

Ahsay Online Backup Manager v7

Microsoft System State Backup and Restore Guide

Ahsay Systems Corporation Limited

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Revision History

Date	Descriptions	Type of modification
26 July 2016	First Draft	New
3 Feb 2017	Added instructions and screen shots for Encryption key handling in Ch. 5.1	New
5 Apr 2017	Added Encryption Type option in Ch. 5.1 Create a MS Windows System State Backup Set section	New
4 Sept 2017	Updated screen shot for Ch5.1	Modification

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Introduction

The MS Windows System State Backup module of AhsayOBM provides you with a set of tools to protect your Windows operating system. This includes backup feature, that leverages Microsoft's native Wbadmin command-line tool (<http://go.microsoft.com/fwlink/?LinkId=140216>), and recovery feature.

The system components included in a system state backup depend on the server roles that are installed (e.g. Active Directory, Internet Information Service ... etc.).

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 a IIS server only)
- Registry

Overview

This document contains information that are essential for understanding the MS Windows System State backup and recovery process:

1. [Requirement and Limitation](#)
2. [Best Practice and Recommendation](#)
3. [Restore Consideration](#)
4. [Starting AhsayOBM](#)
5. [Configuring a MS Windows System State Backup Set](#)
6. [Overview on the Backup Process](#)
7. [Running a Backup](#)
8. [Restore with a MS Windows System State Backup Set](#)

1 Requirement and Limitation

1.1 Hardware Requirement

Refer to the following article for the list of hardware requirements for AhsayOBM:

[FAQ: Ahsay Hardware Requirement List \(HRL\) for version 7.3 or above](#)

1.2 Software Requirement

Refer to the following article for the list of compatible Windows operating systems platforms:

[FAQ: Ahsay Software Compatibility List \(SCL\) for version 7.3 or above](#)

1.3 Other Requirement and Limitation

Ensure that the following requirements are met:

- AhsayOBM Installation

Make sure that AhsayOBM is installed on the server to be backed up.

- Add-on Module Requirement

Make sure that the Windows System State add-on module is enabled for your AhsayOBM user account. Contact your backup service provider for more details.

- Backup Quota Requirement

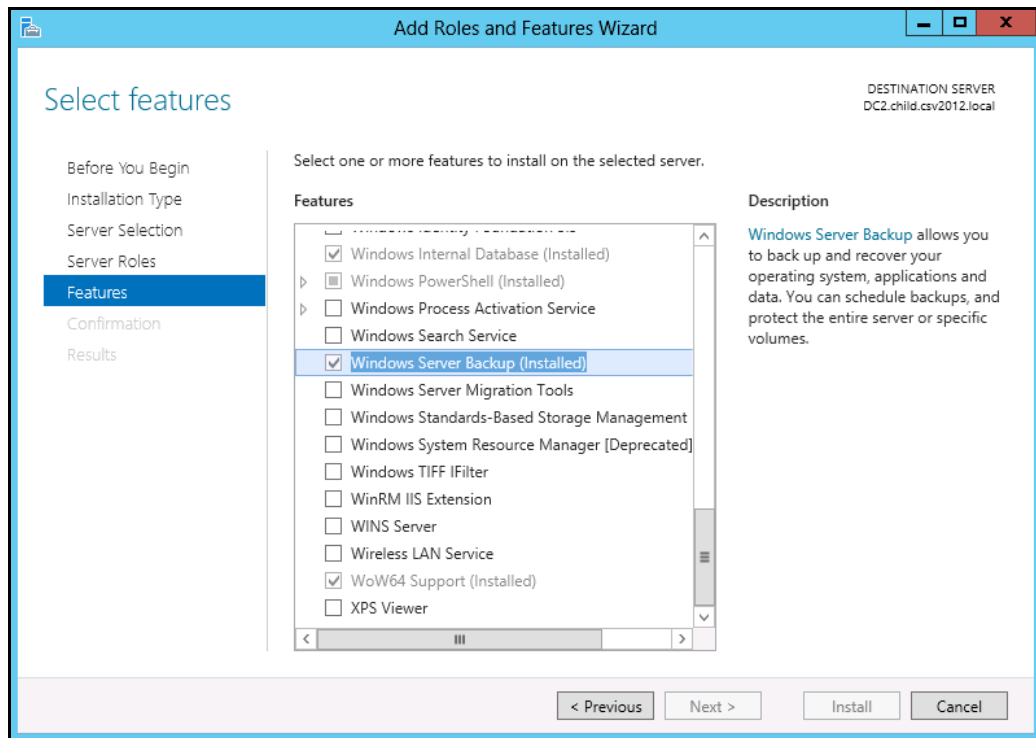
Make sure that your AhsayOBM user account has sufficient quota assigned to accommodate the storage for the system state backup.

The size of a set of system state backup data may vary from 10 - 15 GB, depending on the role installed. Contact your backup service provider for details.

- Windows Server Backup (WSB) Features

The Windows Server Backup feature must be installed in order for either the system backup to take place.

Confirm in the Server Manager, the feature can be added by selecting **Add Roles and Features**.



1 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.

2 Temporary Storage Location

Make sure that the storage location configure for the system state data is set to a supported location.

Refer to the following KB article for details on the restriction:

<https://forum.ahsay.com/viewtopic.php?f=196&t=16301>

3 Disk Space Available in Temporary Storage Location

Make sure that there are sufficient disk spaces available in the storage location for the backup set.

The size of a set of system state backup data may vary from 10 - 15 GB, depending on the role installed on the server.

4 System Component Selection

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

Reference: <https://msdn.microsoft.com/en-us/library/windows/desktop/bb968830>

2 Best Practice and Recommendation

Please consider the following recommendations:

- ❶ It is recommended that the latest version of AhsayOBM is installed on server to be backed up.

User should also stay up-to-date when newer version of AhsayOBM is released. To get our latest product and company news through email, please subscribe to our mailing list:
http://www.ahsay.com/jsp/en/home/subscribe_mail_list.jsp
- ❷ 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 screenshot shows the 'System State Backup' configuration window in AhsayOBM. The window has a sidebar on the left with options: 'General' (selected), 'Backup Schedule', 'Continuous Backup', and 'Destination'. Below 'Destination' is a link 'Show advanced settings'. The main area is titled 'General' and contains the following fields:

- 'Name': MS Windows System State Backup
- 'Owner': HV2
- 'Windows System State Backup': A section header.
- 'Specify the location where you want to store the system backup': A dropdown menu showing 'Volume 3 (G:)'. A mouse cursor is pointing at the dropdown arrow.
- 'Windows User Authentication': A section header.
- 'Domain Name (e.g. Ahsay.com) / Host Name': csv2012.local
- 'User name': Administrator
- 'Password': (empty field)

At the bottom of the window, there is a blue bar with a link 'Delete this backup set' on the left and three buttons: 'Save', 'Cancel', and 'Help' on the right.

- ❸ For best performance, consider to increase the memory allocation setting for AhsayOBM (Java heap space)

Refer to the following KB article for further instruction:

<https://forum.ahsay.com/viewtopic.php?f=206&t=14117>

- ❹ System Recovery Plan

Consider performing routine system recovery test to ensure your system state backup is setup and performed properly. Performing system recovery test can also help identify potential issues or gaps in your system recovery plan.

For best result, it is recommended that you should keep the test as close as possible to a real situation. Often times when a recovery test is to take place, administrators will plan for the test (e.g. reconfigure the test environments, restoring certain data in advance). For real recovery situation, you will not get a chance to do that.

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

3 Restore Consideration

Please consider the following before performing a 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.

- Caution on Recovery to Dissimilar Hardware

You can restore a system state backup to the same physical computer from which the system state backup was created, or to a different physical 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.

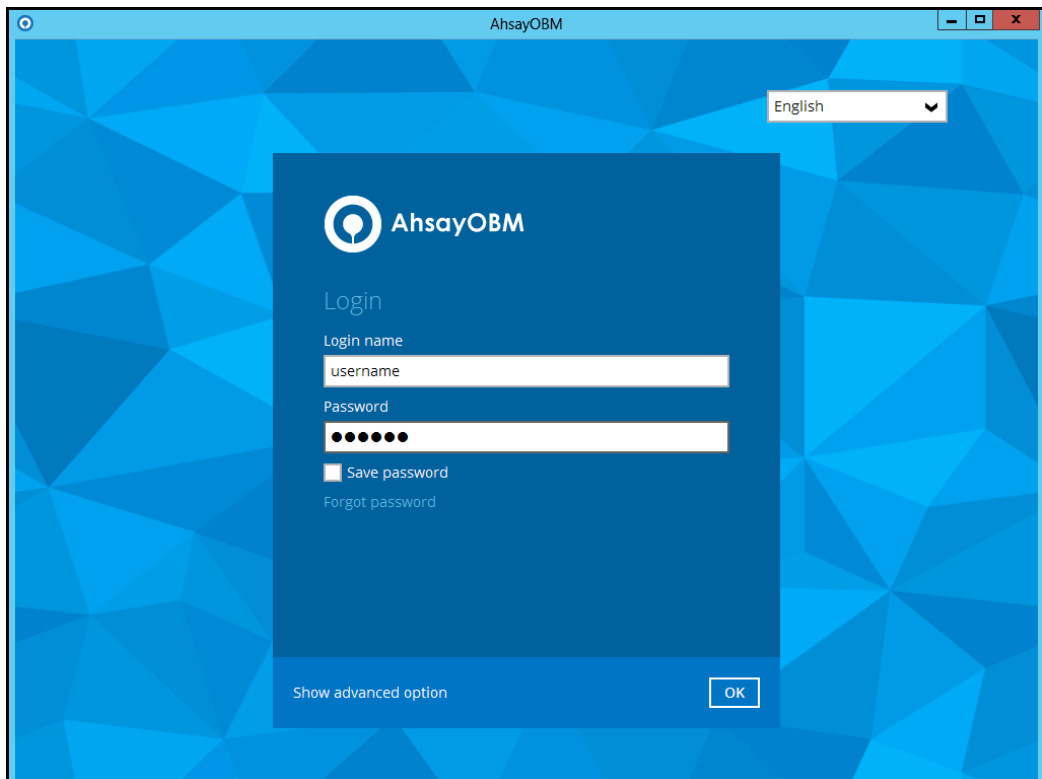
Reference: <http://support.microsoft.com/kb/249694>

4 Starting AhsayOBM

4.1 Login to AhsayOBM

1. Login to the AhsayOBM application user interface.

Double click the AhsayOBM desktop icon to launch the application.




2. Enter the **Login name** and **Password** of your AhsayOBM account.
3. Click **OK** afterward to login to AhsayOBM.

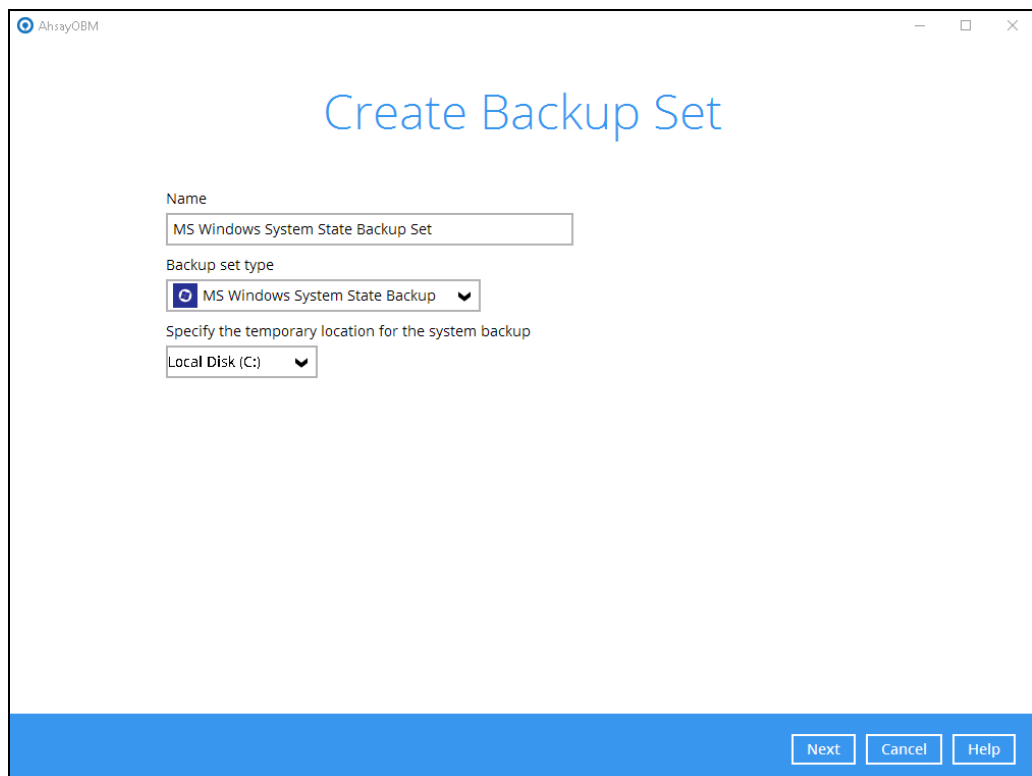
5 Configuring a MS Windows System State Backup Set

5.1 Create a MS Windows System State Backup Set

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



2. Create a MS Windows System State backup set by clicking  next to **Add new backup set**.
3. Select **MS Windows System State Backup** as the **Backup set type**, and enter a **Name** for your backup set.

A screenshot of the 'Create Backup Set' dialog box in the AhsayOBM application. The dialog has a title bar with the AhsayOBM logo and window controls. The main title 'Create Backup Set' is in blue. Below it, there are three input fields: 'Name' with the text 'MS Windows System State Backup Set', 'Backup set type' with a dropdown menu showing 'MS Windows System State Backup' and a plus icon, and 'Specify the temporary location for the system backup' with a dropdown menu showing 'Local Disk (C:)'. At the bottom right, there are three buttons: 'Next', 'Cancel', and 'Help'.

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

Select a local volume from the dropdown menu.

Create Backup Set

Name
MS Windows System State Backup Set

Backup set type
MS Windows System State Backup

Specify the temporary location for the system backup
Local Disk (C:)
Local Disk (C:)
Volume 1 (E:)
Volume 2 (F:)

Next Cancel Help

Or

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

Create Backup Set

Name
MS Windows System State Backup Set

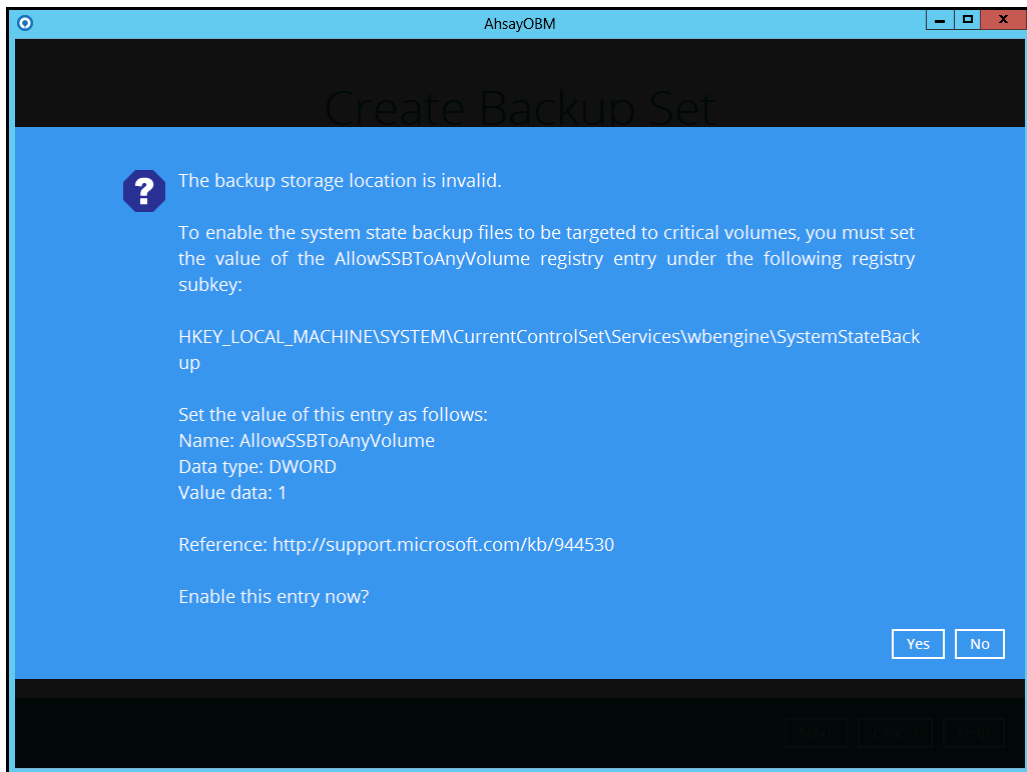
Backup set type
MS Windows System State Backup

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

Next Cancel Help


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

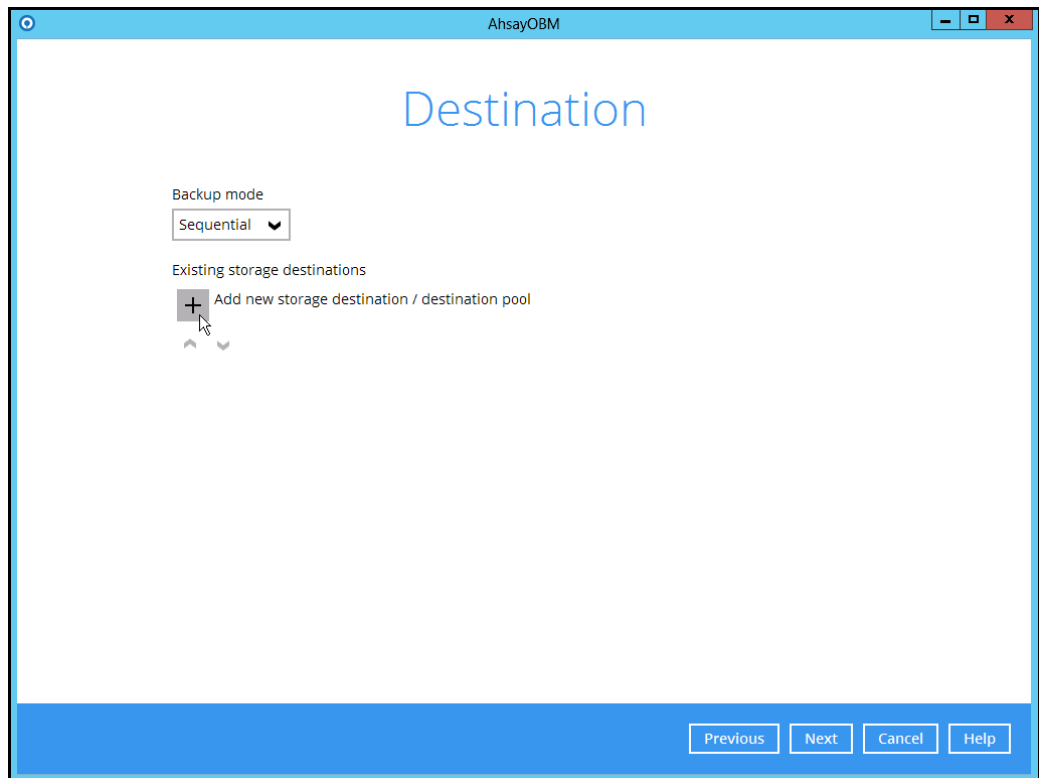
Note: If the storage location is set to a critical volume (e.g. system volume), the following message will be displayed:



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

Refer to the following KB article for details on the restriction:
<https://forum.ahsay.com/viewtopic.php?f=196&t=16301>

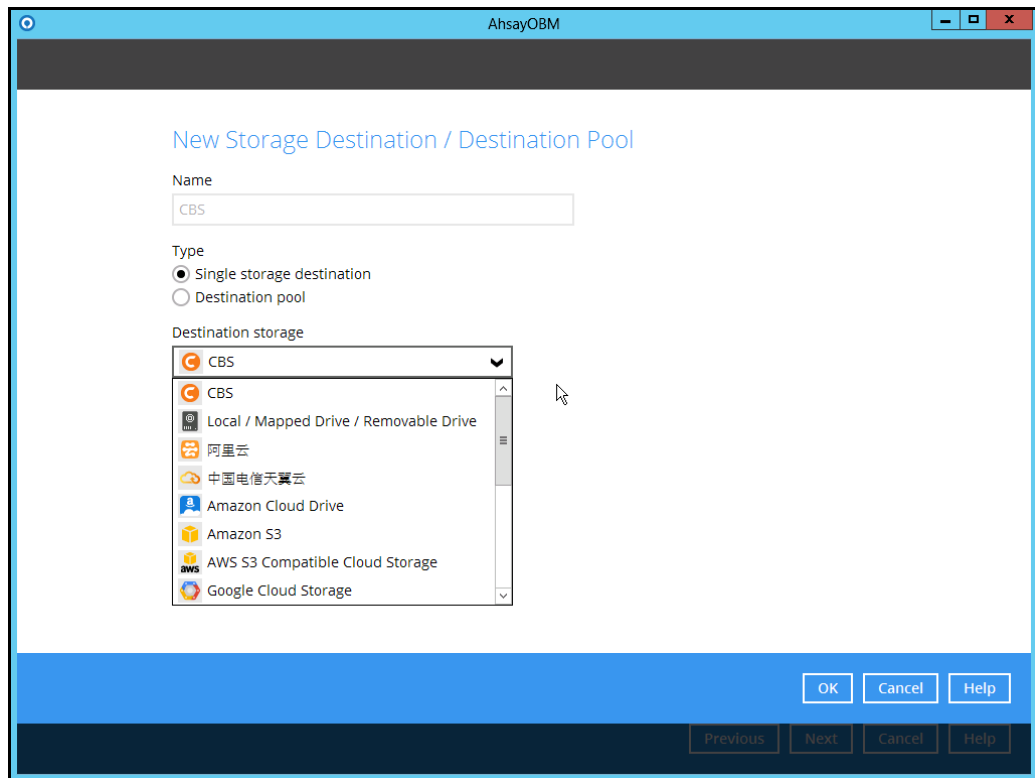
5. In the Schedule menu, configure a backup schedule for backup job to run automatically at your specified time interval. Click **Add** to add a new schedule, then click **Next** to proceed afterward.
6. In the Destination menu, select a backup destination where the backup data will be stored. Click  next to **Add new storage destination / destination pool**.



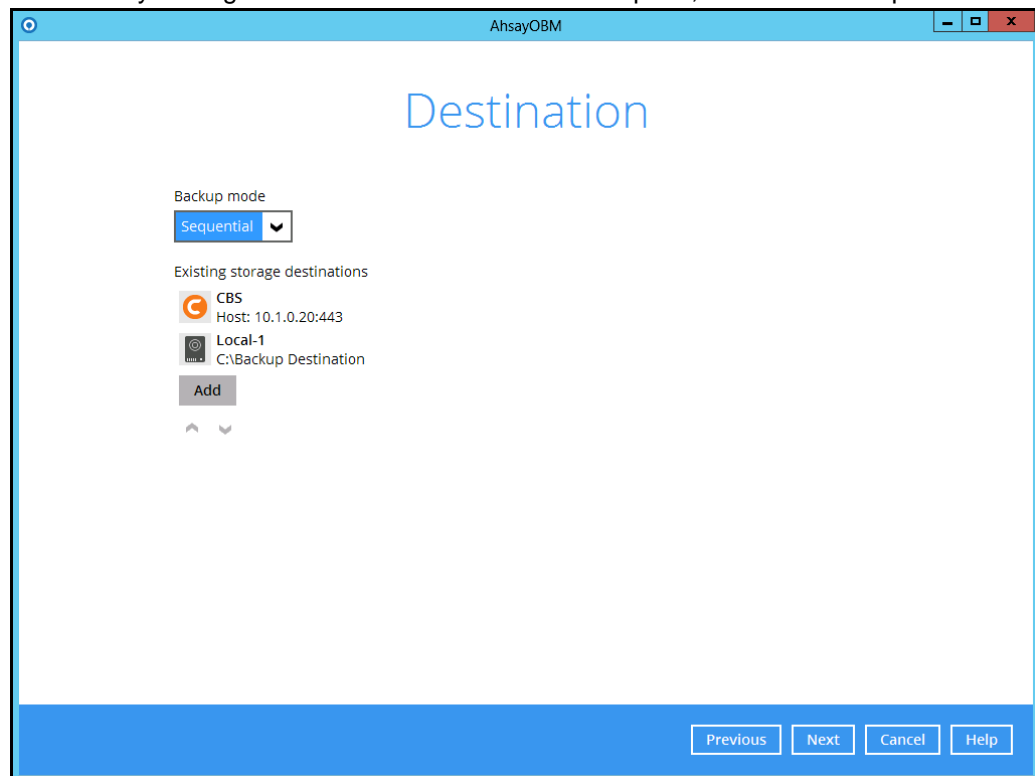
Note: For more details on Backup Destination, refer to the following KB article for details: <https://forum.ahsay.com/viewtopic.php?f=186&t=14049>

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

7. Enter a **Name** for the backup destination, and select the **Type** and **Destination storage**.

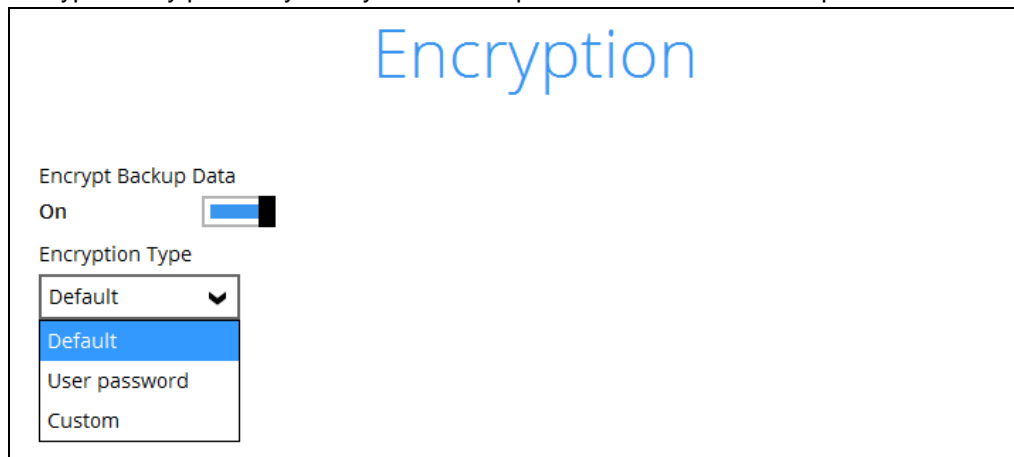


8. Continue by adding another destination for the backup set, or click **Next** to proceed.



Note: Multiple backup destinations can be configured for a single backup set.

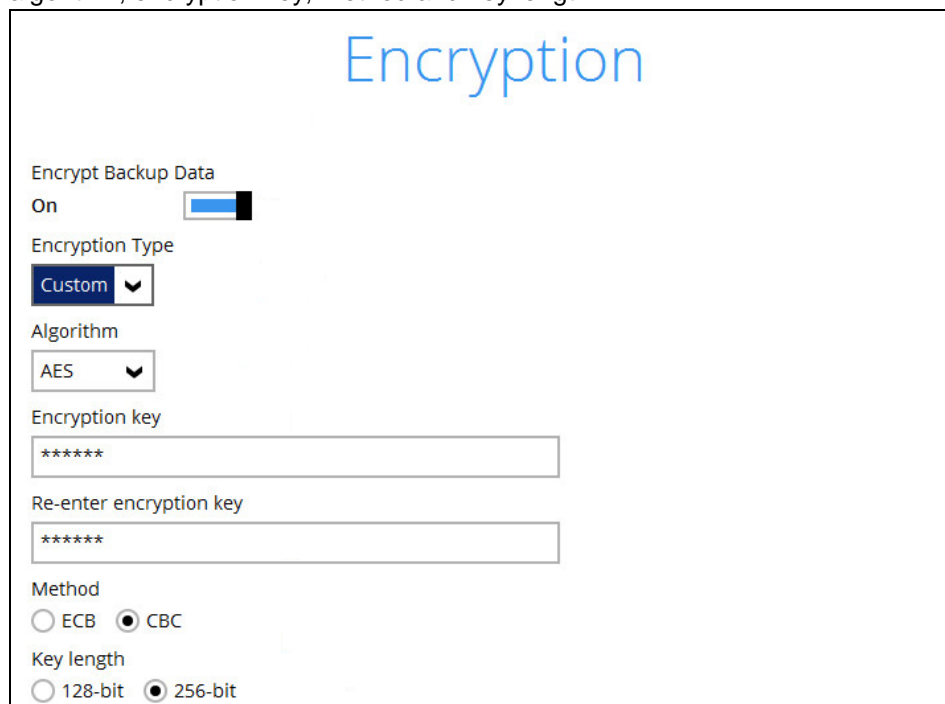
9. In the Encryption window, the default **Encrypt Backup Data** option is enabled with an encryption key preset by the system which provides the most secure protection.



The screenshot shows the 'Encryption' window. At the top, the word 'Encryption' is displayed in a large blue font. Below it, the 'Encrypt Backup Data' section has a toggle switch set to 'On'. Underneath, the 'Encryption Type' dropdown menu is open, showing four options: 'Default' (highlighted in blue), 'User password', and 'Custom'. The 'Default' option is currently selected.

You can choose from one of the following three Encryption Type options:

- **Default** – an encryption key with 44 alpha numeric characters will be randomly generated by the system
- **User password** – the encryption key will be the same as the login password of your AhsayOBM at the time when this backup set is created. Please be reminded that if you change the AhsayOBM login password later, the encryption keys of the backup sets previously created with this encryption type will remain unchanged.
- **Custom** – you can customize your encryption key, where you can set your own algorithm, encryption key, method and key length.

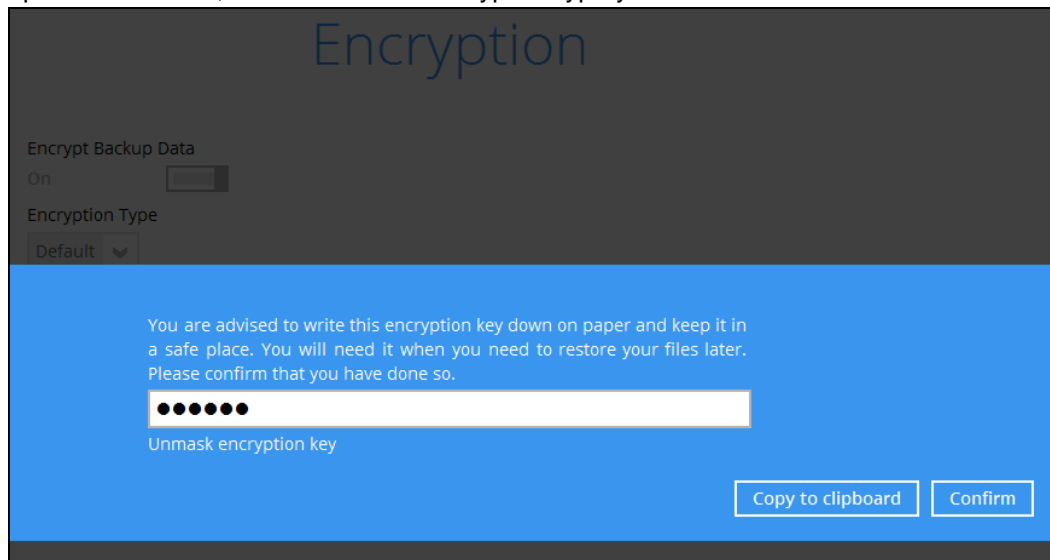


This screenshot shows the 'Encryption' window with the 'Custom' encryption type selected. The 'Encrypt Backup Data' toggle is still 'On'. The 'Encryption Type' dropdown is set to 'Custom'. Below this, the 'Algorithm' dropdown is set to 'AES'. There are two text input fields for the 'Encryption key', both containing '*****'. The 'Method' section has two radio buttons: 'ECB' (unselected) and 'CBC' (selected). The 'Key length' section has two radio buttons: '128-bit' (unselected) and '256-bit' (selected).

Note: For best practice on managing your encryption key, refer to the following KB article. <https://forum.ahsay.com/viewtopic.php?f=169&t=14090>

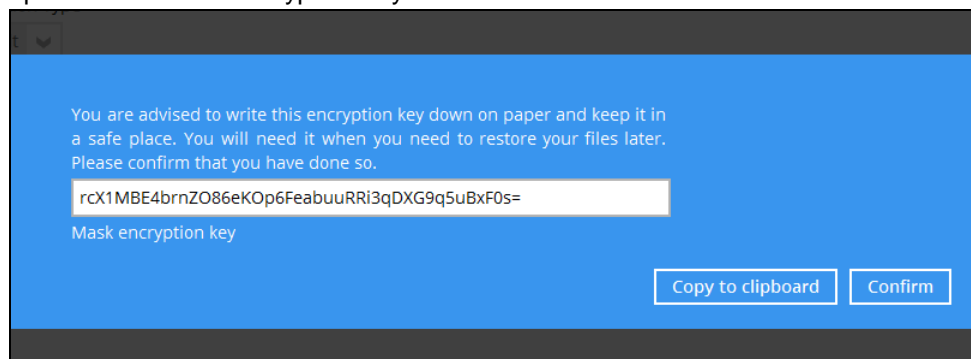
Click **Next** when you are done setting.

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.



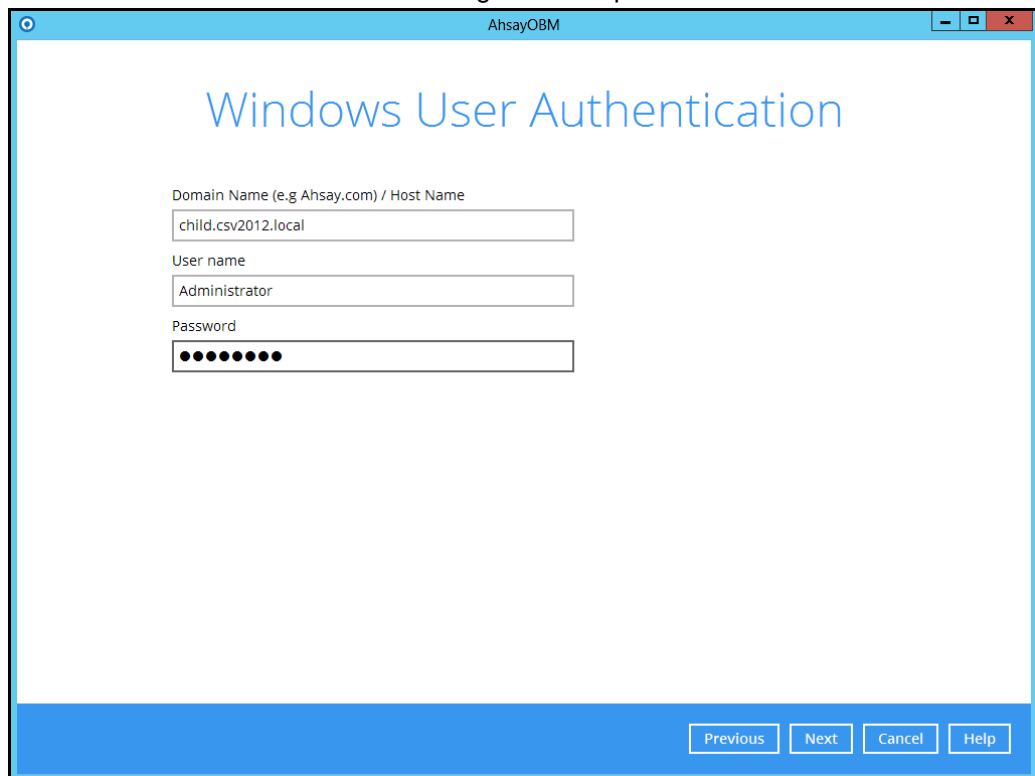
The pop-up window has the following three options to choose from:

- **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.

11. Enter the **Domain Name / Host Name** of the computer, **User Name** and **Password** of the Windows account that will be running the backup.



Windows User Authentication

Domain Name (e.g Ahsay.com) / Host Name
child.csv2012.local

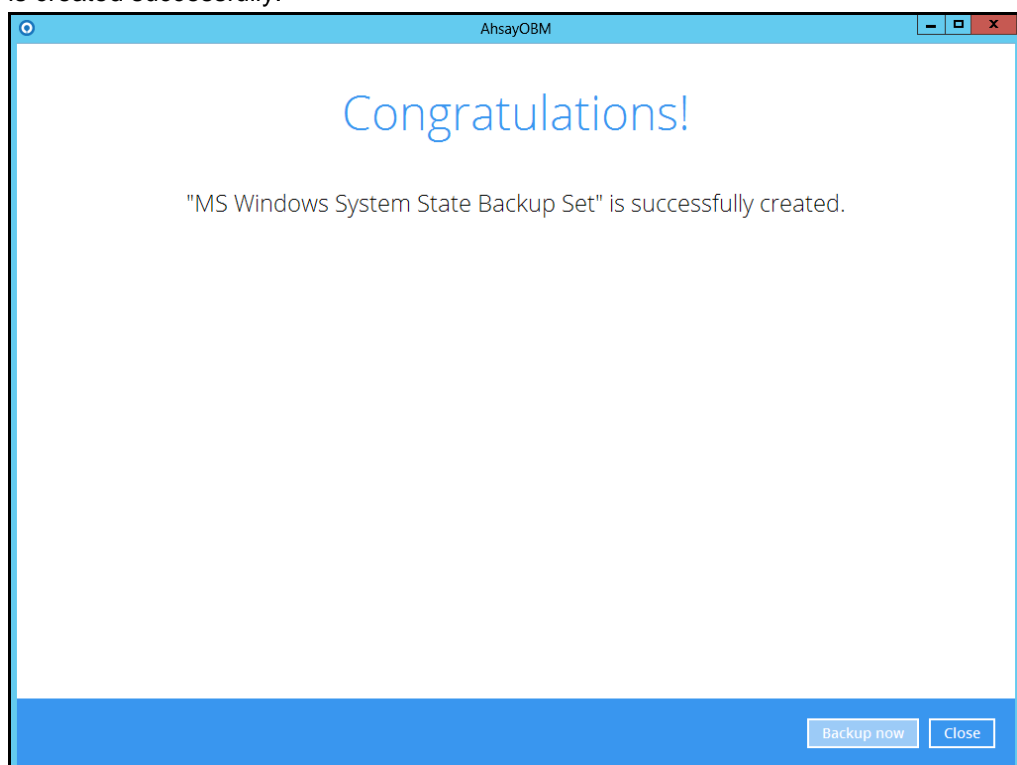
User name
Administrator

Password
●●●●●●●●

Previous Next Cancel Help

Note: This menu will displayed if a backup schedule is configured in the previous step.

12. Click **Next** to create the backup set.
13. The following screen is displayed when the new MS Windows System State backup set is created successfully.



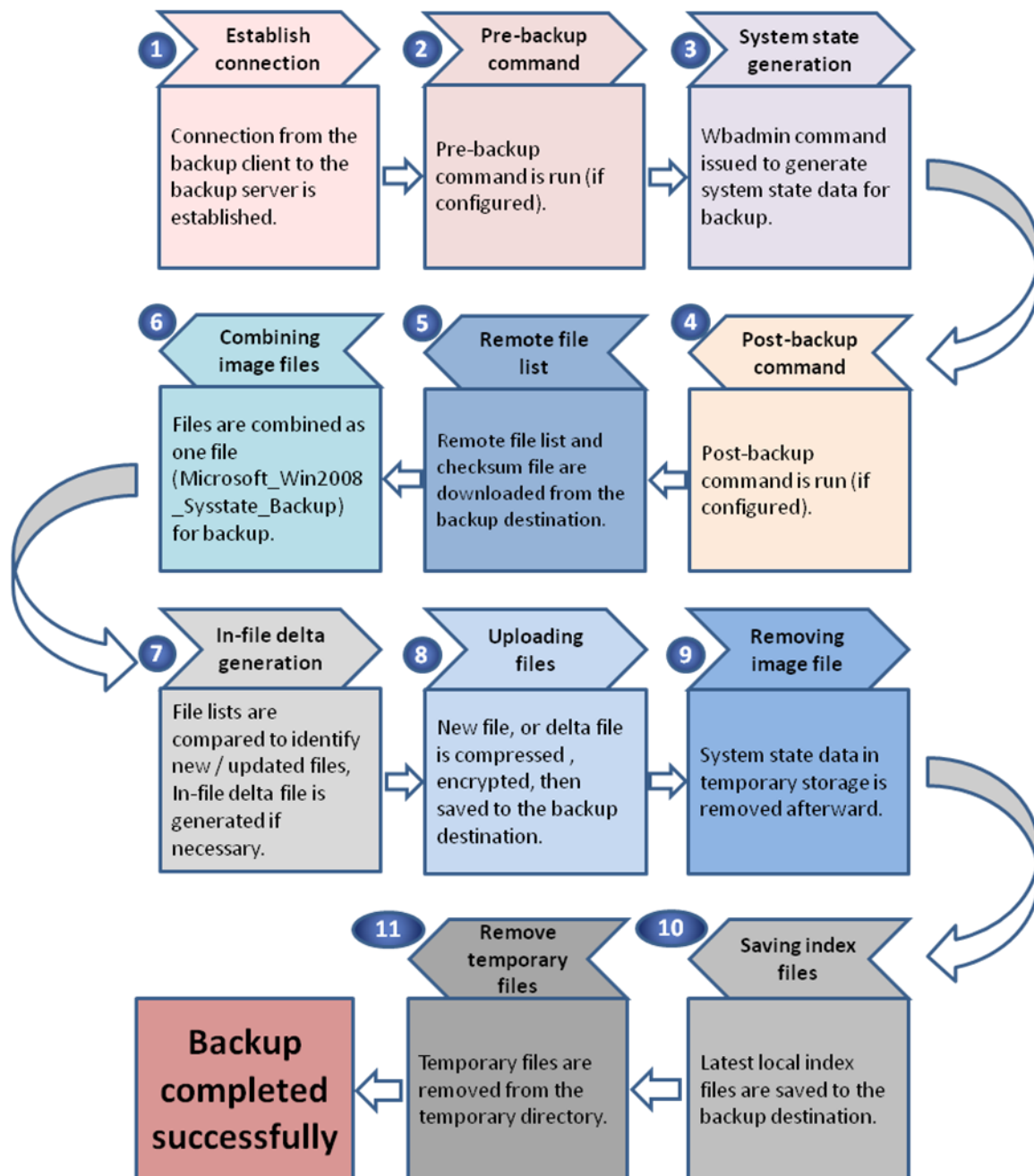
Congratulations!

"MS Windows System State Backup Set" is successfully created.

Backup now Close

6 Overview on the Backup Process

The following steps are performed during a MS Windows System State backup job.



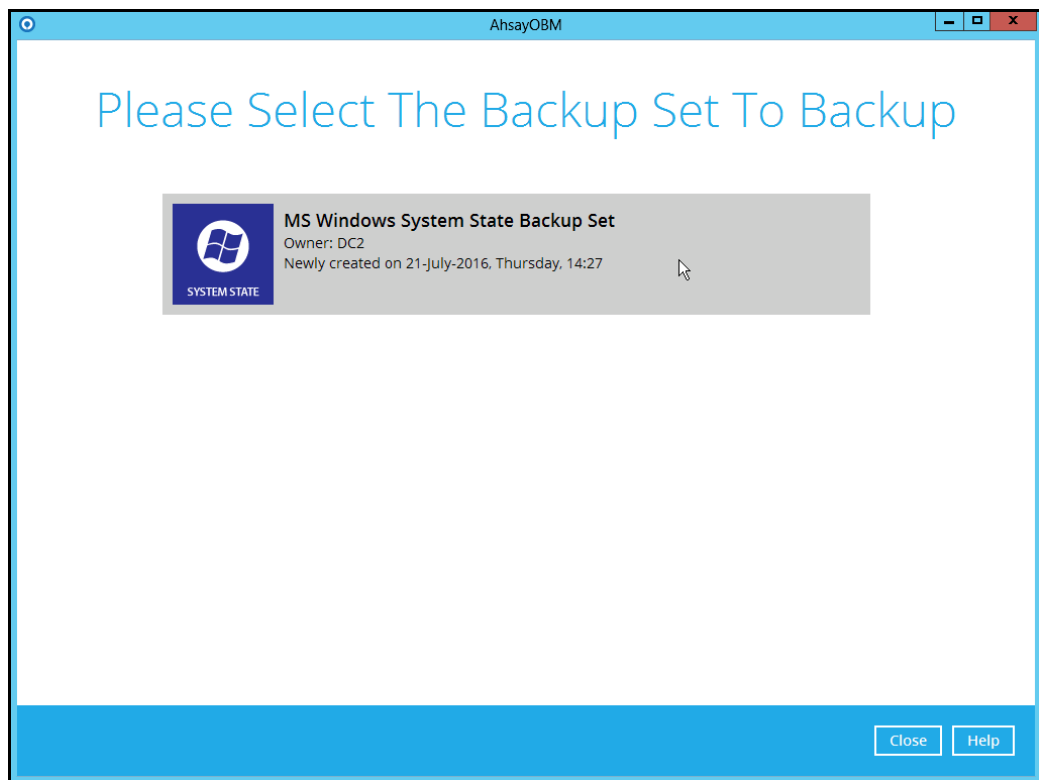
7 Running a Backup

7.1 Start a Manual Backup

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 In-File Delta type, Destinations and Retention Policy Settings, click **Show advance option**.
4. Click **Backup** to start the backup.

7.2 Configure Backup Schedule for Automated Backup

1. Click the Backup Sets icon on the AhsayOBM main interface.



2. Select the backup set that you want to create a backup schedule for.
3. Click **Backup Schedule**, then create a new backup schedule by clicking **Add**.
4. Configure the backup schedule settings, then click **OK** to proceed.
5. Click **Save** to confirm your settings.

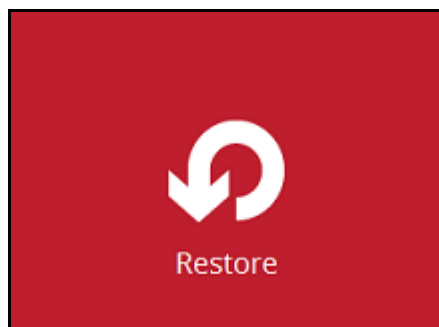
8 Restore with a MS Windows System State Backup Set

8.1 Login to AhsayOBM

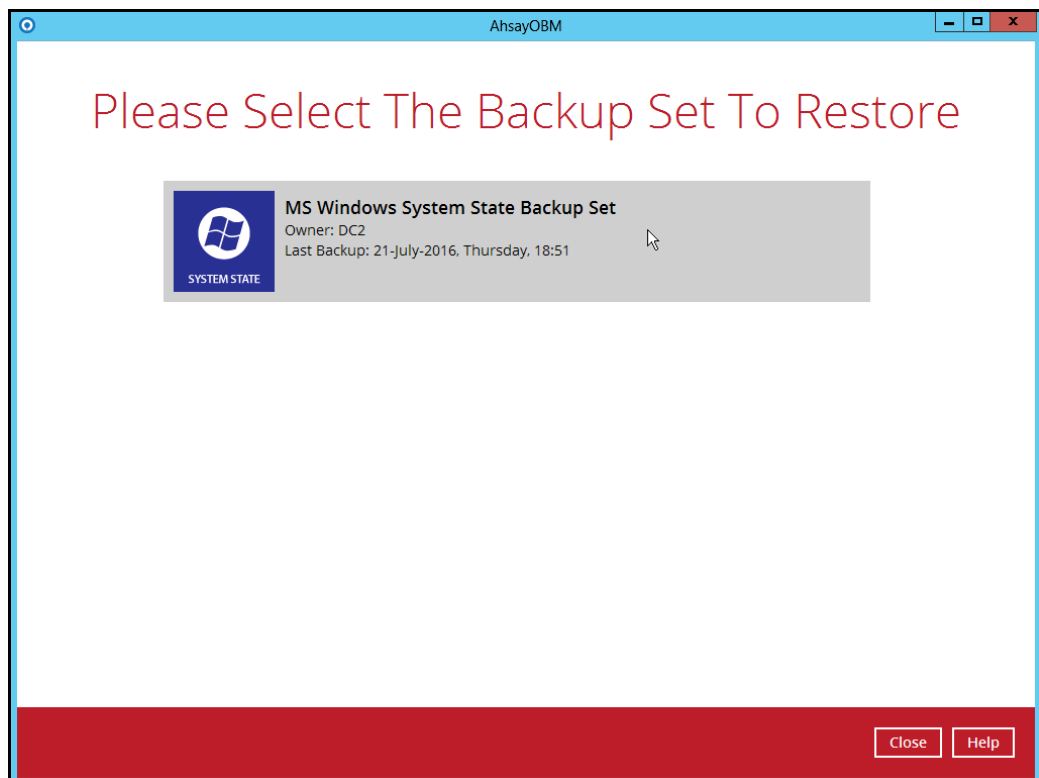
Login to the AhsayOBM application according to the instruction provided in the chapter on [Starting AhsayOBM](#).

8.2 Restore the System State Data

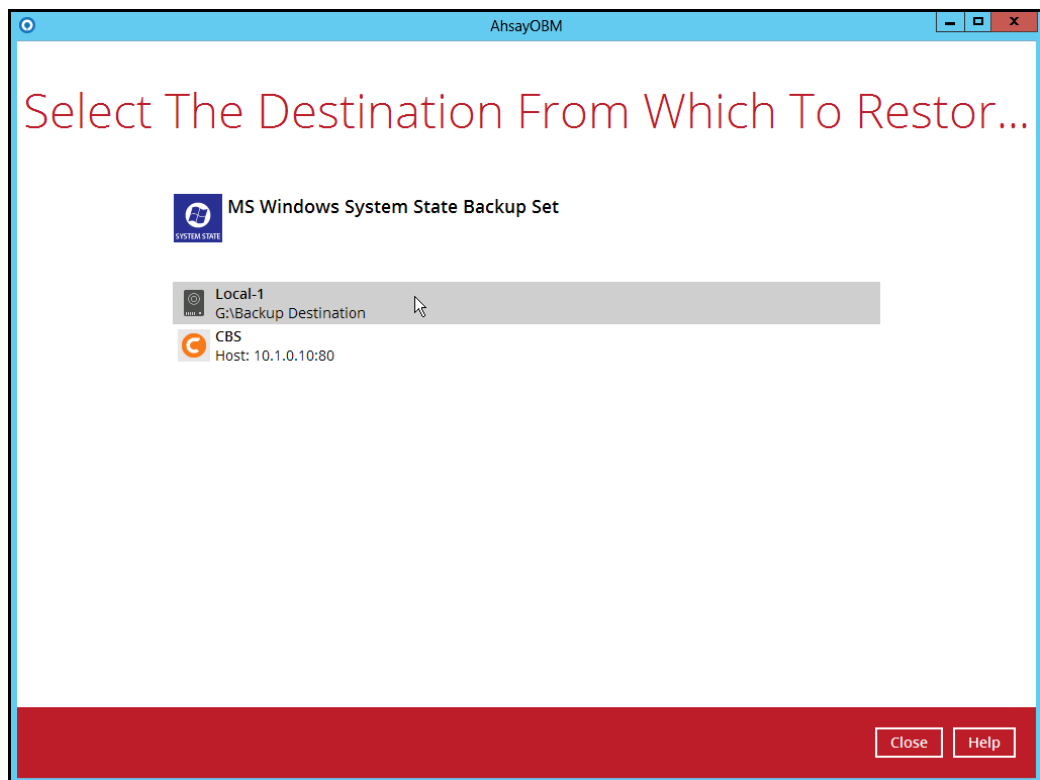
1. Click the **Restore** icon on the main interface of AhsayOBM.



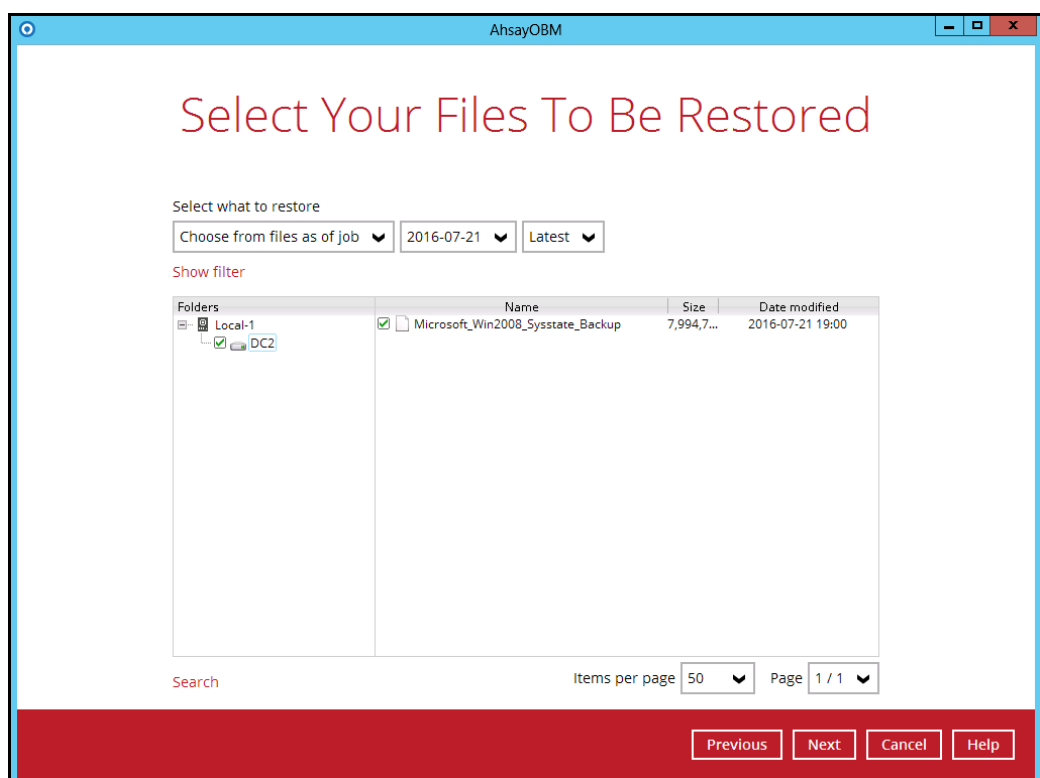
2. Select the backup set that you would like to restore the system state data from.



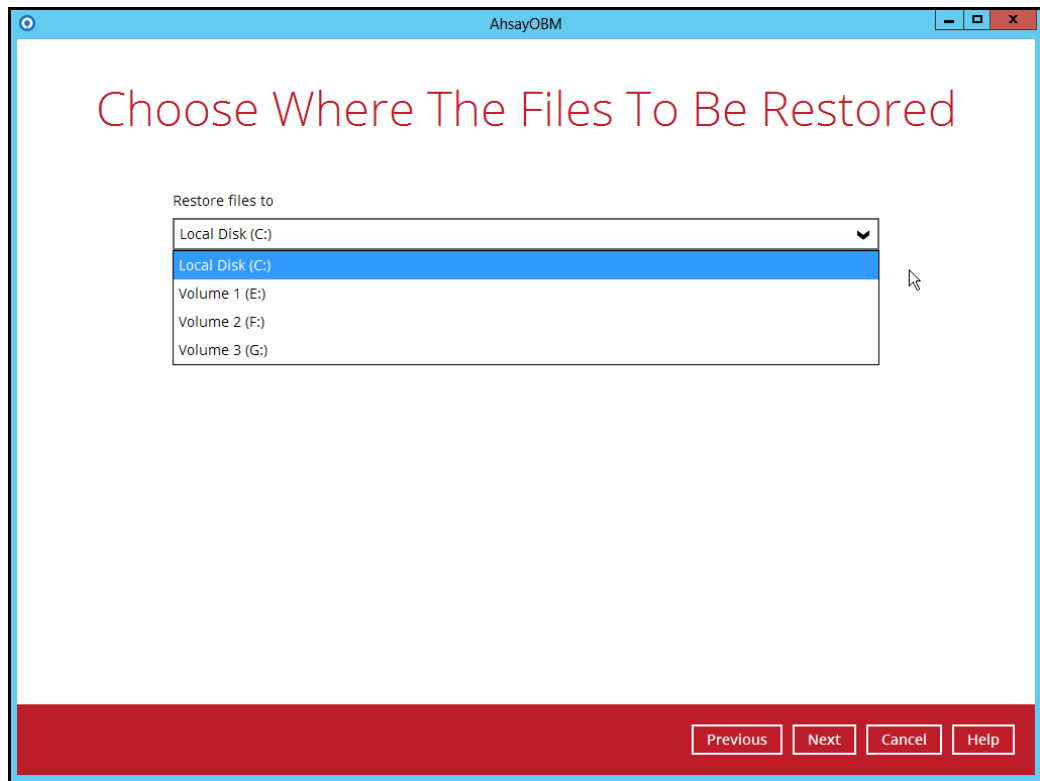
3. Select the backup destination that contains the system state data that you would like to restore.



4. Select to restore from a specific backup job, or the latest job available from the **Select what to restore** drop down menu.
5. Select **Microsoft_Win2008_Sysstate_Backup**, then click **Next** to proceed.

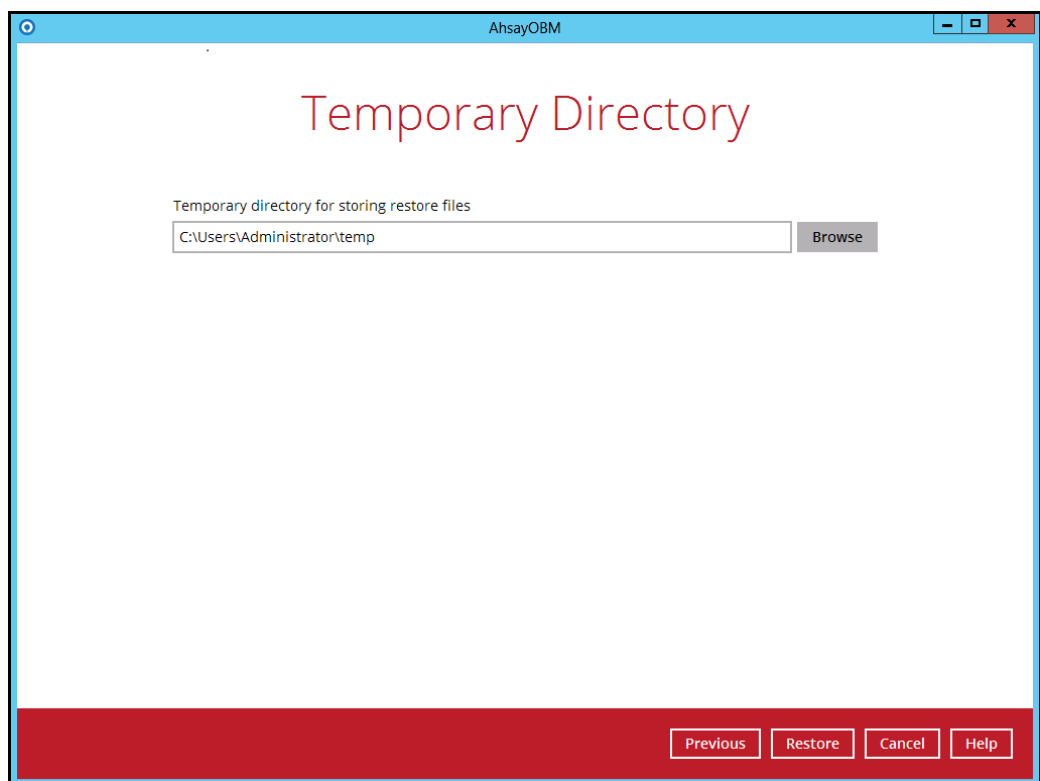


6. Select to restore the system state data to a local volume or to a removable drive.

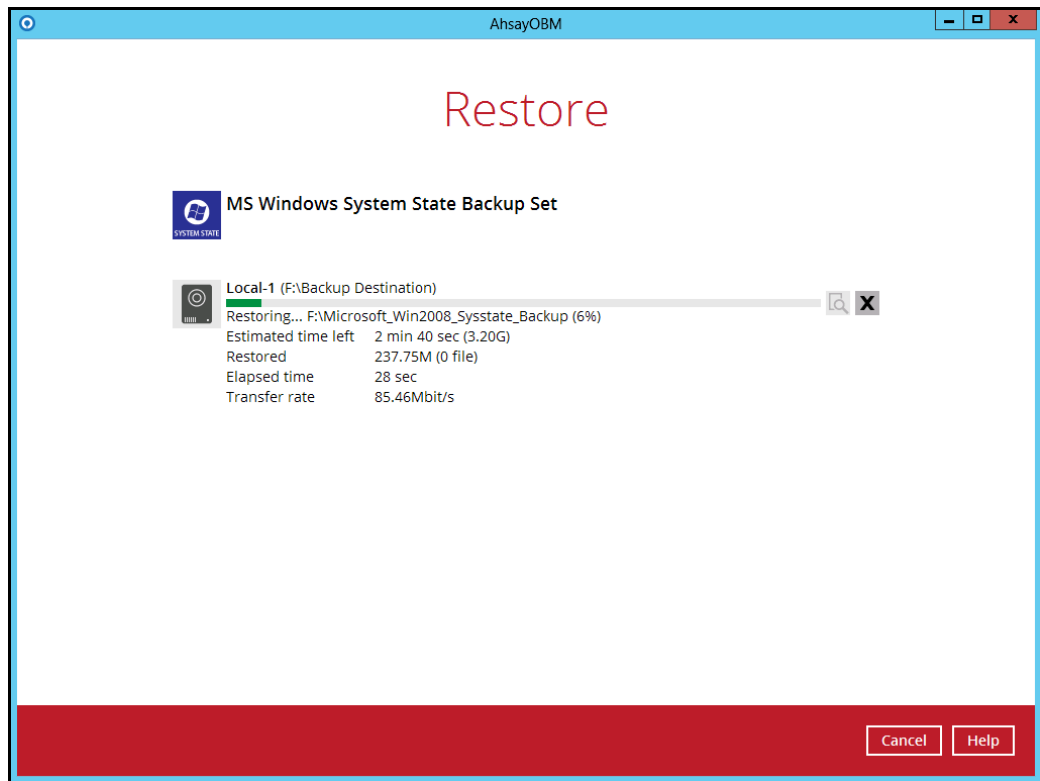


Click **Next** to proceed.

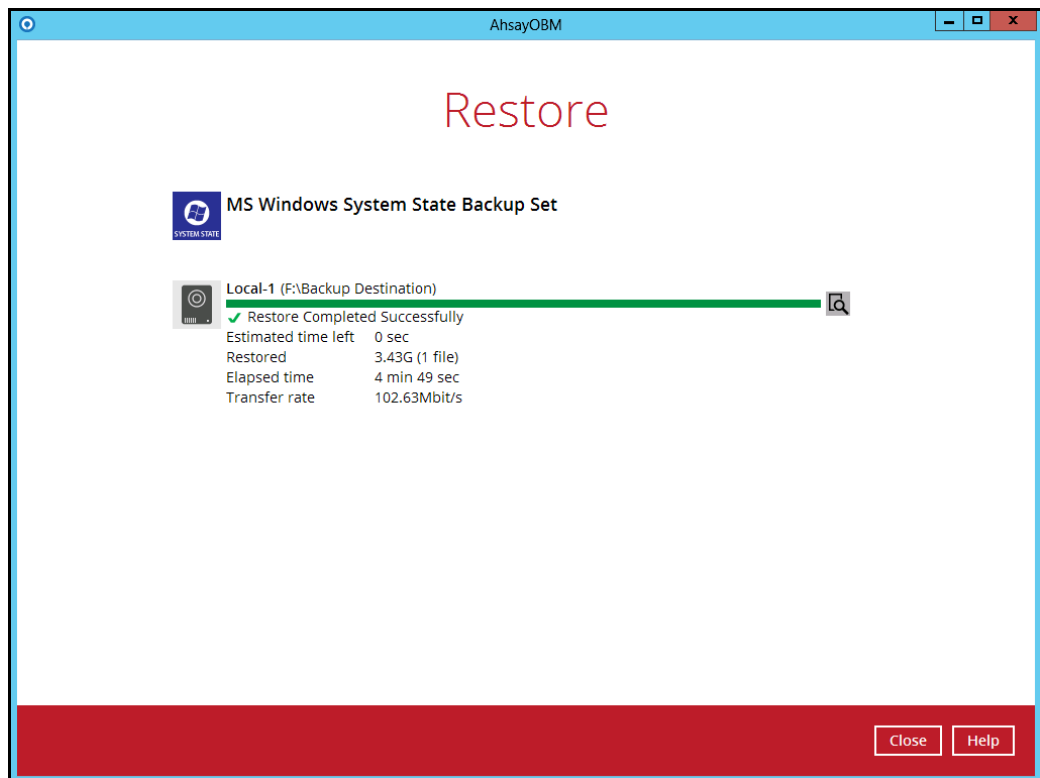
7. Select the temporary directory for storing temporary files.



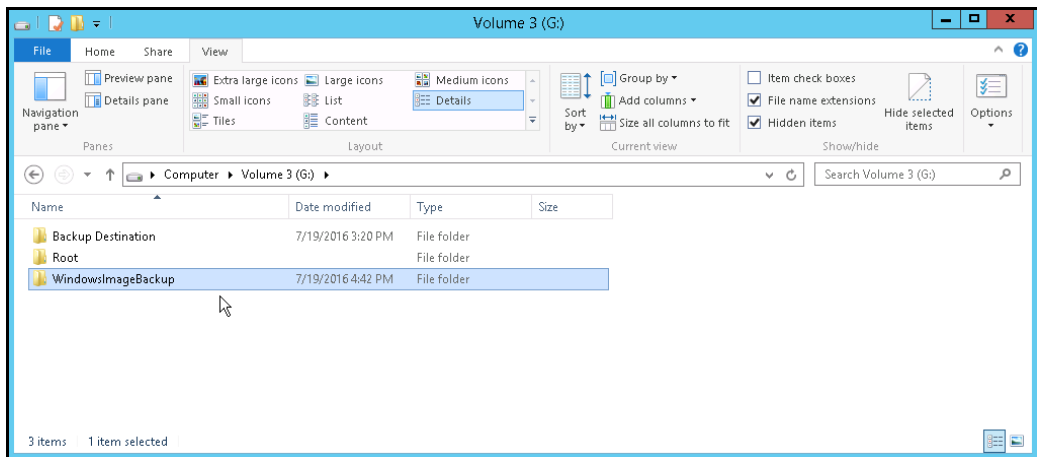
8. Click **Restore** to start the restoration.



9. The following screen is displayed when the system state data are restored successfully.



10. The restored system state data are stored in the **WindowsImageBackup** folder in the restore location.



Important: In addition to the system state data, the **WindowsImageBackup** folder includes catalog files that contain information about all backups in there 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

11. Copy the **WindowsImageBackup** folder and its content to the server that you want to perform the restore for, or to a network drive that is accessible to the server.

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

12. Continue to the next section of the guide.

8.3 Apply the System State Data

Before you begin, make sure that the system state data restored with AhsayOBM are copied to a local disk (where you will perform the restore), or in a remote shared folder.

For Windows Server 2008 R2 or later, you can use the Recovery Wizard in Windows Server Backup or wbadmin command to recover the system state.

For Windows Server 2008, you can only use the wbadmin command to recover the system state.

For instructions specific to recovering Active Directory Domain Services, see <http://go.microsoft.com/fwlink/?LinkId=143754>

Note: Refer to the following page for syntax of the wbadmin command: <http://go.microsoft.com/fwlink/?LinkId=140216>

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

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

Example (system state restored to G: volume):

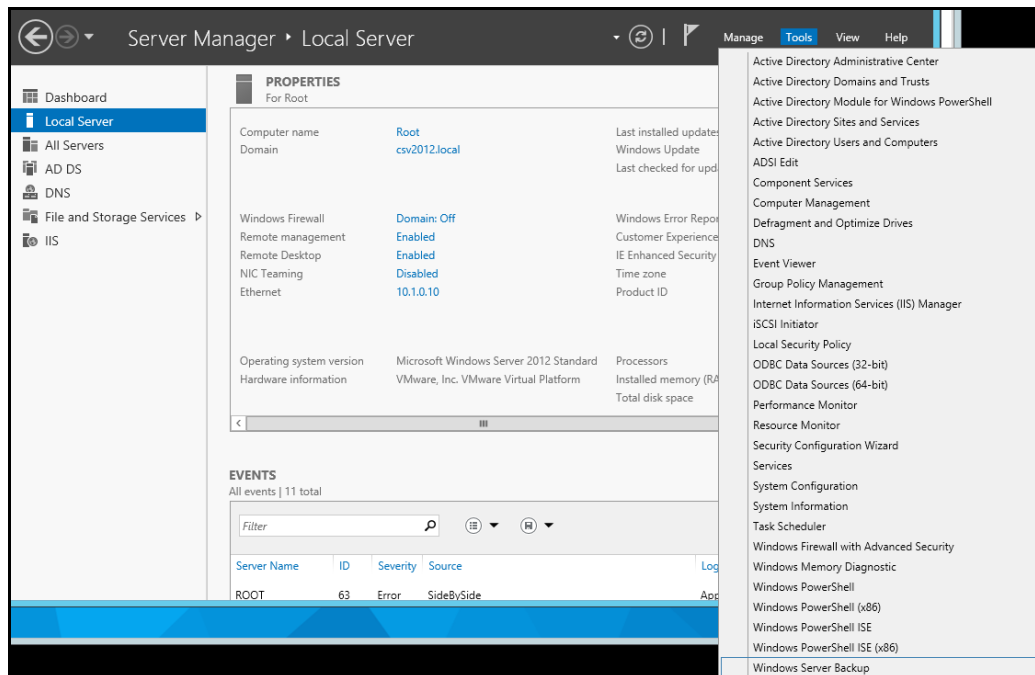
```
C:\Users\Administrator>wbadmin get versions -backupTarget:g:
wbadmin 1.0 - Backup command-line tool
(C) Copyright 2012 Microsoft Corporation. All rights reserved.
```

```
Backup time: 7/19/2016 1:46 PM
Backup target: 1394/USB Disk labeled Volume 3(G:)
Version identifier: 07/19/2016-05:46
Can recover: Volume(s), File(s), Application(s), Bare Metal
Recovery, System State
Snapshot ID: {feb9079c-9459-4034-908f-7b5a9b0bb1e5}
```

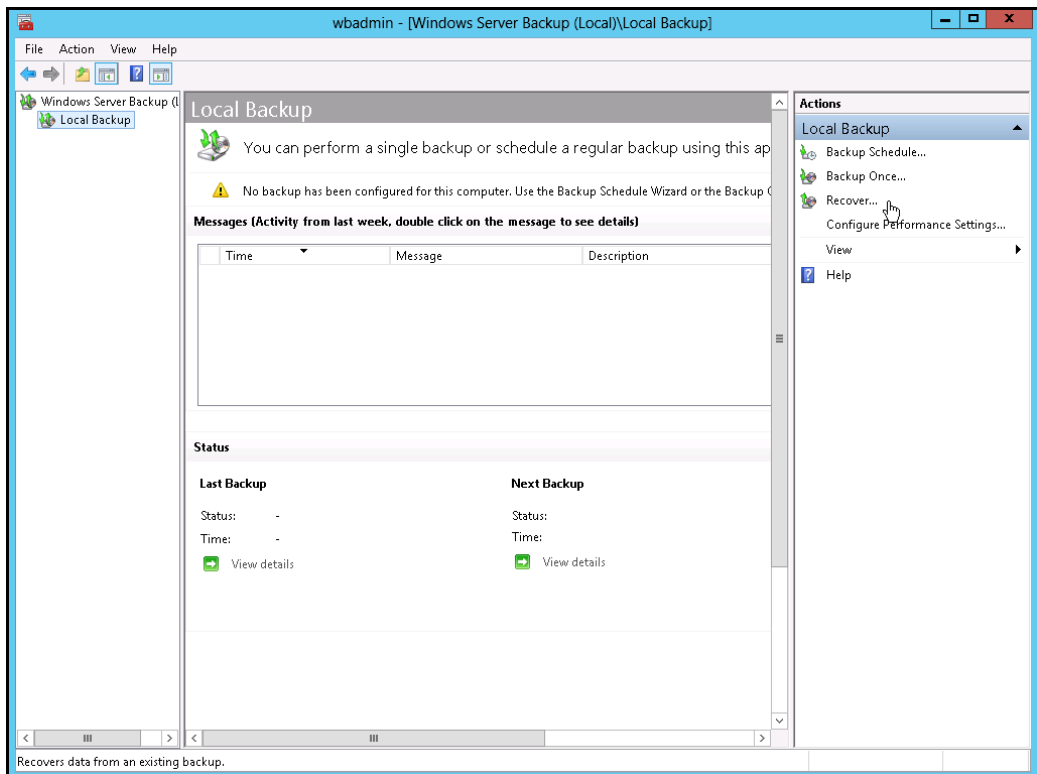
Note: File and folder recovery is not possible from a system state backup performed on Windows Server 2008.

To recover the system state using the Windows Server Backup user interface.

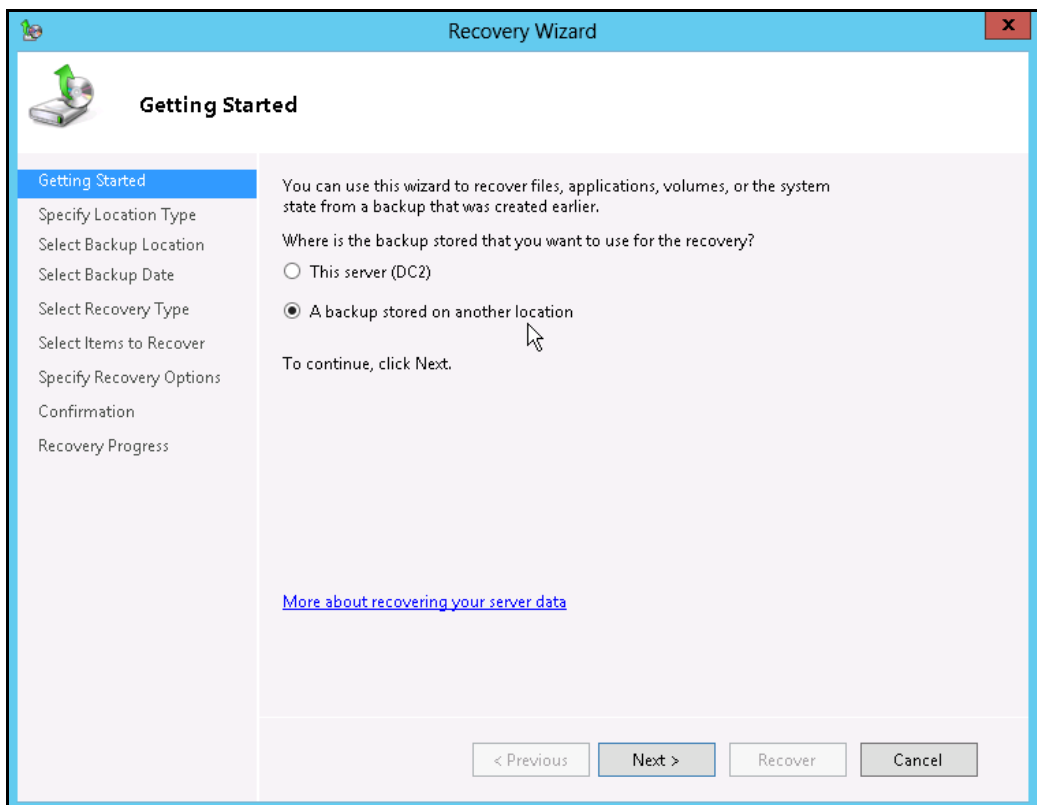
1. Open **Windows Server Backup** from **Administrative Tools** or **Server Manager**.



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

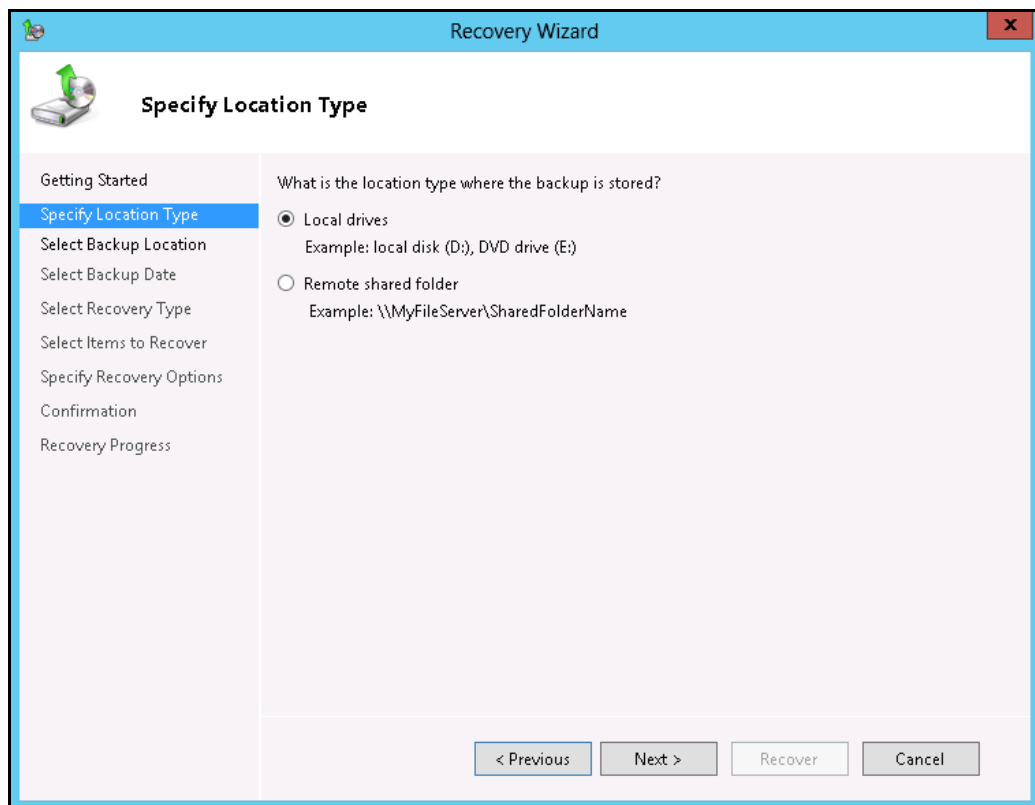


3. On the **Getting Started** page, select **A backup stored on another location**, then click **Next**.

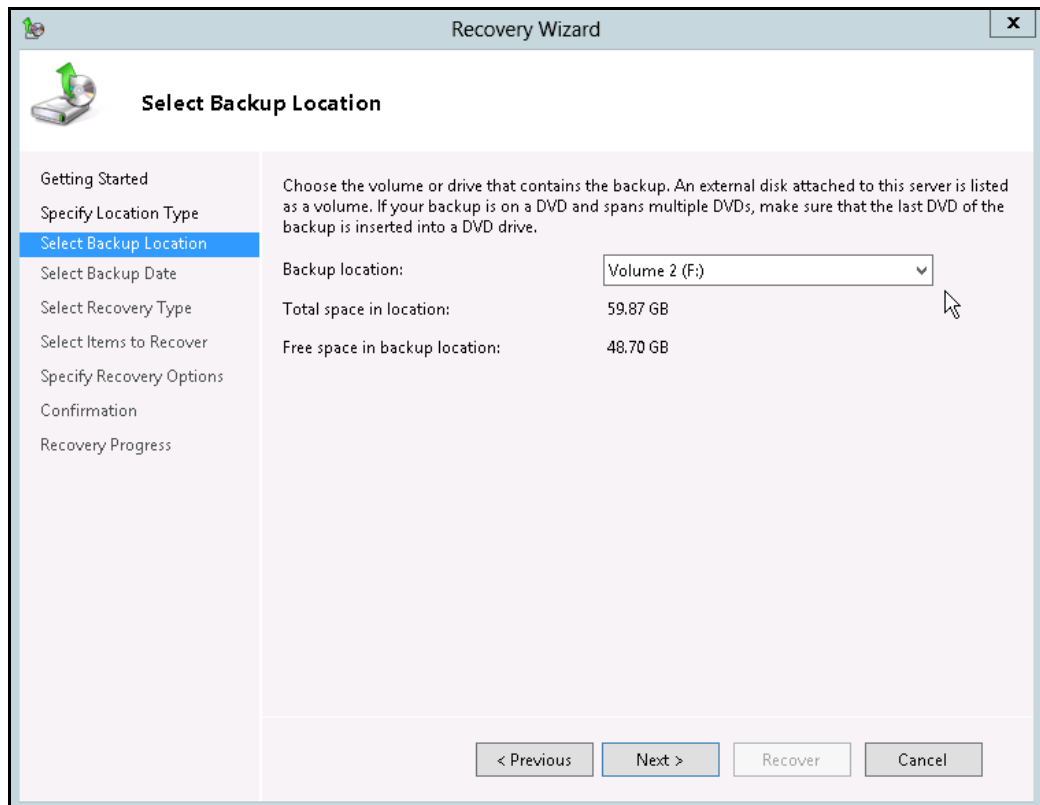


4. On the **Specify Location Type** page, select

- 1. Click **Local drives**, if the system state data were copied to a local volume on the server.
- 2. Click **Remote shared folder**, if the system state data were copied to a network path accessible to this server.

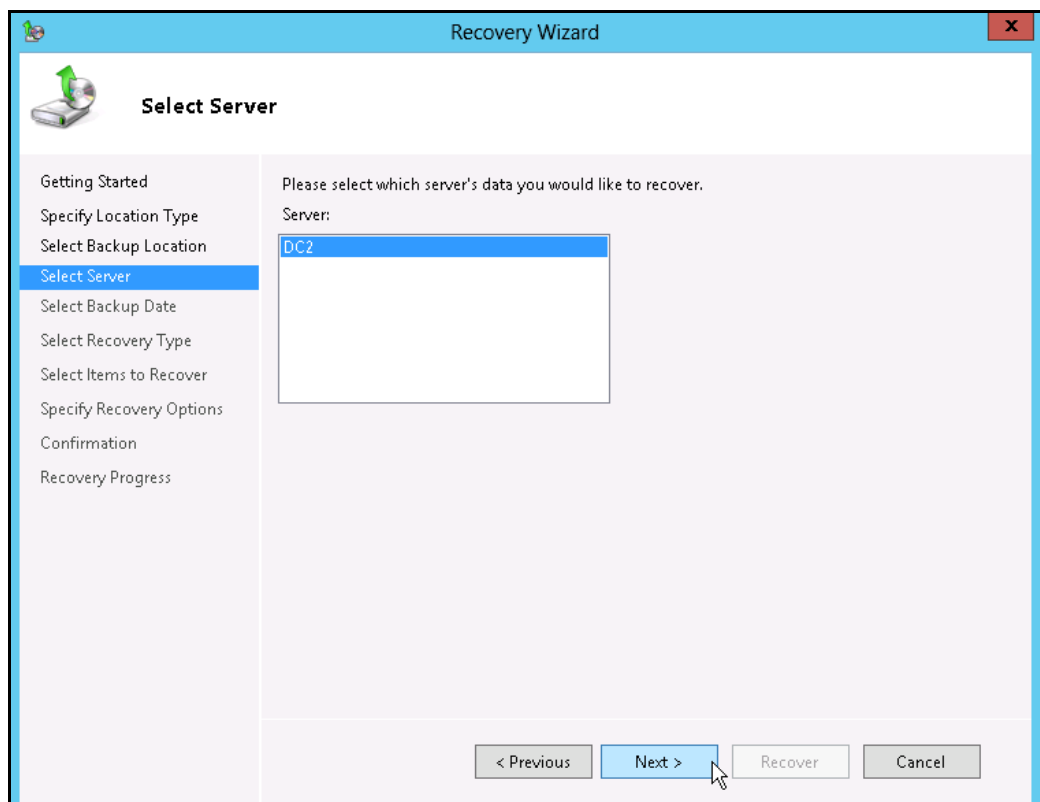


5. On the **Select Backup Location** page, select the volume that contains the system state data.



Note: Assuming that the **WindowsImageBackup** folder was copied to the following
F:\ WindowsImageBackup

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



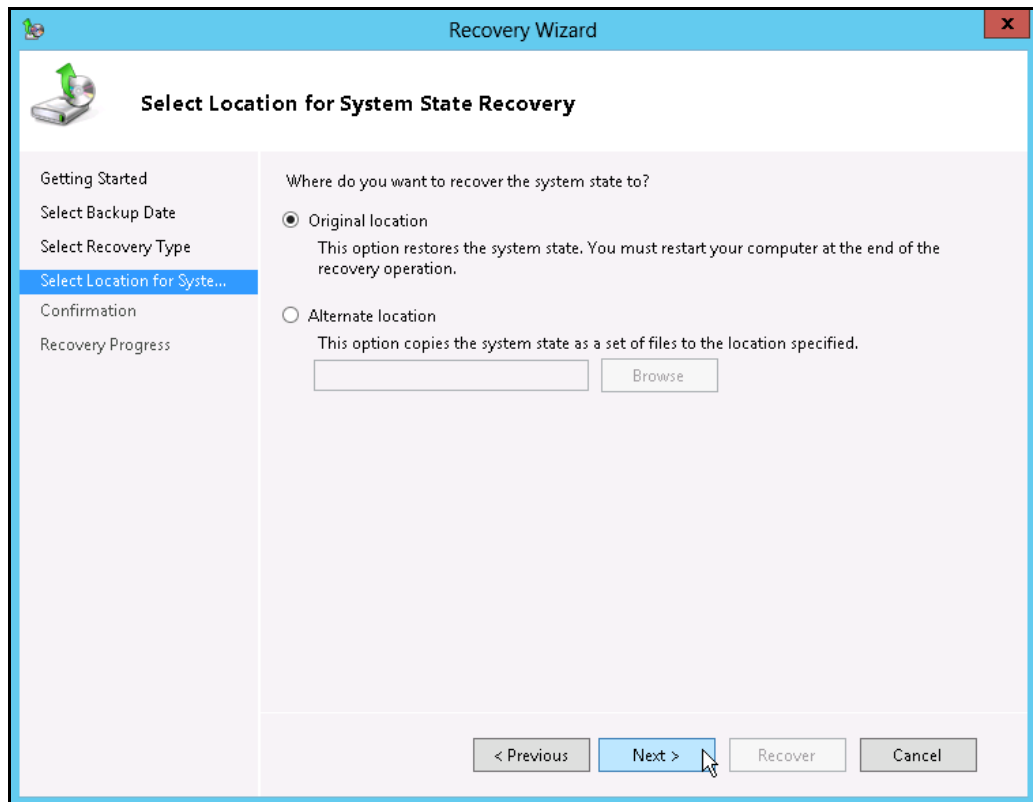
- On the **Select Backup Date** page, select the point in time of the backup you want to restore from.

The screenshot shows the 'Select Backup Date' page of the Recovery Wizard. The left sidebar contains a list of steps: Getting Started, Specify Location Type, Select Backup Location, Select Server, **Select Backup Date** (highlighted), Select Recovery Type, Select Items to Recover, Specify Recovery Options, Confirmation, and Recovery Progress. The main area displays 'Oldest available backup: 7/21/2016 6:51 PM' and 'Newest available backup: 7/21/2016 6:51 PM'. Below this, it says 'Available backups' and 'Select the date of a backup to use for recovery. Backups are available for dates shown in bold.' A calendar for July 2016 is shown with the 21st highlighted. To the right, 'Backup date:' is set to '7/21/2016', 'Time:' is set to '6:51 PM', and 'Recoverable items:' is set to 'System state'. At the bottom, there are buttons for '< Previous', 'Next >', 'Recover', and 'Cancel'.

- On the **Select Recovery Type** page, click **System state**.

The screenshot shows the 'Select Recovery Type' page of the Recovery Wizard. The left sidebar contains a list of steps: Getting Started, Specify Location Type, Select Backup Location, Select Server, Select Backup Date, **Select Recovery Type** (highlighted), Select Location for System..., Confirmation, and Recovery Progress. The main area is titled 'What do you want to recover?' and lists four options: 'Files and folders' (You can browse volumes included in this backup and select files and folders.), 'Hyper-V' (You can restore virtual machines to their original location, another location or copy the virtual hard disk files of a virtual machine.), 'Volumes' (You can restore an entire volume, such as all data stored on C:.), and 'Applications' (You can recover applications that have registered with Windows Server Backup.). The 'System state' option is selected with a radio button, and its description is 'You can restore just the system state.' Below the options is a link 'More about performing recoveries'. At the bottom, there are buttons for '< Previous', 'Next >', 'Recover', and 'Cancel'.

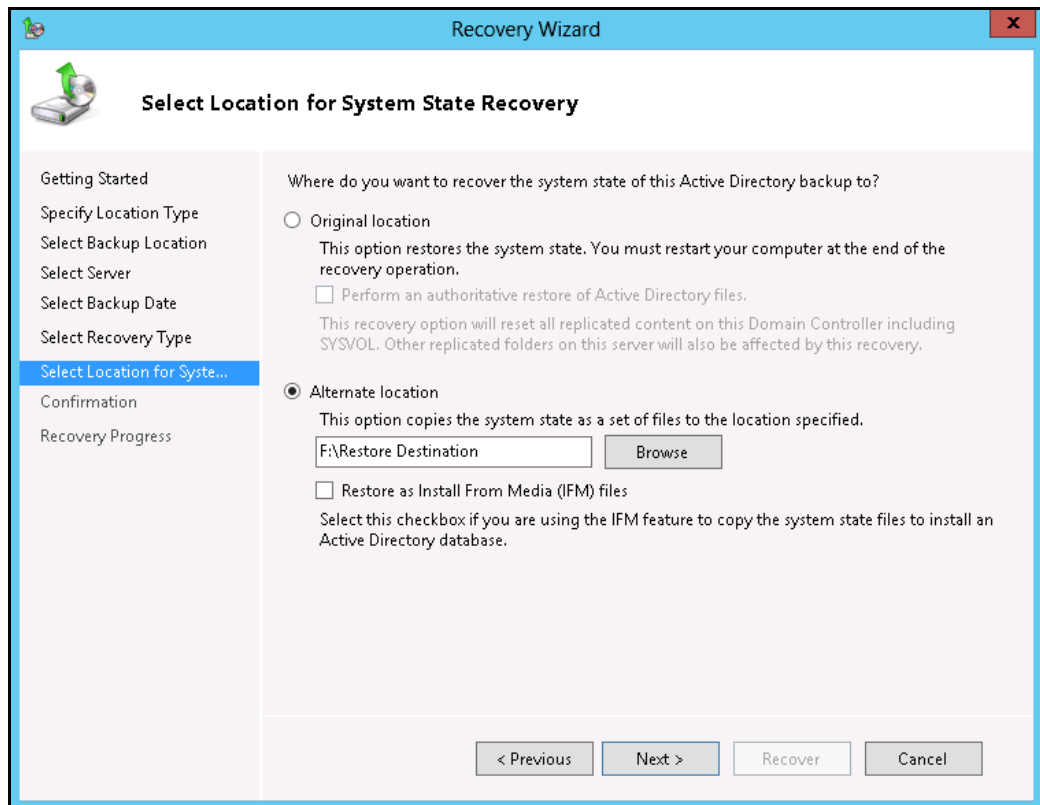
9. On the **Select Location for System State Recovery** page, select
- **Original location**, to restore the system state to the same physical computer from which the system state backup was created
- Or
- **Alternate location**, to restore a copy of the system state as a set of files.



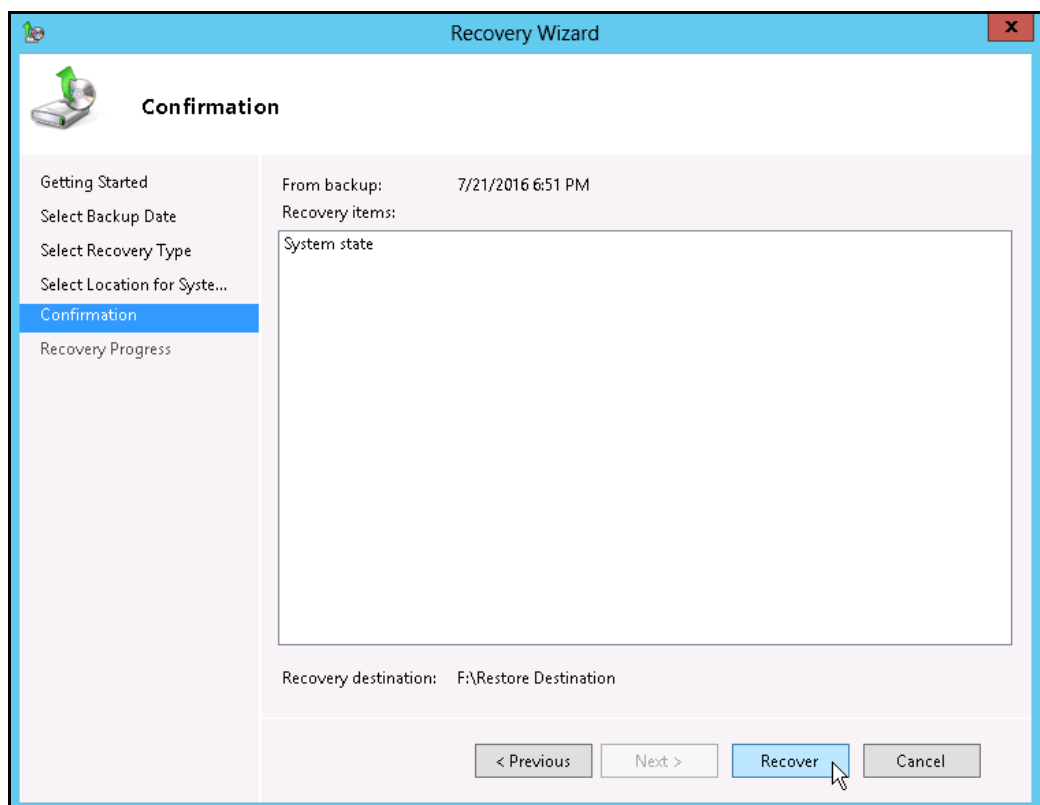
Note: The options displayed are different for system state containing Active Directory Domain Services.

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

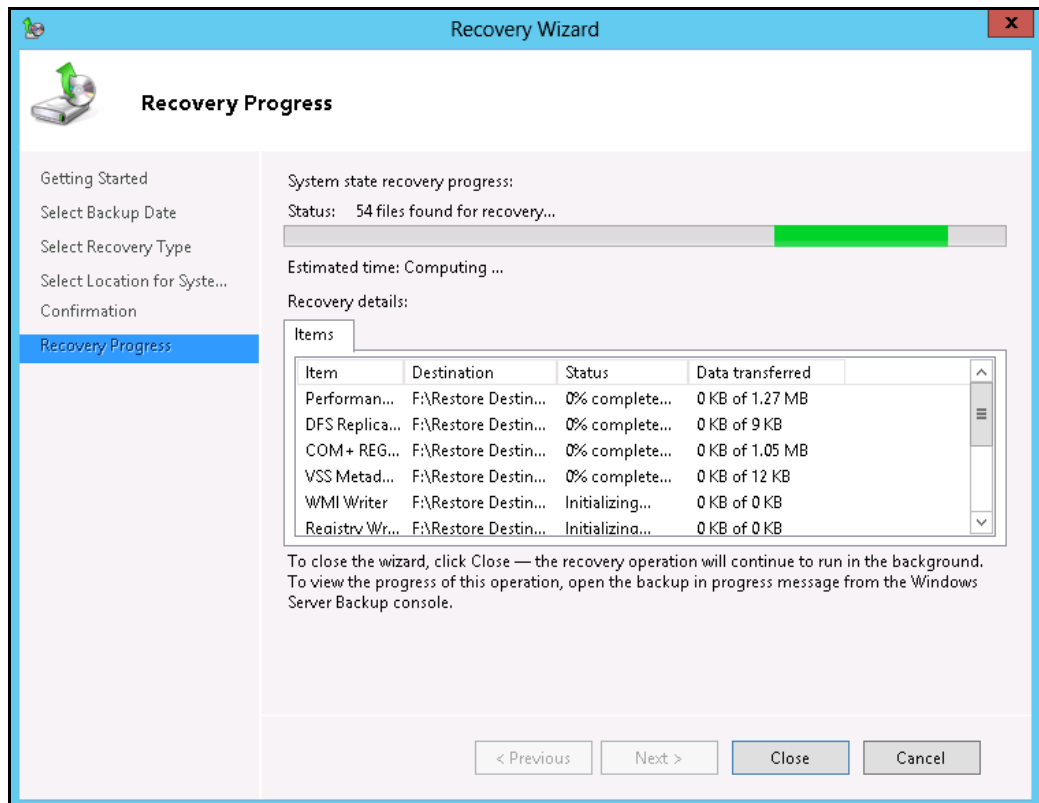
For instructions specific to recovering system state to Active Directory server, see <http://go.microsoft.com/fwlink/?LinkId=143754>



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



11. On the **Recovery progress** page, the status and result of the recovery operation is displayed.



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

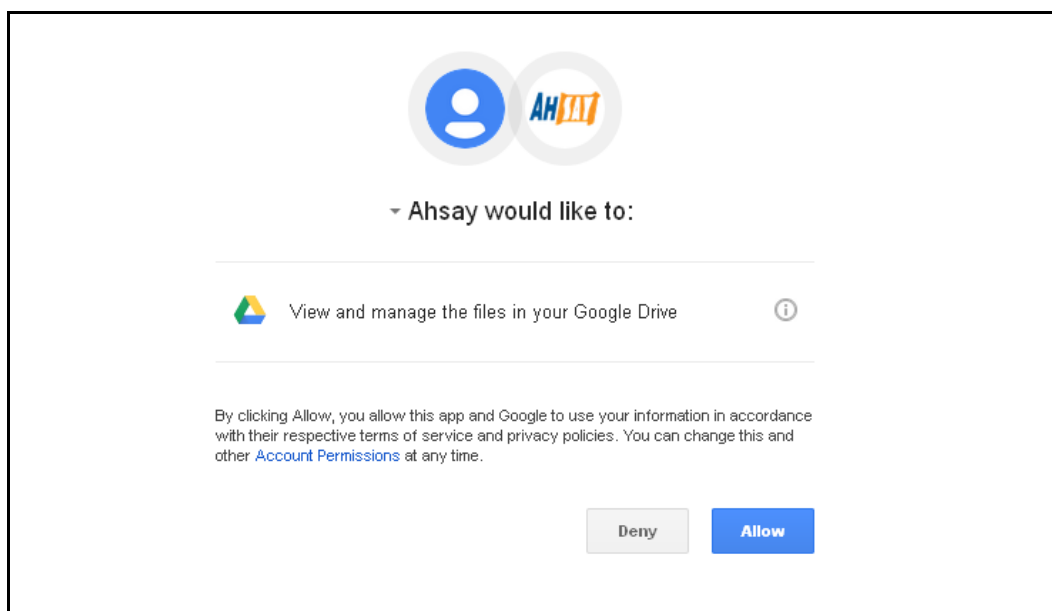
Appendix

Appendix A Cloud Storage as Backup Destination:

For most cloud storage provider (e.g. Dropbox, Google Drive ... etc.), you need to allow access 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 the following KB article:

<https://forum.ahsay.com/viewtopic.php?f=169&t=14049>

Appendix B Uninstall AhsayOBM

Refer to the Appendix of the AhsayOBM Quick Start Guide for the corresponding operating system for details on how to uninstall AhsayOBM:

https://www.ahsay.com/jsp/en/home/index.jsp?pageContentKey=ahsay_downloads_documentation_guides

Technical Assistance

To contact Ahsay support representatives for technical assistance, visit the following website:

<https://www.ahsay.com/jsp/en/contact/kbQuestion.jsp>

Also use the Ahsay Knowledge Base for resource such as Hardware Compatibility List, Software Compatibility List, and other product information: <https://forum.ahsay.com>

Documentation

Documentations for all Ahsay products are available at:

https://www.ahsay.com/jsp/en/home/index.jsp?pageContentKey=ahsay_downloads_documentation_guides

You can send us suggestions for improvements or report on issues in the documentation, by contacting us at:

<https://www.ahsay.com/jsp/en/contact/kbQuestion.jsp>

Please specify the specific document title as well as the change required / suggestion when contacting us.