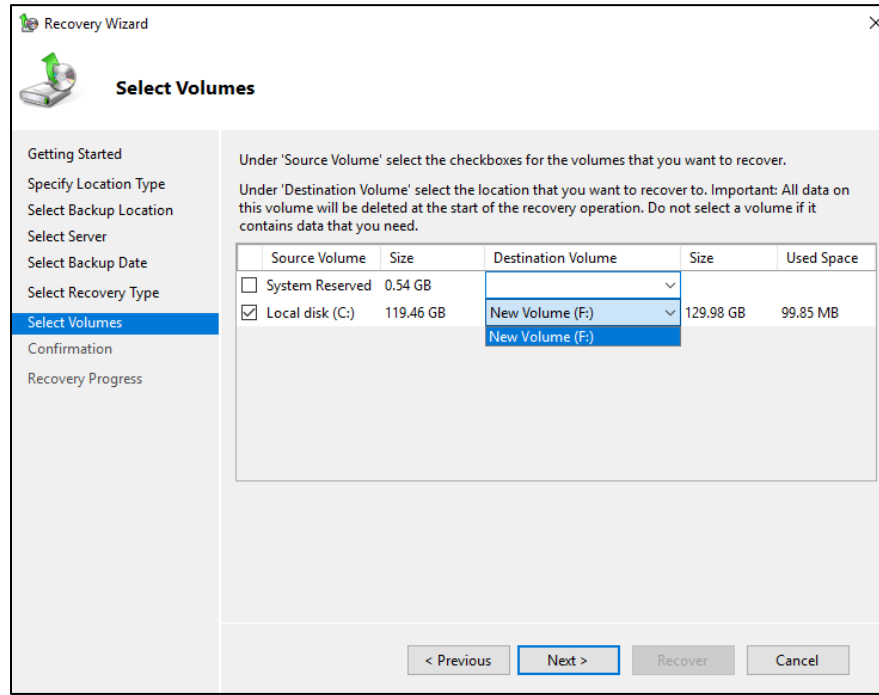
Modify the “When this wizard finds items in the backup that are already in the recovery destination” setting and the “Security settings” if necessary. Then click **Next** to proceed.

▶ Recover Volumes

- i. Select Volumes, then click **Next** to proceed.

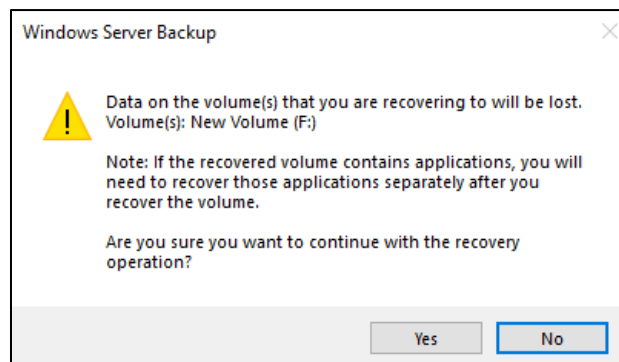


- ii. On the “Select Volumes” page, select the check boxes associated with the volumes in the “Source Volume” column that you want to recover. Then, from the associated dropdown list in the “Destination Volume” column, select the location that you want to recover the volume to then click **Next**.



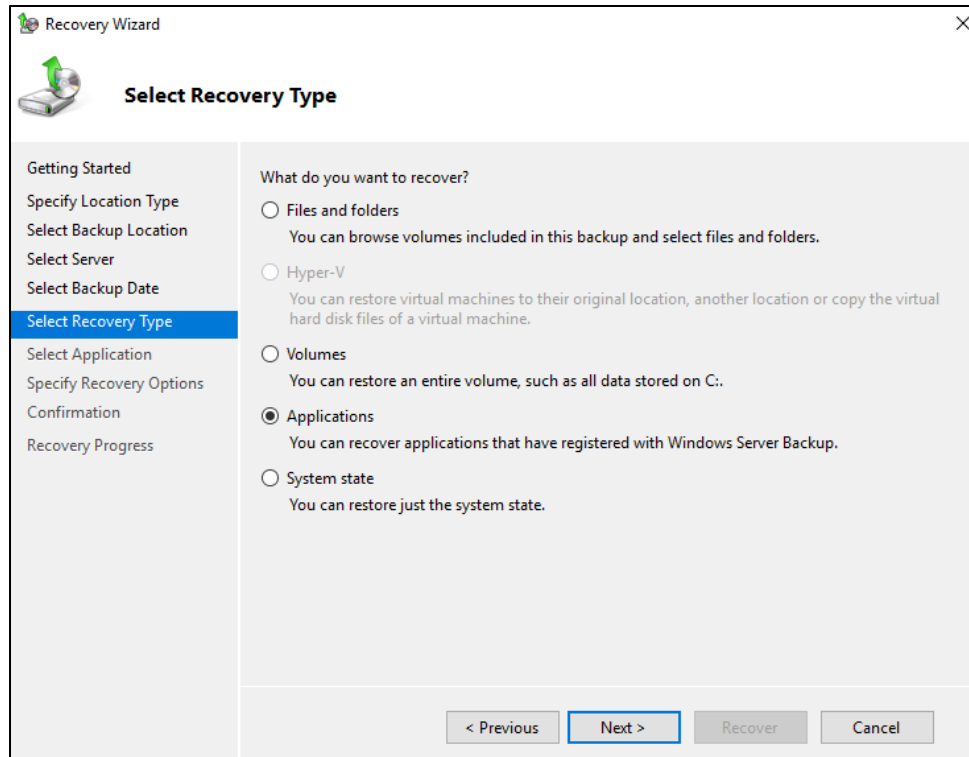
IMPORTANT

Before clicking **Next** to continue, make sure that the destination volume is empty, or does not contain information that you will need later.

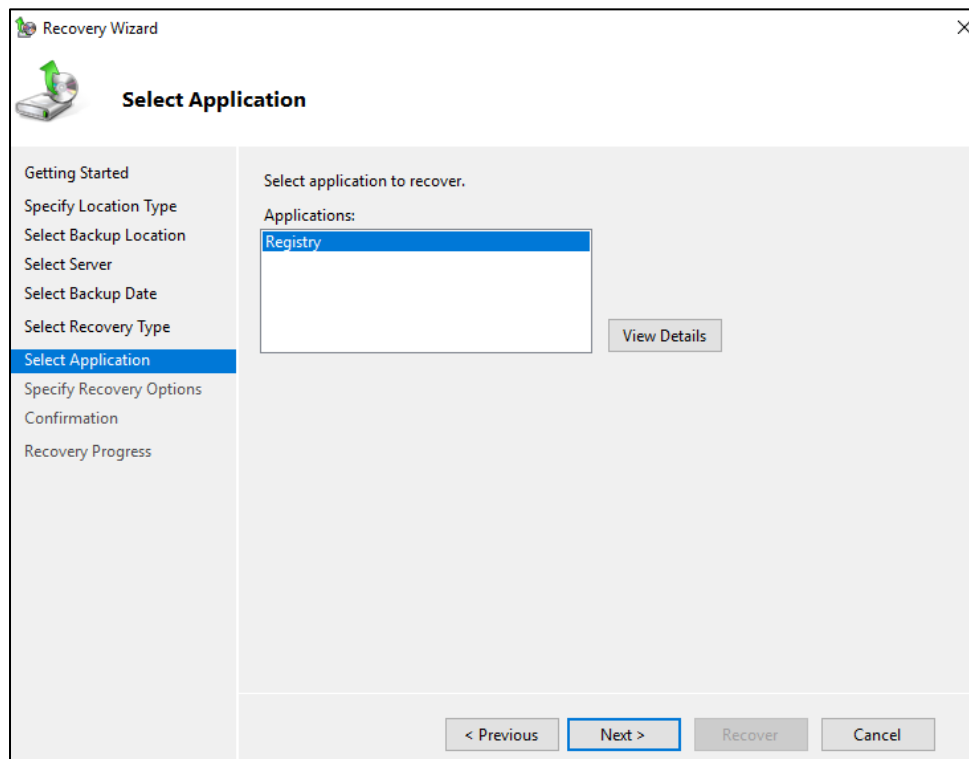


► Applications

- i. Select Applications, then click **Next** to proceed.



- ii. On the “Select Application” page, under “Applications”, click the application that you want to recover. Click **Next**.

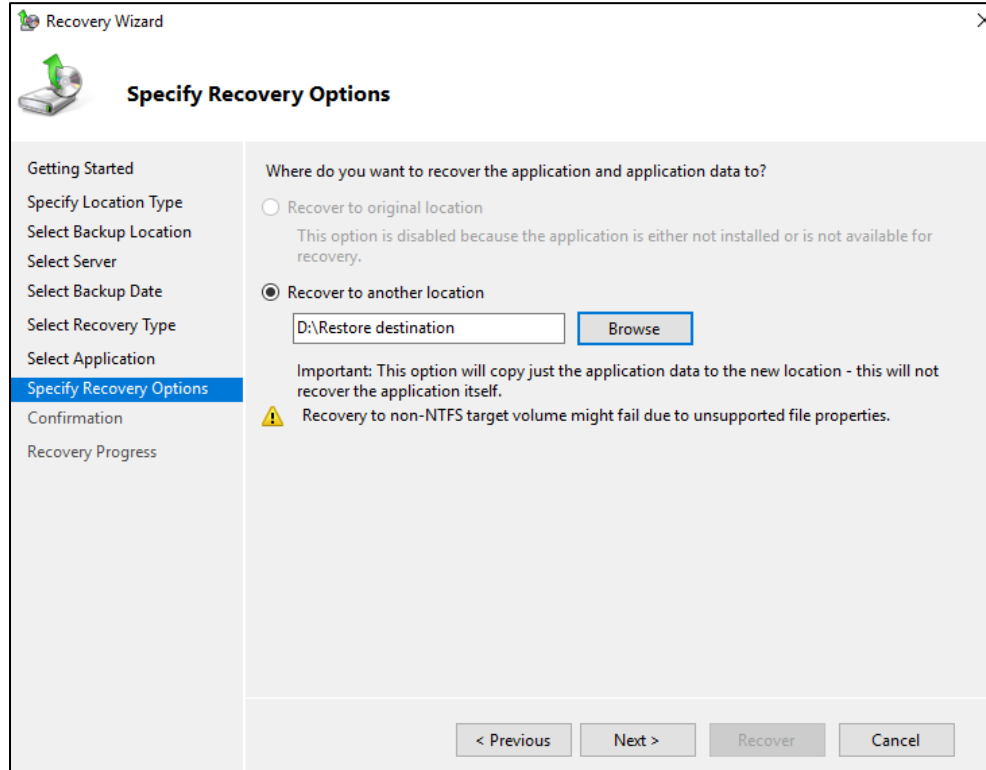


NOTE

If the backup that you are using is the most recent and the application you are recovering supports a "roll-forward" of the application database, you will see a check box labeled "Do not perform a roll-forward recovery of the application databases".

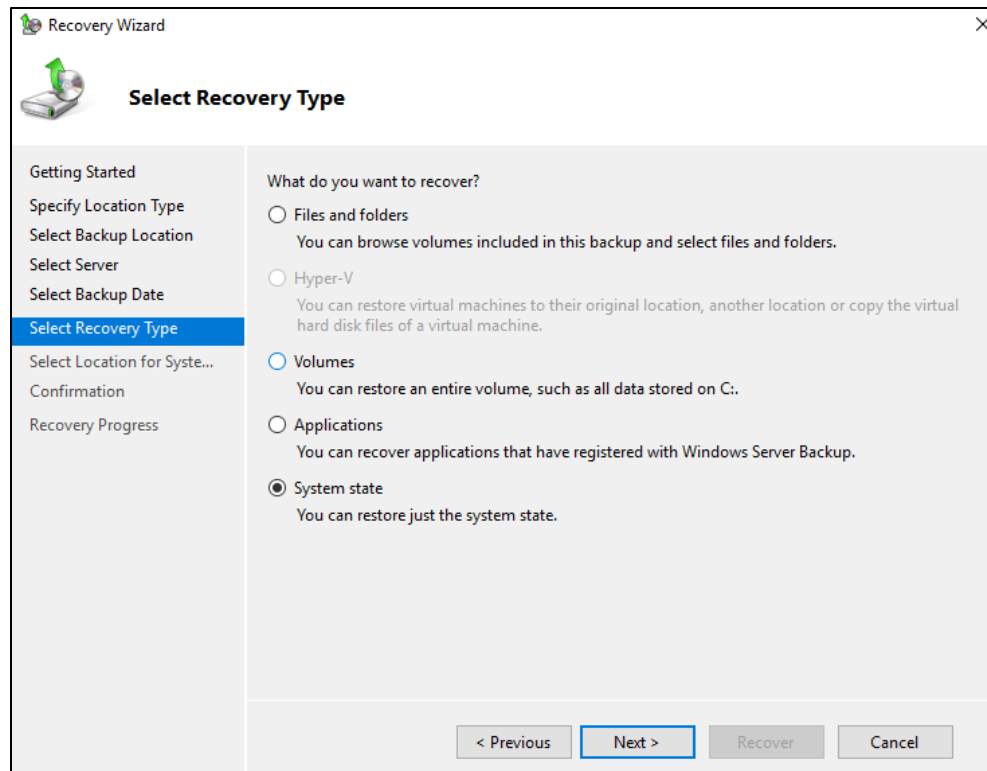
Select this check box if you want to prevent Windows Server Backup from rolling forward the application database that is currently on your server.

- iii. On the "Specify Recovery Options" page, select Recover to another location. Type the path to the location or click **Browse** to select it. Click **Next** to proceed.

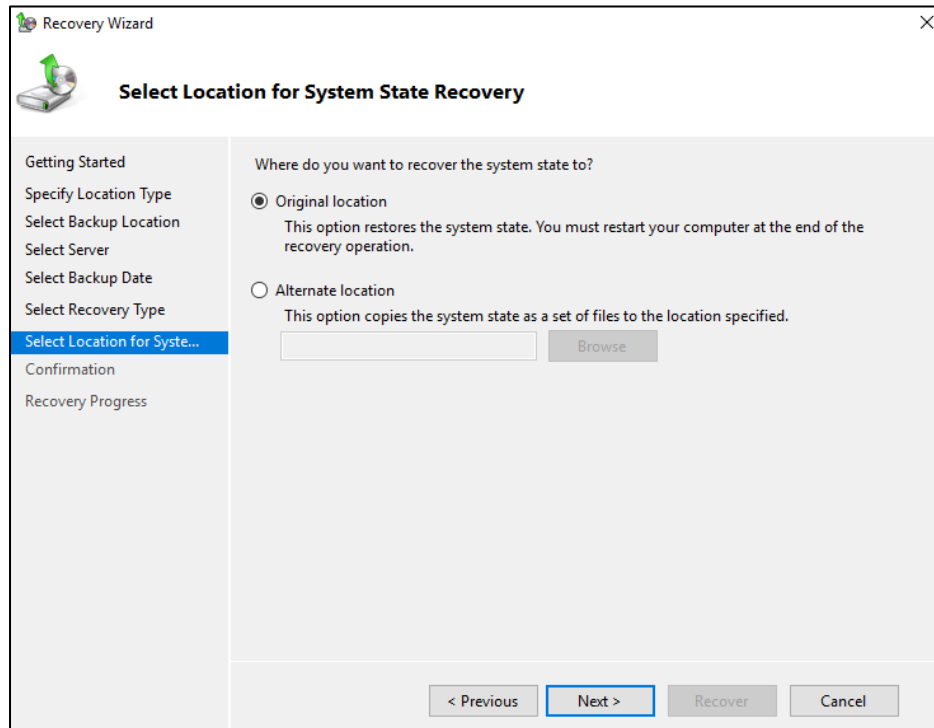


▶ System State

- i. Select System state, then click **Next** to proceed.



- ii. On the “Select Location for System State Recovery” page, select:
- ▶ Original location, to restore the system state to the same physical computer from which the system state backup was created.
 - ▶ Alternate location, to restore a copy of the system state as a set of files.



NOTE

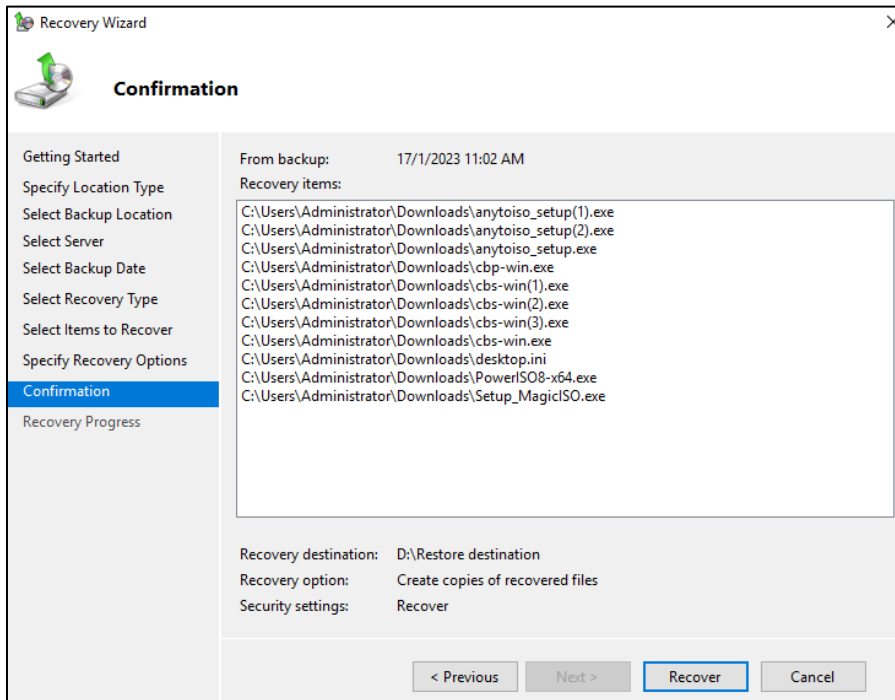
The options displayed are different for system state containing Active Directory Domain Services.

You will also need to start the server in Directory Services Restore Mode (DSRM) to restore system state data containing Active Directory Domain Services.

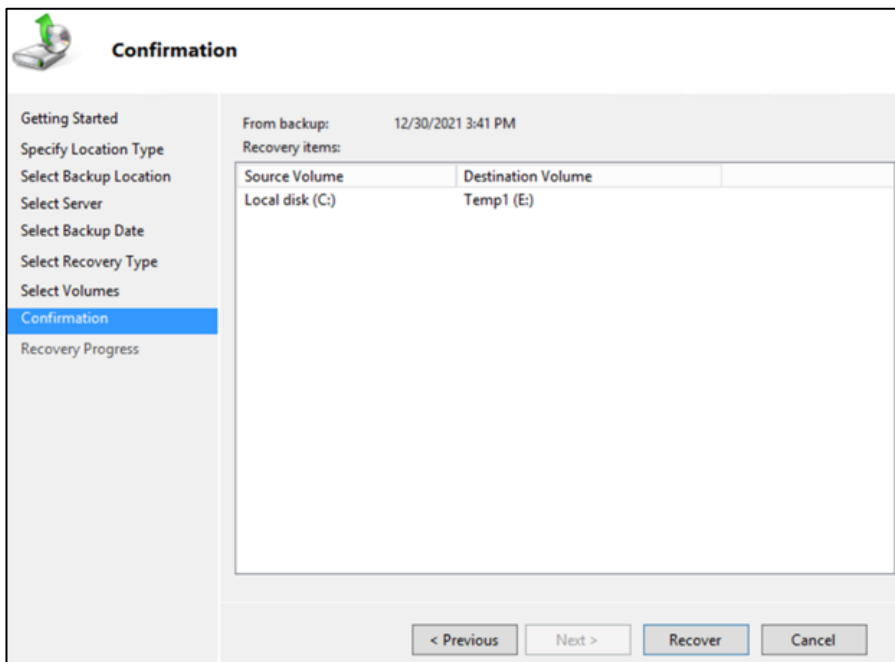
For instructions specific to recovering system state to Active Directory server, see [Recovering Active Directory Domain Services](#).

9. On the “Confirmation” page, review the details, and then click **Recover** to restore the specified items.

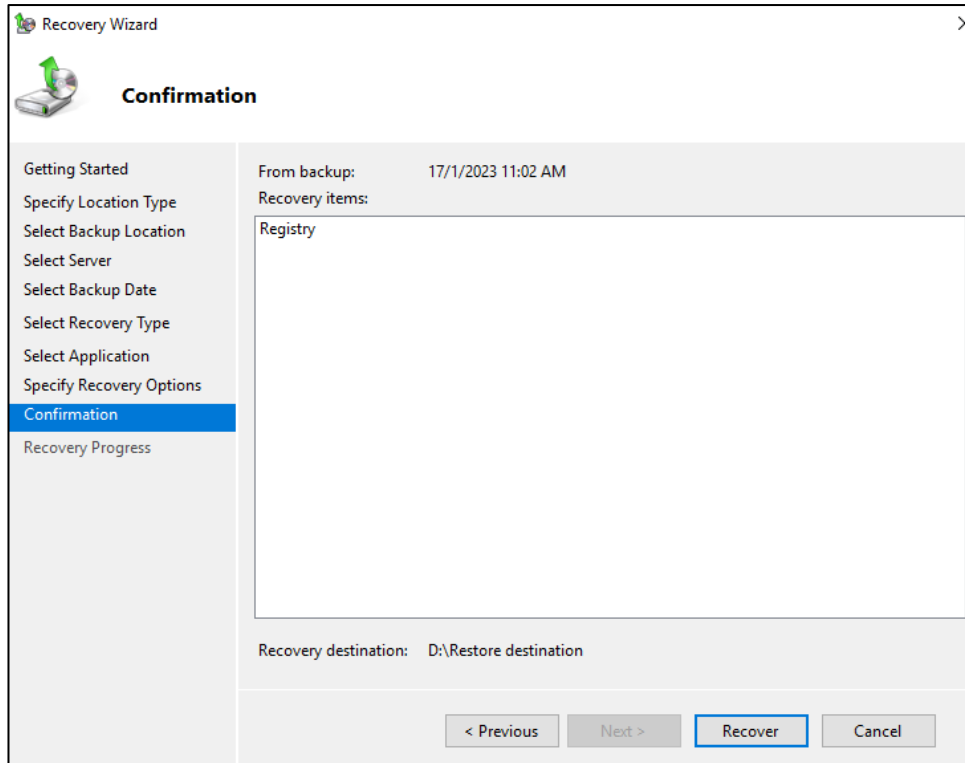
► **Files and Folders**



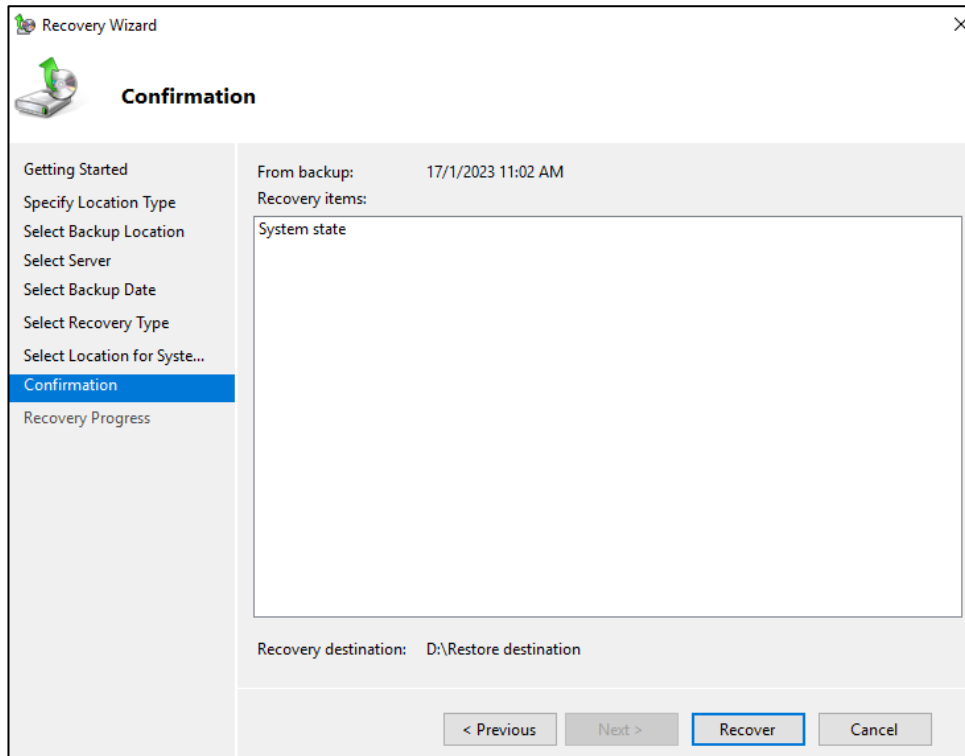
► **Volumes**



Applications

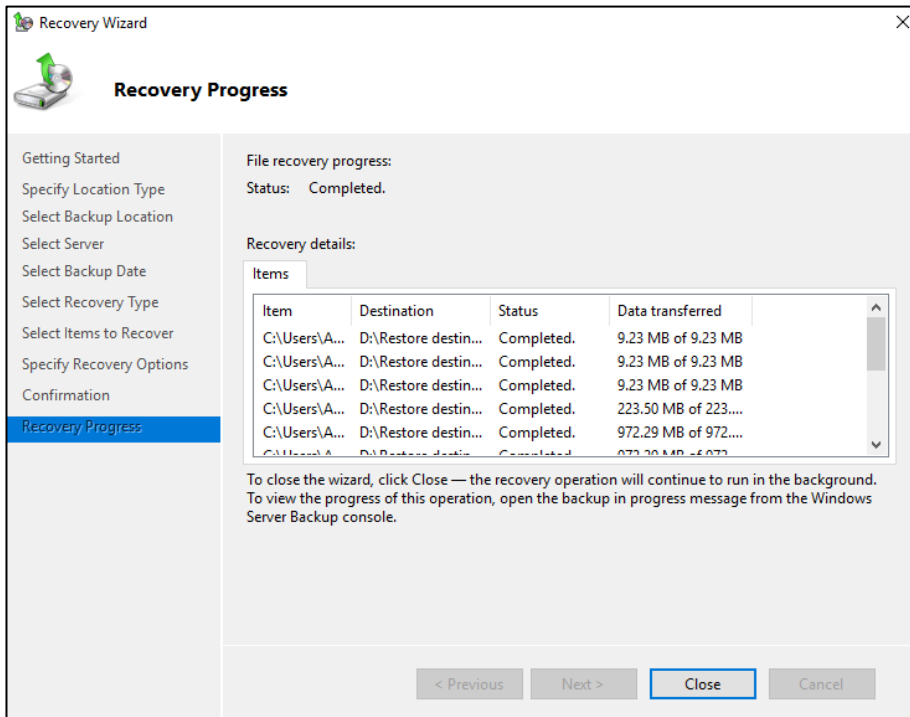


System State

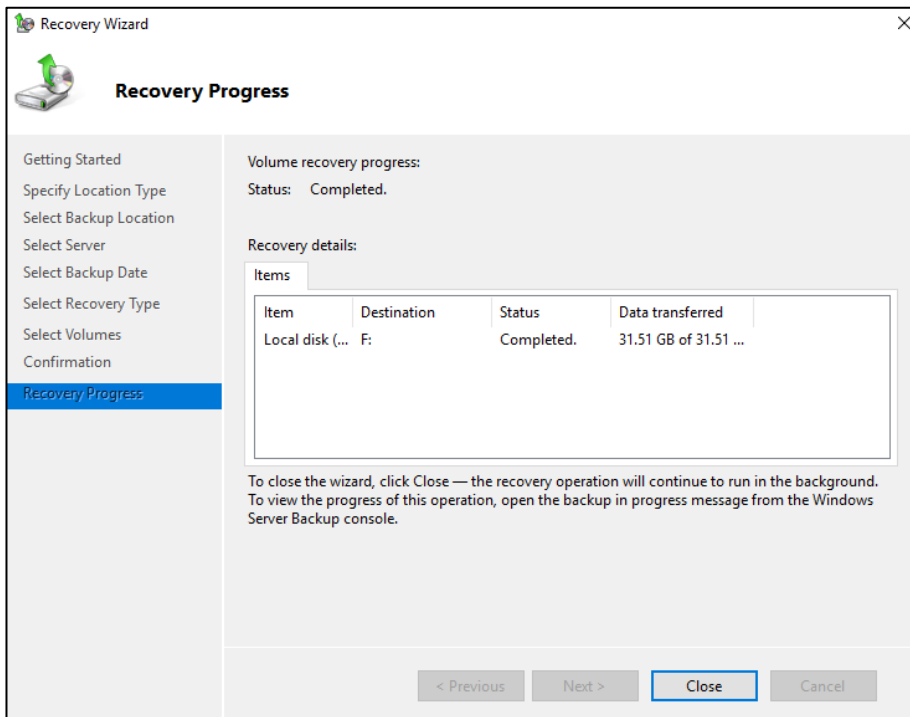


- On the “Recovery Progress” page, the status and result of the recovery operation are displayed. Click **Close** to end the process.

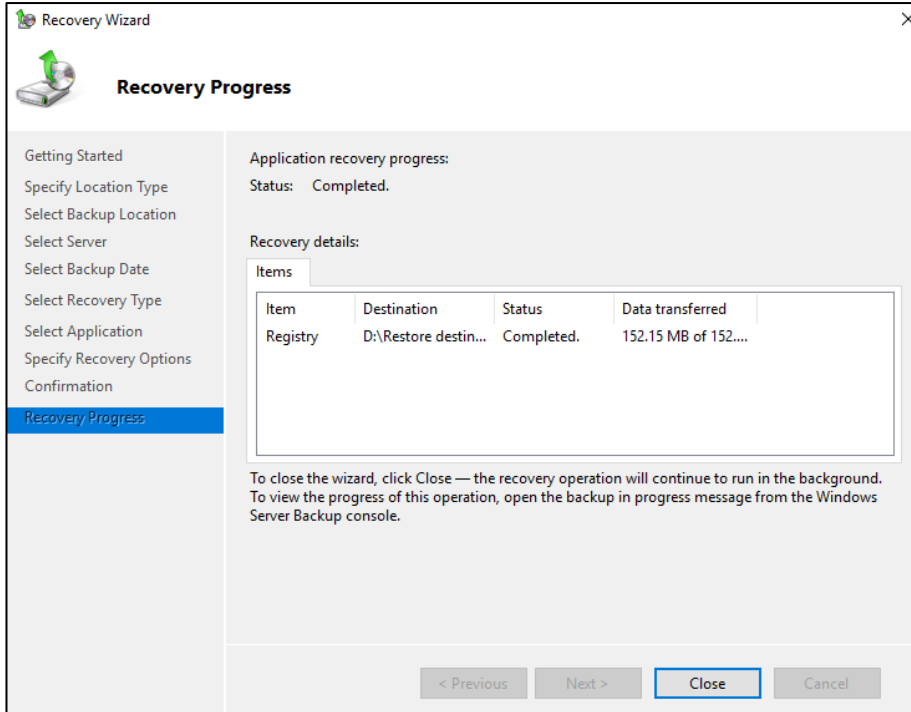
► Files and Folders



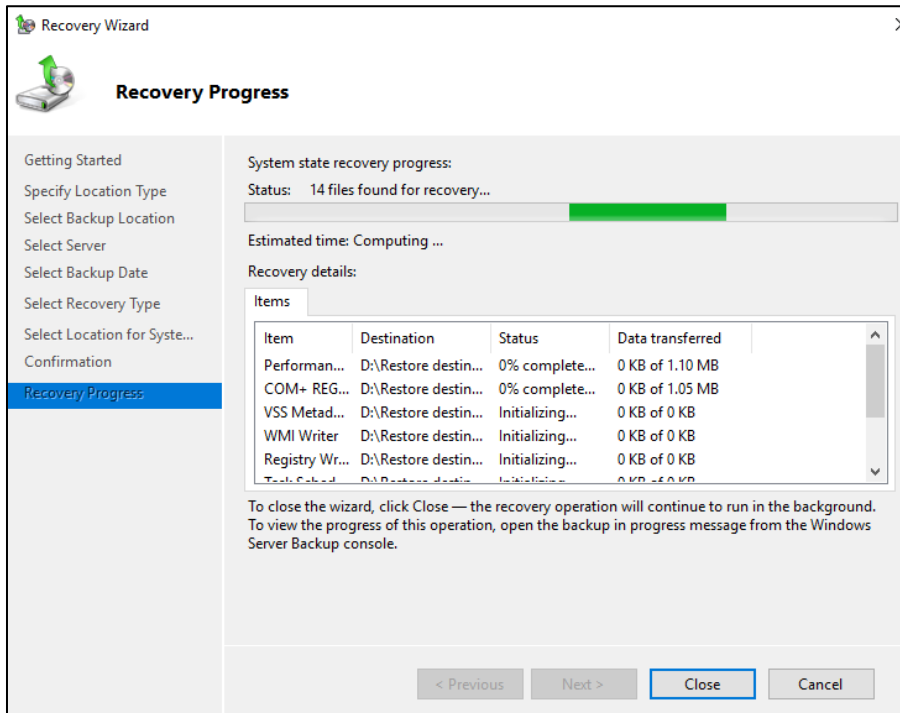
► Volumes



Applications



System State



IMPORTANT

For restore to **Original location**, the system state recovery cannot be stopped once it is started, or the system could become unbootable.

RECOVER OPERATING SYSTEM OR FULL SYSTEM FOR SERVER AND NON-SERVER PLATFORMS

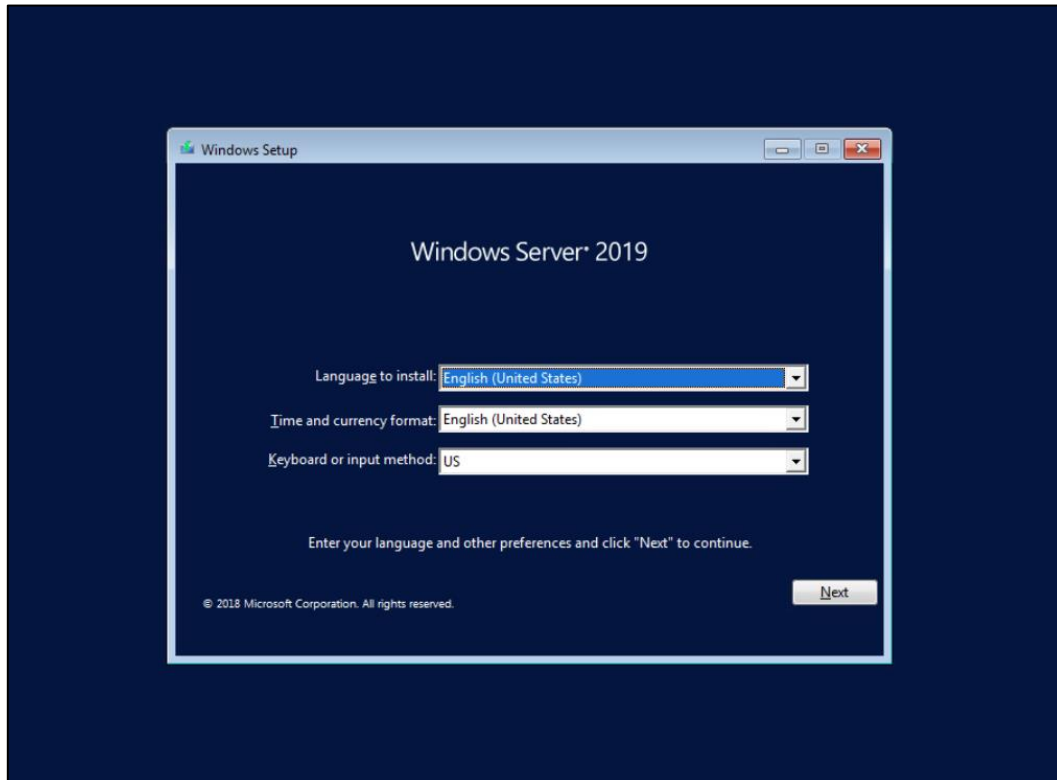
You can recover an operating system or full system by using Windows Recovery Environment, or by booting from a Windows setup disc.

NOTE

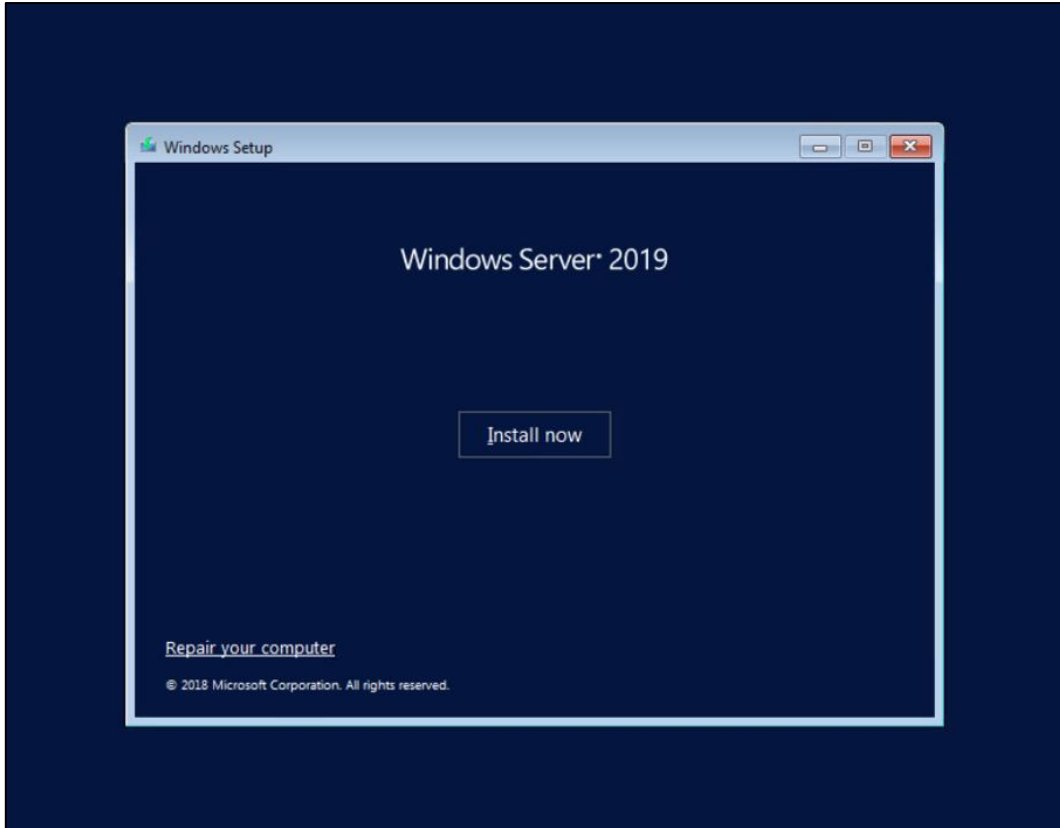
For instructions specific to recovering Active Directory Domain Services, refer to [Recovering Active Directory Domain Services](#).

To launch in Windows Recovery Environment, insert the Windows setup disc that has the same architecture of the system that you are recovering into the CD/DVD drive and start or restart the computer. Press the required key to boot the disc.

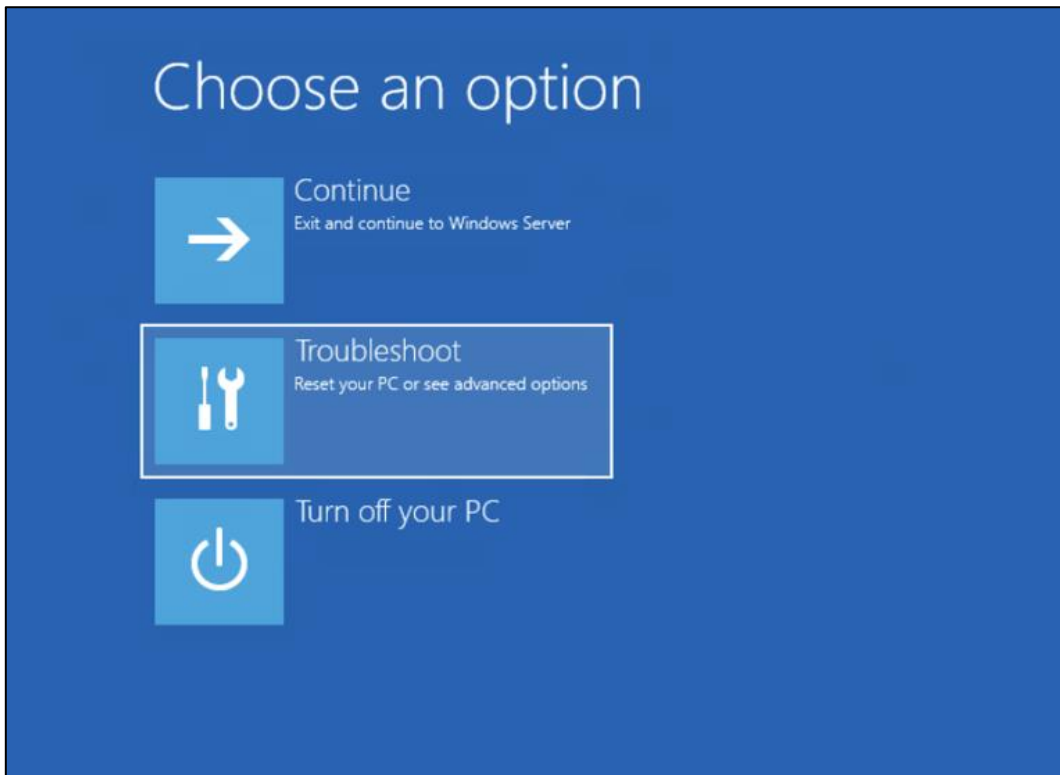
1. Set the language, time and currency, and keyboard or input method, then click **Next** to proceed.



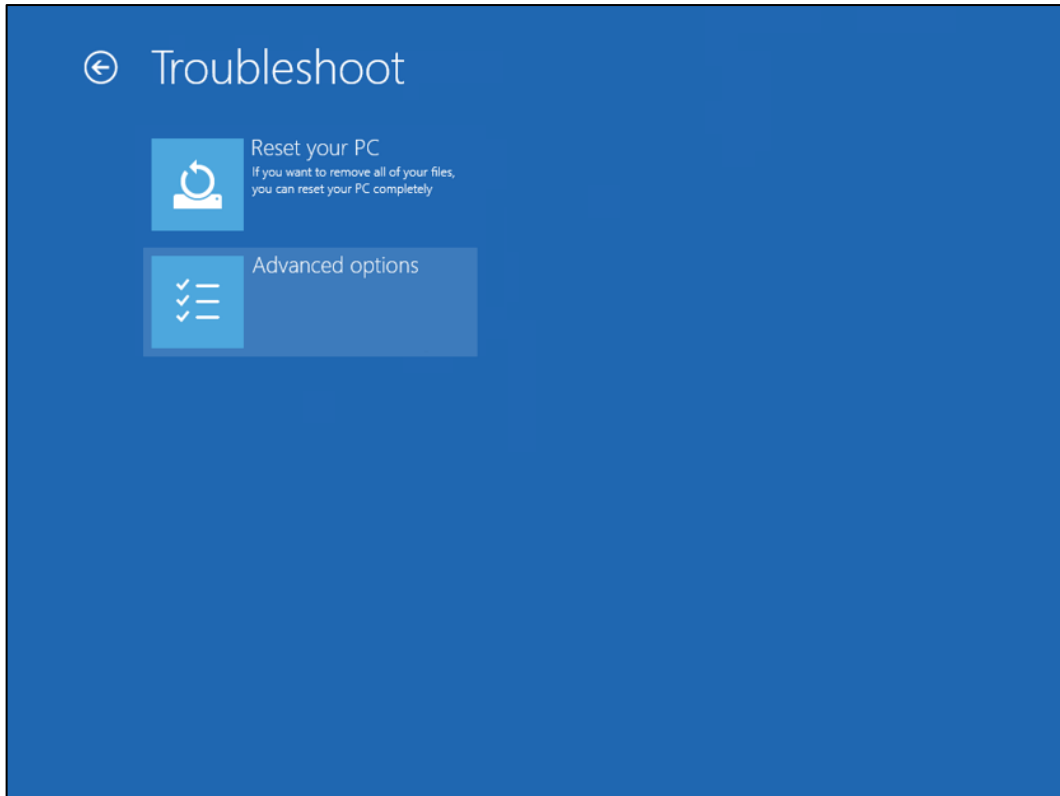
2. On the “Windows Setup” page, click **Repair your computer**.



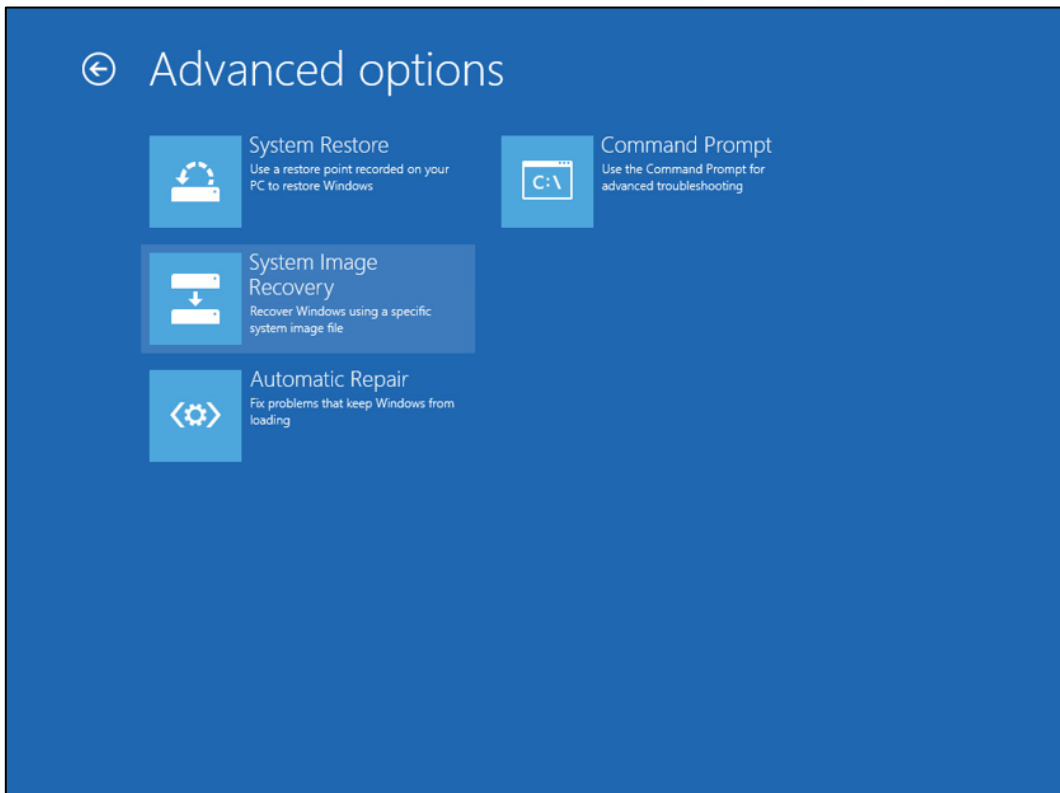
3. On the “Choose an option” page, click **Troubleshoot**.



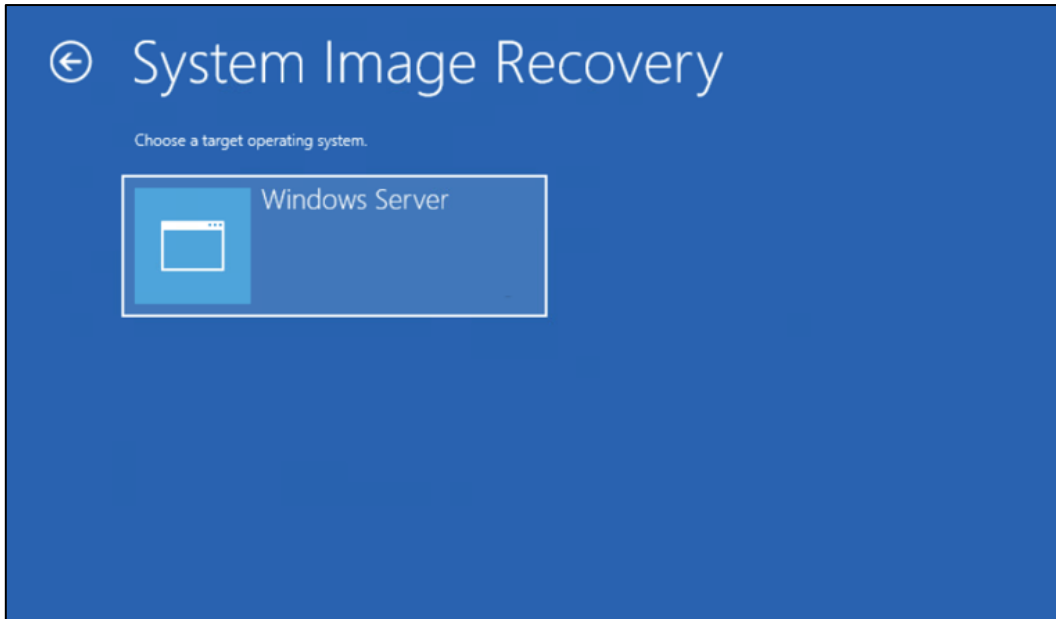
4. Click **Advanced options**.



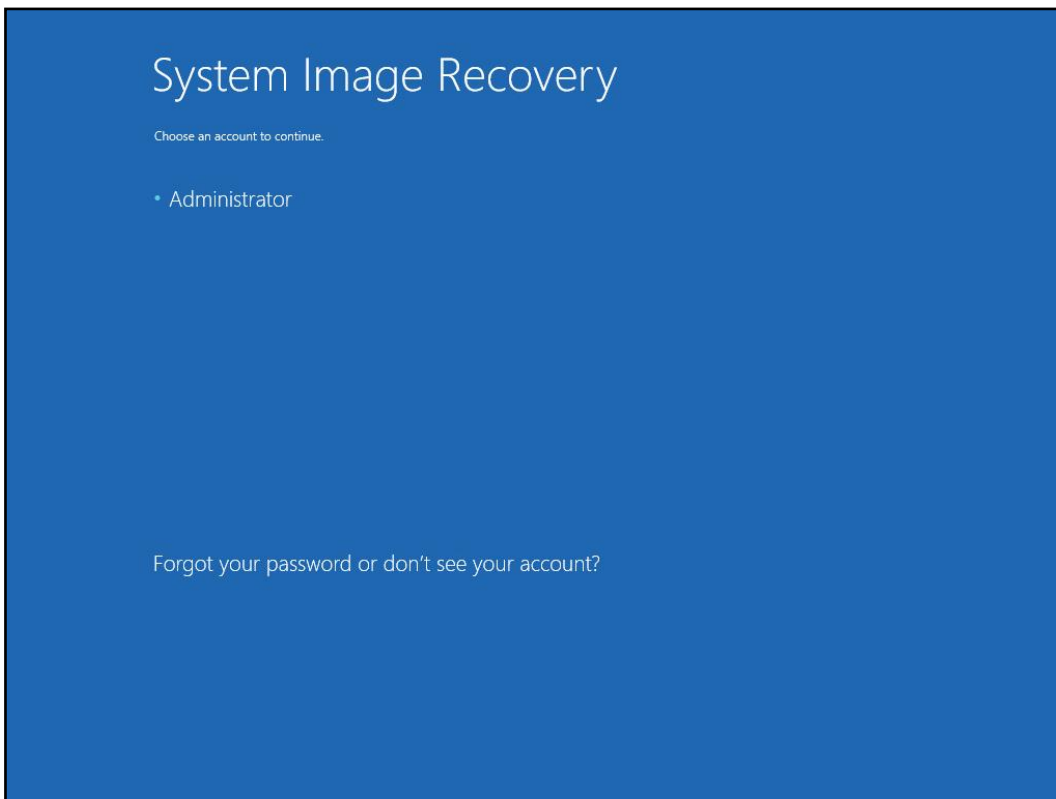
5. Click **System Image Recovery**.



6. Confirm the target operating system. This opens the [Re-image your computer](#) page.



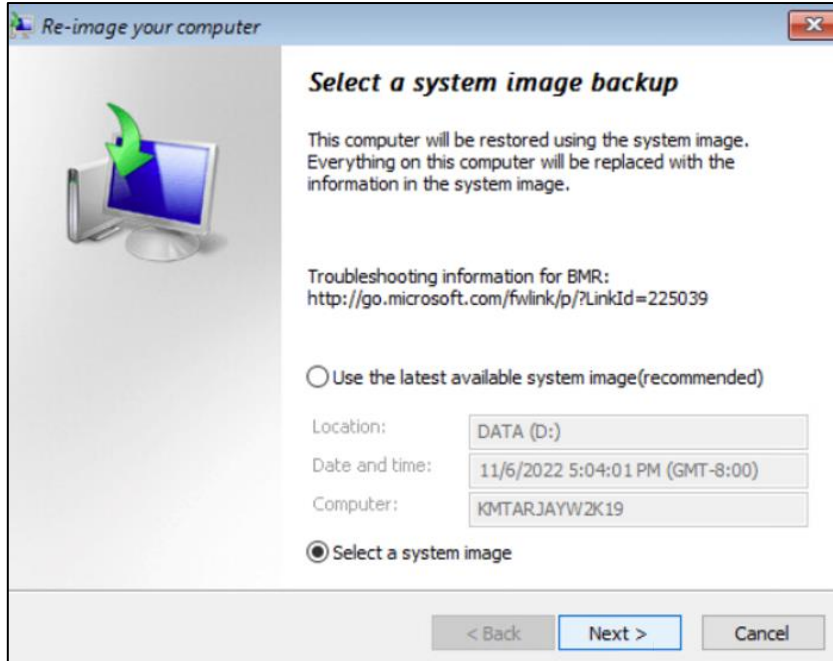
7. Login with an administrative account, by clicking on **Administrator**.



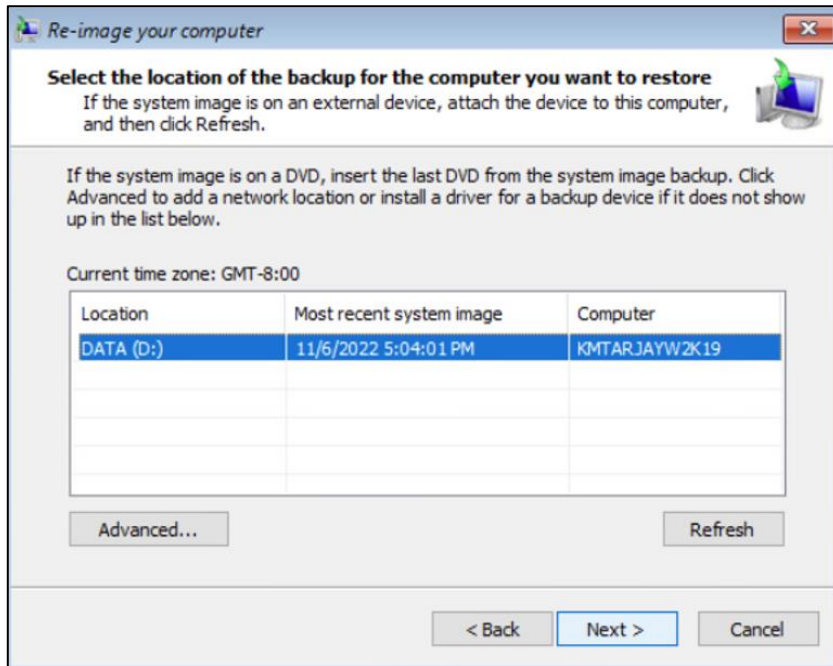
NOTE

This screen will only be displayed for non-server platforms.

8. Choose Select a system image, then click **Next**.



9. Select the location that contains the system image to restore from.



If you do not see the image available, then:

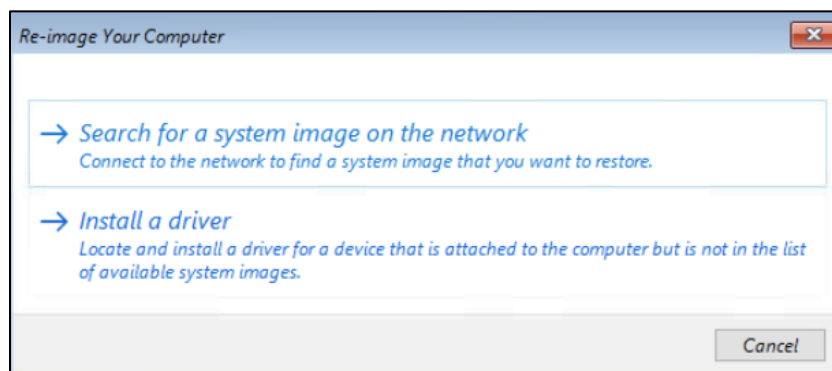
- ▶ Click **Advanced** and install the required driver for the removable drive to be accessed, if the system image was copied to a removable drive attached to the server.

To install a driver, the driver must be located on the local system. You cannot install a driver from the network.

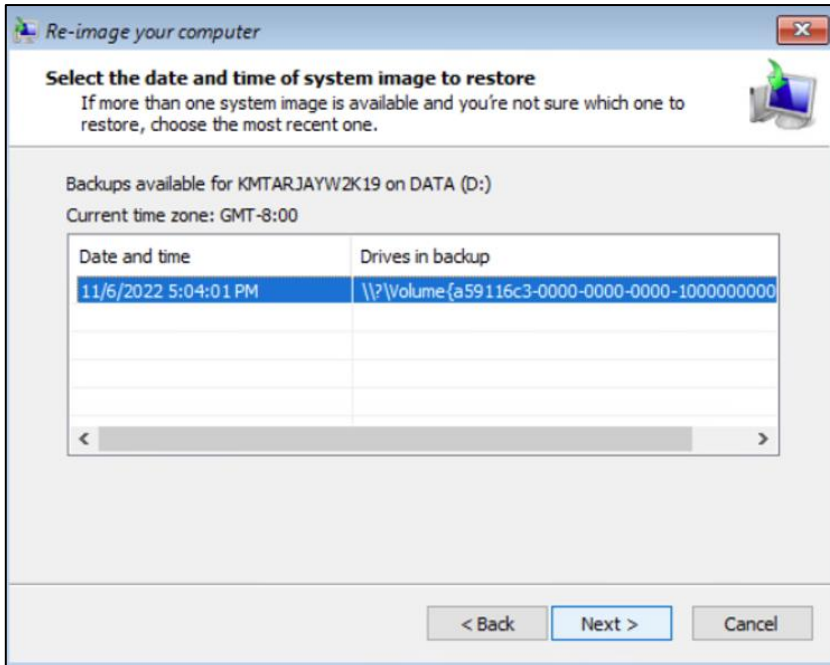
- ▶ Click **Advanced** and browse to the remote shared folder which contains the system image if the system image was copied to a network path.

For domain environment, if the backup storage location is on a computer that is a member of that domain, then the computer containing the storage location should be on the IPsec boundary, to be accessible by non-domain computer.

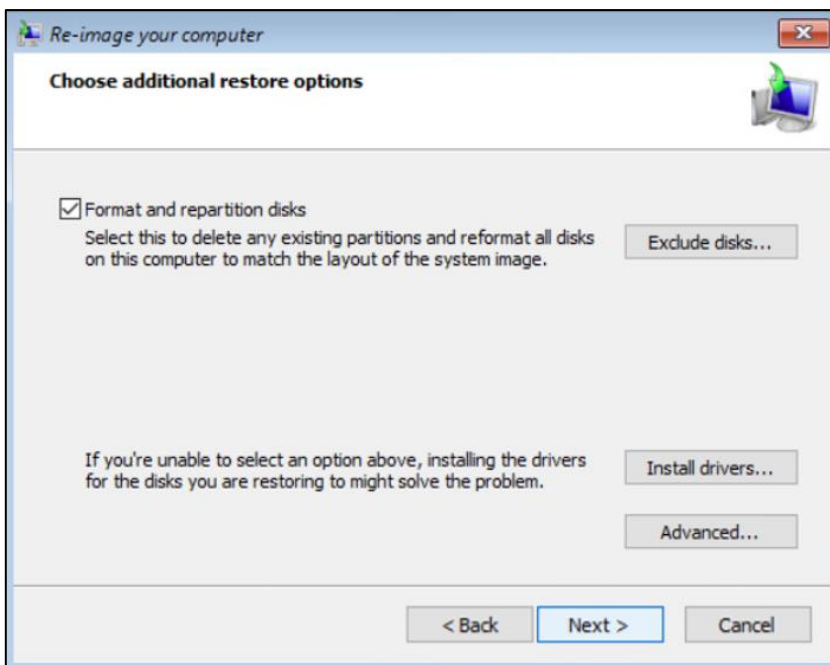
When a computer boots into Windows Recovery Environment, it becomes a non-domain computer, therefore, cannot access the usual network shares. Only those computers that allow non-domain computers to access the share can be used as a backup storage location in this way.



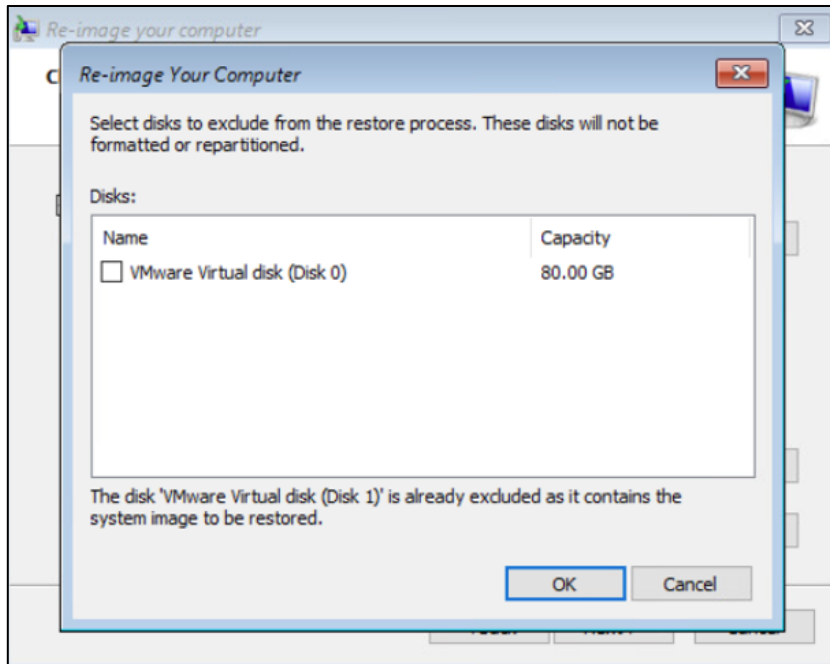
10. Select the date and time of the system image to restore.



11. On the "Choose additional restore options" page, tick the Format and repartition disks check box to delete existing partitions and reformat the destination disks to be the same as the backup.



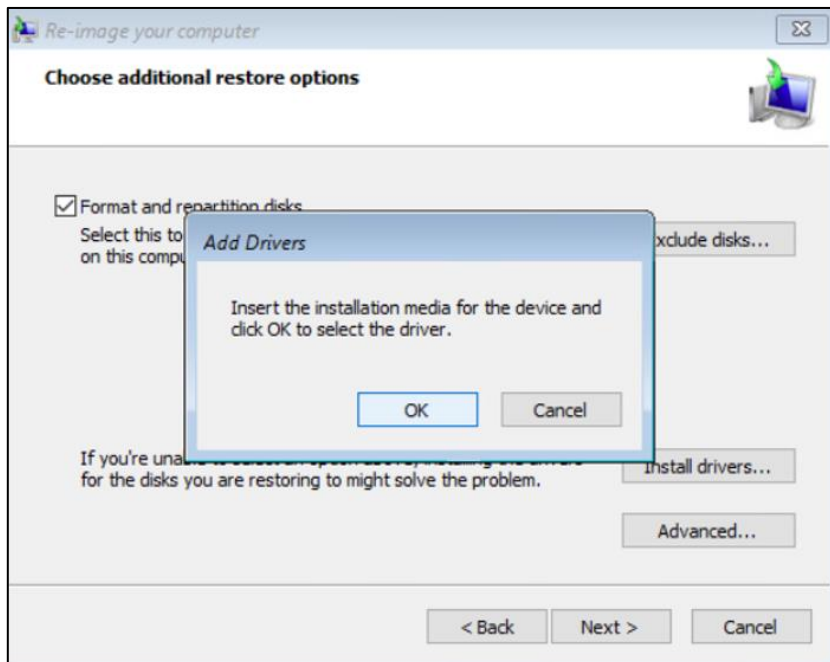
Click the **Exclude disks** button, then select the check boxes associated with any disks that you want to exclude from being formatted and partitioned.



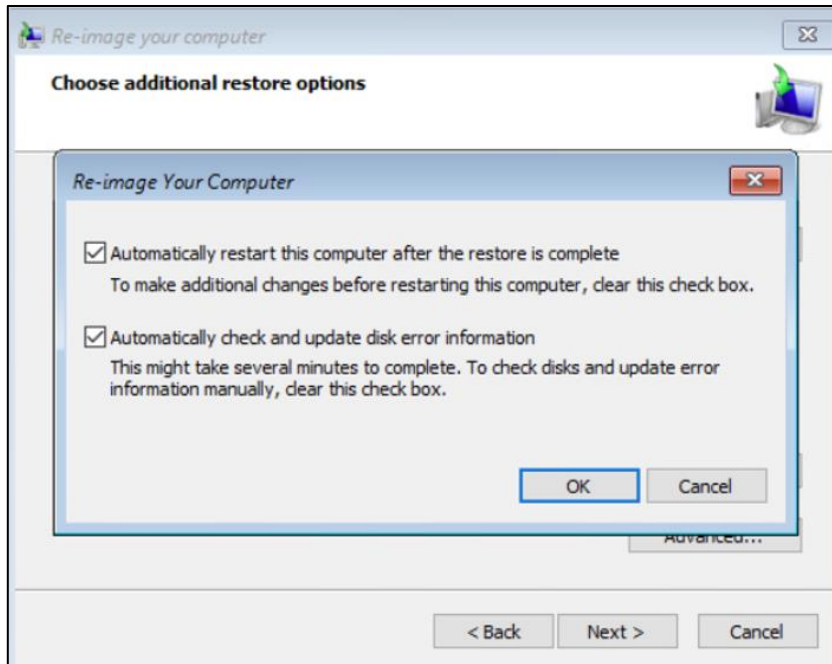
NOTE
The disk that contains the backup that you are using is automatically excluded.

Select **Only restore system drives** check box (not displayed in screenshot) to perform an operating system only recovery (instead of a full system recovery).

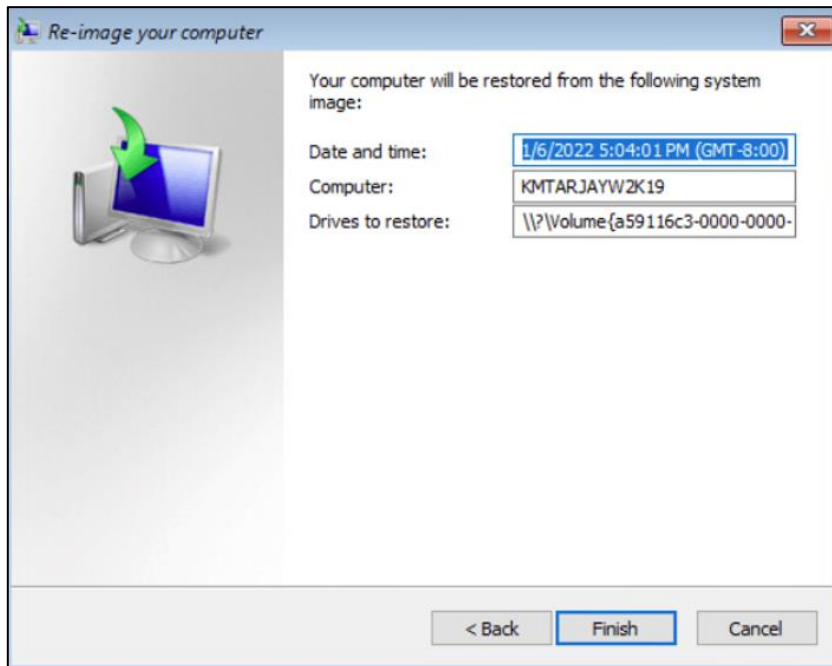
Click **Install drivers** to install device drivers for the hardware that you are recovering to.



Click **Advanced** to specify whether the computer is automatically restarted, and the disks are checked for errors immediately after the recovery. Click **Next** to proceed.



12. Confirm the details for the restoration, and then click **Finish** to start the recovery process.



IMPORTANT
Do not interrupt the restore process.

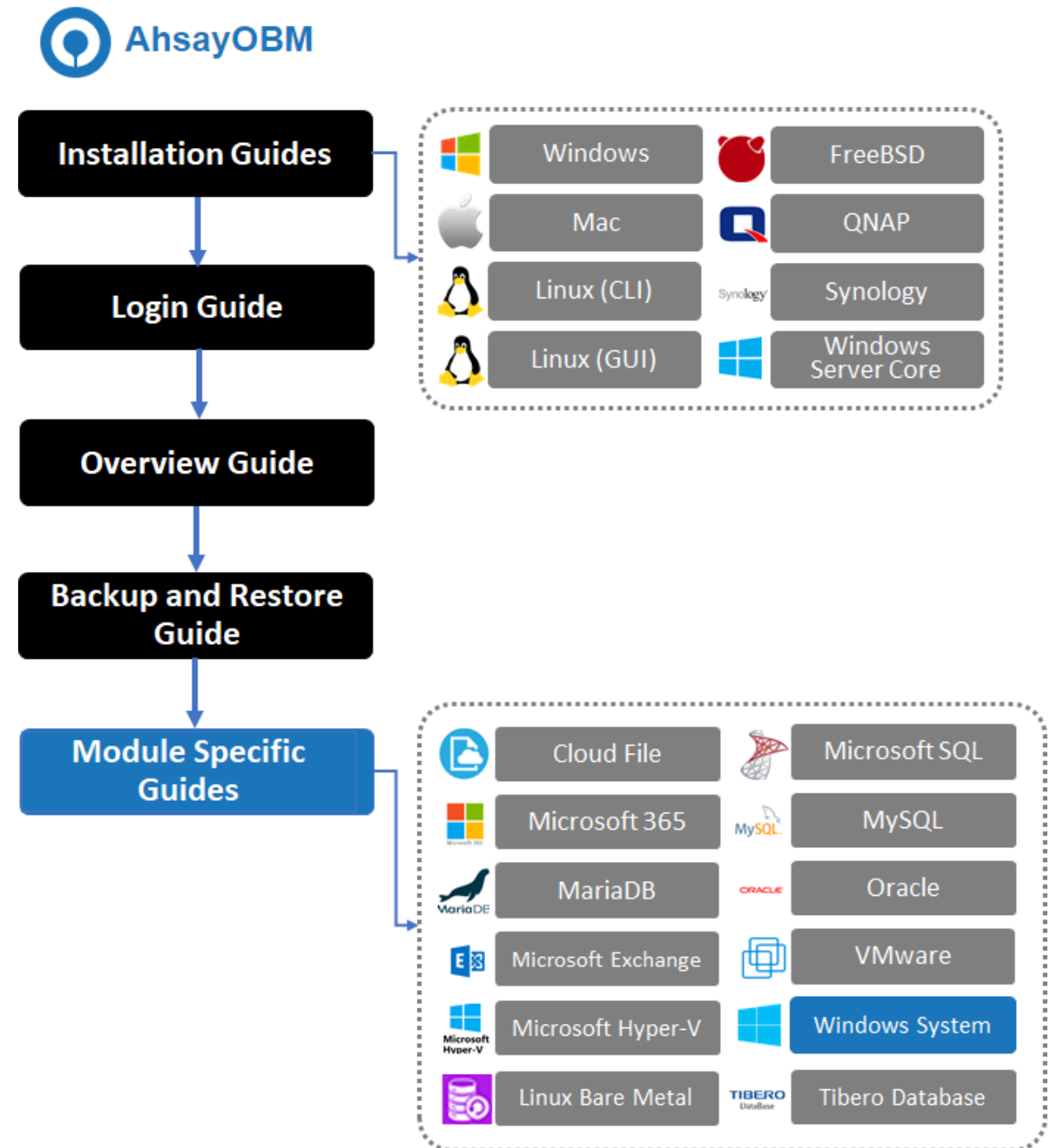
The recovery will succeed as long as all the critical volumes (e.g. volumes containing operating system components) are recovered.

If any data volume cannot be recovered, Windows will show a prompt with the un-recoverable volumes at the end of the recovery operation.

7 WHAT TO READ NEXT

You have just completed the Windows System and System State Backup and Restore Guide.

We recommend you next read the Module Specific Guides depending on the type of backup that you will be running. This will give you in detail all you need to know to configure, run backup and restore jobs of specific modules in AhsayOBM.



CONTACT AHSAY

SUPPORT

You can contact Ahsay support representatives on the following touchpoints:

- ▶ Through the [Partner Portal](#)
- ▶ WhatsApp, found in the [website](#)

DOCUMENTATION

For additional resources, you can find articles published in <https://wiki.ahsay.com>.

Available guides for all Ahsay products are available at: [Administrator and User Guides](#)

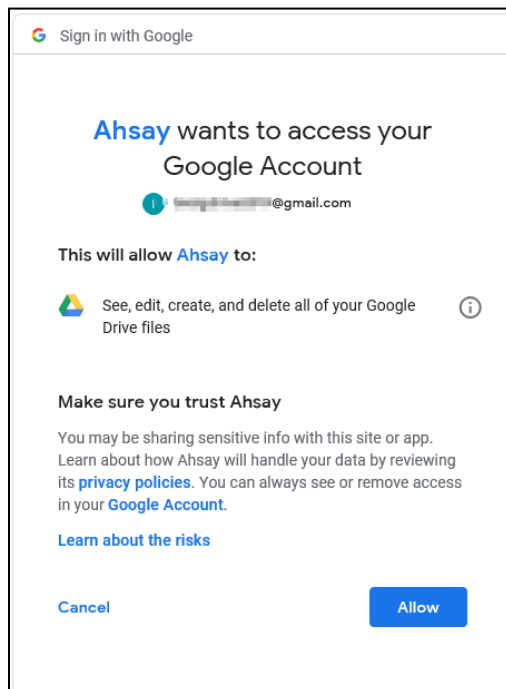
APPENDIX – CLOUD STORAGE AS BACKUP DESTINATION

For most cloud storage provider (e.g. Dropbox, Google Drive ... etc.), you need to allow AhsayOBM to access the cloud destination. Click **OK / Test**, you will be prompted to login to the corresponding cloud service.

IMPORTANT

The authentication request will be opened in a new tab / window on the browser, ensure that the pop-up tab / window is not blocked (e.g. pop-up blocker in your browser)

Click **Allow** to permit AhsayOBM to access the cloud storage:



Enter the authentication code returned in AhsayOBM to complete the destination setup.

NOTE

A backup destination can be set to a supported cloud storage, backup server, FTP / SFTP server, network storage, or local / removable drive on your computer.

Multiple backup destinations can be configured for a single backup set. In fact, it is recommended for you to setup at least 2 backup destinations for your backup set.

For more details on backup destination, for example which cloud service providers are supported, destination type, or limitation, you can refer to this link:

[FAQ: Frequently Asked Questions on Backup Destination](#)