



Ahsay Online Backup Manager v8

Microsoft System State Backup and Restore Guide

Ahsay Systems Corporation Limited

3 May 2019

Copyright Notice

© 2019 Ahsay Systems Corporation Limited. All rights reserved.

The use and copying of this product is subject to a license agreement. Any other use is prohibited. No part of this publication may be reproduced, transmitted, transcribed, stored in a retrieval system or translated into any language in any form by any means without prior written consent of Ahsay Systems Corporation Limited. Information in this manual is subject to change without notice and does not represent a commitment on the part of the vendor, Ahsay Systems Corporation Limited does not warrant that this document is error free. If you find any errors in this document, please report to Ahsay Systems Corporation Limited in writing.

This product includes software developed by the Apache Software Foundation (<http://www.apache.org/>).

Trademarks

Ahsay, Ahsay Cloud Backup Suite, Ahsay Online Backup Suite, Ahsay Offsite Backup Server, Ahsay Online Backup Manager, Ahsay A-Click Backup, Ahsay Replication Server, Ahsay BackupBox Firmware, Ahsay Universal Backup System, Ahsay NAS Client Utility are trademarks of Ahsay Systems Corporation Limited.

Amazon S3 is registered trademark of Amazon Web Services, Inc. or its affiliates.

Apple and Mac OS X are registered trademarks of Apple Computer, Inc.

Dropbox is registered trademark of Dropbox Inc.

Google Cloud Storage and Google Drive are registered trademarks of Google Inc.

Lotus, Domino, Notes are registered trademark of IBM Corporation.

Microsoft, Windows, Microsoft Exchange Server, Microsoft SQL Server, Microsoft Hyper-V, Microsoft Azure, One Drive and One Drive for Business are registered trademarks of Microsoft Corporation.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Oracle, Oracle 10g, Oracle 11g and MySQL are registered trademarks of Oracle Corporation.

Rackspace and OpenStack are registered trademarks of Rackspace US, Inc.

Red Hat, Red Hat Enterprise Linux, the Shadowman logo and JBoss are registered trademarks of Red Hat, Inc. www.redhat.com in the U.S. and other countries. Linux is a registered trademark of Linus Torvalds.

ShadowProtect is registered trademark of StorageCraft Technology Corporation.

VMware, ESX, ESXi, vCenter are registered trademarks of VMware, Inc.

All other product names are registered trademarks of their respective owners.

Disclaimer

Ahsay Systems Corporation Limited will not have or accept any liability, obligation or responsibility whatsoever for any loss, destruction or damage (including without limitation consequential loss, destruction or damage) however arising from or in respect of any use or misuse of reliance on this document. By reading and following the instructions in this document, you agree to accept unconditionally the terms of this Disclaimer and as they may be revised and/or amended from time to time by Ahsay Systems Corporation Limited without prior notice to you.

Revision History

Date	Descriptions	Type of modification
12 February 2019	Updated the FAQ Link for the Hardware Requirement in Ch. 2.1; Updated the FAQ Link for the Software Requirement in Ch. 2.2; Added the Facebook Page and Twitter Account for the latest updates on AhsayOBM, changed the screen shot for the Add-on Modules, and added the AhsayOBM Licenses in Ch. 2.4.1; Added the Facebook Page and Twitter Account for the latest updates on AhsayOBM, changed the screen shot for the Add-on Modules, and added the AhsayOBM Licenses in Ch. 2.4.2; Updated the screen shots in Ch. 3.1; Updated the screen shots, updated the FAQ Link for the backup destination, updated the FAQ link for the best practices for managing encryption key for AhsayOBM and AhsayACB, and added a portion for specifying the temporary location of the system backup in Ch. 5.1; Updated the screen shots in Ch. 5.2; Updated the screen shots and added the advance option which is the verify checksum of in-file delta in Ch. 5.3; Updated the screen shots, updated the FAQ Link for the backup destination, updated the FAQ link for the best practices for managing encryption key for AhsayOBM and AhsayACB, and added a portion for specifying the temporary location of the system backup in Ch. 6.1; Updated the screen shots in Ch. 6.2; Updated the screen shots and added the advance option which is the verify checksum of in-file delta in Ch. 6.3; Updated the screen shot of authentication screen in cloud storage in Appendix A.	New / Modifications

Table of Contents

1	Overview.....	1
1.1	Introduction	1
1.2	What is this software?	1
1.3	About this document	1
1.3.1	Document Main Part	1
1.3.2	What should I expect from this document?	2
1.3.3	Who should read this document?.....	2
2	Preparing for Backup and Restore	3
2.1	Hardware Requirement.....	3
2.2	Software Requirement	3
2.3	Antivirus Exclusion Requirement	3
2.4	Other Requirement and Limitation	3
2.4.1	For Windows XP and Windows Server 2003	3
2.4.2	For Windows Server 2008 and Newer Releases	6
2.5	Best Practice and Recommendation.....	10
3	Starting AhsayOBM.....	11
3.1	Login to AhsayOBM	11
4	Overview on the Backup Process	13
5	Windows XP and Windows Server 2003.....	14
5.1	Configuring a MS Windows System State Backup Set.....	14
5.2	Start a Manual Backup.....	22
5.3	Restore the System State Data	26
5.4	Apply the System State Data	32
6	Windows Server 2008 and Newer Releases.....	38
6.1	Configuring a MS Windows System State Backup Set.....	38
6.2	Start a Manual Backup.....	47
6.3	Restore the System State Data	49
6.4	Apply the System State Data	55
7	Contact Ahsay	63
7.1	Technical Assistance	63
7.2	Documentation	63
	Appendix	64
	Appendix A Cloud Storage as Backup Destination:	64
	Appendix B Uninstall AhsayOBM	65

1 Overview

1.1 Introduction

This user guide aims at providing detailed information for backing up and restoring MS Windows System State with AhsayOBM.

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 XP and Windows Server 2003: <https://msdn.microsoft.com/en-us/library/windows/desktop/aa381498>

For Windows 2008 and newer releases: <https://msdn.microsoft.com/en-us/library/windows/desktop/bb968830>

1.2 What is this software?

Ahsay brings you specialized client backup software, namely AhsayOBM, to provide a set of tools to protect your Microsoft system state. This includes backup feature, that leverages Microsoft's native WBAdmin command-line tool (<http://go.microsoft.com/fwlink/?LinkId=140216>) for Windows Server 2008 and newer releases, and recovery feature.

1.3 About this document

1.3.1 Document Main Part

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

The document can be divided into three (3) main parts:

Part 1: Preparing for Microsoft System State Backup & Restore

Requirements and Limitation

Requirements on hardware & software for installation and limitation

Best Practice and Recommendation

Items recommended to pay attention to before backup and restore

Part 2: Performing Microsoft System State Backup

Starting AhsayOBM

Login to AhsayOBM

Creating a Backup Set

Create a backup set using AhsayOBM

Running a Backup Set

Run a backup set using the AhsayOBM

Part 3: Restoring Microsoft System State Backup

Restoring a Backup Set using AhsayOBM

Restore a backup using the AhsayOBM and User Web Console

1.3.2 What should I expect from this document?

After reading through this documentation, you can expect to have sufficient knowledge to set up your system to backup Microsoft System State on AhsayOBM, as well as to carry out an end-to-end backup and restore process.

1.3.3 Who should read this document?

This documentation is intended for backup administrators and IT professionals who are responsible for the Microsoft System State backup and restore.

2 Preparing for Backup and Restore

2.1 Hardware Requirement

To achieve the optimal performance when AhsayOBM is running on your machine, refer to the following link for the list of hardware requirements for AhsayOBM:

[FAQ: Ahsay Hardware Requirement List \(HRL\) for version 8.1 or above](#)

2.2 Software Requirement

Make sure the operating system where you need the Windows System State to be backed up is compatible with the AhsayOBM. Refer to the following link for the list of compatible operating systems and application versions.

[FAQ: Ahsay Software Compatibility List \(SCL\) for version 8.1 or above](#)

2.3 Antivirus Exclusion Requirement

To optimize performance of AhsayOBM on Windows, and to avoid conflict with your antivirus software, refer to the following link for the list of processes and directory paths that should be added to all antivirus software white-list / exclusion list:

[FAQ: Suggestion on antivirus exclusions to improve performance of Ahsay software on Windows](#)

2.4 Other Requirement and Limitation

2.4.1 For Windows XP and Windows Server 2003

NOTE

Please be noted that:

- 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 any more, Ahsay will provide best effort support for backup and restore for these 2 Windows platforms.

🔵 AhsayOBM Installation

Make sure that the latest version of AhsayOBM is installed on the computer 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, please subscribe to our Facebook page and Twitter account:

Facebook page: <https://www.facebook.com/ahsaybackup>

Twitter account: <https://twitter.com/ahsay>

🔵 Add-on Module Requirement

Make sure that the Windows System State add-on module is enabled for your AhsayOBM user account.

Please contact your backup service provider for more details.

The screenshot shows the 'Backup Client Settings' configuration page. The 'Backup Client' section has 'AhsayOBM User' selected. The 'Add-on Modules' section contains a grid of checkboxes for various backup targets. 'Windows System State Backup' is checked and highlighted with a red rectangle. Other modules include Microsoft Exchange Server, MySQL Database Server, Lotus Domino, Microsoft SQL Server, Oracle Database Server, Lotus Notes, VMware, Hyper-V, Microsoft Exchange Mailbox, ShadowProtect System Backup, Continuous Data Protection, NAS - Synology, NAS - QNAP, Volume Shadow Copy, In-File Delta, OpenDirect / Granular Restore, and Office 365 Backup.

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.

AhsayOBM Licenses

AhsayOBM licenses are calculated on a per device basis:

- i. To backup users with 1 backup client computer (e.g. 1 AhsayOBM installed), 1 AhsayOBM license is required.
- ii. To backup 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 backup with 3 backup client computers, then 3 AhsayOBM licenses are required. Please contact your backup service provider for more details.

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:

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

NTBackup

NTBackup must be installed on the computer to be backed up.

This can be confirmed either by searching if ntbackup.exe is found under C:\WINDOWS, or running the following command in an administrative command prompt:

```
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\support>ntbackup
```

You can verify if ntbackup is installed or not by the following interface pop out or not.



System Volume

The system volume must be formatted with NTFS.

2.4.2 For Windows Server 2008 and Newer Releases

🔹 AhsayOBM Installation

Make sure that the latest version of AhsayOBM is installed on the computer 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, please subscribe to our Facebook page and Twitter account:

Facebook page: <https://www.facebook.com/ahsaybackup>

Twitter account: <https://twitter.com/ahsay>

🔹 Add-on Module Requirement

Make sure that the Windows System State add-on module is enabled for your AhsayOBM user account.

Please contact your backup service provider for more details.

The screenshot shows the 'Backup Client Settings' tab in the AhsayOBM interface. Under the 'Add-on Modules' section, the 'Windows System State Backup' option is checked and highlighted with a red box. Other options include Microsoft Exchange Server, MySQL Database Server, Lotus Domino, Windows System Backup, VMware, Microsoft Exchange Mailbox, Continuous Data Protection, Mobile, Volume Shadow Copy, OpenDirect / Granular Restore, Microsoft SQL Server, Oracle Database Server, Lotus Notes, Hyper-V, ShadowProtect System Backup, NAS - Synology, NAS - QNAP, In-File Delta, and Office 365 Backup.

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

Please contact your backup service provider for more details.

❶ **AhsayOBM Licenses**

AhsayOBM licenses are calculated on a per device basis:

- i. To backup users with 1 backup client computer (e.g. 1 AhsayOBM installed), 1 AhsayOBM license is required.
- ii. To backup 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 backup with 3 backup client computers, then 3 AhsayOBM licenses are required. Please contact your backup service provider for more details.

❷ **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:

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

❸ **Memory Setting**

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 amount of free memory available on the machine with AhsayOBM installed (machine that is running the backup).

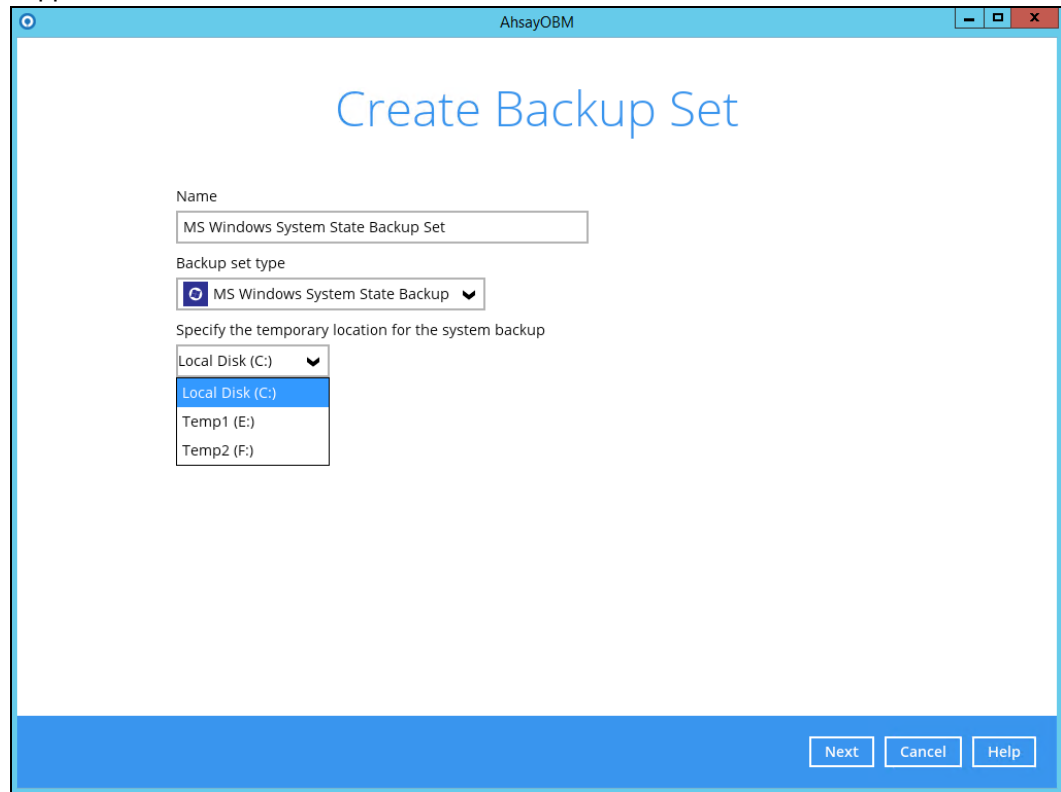
For best performance, consider increasing the memory allocation setting for AhsayOBM (Java heap space)

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?](#)

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 temporary store the image file during the backup set.

The machine requires an additional drive to accommodate the spooling of the System State image file. As you can on our sample screen shot above, we have three (3) drives in total, Local Disk C:, Temp1 E:, and Temp2 F:

If by any chance the machine has only one (1) drive and it is his/her Local Disk C:, then one of the following options will need to be implemented

- i. An extra physical drive will need to be installed
- ii. The existing C: drive will need to be repartitioned to create an additional drive, i.e. D:
- iii. A USB drive needs to be connected
- iv. Setup a network drive

Please refer to the following link for details on the restriction:

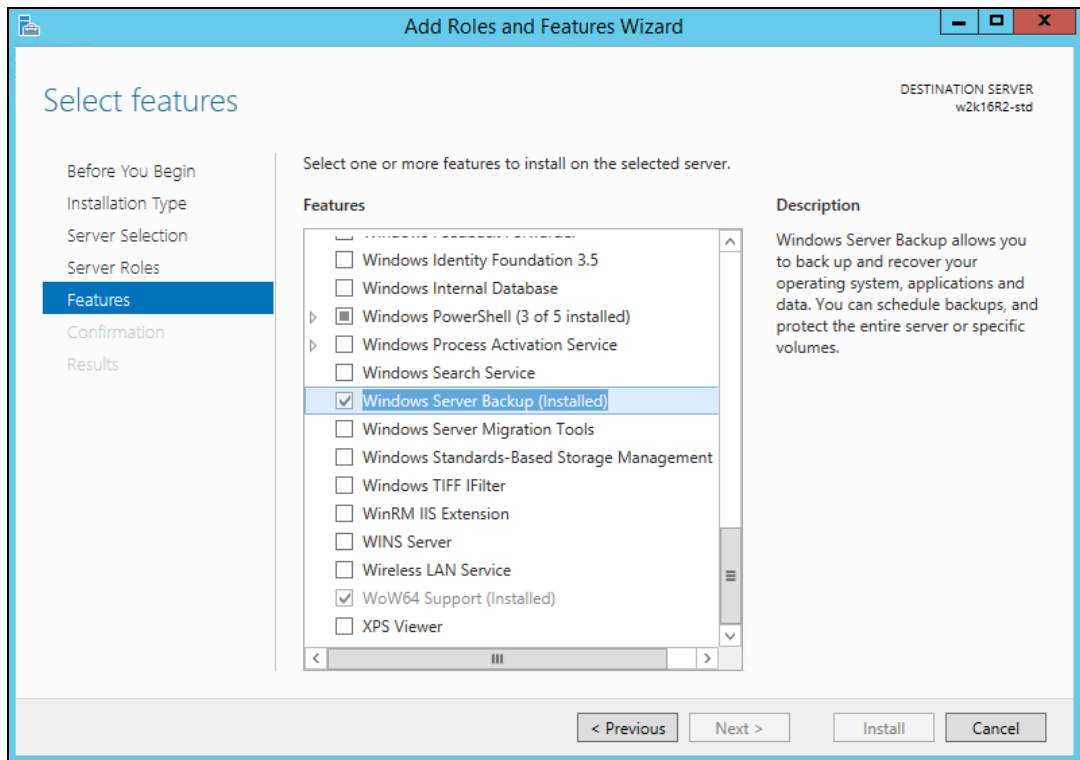
[FAQ: Restrictions on the temporary storage location for the Windows System State and System backup image file](#)

❶ Windows Server Backup (WSB) Features

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

- ❶ Windows Server Backup
- ❷ Command line Tool
- ❸ Windows PowerShell

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



❷ 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.

❸ Latest Service Packs from Microsoft

Make sure that you have the latest service packs installed on the computer to be backed up. Update to the Windows operating system improve its performance and resolve known issues with Windows Server Backup.

❹ System Volume

The system volume must be formatted with NTFS.

2.5 Best Practice and Recommendation

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

• Temporary Directory Folder Location

Temporary directory folder is used by AhsayOBM for storing backup set index files and any incremental or differential backup files generated during a backup job. To ensure optimal backup/restoration performance, it is recommended that the temporary directory folder is set to a local drive with sufficient free disk space.

NOTE

Kindly noted that for Windows Server 2008 or newer releases, the restriction on temporary volume (Ch2.3.2) must also be considered.

• 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

• Backup Frequency

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

• Performance Recommendations

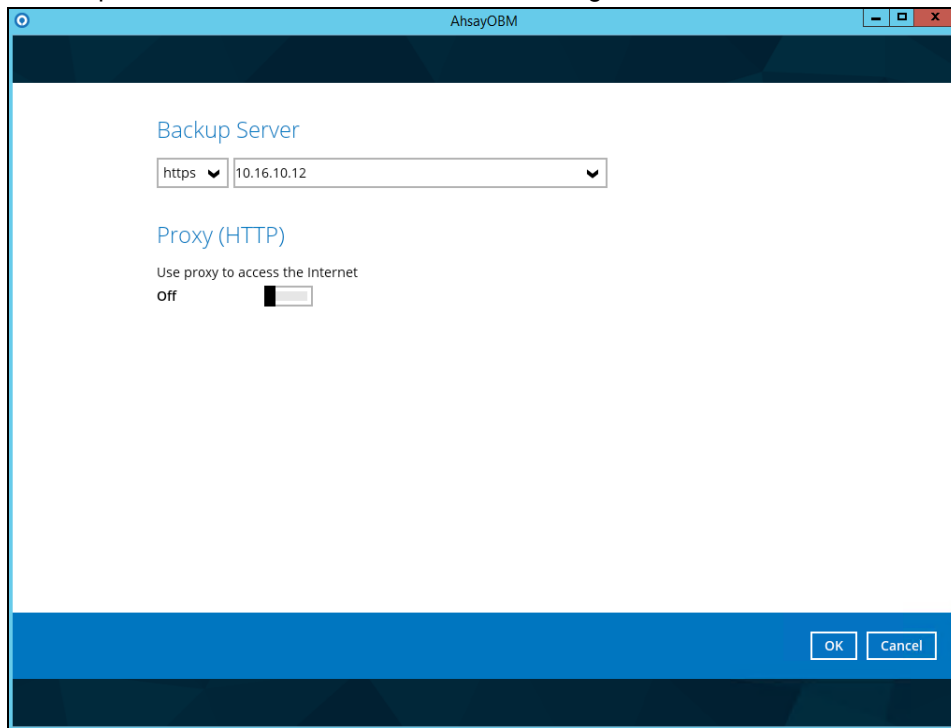
Consider the following best practices for optimized performance of the backup operations:

- Enable schedule 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.

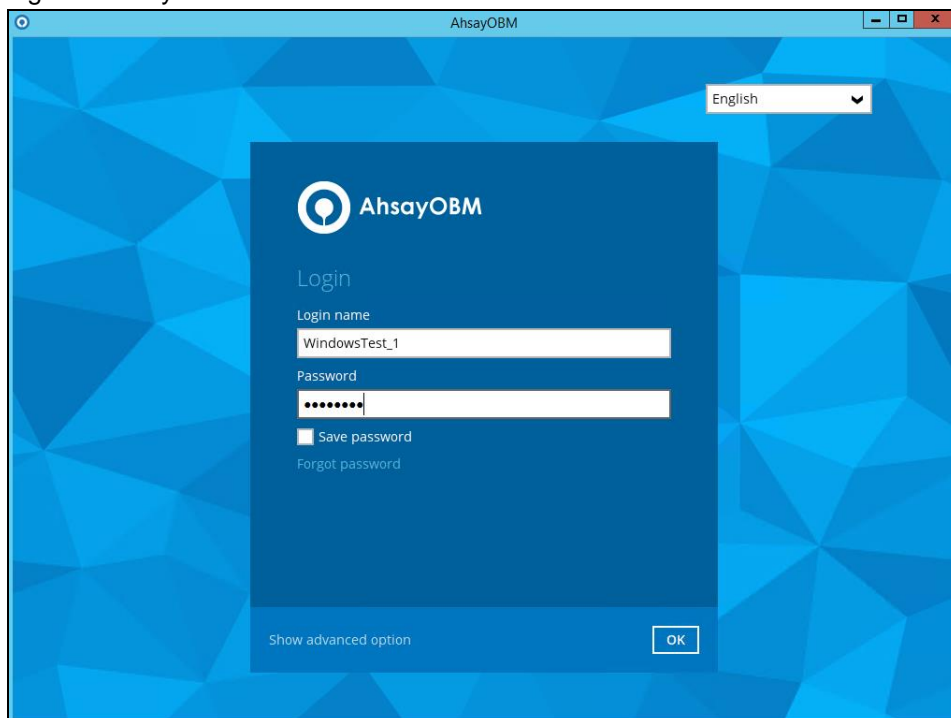
3 Starting AhsayOBM

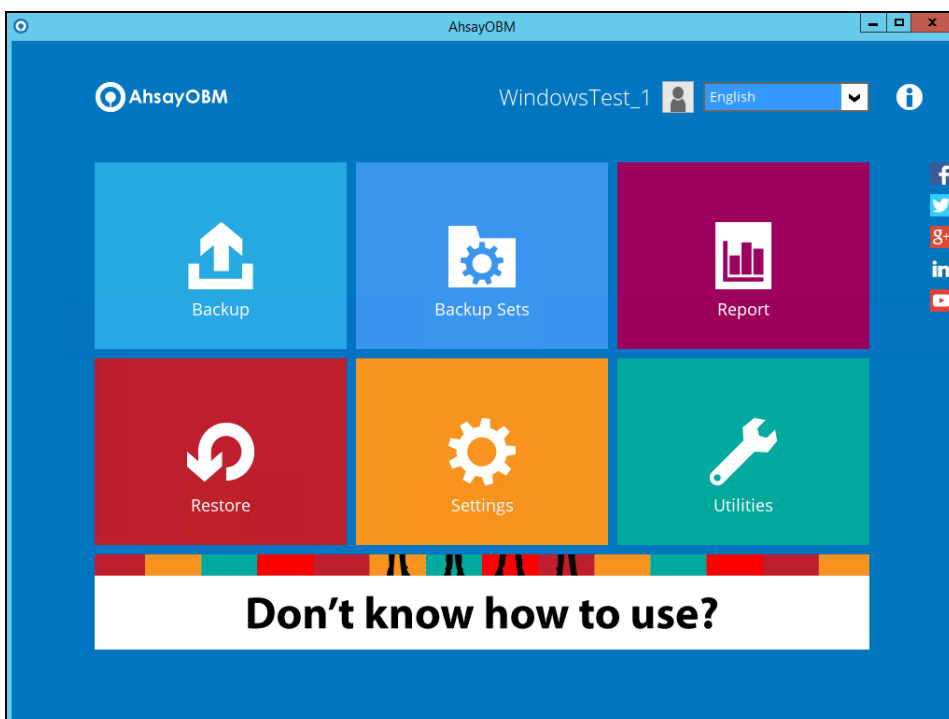
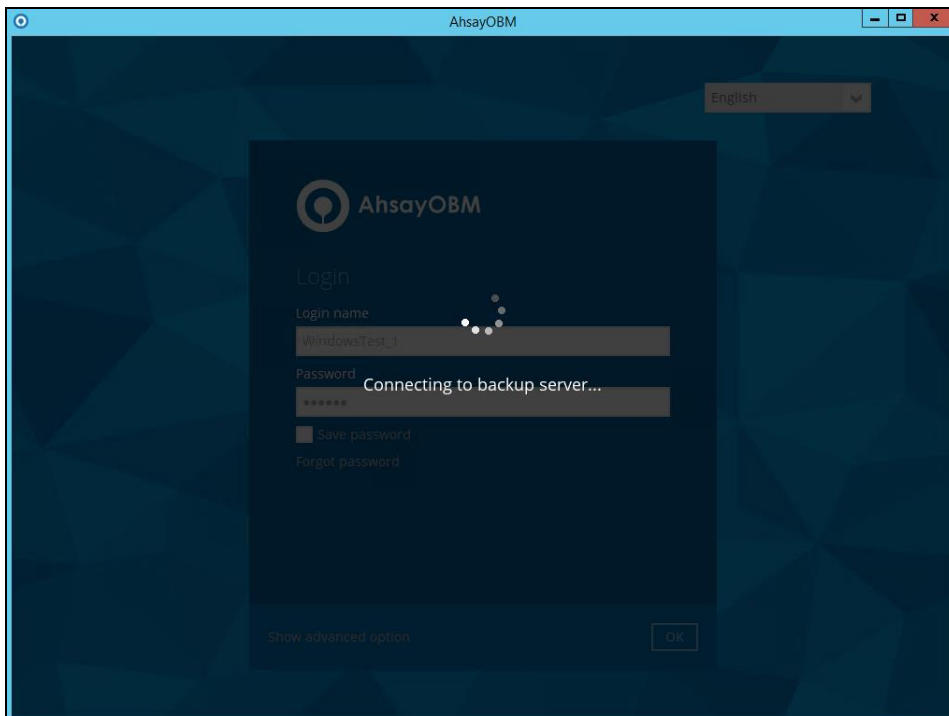
3.1 Login to AhsayOBM

1. Double click the AhsayOBM desktop icon to launch the application.
2. Click **Show advanced option** to enter the backup server settings provided by your backup service provider. Then, click **OK** to save the changes.



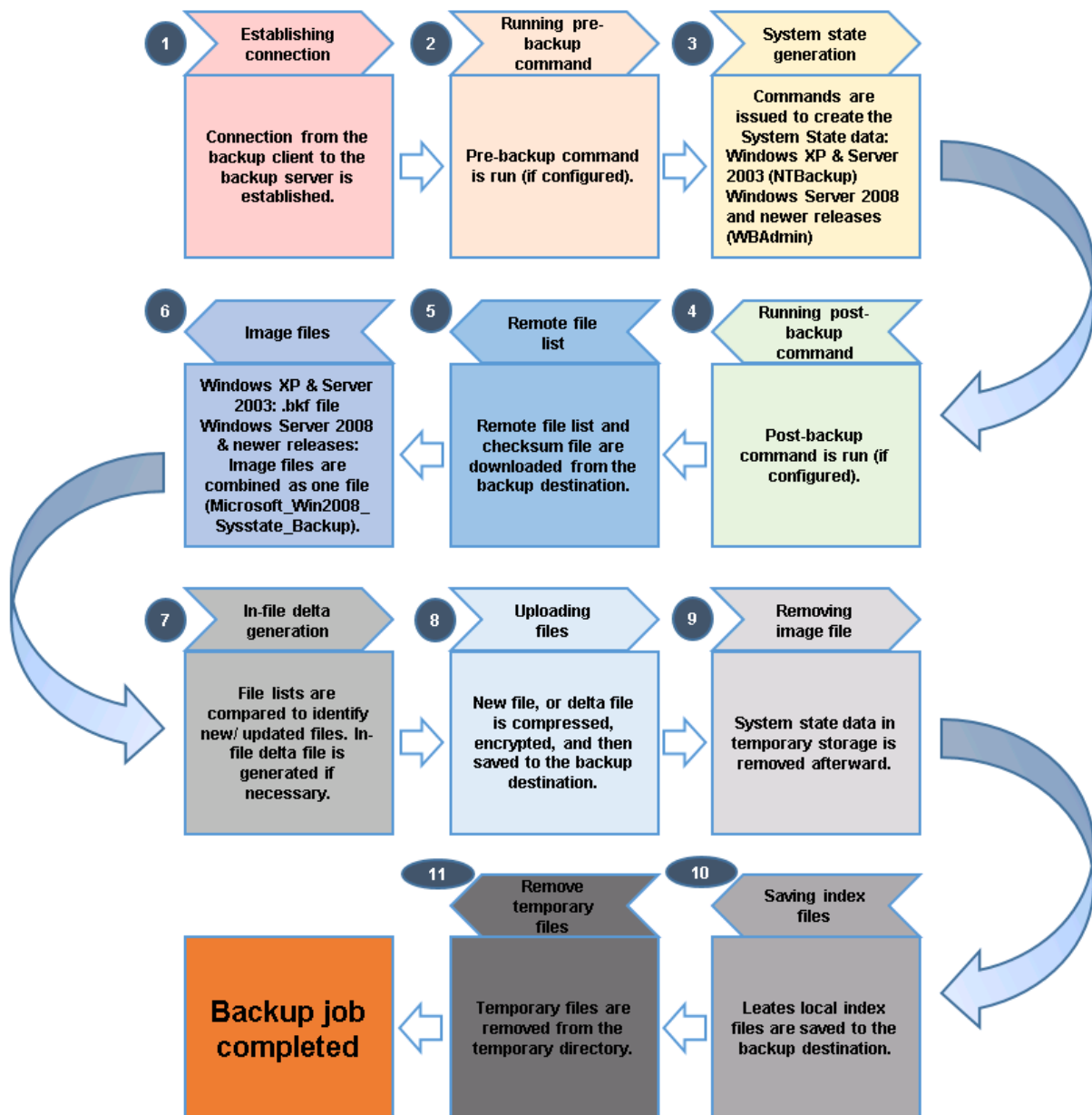
3. Enter the **Login name** and **Password** of your AhsayOBM account then lick **OK** afterward to login to AhsayOBM.





4 Overview on the Backup Process

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




5 Windows XP and Windows Server 2003

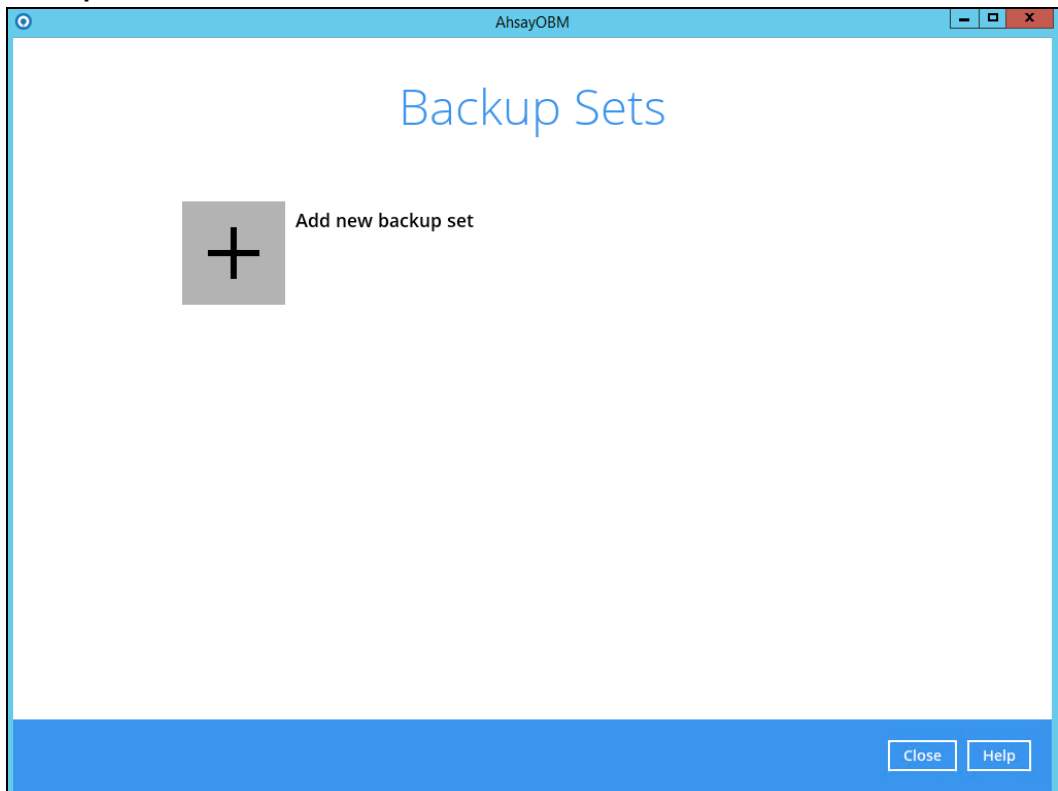
5.1 Configuring a MS Windows System State Backup Set

Create the MS Windows System State backup set using following steps.

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**, enter a **Name** for your backup set, and specify a **Temporary Location** for your back up. Click **Next** to proceed.

AhsayOBM

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
Temp1 (E:)

Next Cancel Help

AhsayOBM

Create Backup Set

Name
MS Windows System State Backup Set

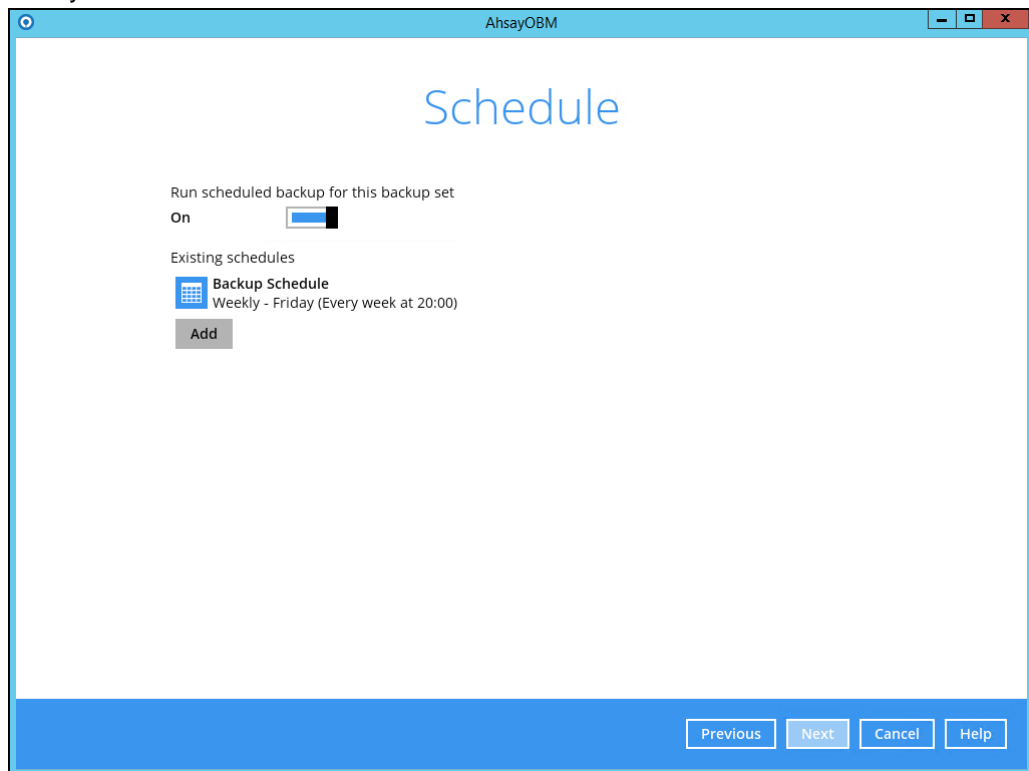
Backup set type
MS Windows System State Backup

Specify the temporary location for the system backup
Local Disk (C:)

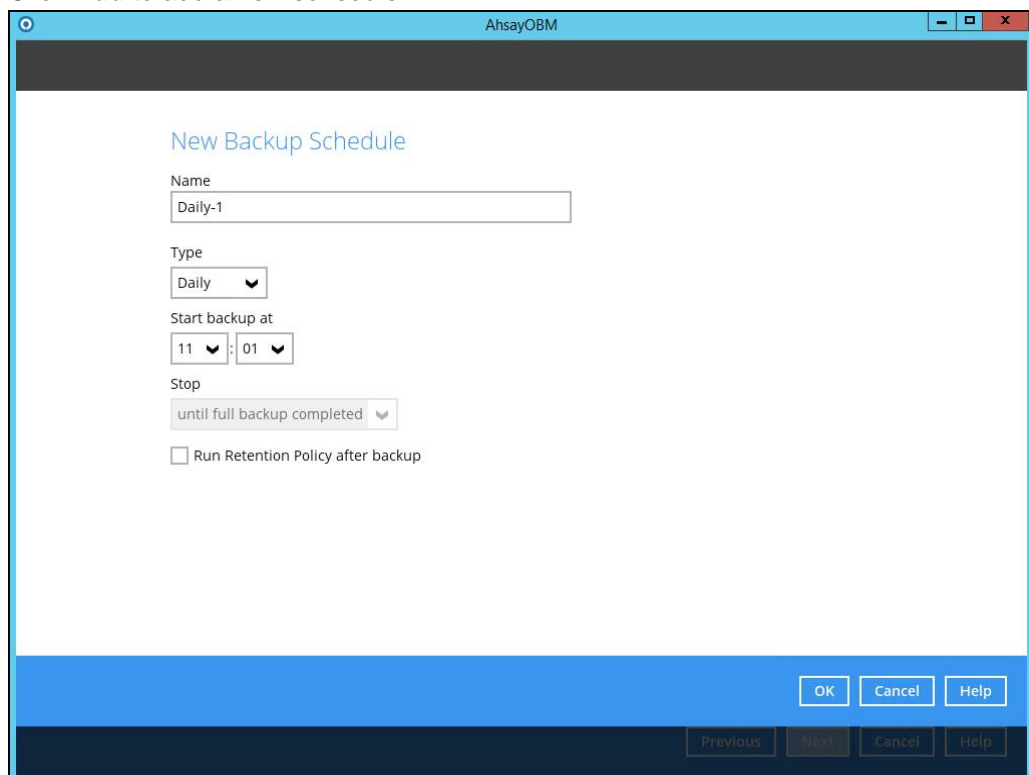
Next Cancel Help

4. In the **Schedule** menu, configure a backup schedule for backup job to run automatically at your specified time interval.


As you can see there's already a default Backup Schedule which is set weekly, every Friday around 20:00PM.

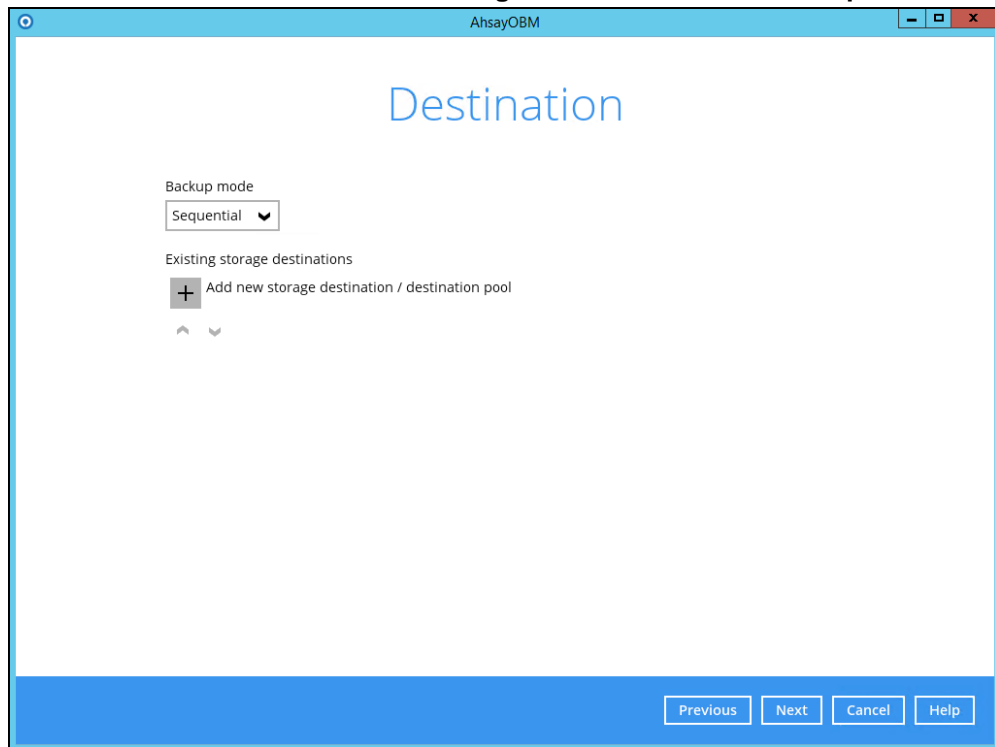


Click **Add** to add a new schedule.



Click **OK** to continue, and then click **Next** to proceed.

5. In the **Destination** menu, select a backup destination where the backup data will be stored. Click  next to **Add new storage destination / destination pool**.

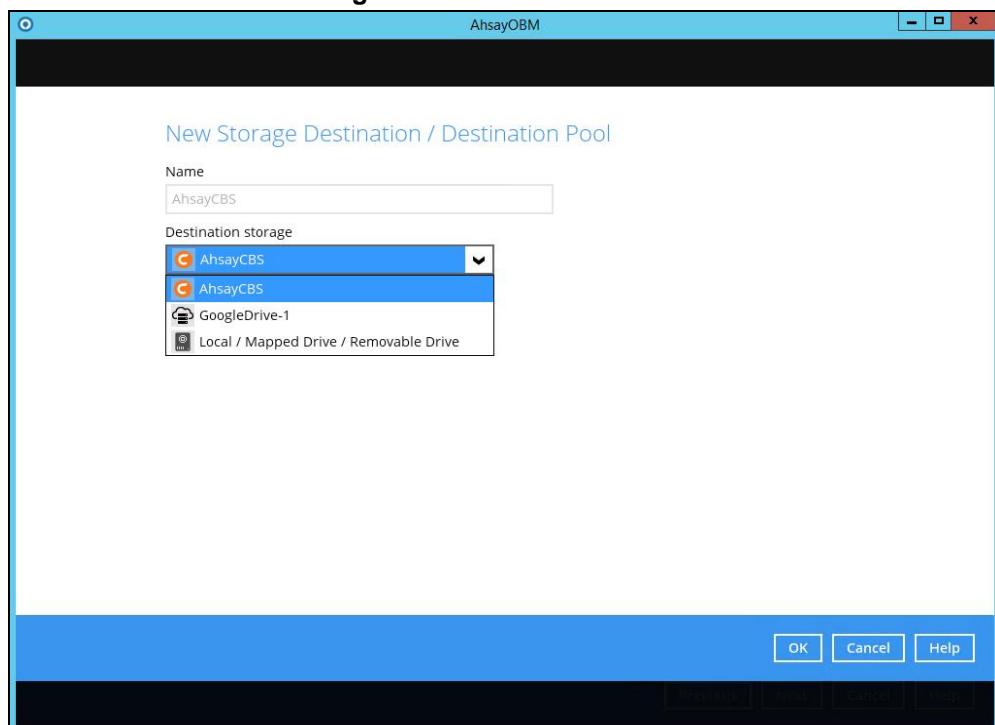


Note: For more details on Backup Destination, refer to this link:

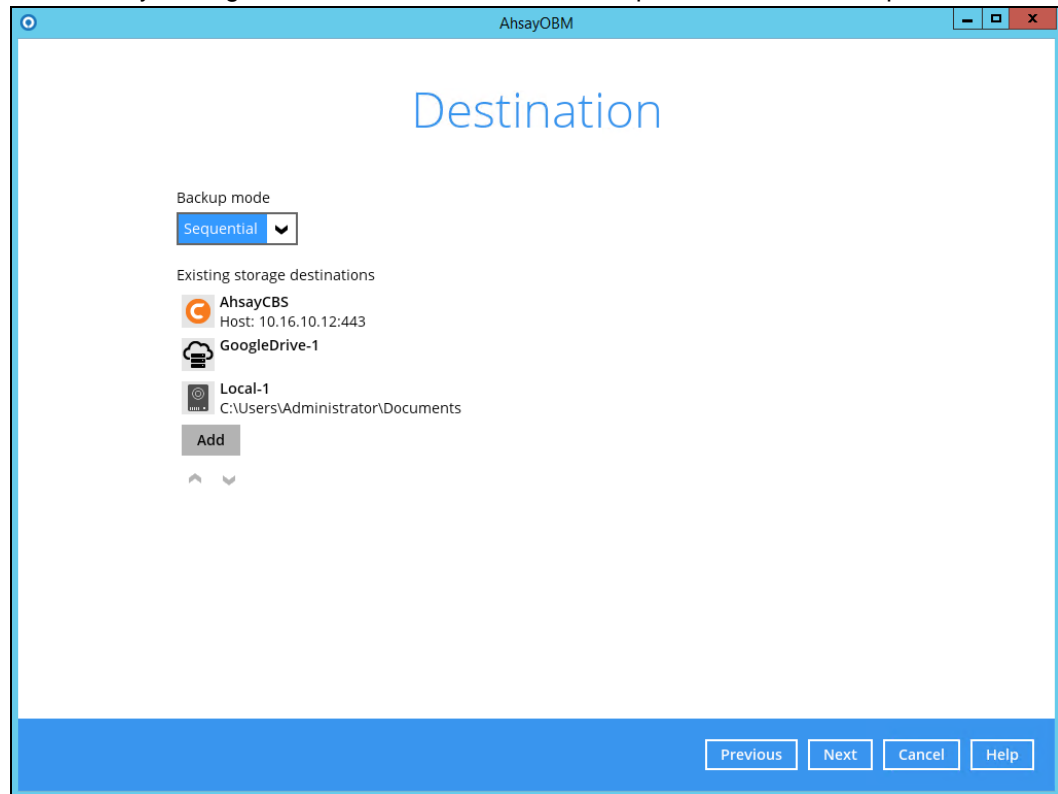
[FAQ: Frequently Asked Questions on Backup Destination](#)

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

6. Select the **Destination storage**.

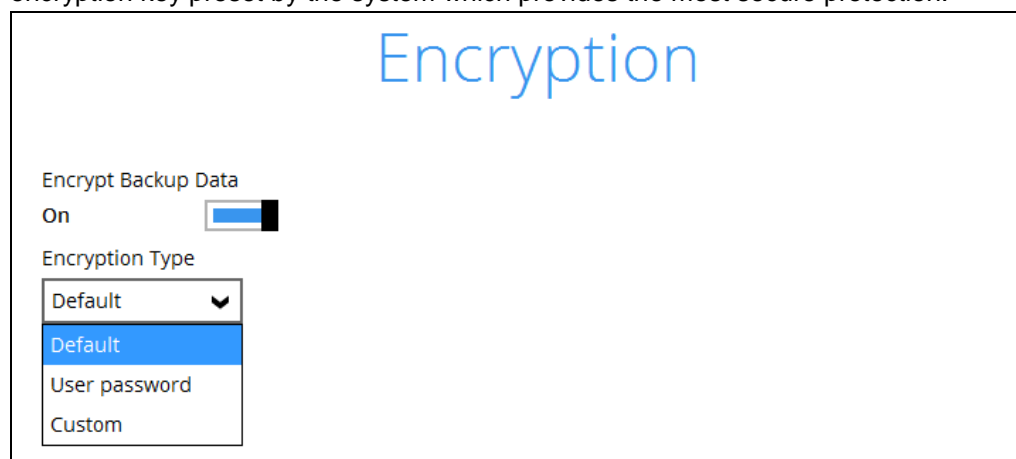


Continue by adding another destination for the backup set or click **Next** to proceed.



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

7. 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.



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.

Encryption

Encrypt Backup Data
On ☒

Encryption Type
Custom ▼

Algorithm
AES ▼

Encryption key

Re-enter encryption key

Method
☐ ECB ☒ CBC

Key length
☐ 128-bit ☒ 256-bit

Note: For best practice on managing your encryption key, refer to this link.

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

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

8. If you have enabled the **Encryption** feature in the previous step, the following pop-up window will be shown, no matter which encryption type you have selected.

Encryption

Encrypt Backup Data
On ☐

Encryption Type
Default ▼

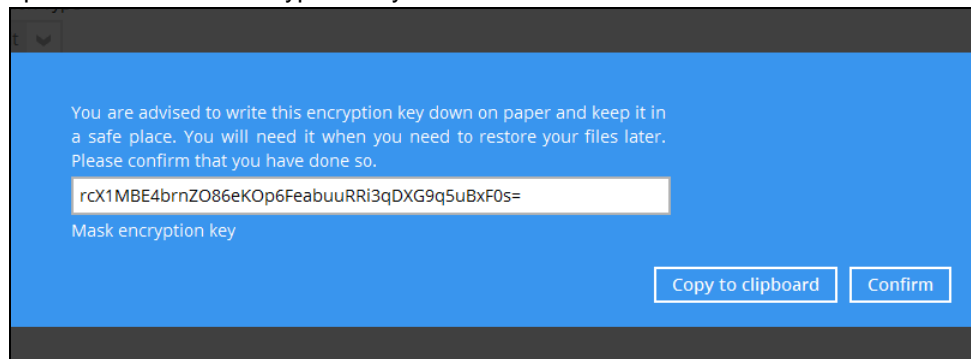
You are advised to write this encryption key down on paper and keep it in a safe place. You will need it when you need to restore your files later. Please confirm that you have done so.

Unmask encryption key

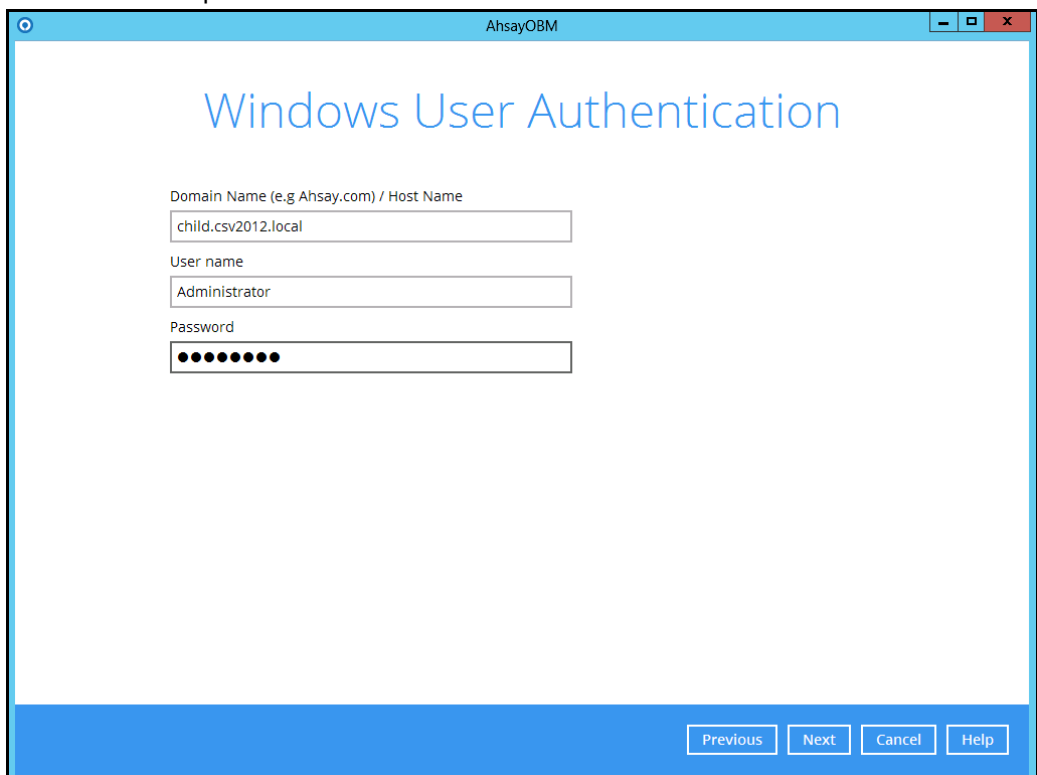
Copy to clipboard Confirm

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

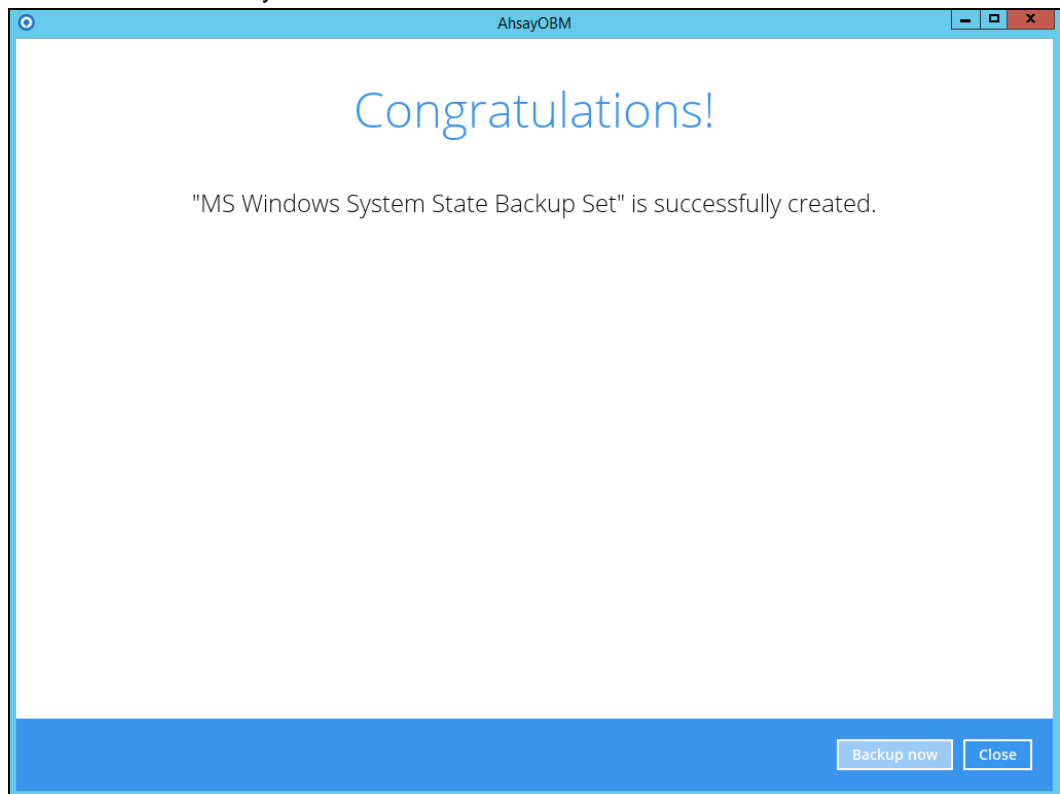
- **Unmask encryption key** – The encryption key is masked by default. Click this option to show the encryption key.



- **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.
9. If you have enabled the **Schedule** feature in the previous step, the following window will be shown. Enter the **Domain Name / Host Name** of the computer, **User Name** and **Password** of the Windows account that will be running the backup. Click **Next** to create the backup set.



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

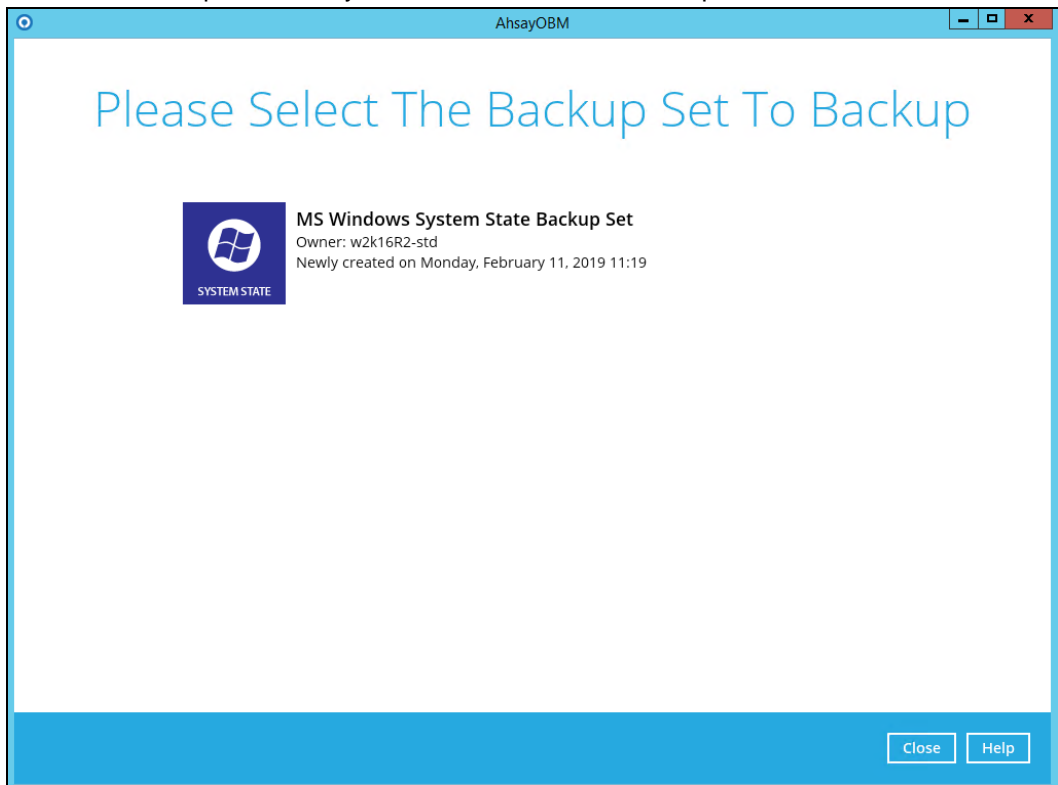


5.2 Start a Manual Backup

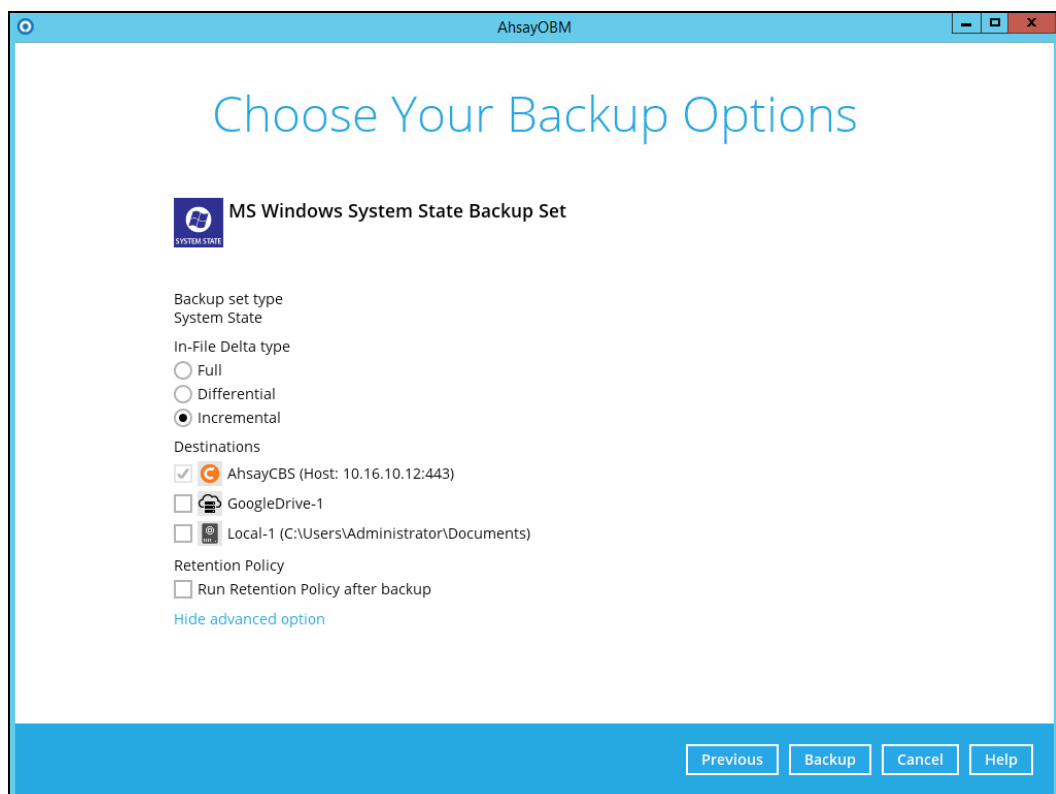
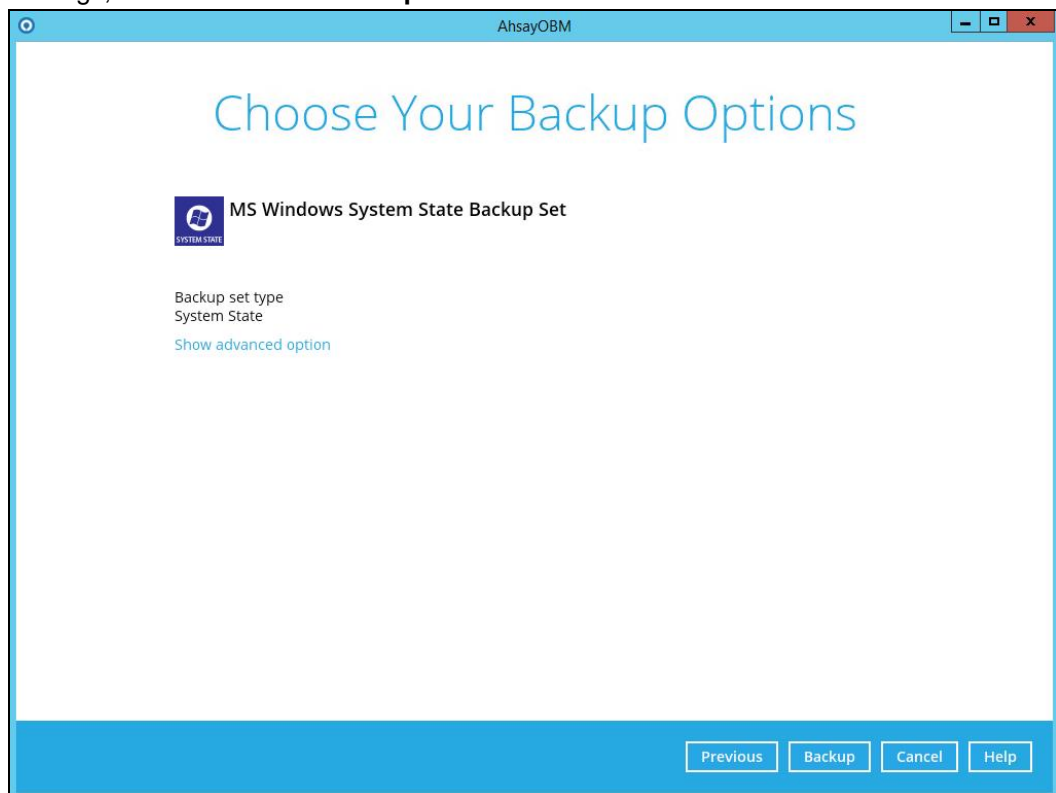
1. Click the **Backup** icon on the main interface of AhsayOBM.



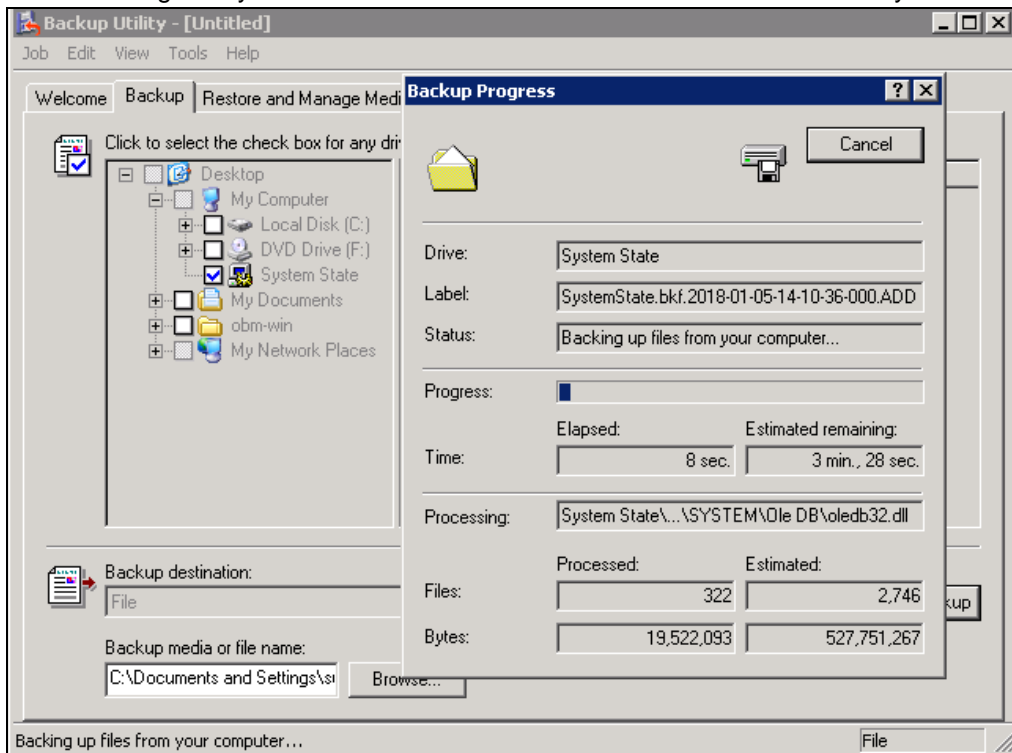
2. Select the backup set which you would like to start a backup for.



3. If you would like to modify the In-File Delta type, Destinations and Retention Policy Settings, click **Show advanced option**.

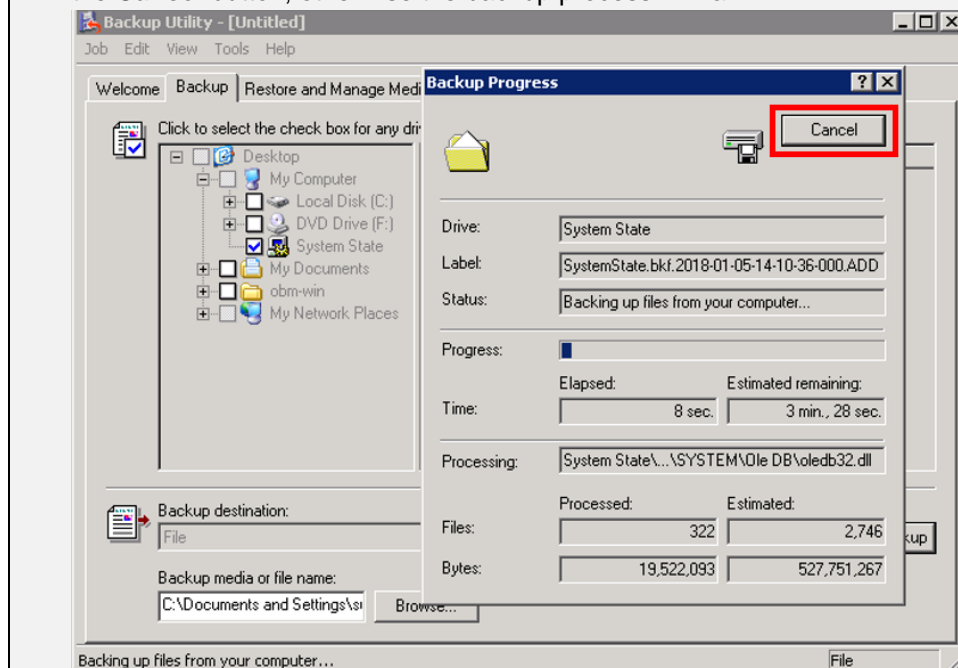


4. Click **Backup** to start the backup. The NTBackup interface will be displayed temporarily when creating the system state .bkf file. The window will close automatically afterward.

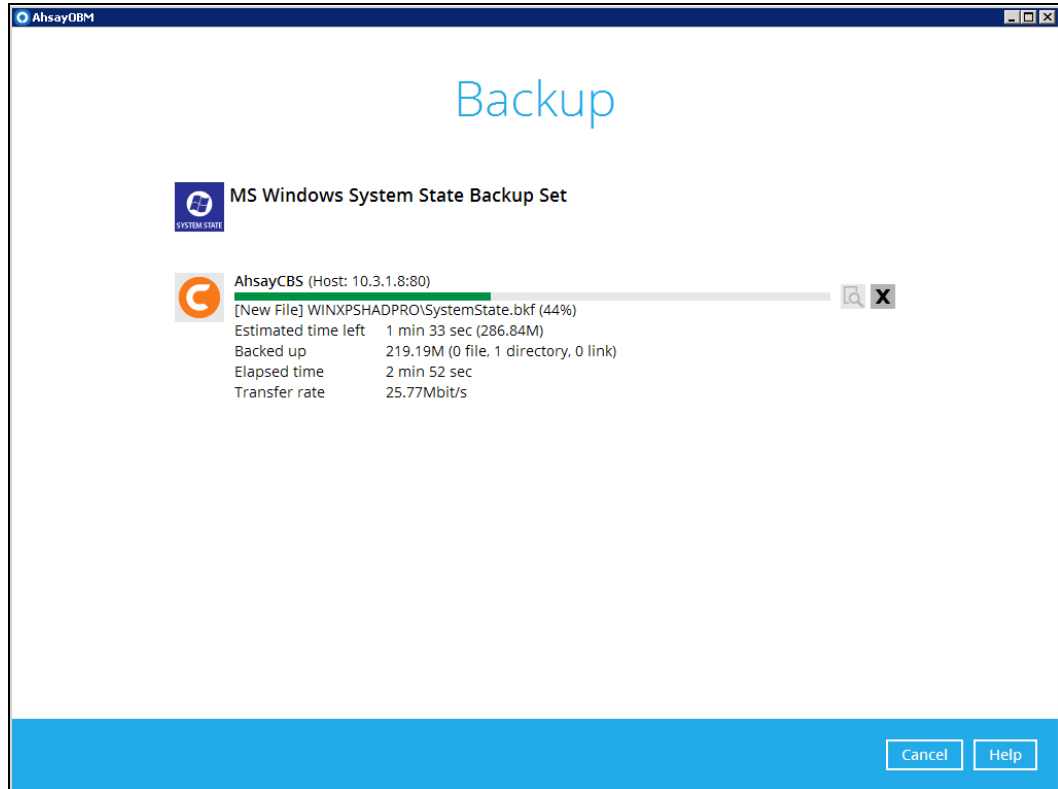


NOTE

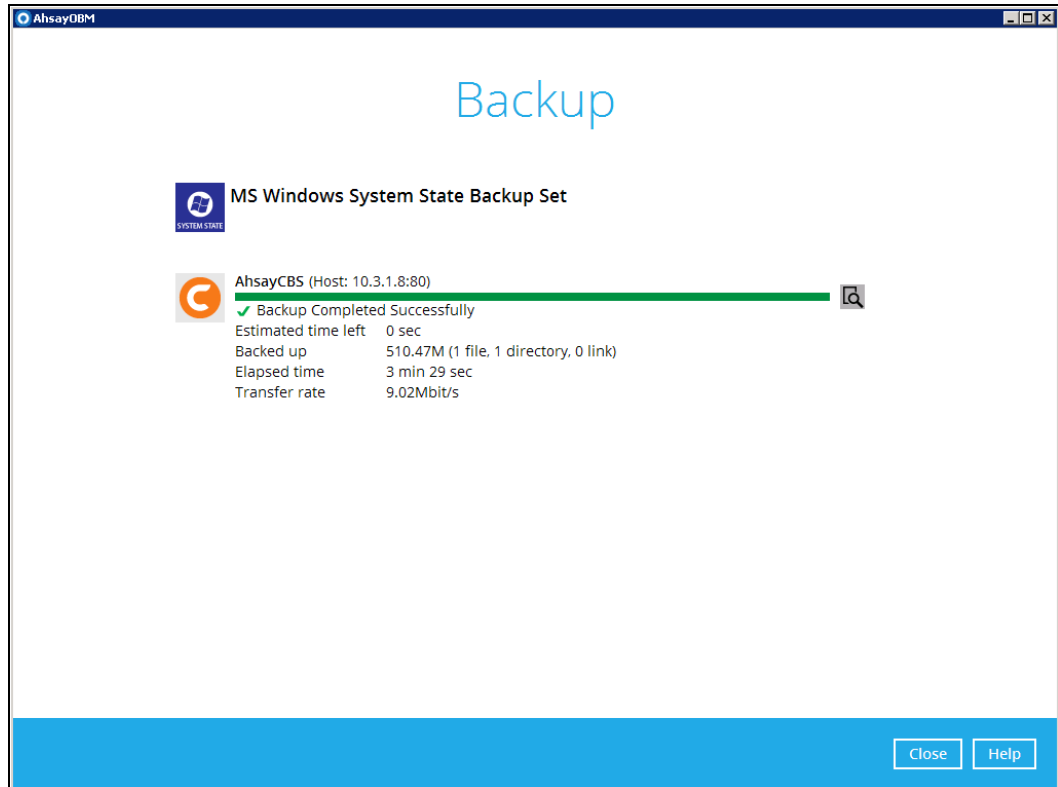
- Kindly noted that the NTBackup interface will only be displayed during manual backup process, it will NOT be shown during a scheduled backup or a continuous backup.
- During the process of creating the system state .bkf file, please do **NOT** click on the **Cancel** button, otherwise the backup process will fail.



5. AhsayOBM wil start to backup the system state .bkf file.

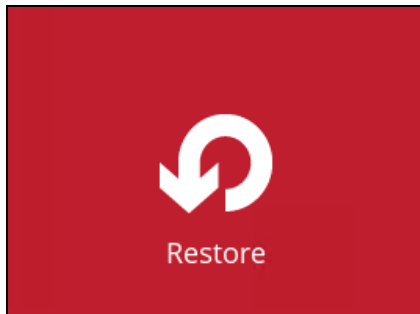


6. The following screen is displayed when the system state data are backed up successfully.

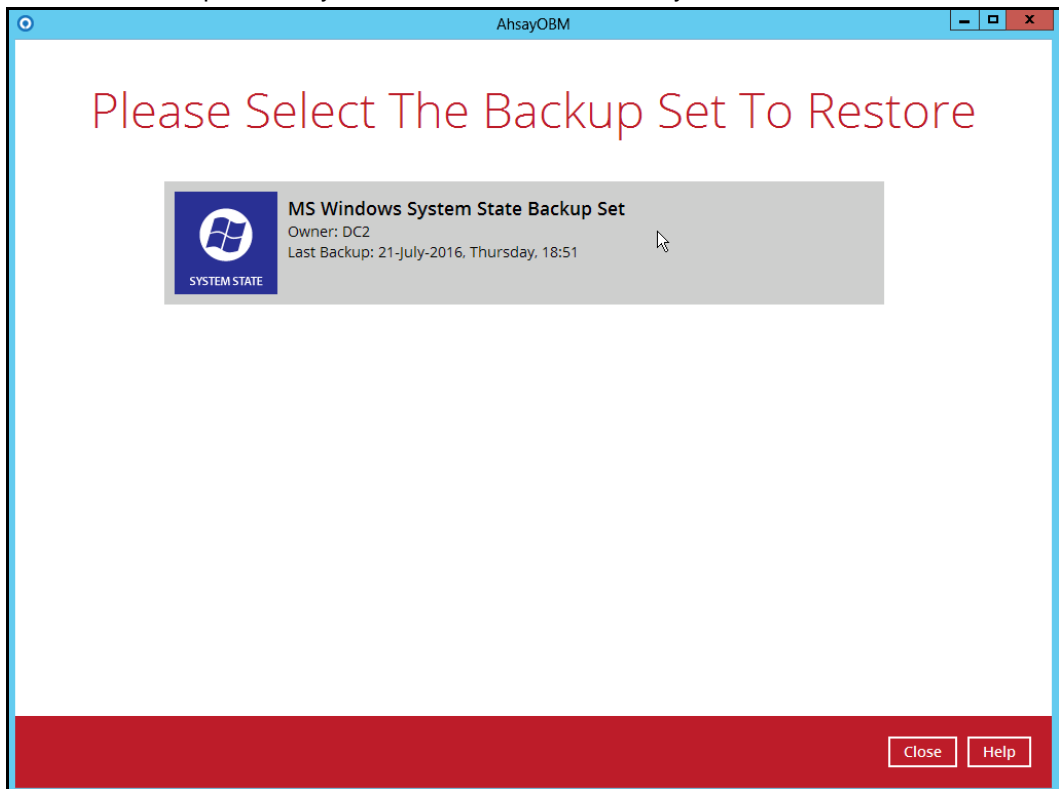


5.3 Restore the System State Data

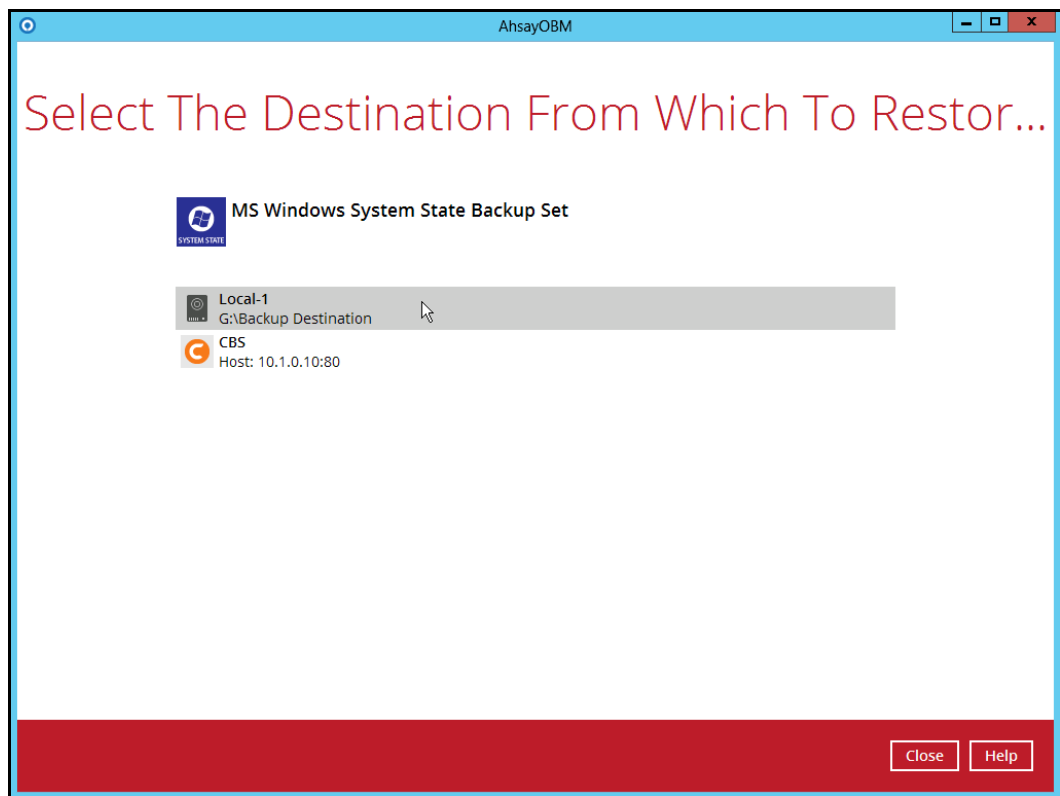
1. Click the **Restore** icon on the main interface of AhsayOBM.



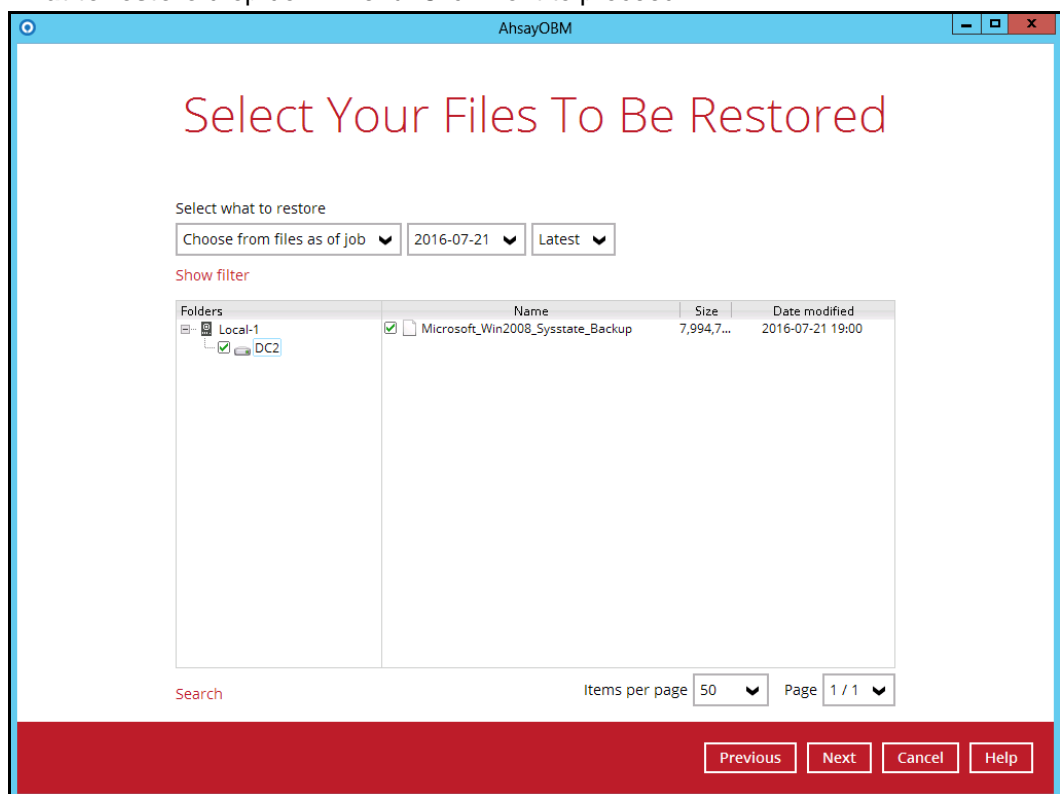
2. Select the backup set that you would like to restore the system state data from.



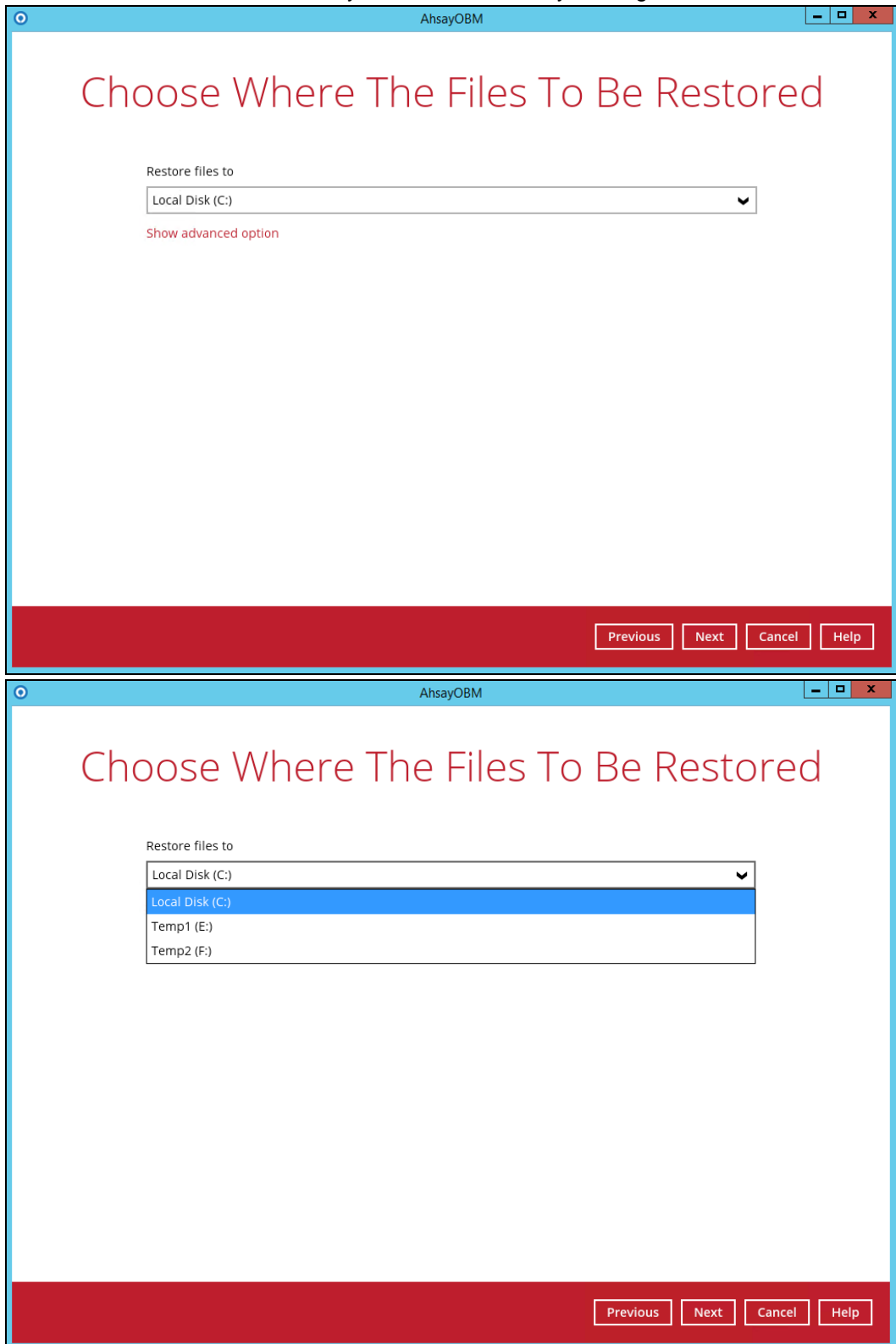
3. Select the backup destination that contains the system state data that you would like to restore.



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



5. Select the location to restore the system state data to by clicking the arrow down icon.



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

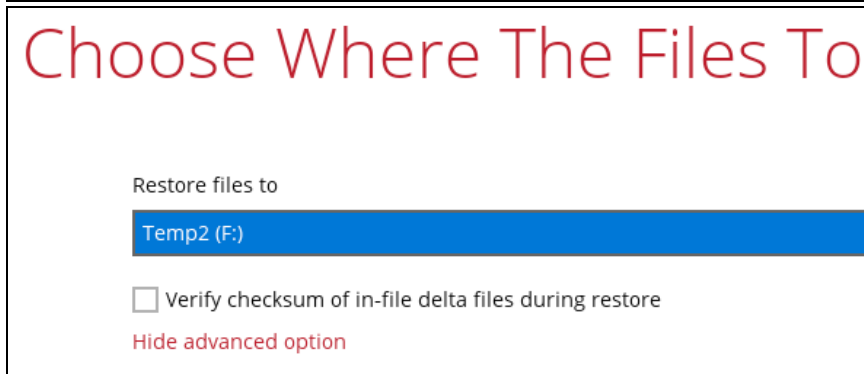


Choose Where The Files To

Restore files to

Temp2 (F:)

Show advanced option



Choose Where The Files To

Restore files to

Temp2 (F:)

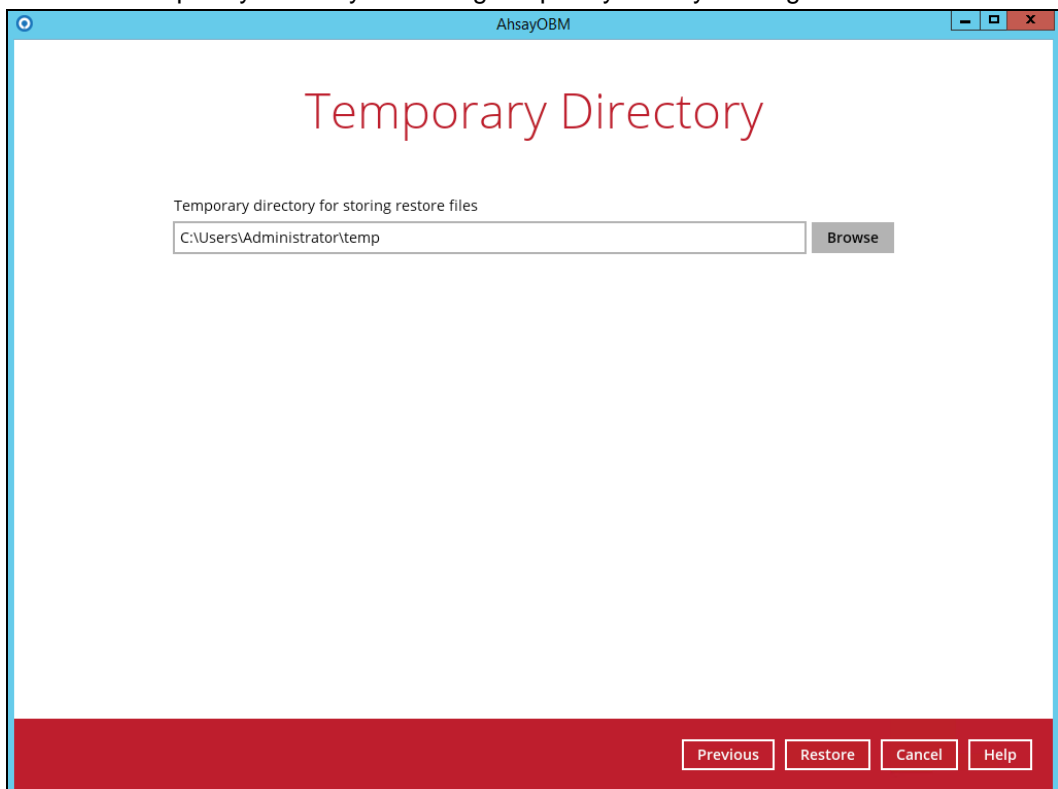
☐ Verify checksum of in-file delta files during restore

Hide advanced option

• **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.

6. Select the temporary directory for storing temporary files by clicking **Browse**.



Temporary Directory

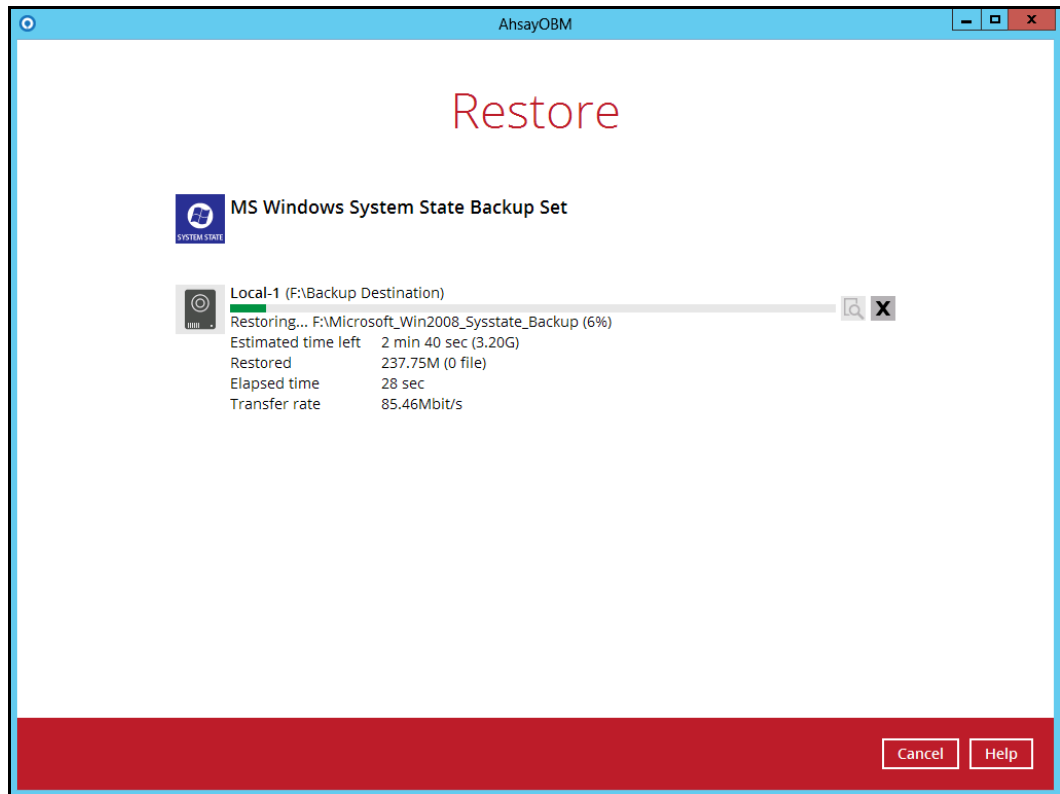
Temporary directory for storing restore files

C:\Users\Administrator\temp

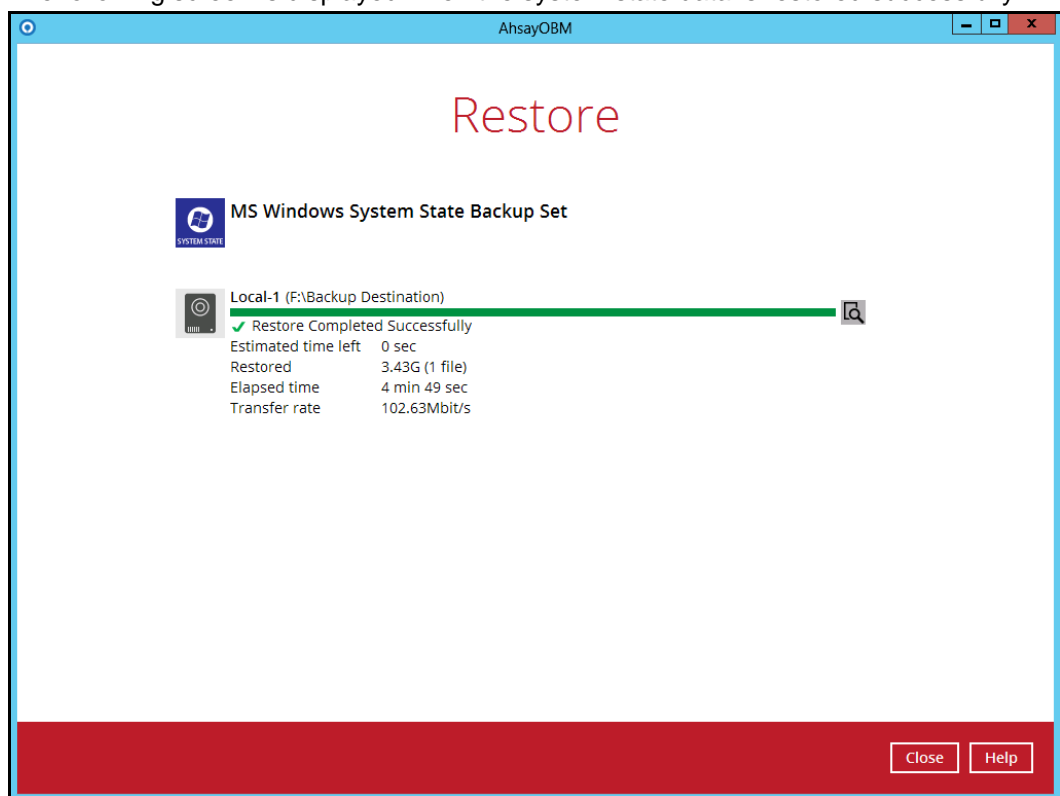
Browse

Previous Restore Cancel Help

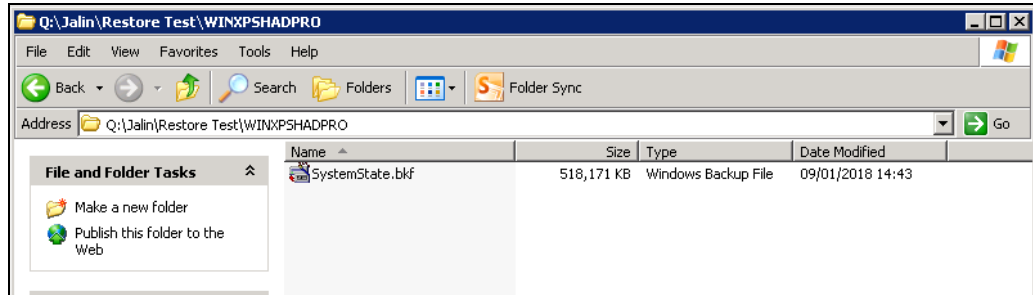
7. Click **Restore** to start the restoration.



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



9. The restored system state data is stored in the “hostname” folder in the restore location.

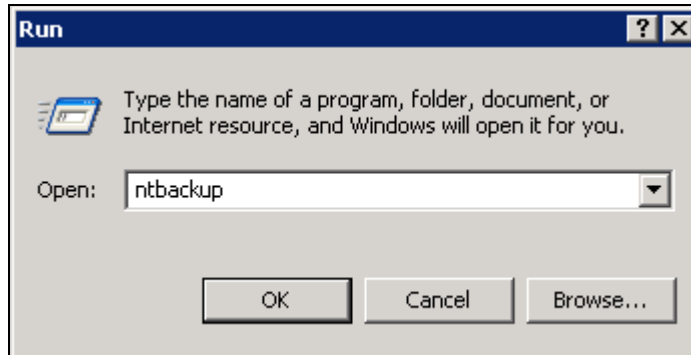


10. Continue to the next section of the guide.

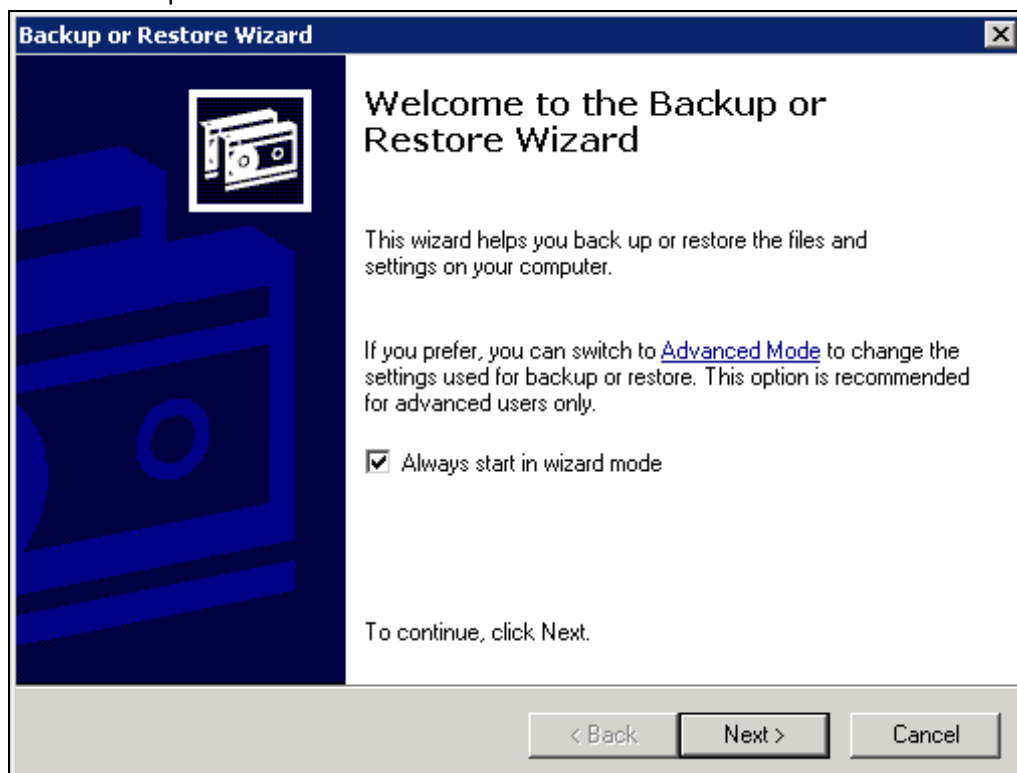
5.4 Apply the System State Data

Before you begin, please make sure that the system state data restored with AhsayOBM are copied to a local disk or in a remote shared folder.

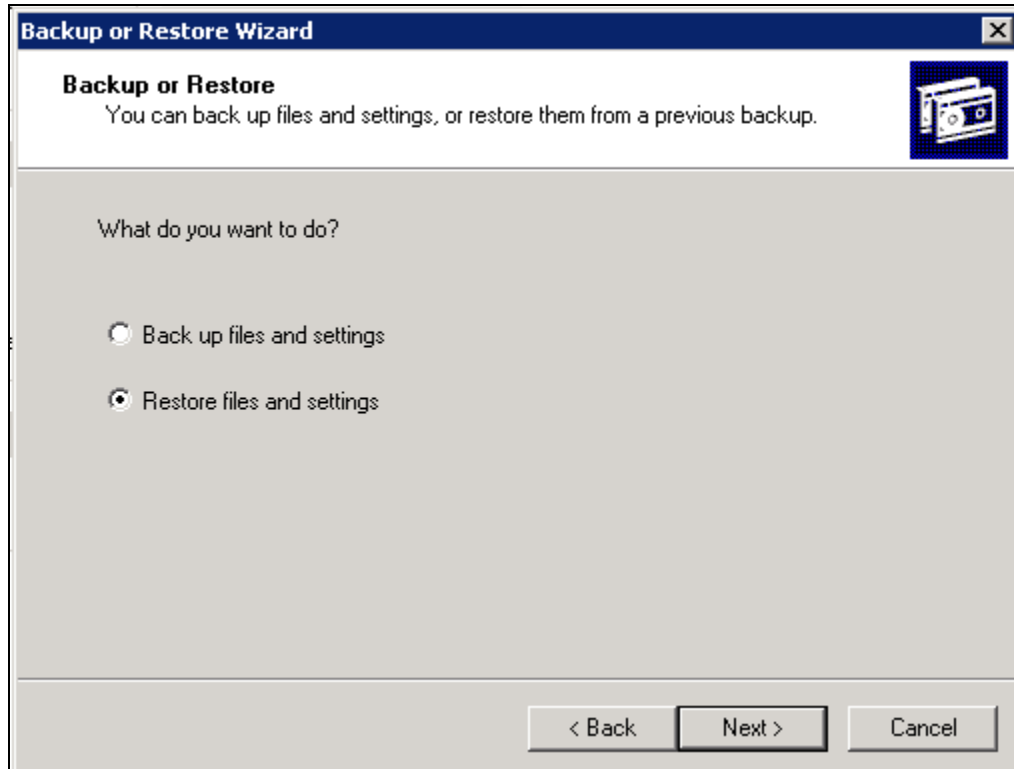
1. Open **NTBackup**. In the Windows Start menu, click **Run...** and type in **ntbackup**.



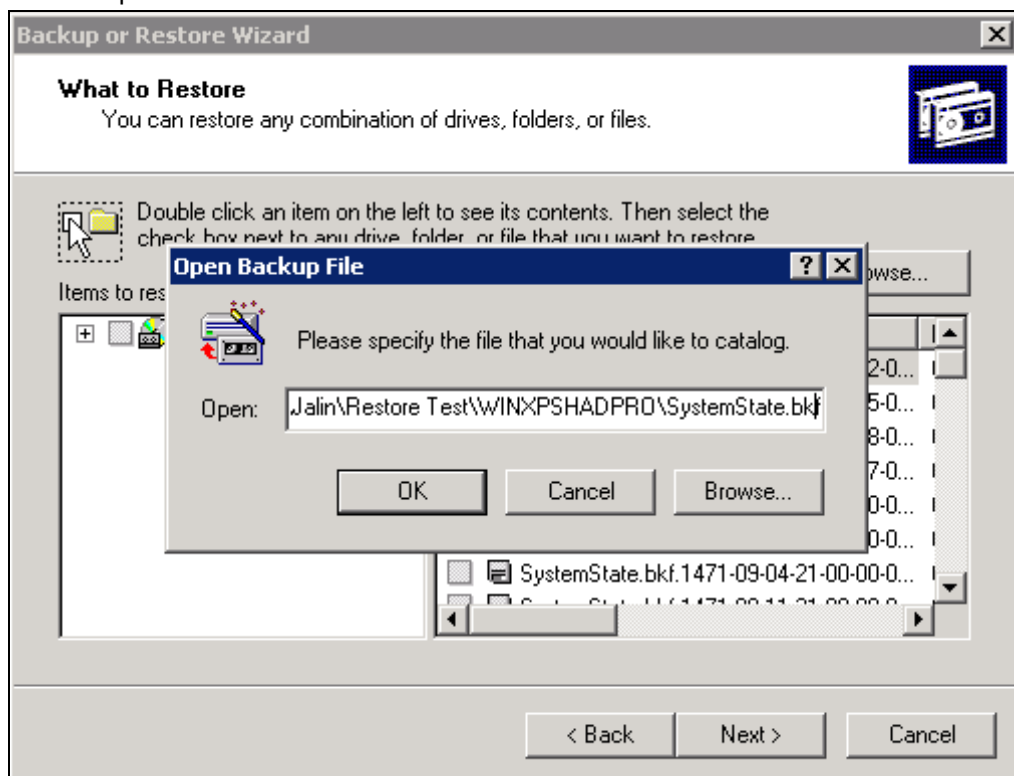
2. Click **Next** to proceed.



3. Choose **Restore file and settings** and click **Next** to proceed.

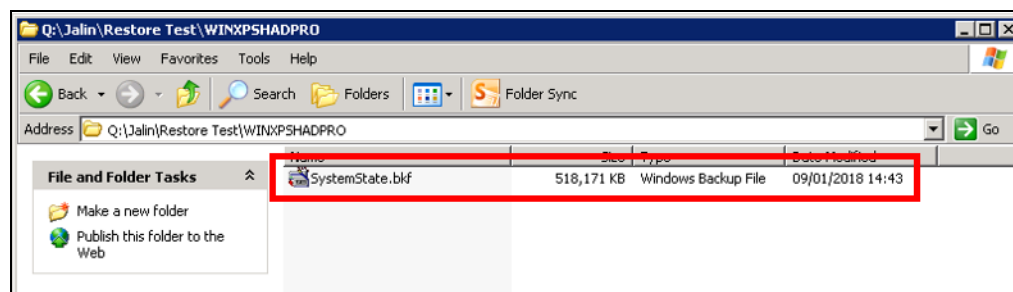
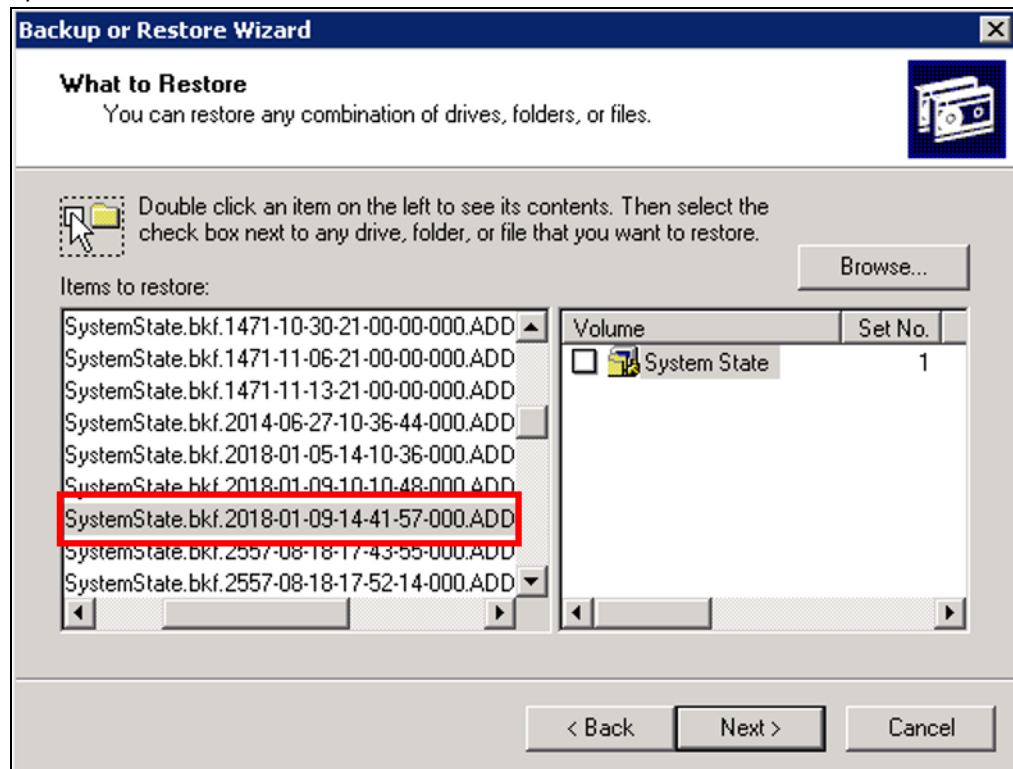


4. Click **Browse** to choose the **SystemState.bkf** file which is restored via AhsayOBM, and then press **OK**.

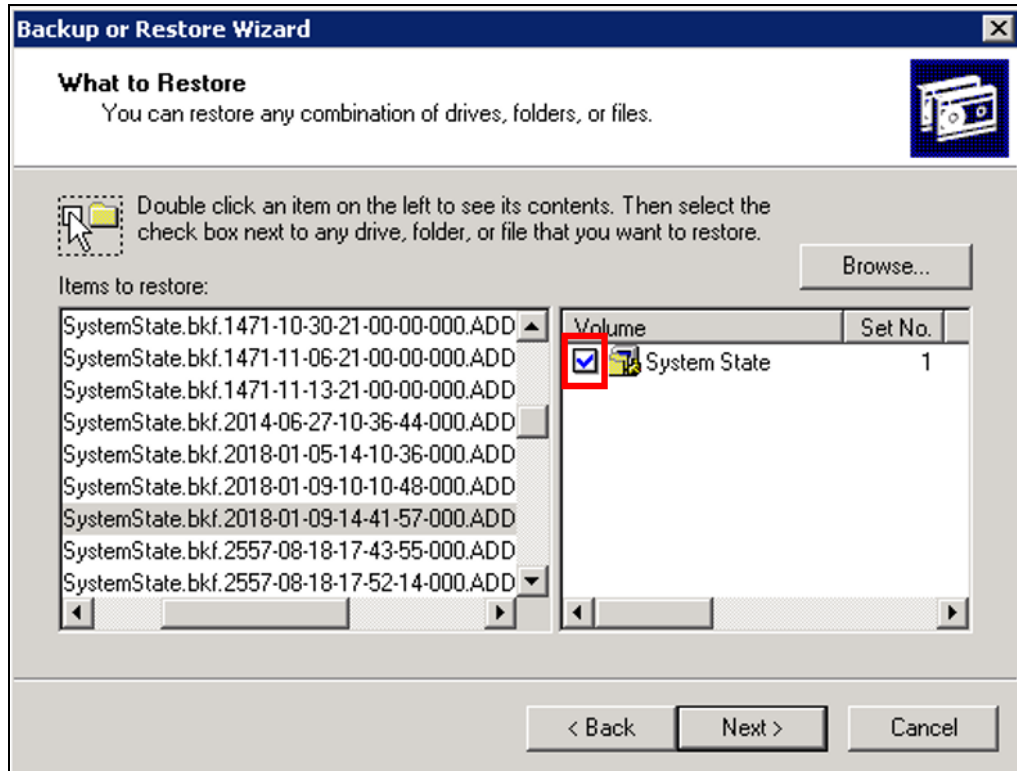


5. Expand the file tree from the left panel and select the corresponding System State file according to the file restored previously. You can refer to the restored file in the restored destination. The correct SystemState.bkf file should be the one with the most

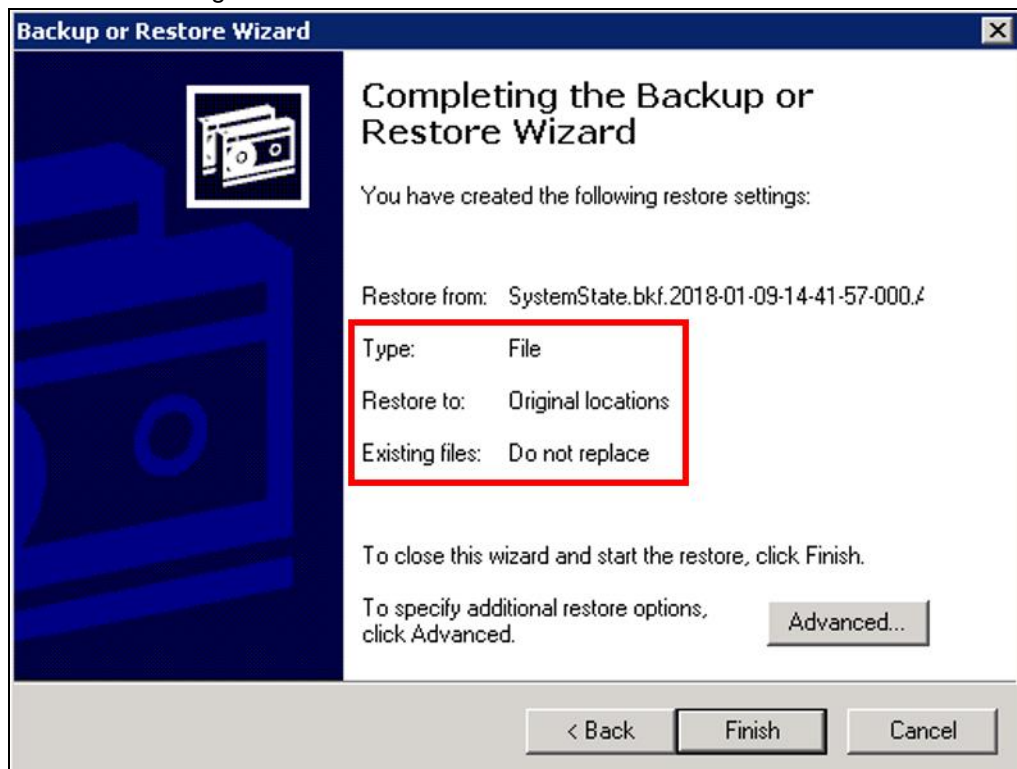
updated modification time as the file in restored destination.



6. Check the box in front of **System State** and click **Next** to proceed.



7. Review the settings.

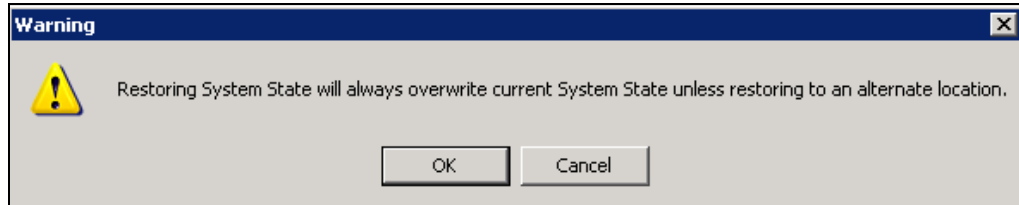


- If you don't want to change any settings, click **Finish** to begin the restore process with default setting.
- If you want to change any of the advanced restore options, such as restoring security and junction point data, click **Advanced...** to modify the settings. Please

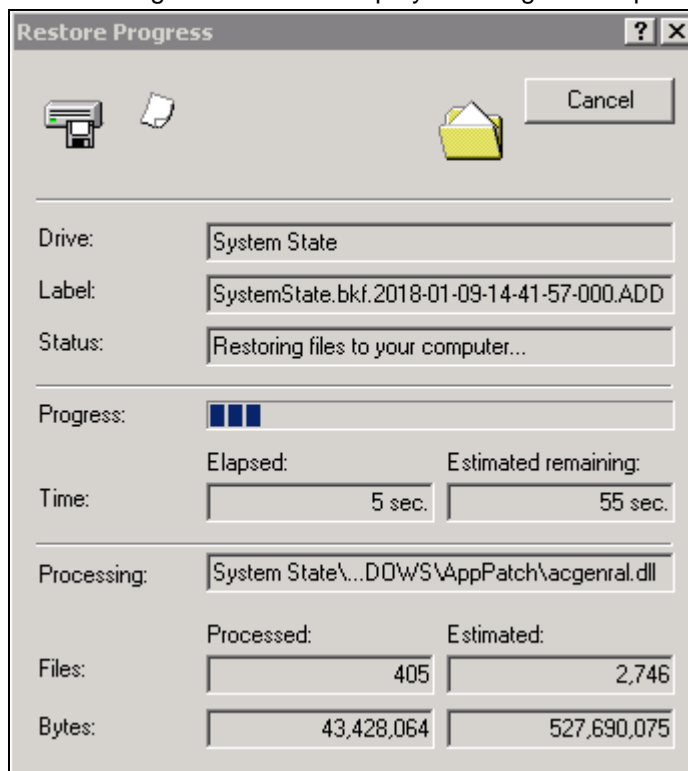
refer to the following article for more details: <https://msdn.microsoft.com/en-us/library/cc875820.aspx>

When you are done setting advanced restore option, click **Finish** to begin the restore.

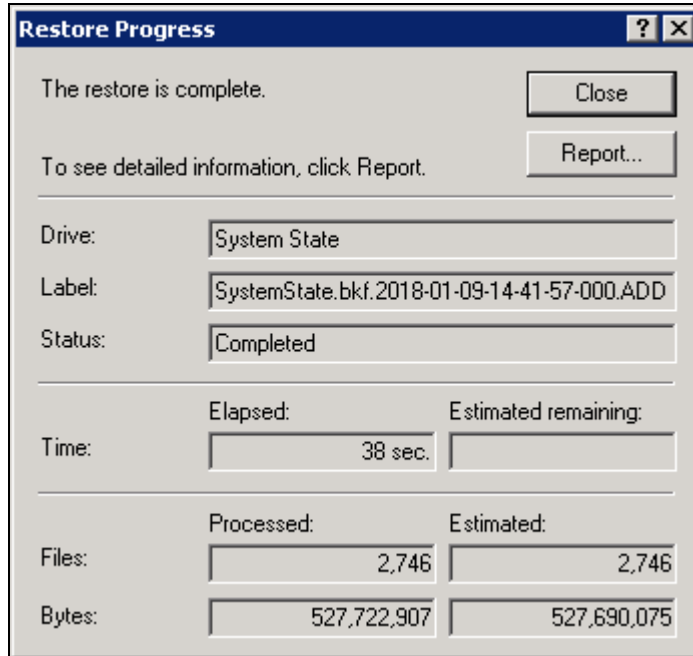
- Click **Yes** to confirm and start the restore process.



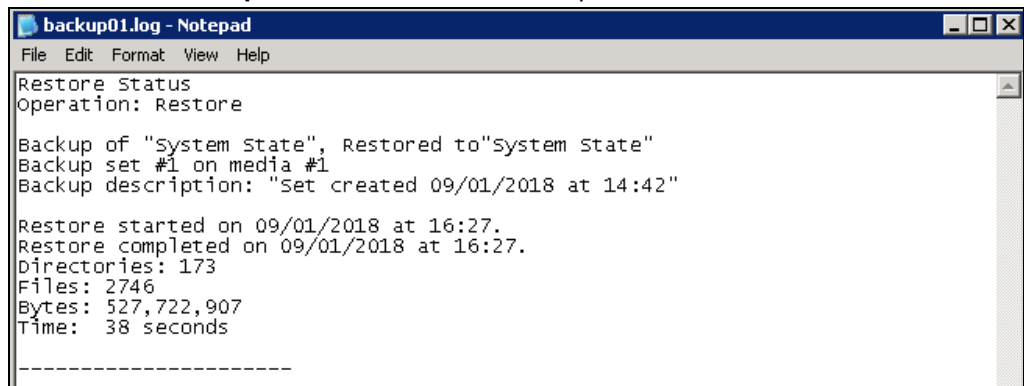
- The following screen will be displayed during restore process.



10. The following screen will be displayed when the restore process is completed.

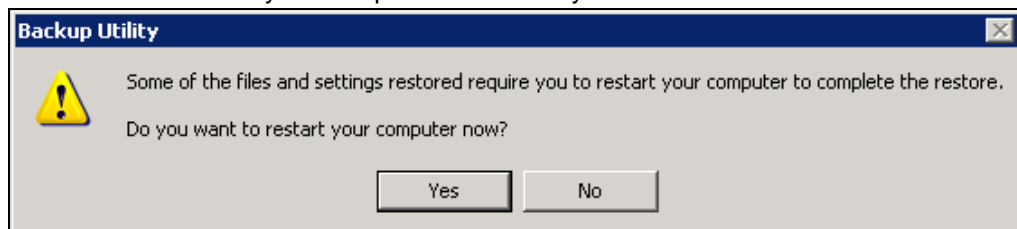


11. You can click on **Report...** to view the restore report.



Or click **Close** to finish the restore process.

A restart must be performed after the system state restoration, and you are suggested to click **Yes** to restart your computer immediately.




6 Windows Server 2008 and Newer Releases

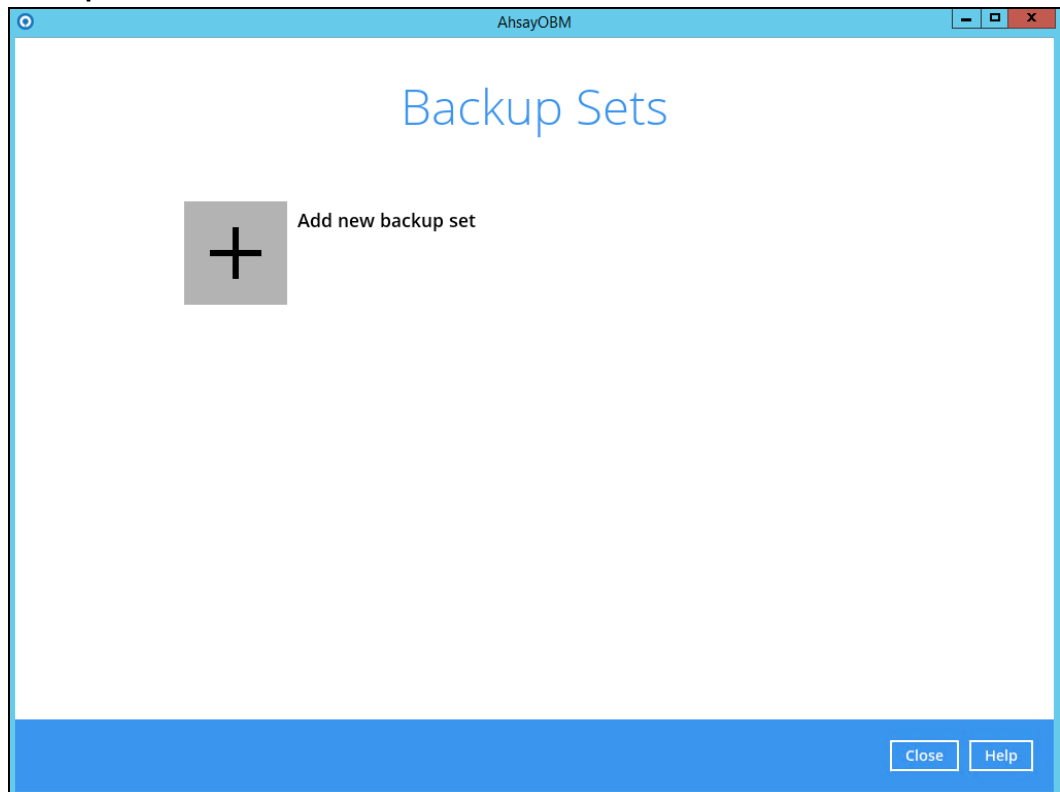
6.1 Configuring a MS Windows System State Backup Set

Create the MS Windows System State backup set using following steps.

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**, enter a **Name** for your backup set, and specify a **Temporary Location** for your back up. Click **Next** to proceed.

AhsayOBM

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:)

Next Cancel 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.

AhsayOBM

Create Backup Set

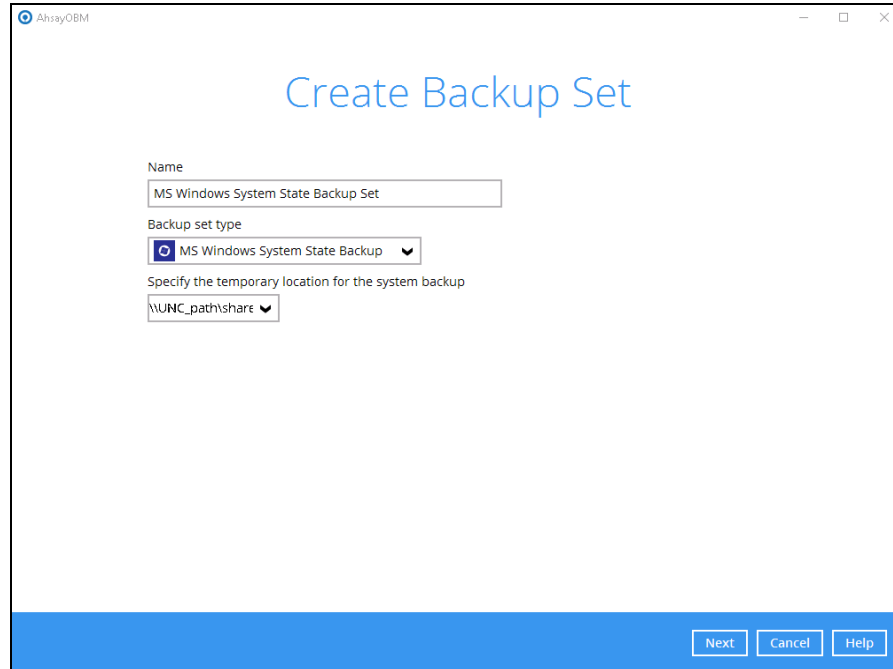
Name
MS Windows System State Backup Set

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:)

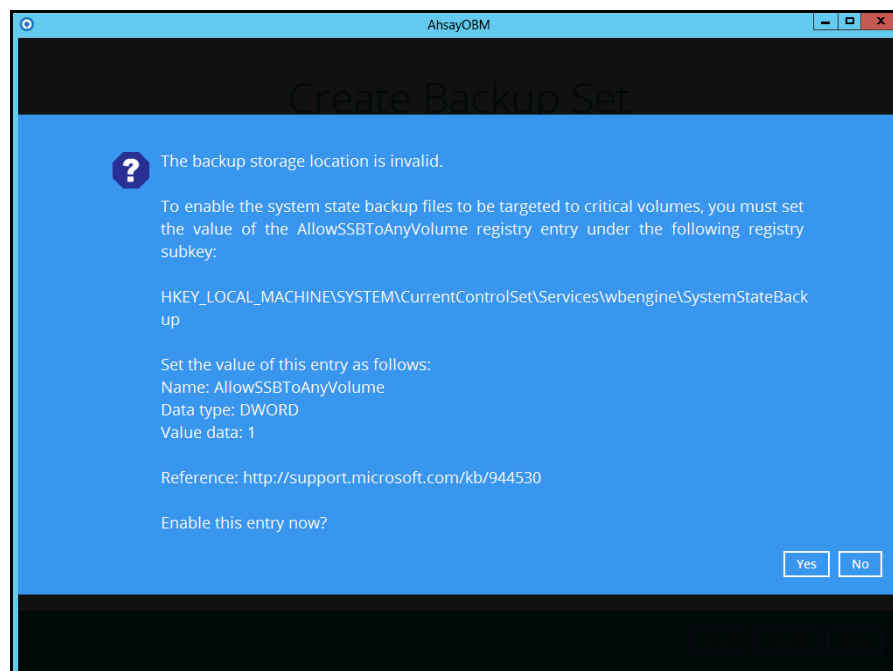
Next Cancel Help

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



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:



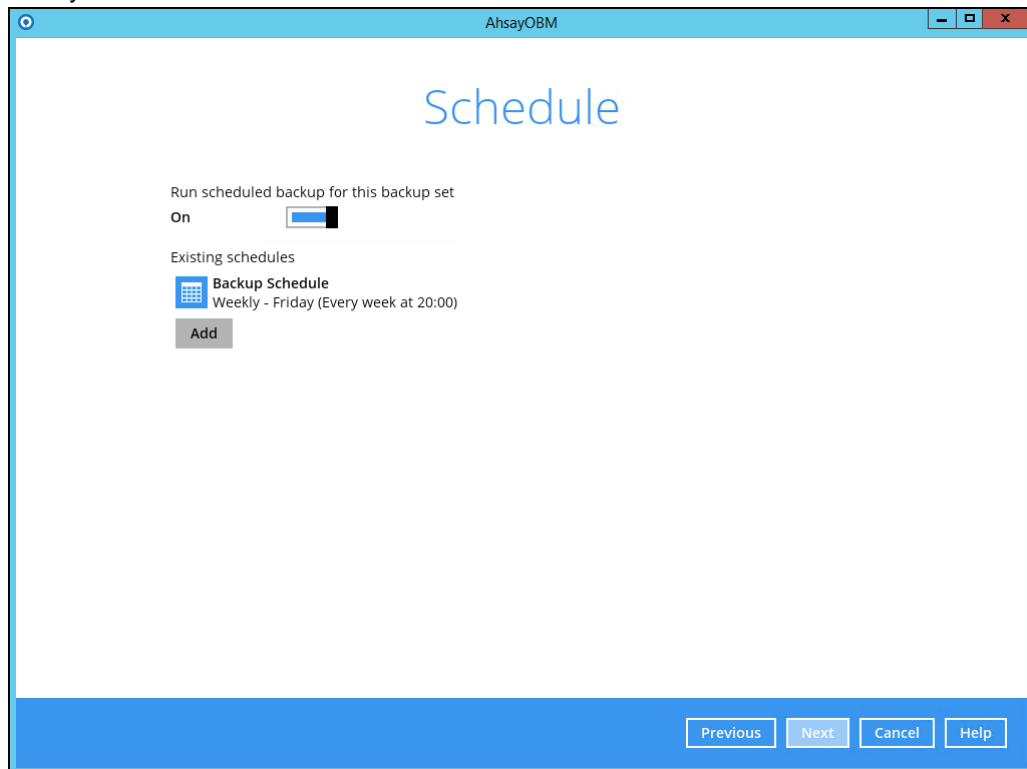
Click **Yes** for AhsayOBM to enable the registry entry, or click **No**, then change the storage location setting to another location.

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

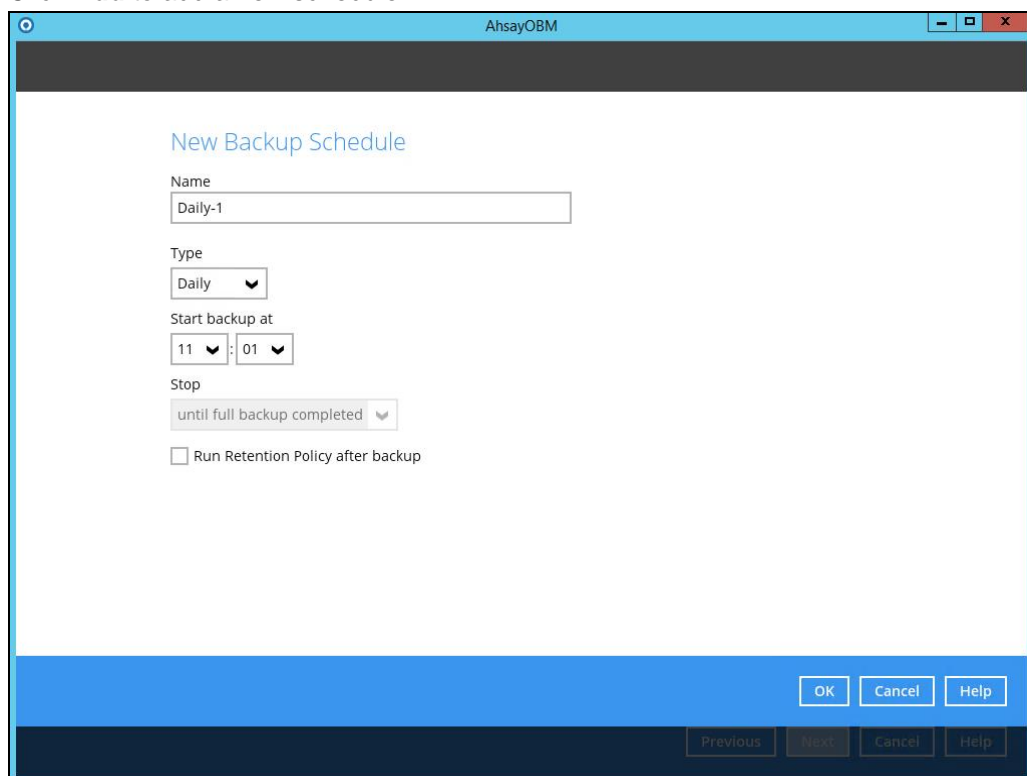
[FAQ: Restrictions on the temporary storage location for the Windows System State and System backup image file](#)

5. In the **Schedule** menu, configure a backup schedule for backup job to run automatically at your specified time interval.


As you can see there's already a default Backup Schedule which is set weekly, every Friday around 20:00PM.

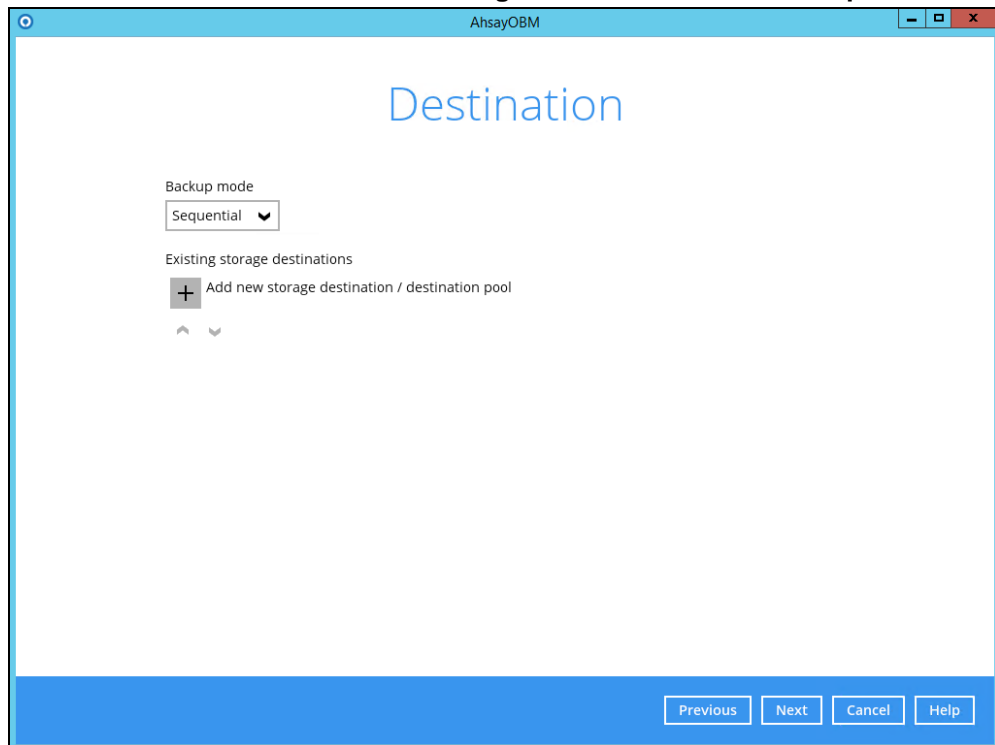


Click **Add** to add a new schedule.



Click **OK** to continue, and then click **Next** to proceed.

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**.

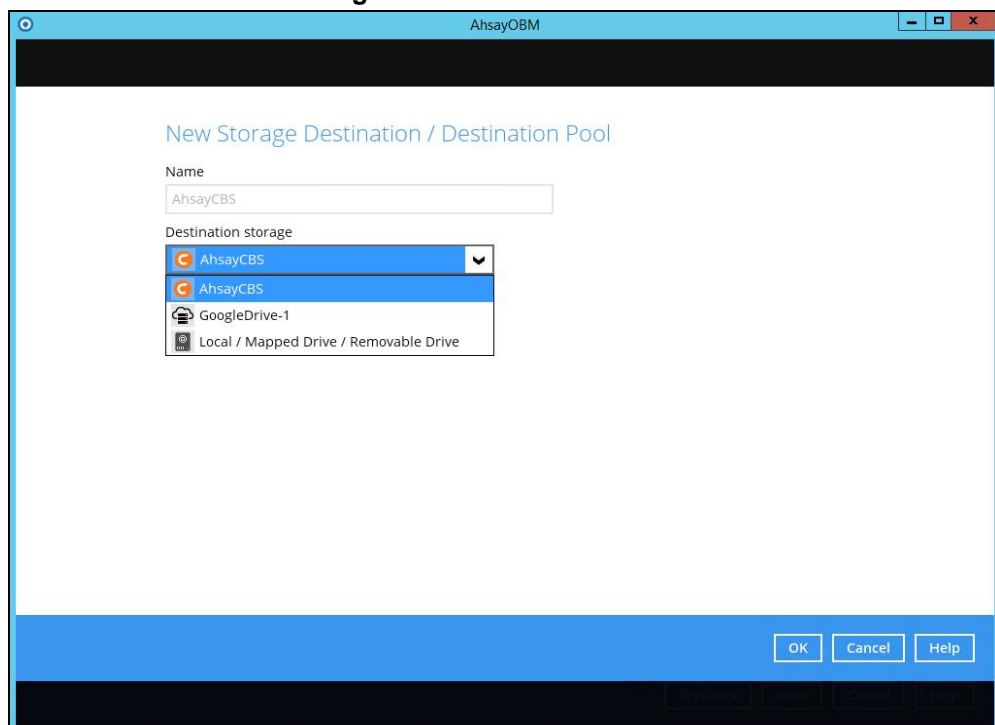


Note: For more details on Backup Destination, refer to this link:

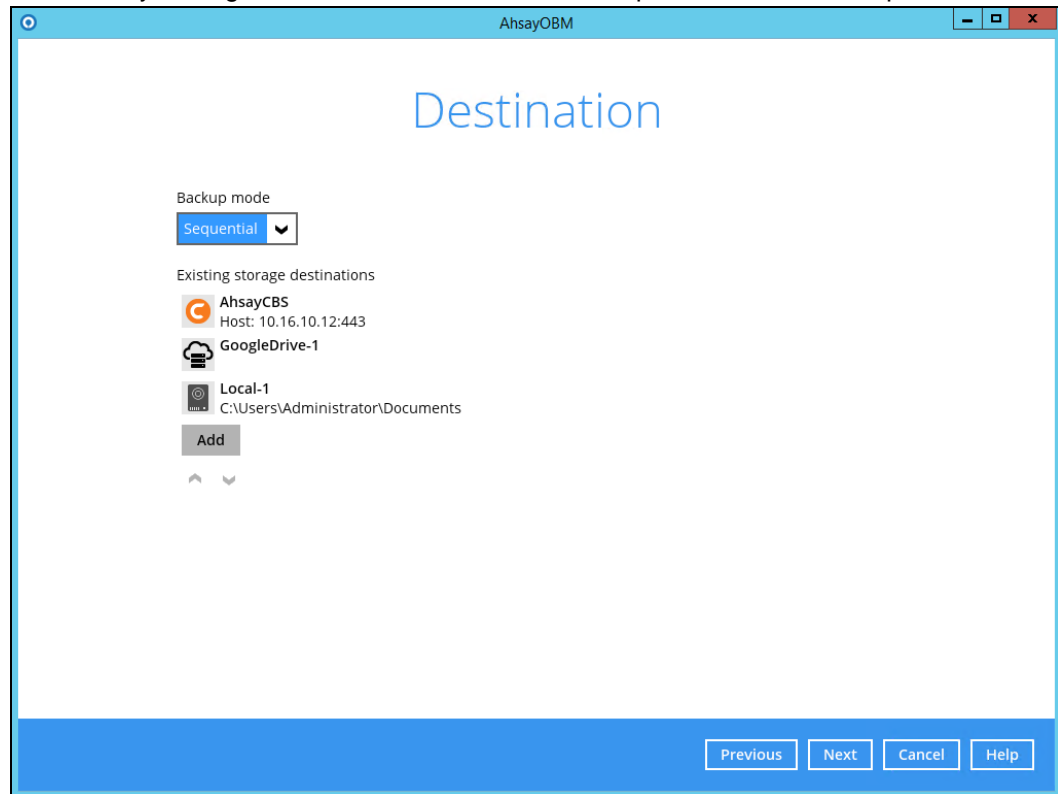
[FAQ: Frequently Asked Questions on Backup Destination](#)

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

7. Select the **Destination storage**.



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.

8. 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.



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.

The screenshot shows the 'Encryption' settings window. At the top, the word 'Encryption' is displayed in a large blue font. Below it, there are several settings: 'Encrypt Backup Data' is set to 'On' with a toggle switch; 'Encryption Type' is set to 'Custom' in a dropdown menu; 'Algorithm' is set to 'AES' in a dropdown menu; 'Encryption key' and 'Re-enter encryption key' are both masked with '*****' in text input fields; 'Method' has 'ECB' and 'CBC' radio buttons, with 'CBC' selected; and 'Key length' has '128-bit' and '256-bit' radio buttons, with '256-bit' selected.

Note: For best practice on managing your encryption key, refer to this link:
[FAQ: Best practices for managing encryption key for AhsayOBM or AhsayACB](#)

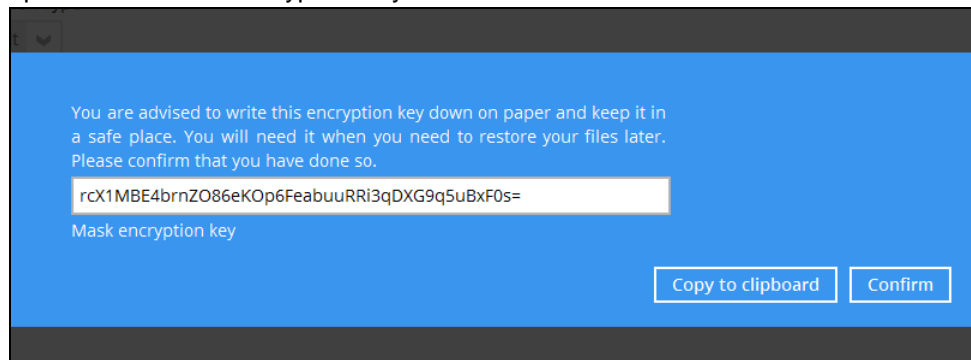
Click **Next** when you are done setting.

9. If you have enabled the **Encryption** feature in the previous step, the following pop-up window will be shown, no matter which encryption type you have selected.

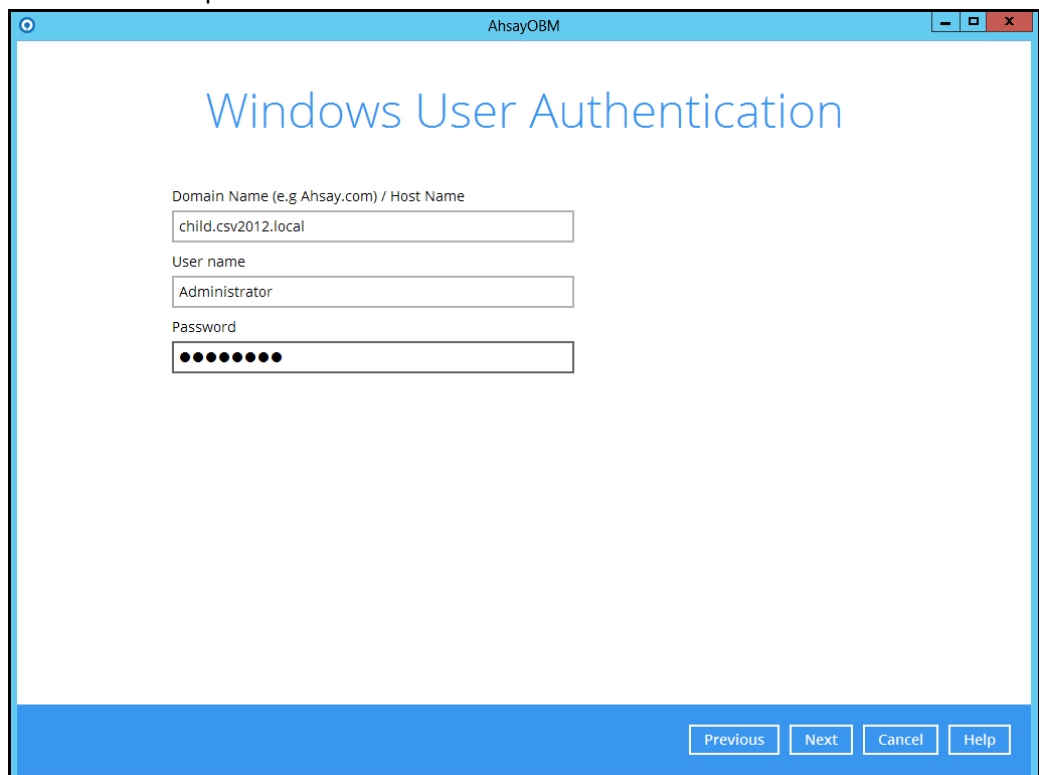
The screenshot shows a confirmation pop-up window titled 'Encryption'. It has a dark grey header with the title in blue. The main area has a light blue background. It contains the text: 'You are advised to write this encryption key down on paper and keep it in a safe place. You will need it when you need to restore your files later. Please confirm that you have done so.' Below this text is a text input field with seven black dots, representing the encryption key. Below the input field is the label 'Unmask encryption key'. At the bottom right, there are two buttons: 'Copy to clipboard' and 'Confirm'.

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

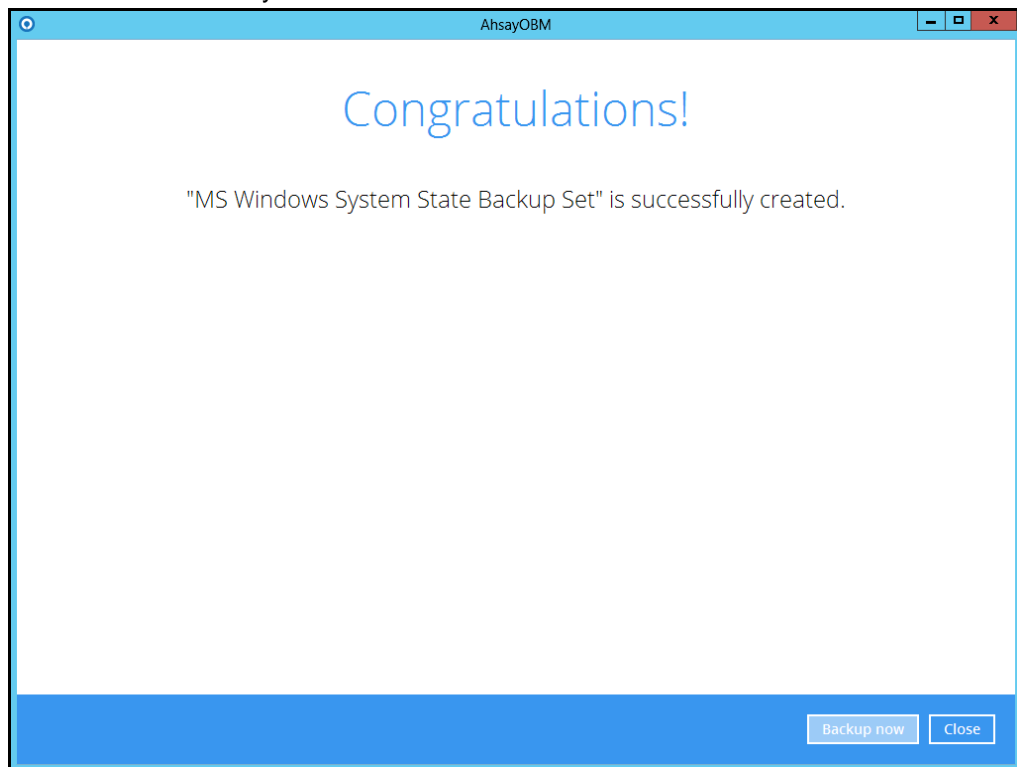
- **Unmask encryption key** – The encryption key is masked by default. Click this option to show the encryption key.



- **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.
10. If you have enabled the **Schedule** feature in the previous step, the following window will be shown. Enter the **Domain Name / Host Name** of the computer, **User Name** and **Password** of the Windows account that will be running the backup. Click **Next** to create the backup set.



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

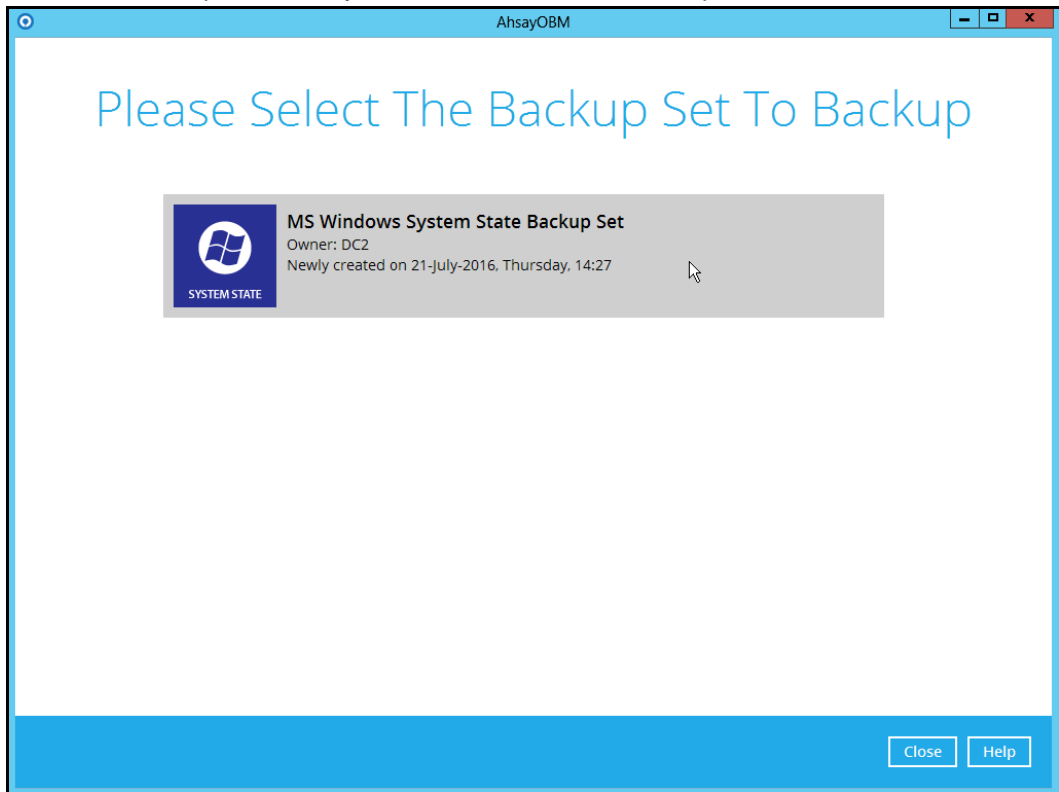


6.2 Start a Manual Backup

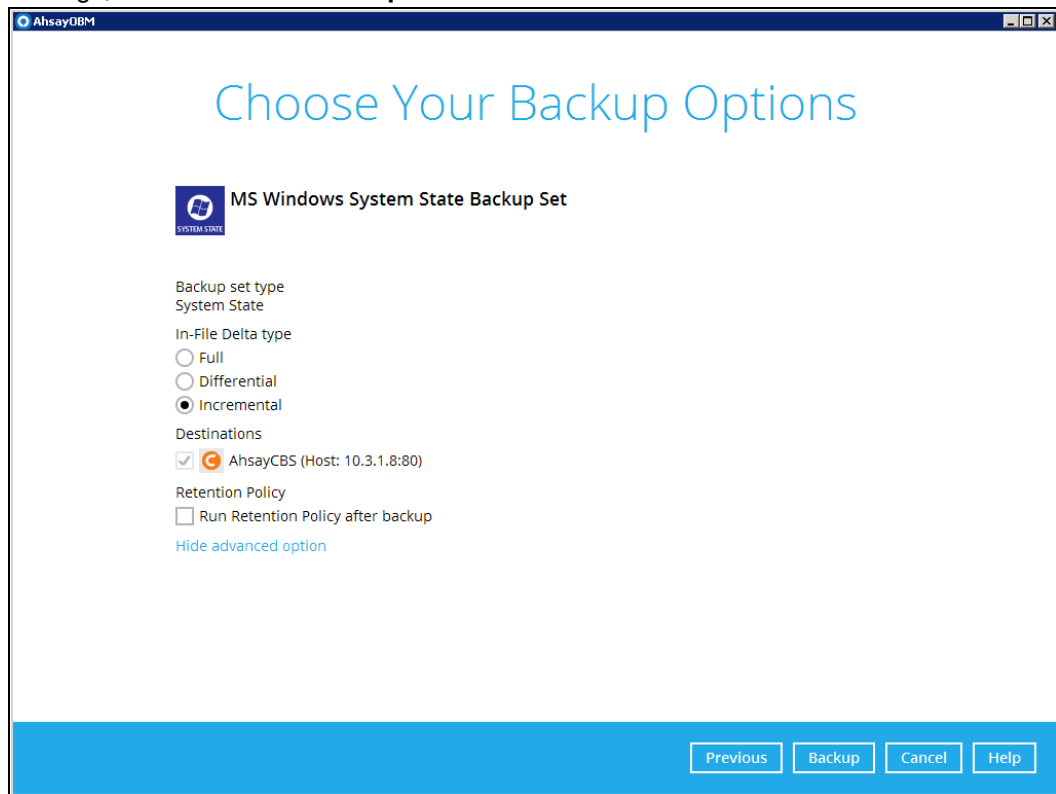
1. Click the **Backup** icon on the main interface of AhsayOBM.



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

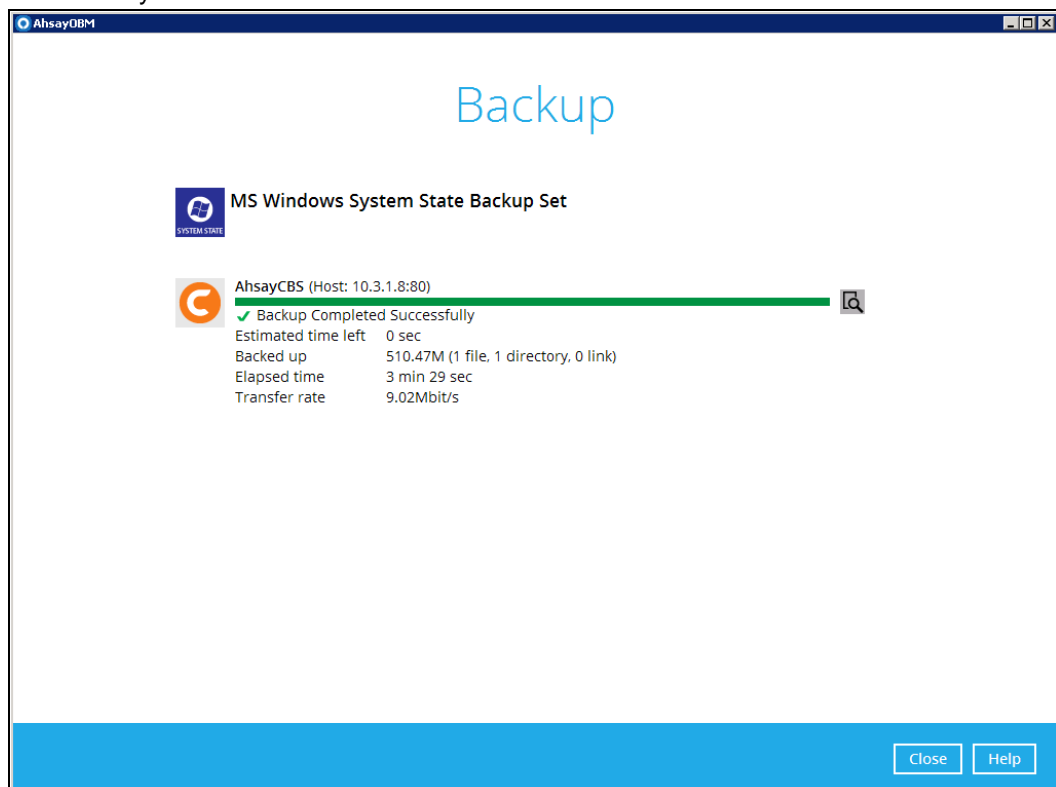


3. If you would like to modify the In-File Delta type, Destinations and Retention Policy Settings, click **Show advance option**.



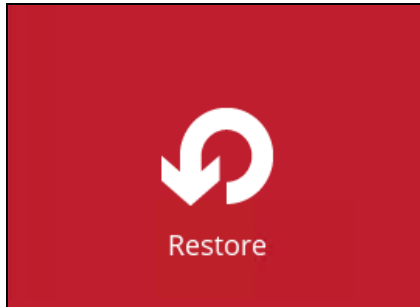
Click **Backup** to start the backup.

4. The following screen is displayed when the system state data are backed up successfully.

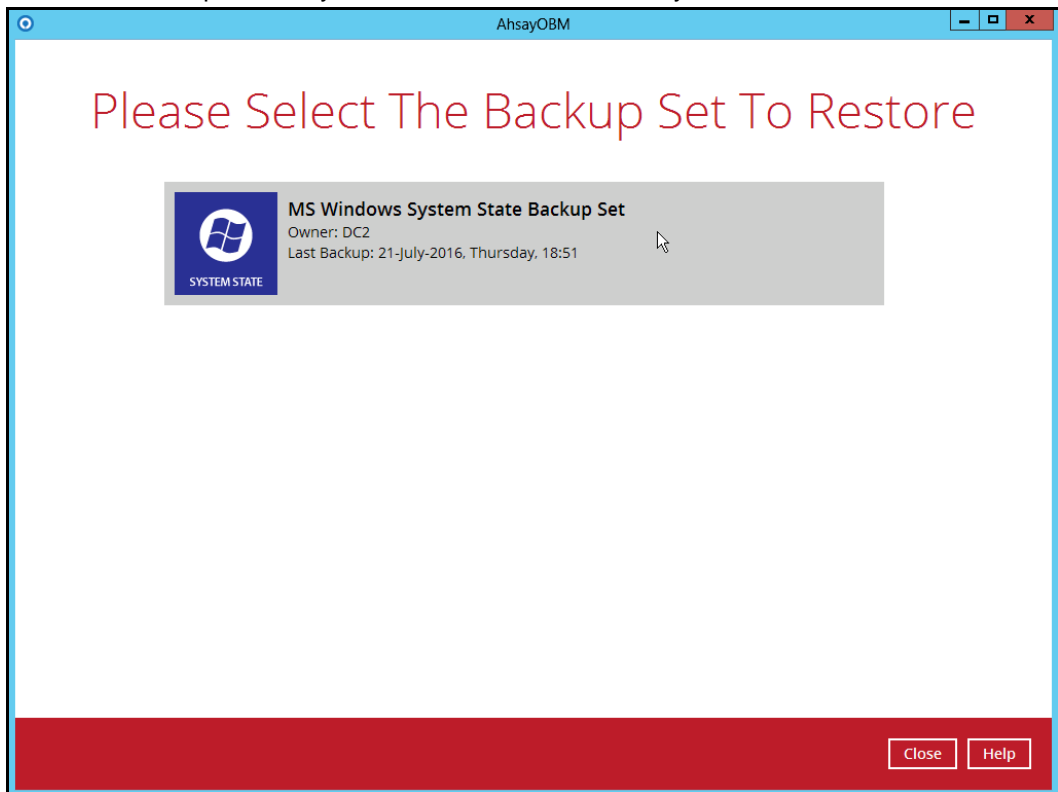


6.3 Restore the System State Data

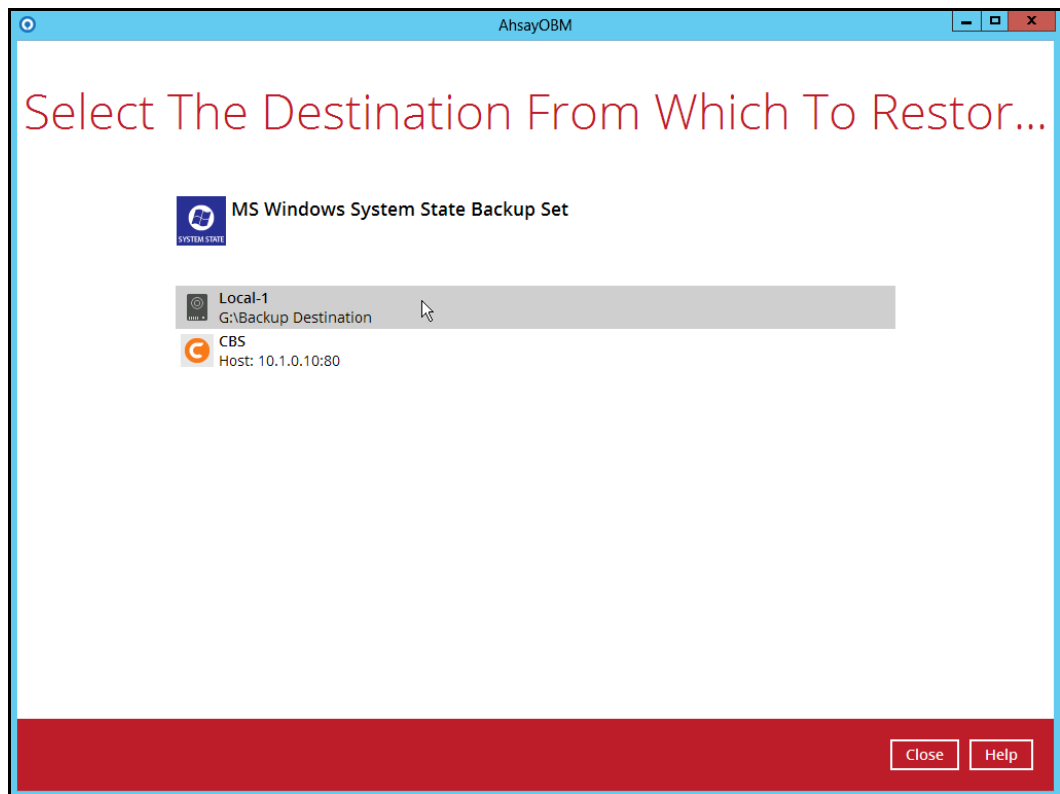
1. Click the **Restore** icon on the main interface of AhsayOBM.



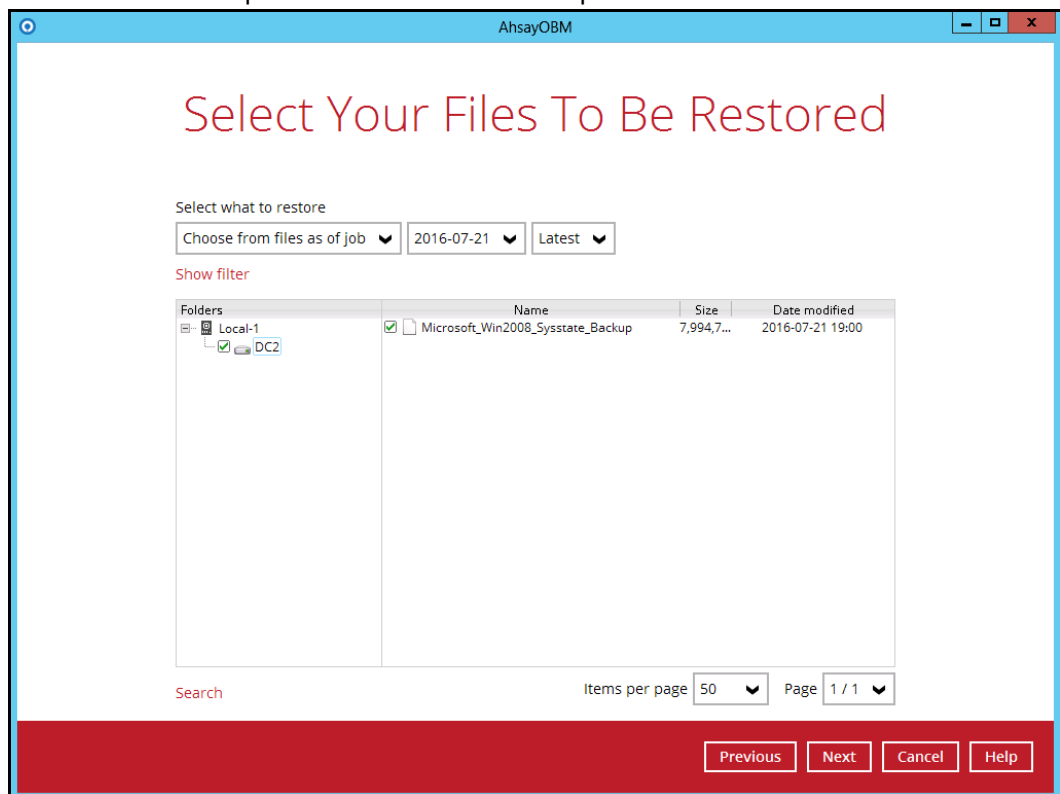
2. Select the backup set that you would like to restore the system state data from.



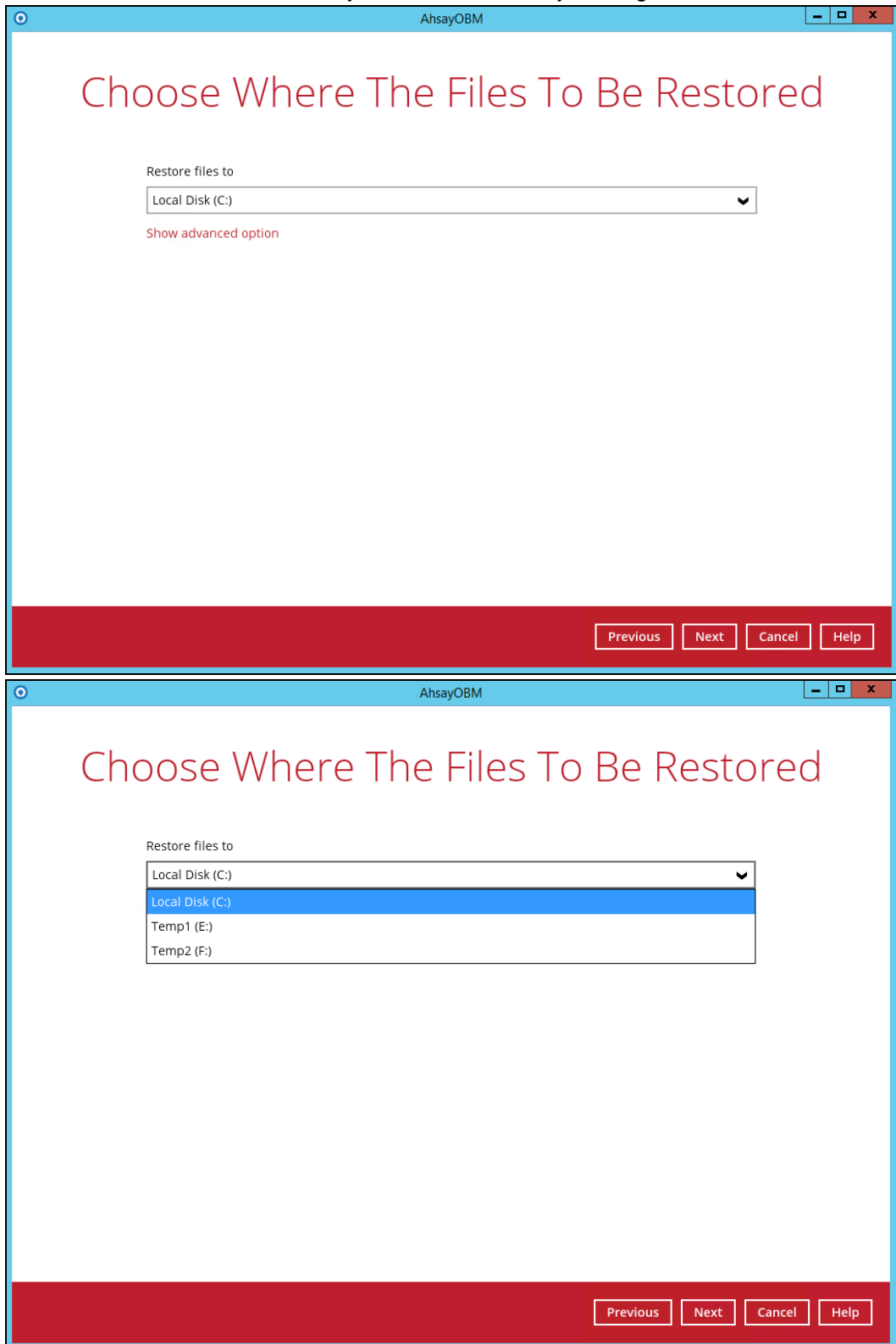
3. Select the backup destination that contains the system state data that you would like to restore.



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



5. Select the location to restore the system state data to by clicking the arrow down icon.



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

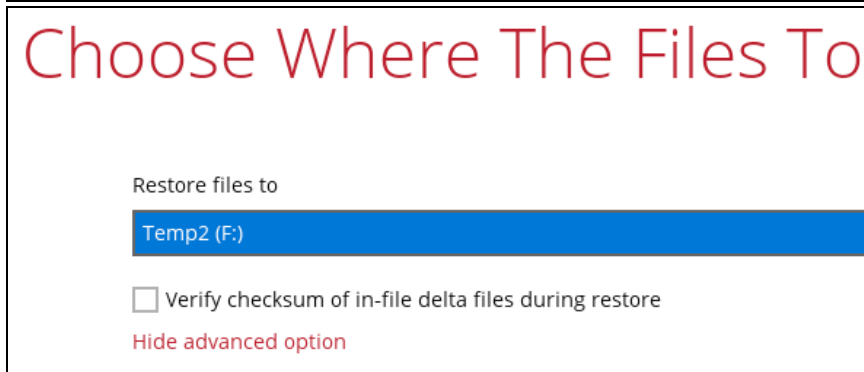


Choose Where The Files To

Restore files to

Temp2 (F:)

Show advanced option



Choose Where The Files To

Restore files to

Temp2 (F:)

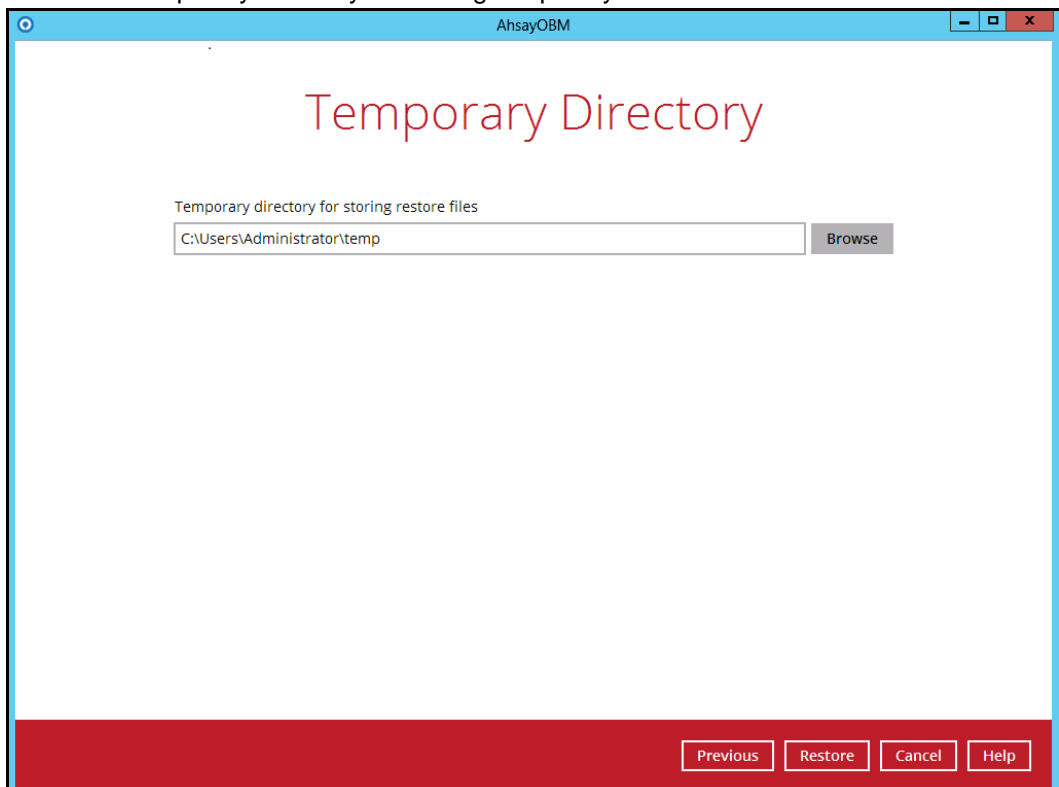
☐ Verify checksum of in-file delta files during restore

Hide advanced option

• **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.

6. Select the temporary directory for storing temporary files.



Temporary Directory

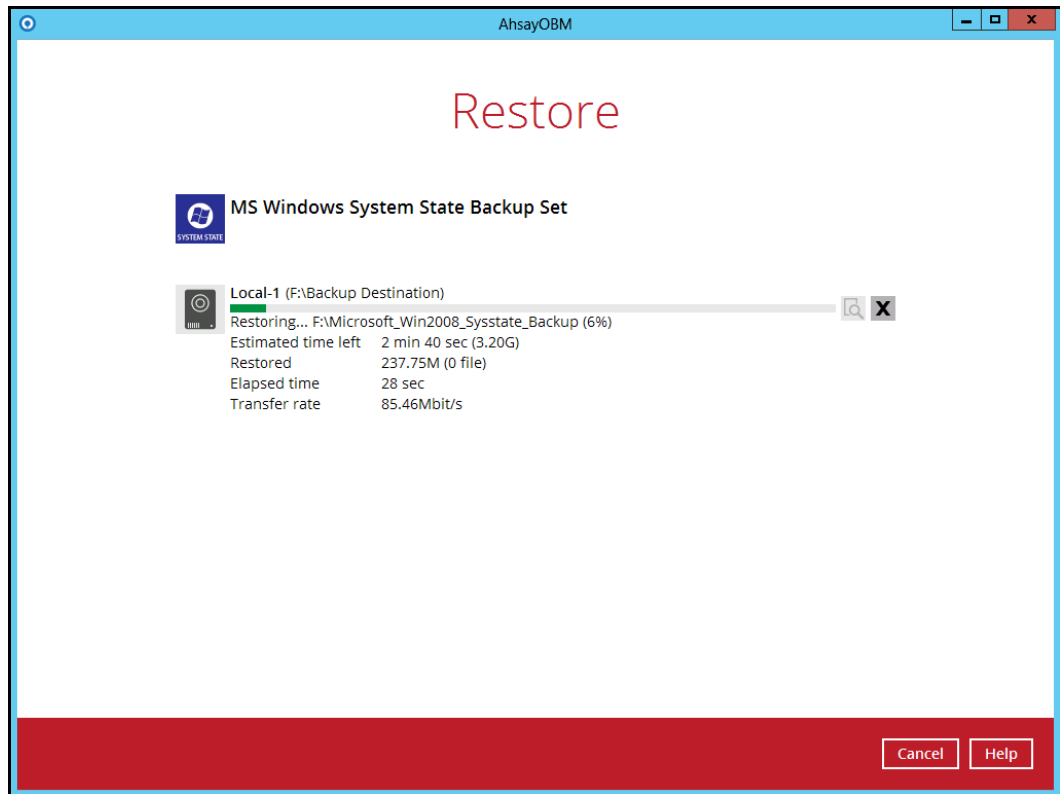
Temporary directory for storing restore files

C:\Users\Administrator\temp

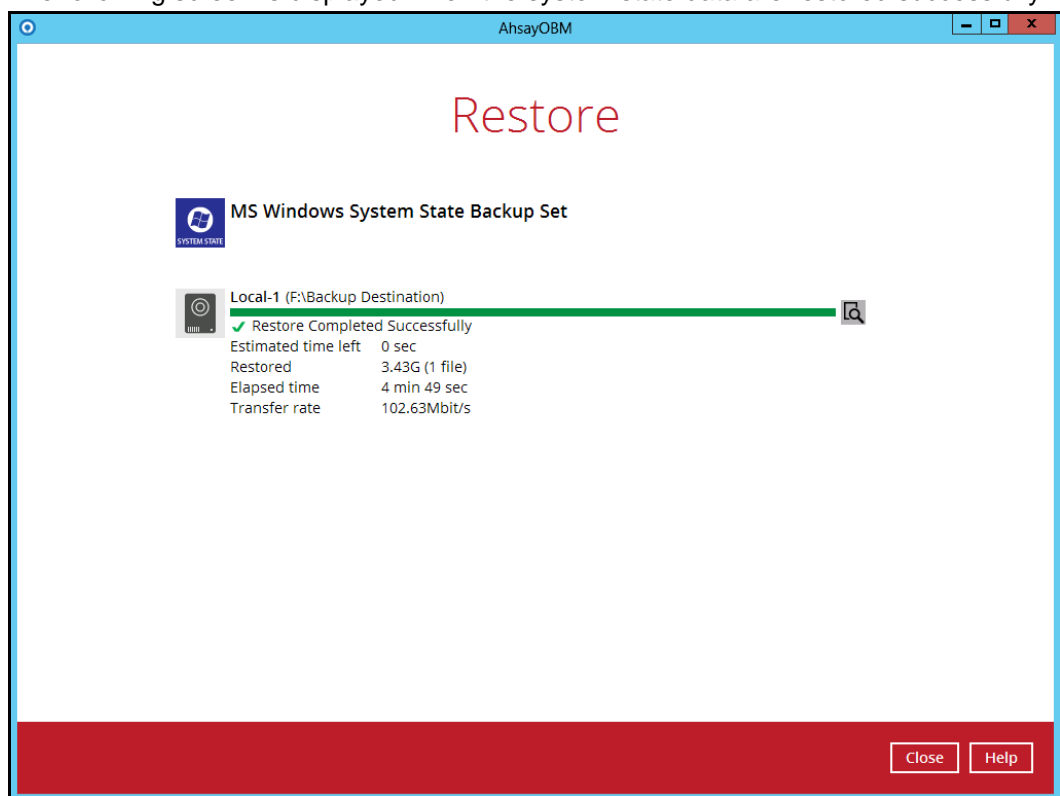
Browse

Previous Restore Cancel Help

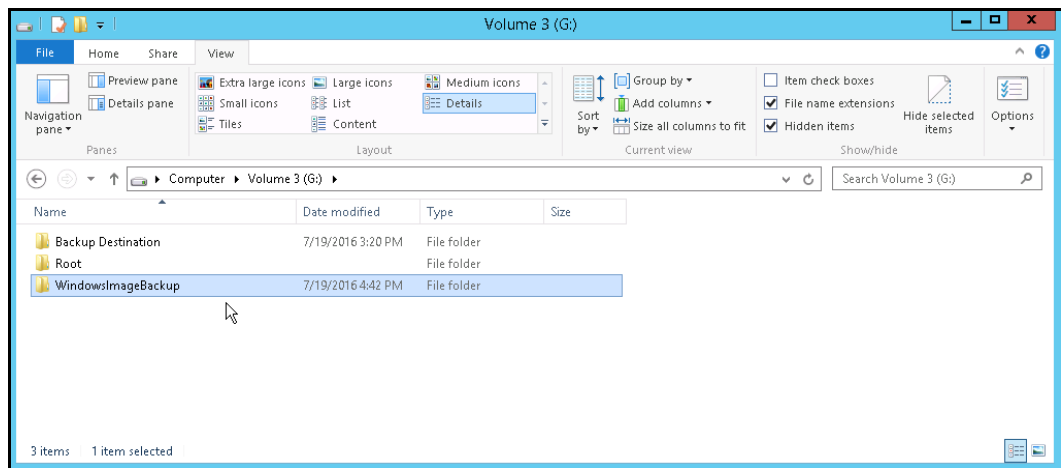
7. Click **Restore** to start the restoration.



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



9. 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

10. 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.

11. Continue to the next section of the guide.

6.4 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>}]
```

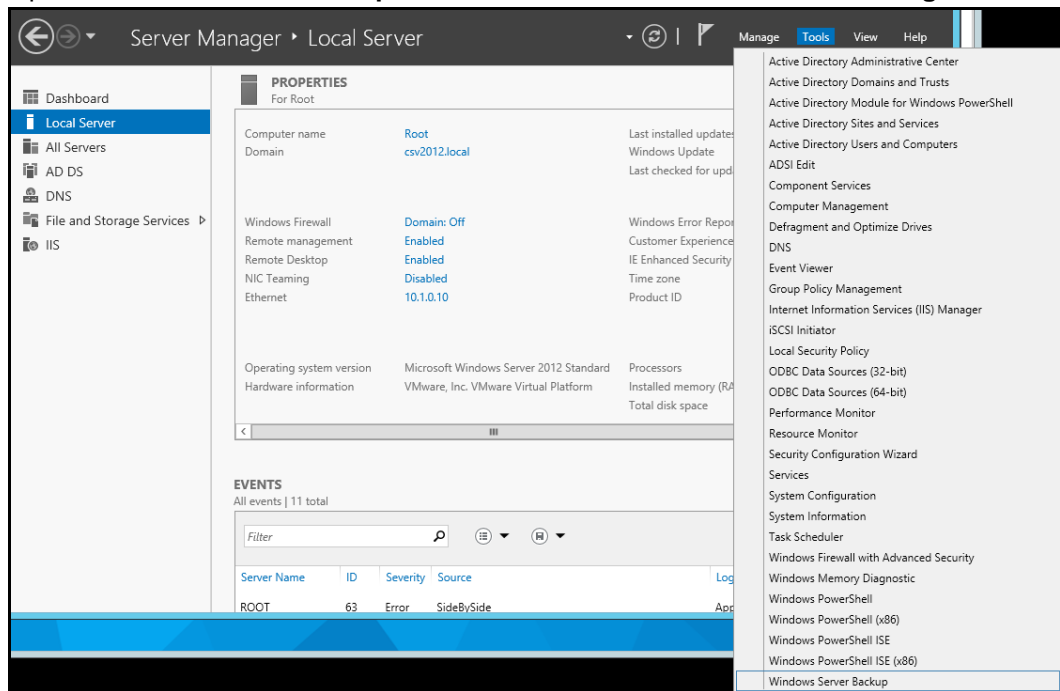
Example (system state restored to G: volume):

```
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}
```

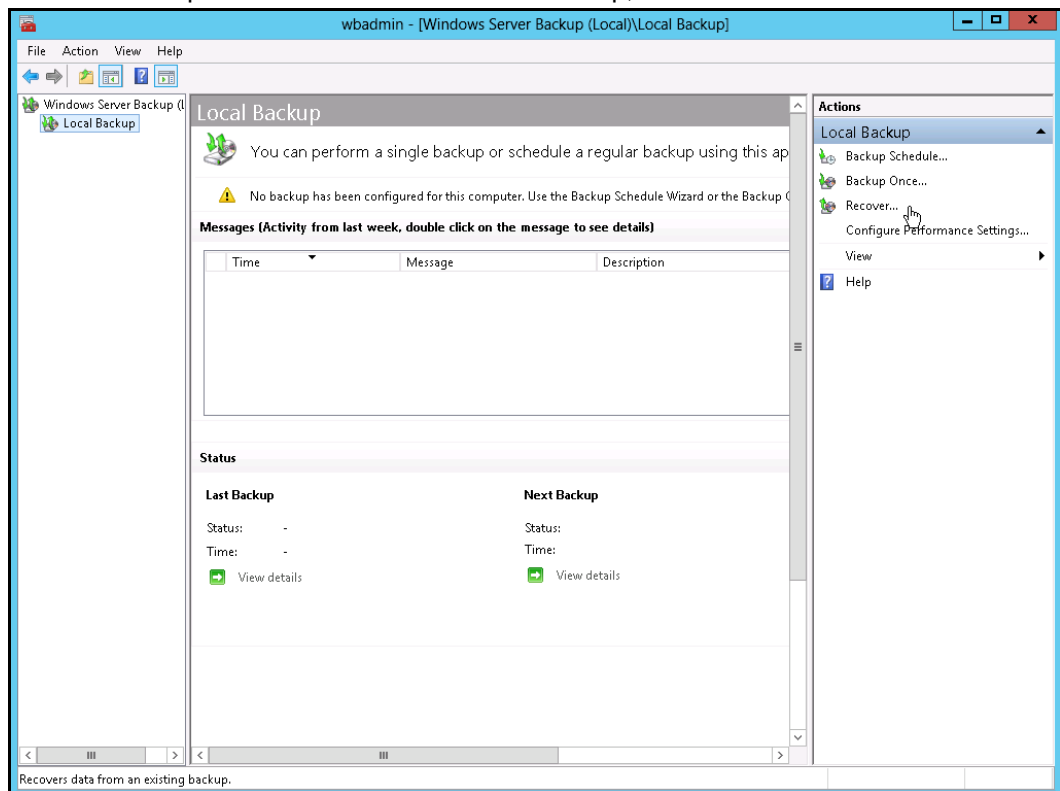
Note: File and folder recovery is not possible from a system state backup performed on Windows Server 2008.

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

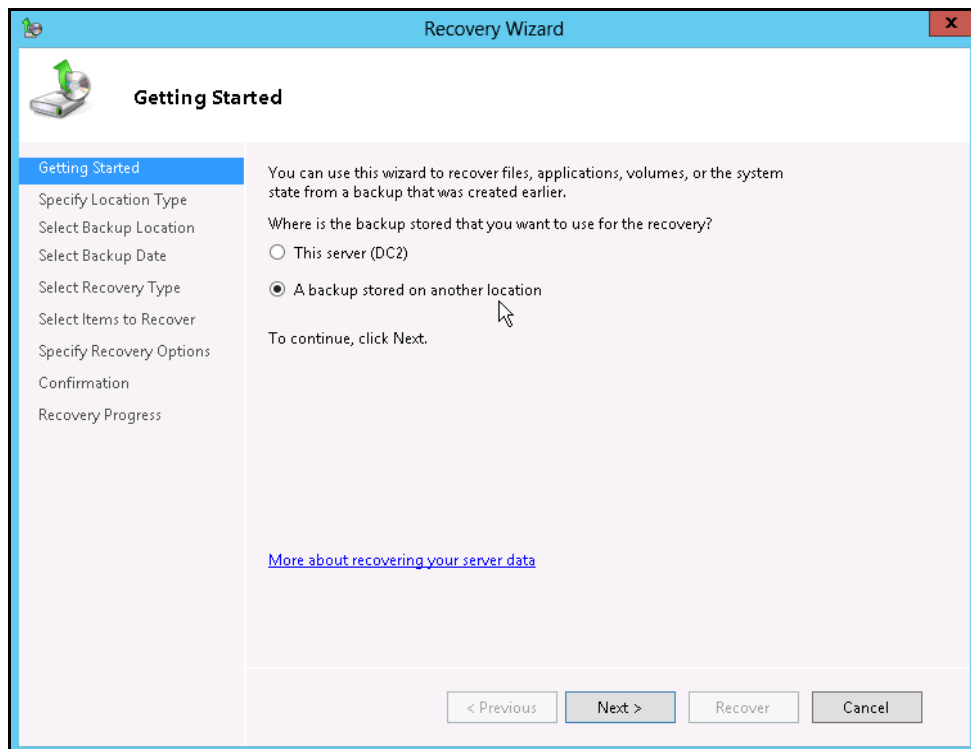
1. Open **Windows Server Backup** from **Administrative Tools** or **Server Manager**.



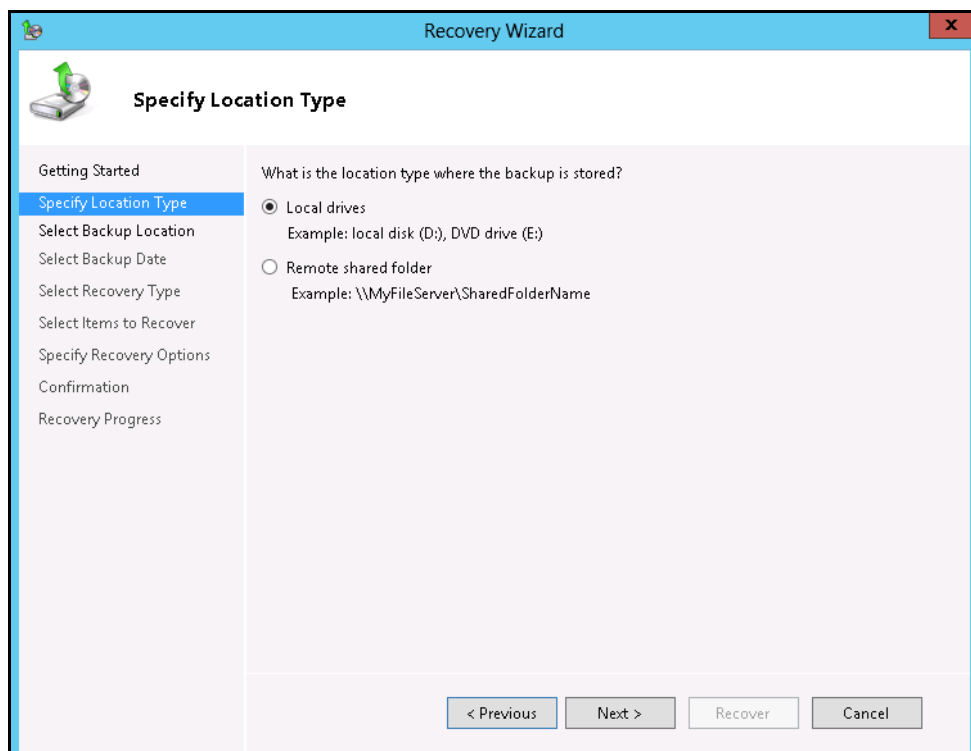
2. In the **Actions** panel under Windows Server Backup, click **Recover...**



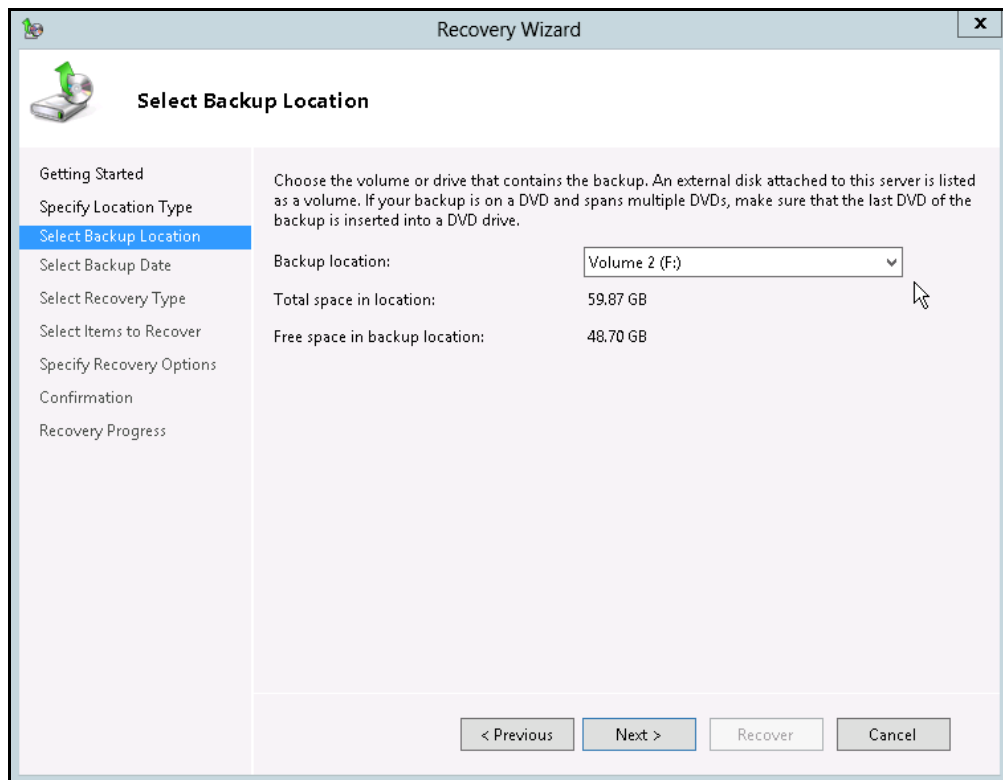
3. On the **Getting Started** page, select **A backup stored on another location**, then click **Next**.



4. On the **Specify Location Type** page, select
- ➊ Click **Local drives**, if the system state data were copied to a local volume on the server.
 - ➋ Click **Remote shared folder**, if the system state data were copied to a network path accessible to this server.

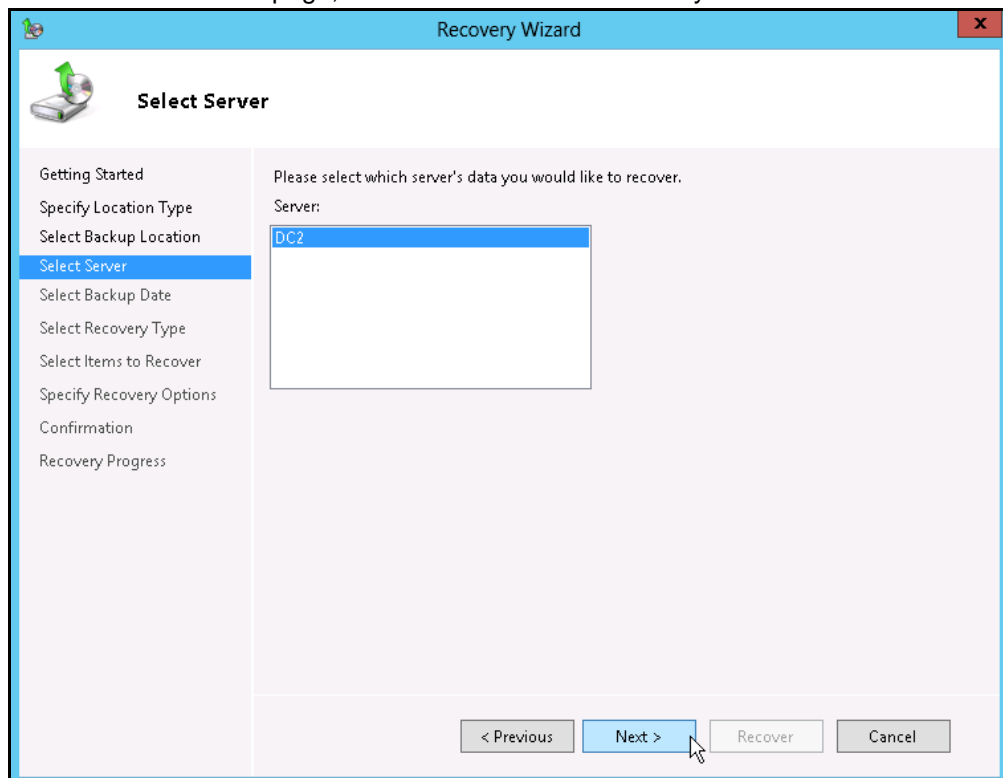


5. On the **Select Backup Location** page, select the volume that contains the system state data.



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.



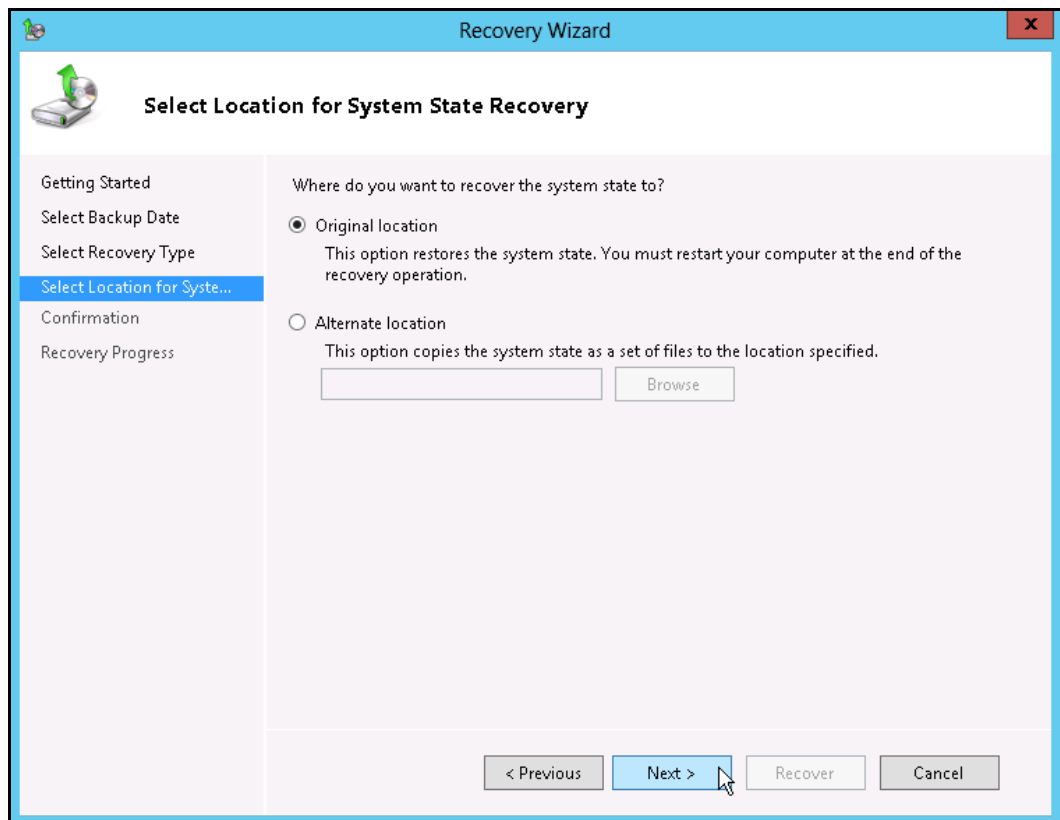
7. On the **Select Backup Date** page, select the point in time of the backup you want to restore from.

The screenshot shows the 'Select Backup Date' page of the Recovery Wizard. The left sidebar lists the steps: Getting Started, Specify Location Type, Select Backup Location, Select Server, **Select Backup Date**, 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'.

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

The screenshot shows the 'Select Recovery Type' page of the Recovery Wizard. The left sidebar lists the steps: Getting Started, Specify Location Type, Select Backup Location, Select Server, Select Backup Date, **Select Recovery Type**, Select Location for System..., Confirmation, and Recovery Progress. The main area asks 'What do you want to recover?' and lists five options: Files and folders, Hyper-V, Volumes, Applications, and **System state** (which is selected with a radio button). Below the options, there is a link 'More about performing recoveries'. At the bottom, there are buttons for '< Previous', 'Next >', 'Recover', and 'Cancel'.

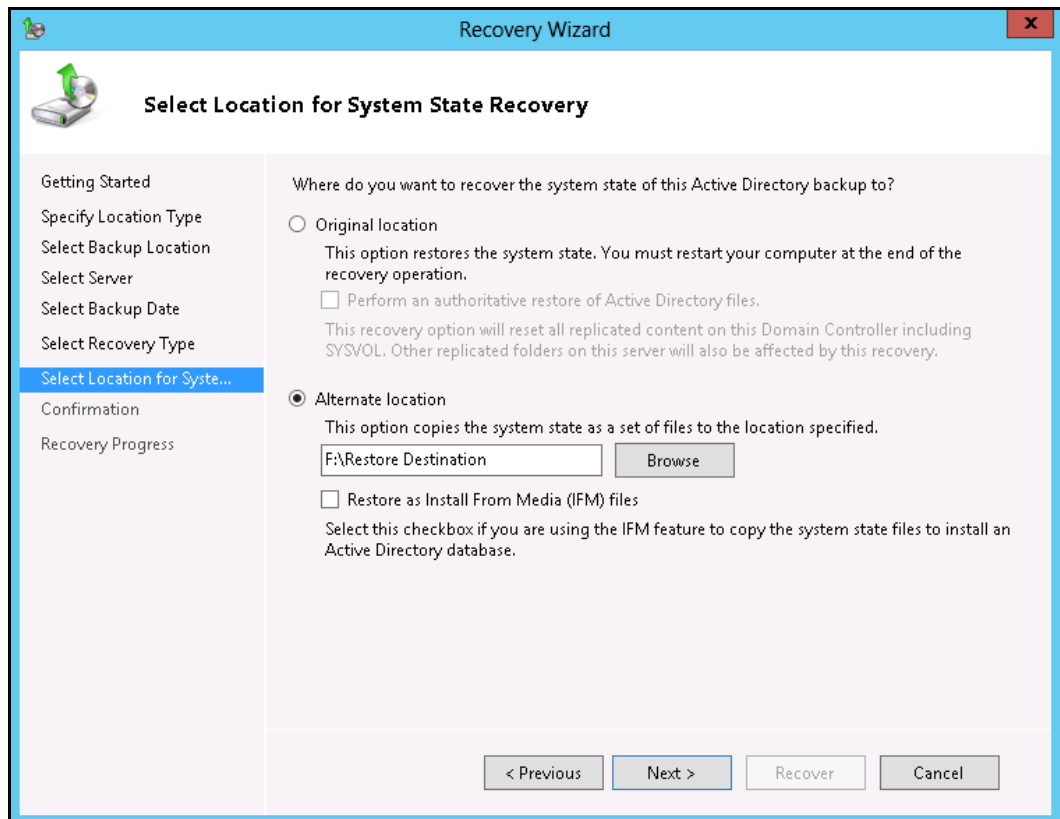
9. On the **Select Location for System State Recovery** page, select
- ❶ **Original location**, to restore the system state to the same physical computer from which the system state backup was created
- Or
- ❷ **Alternate location**, to restore a copy of the system state as a set of files.



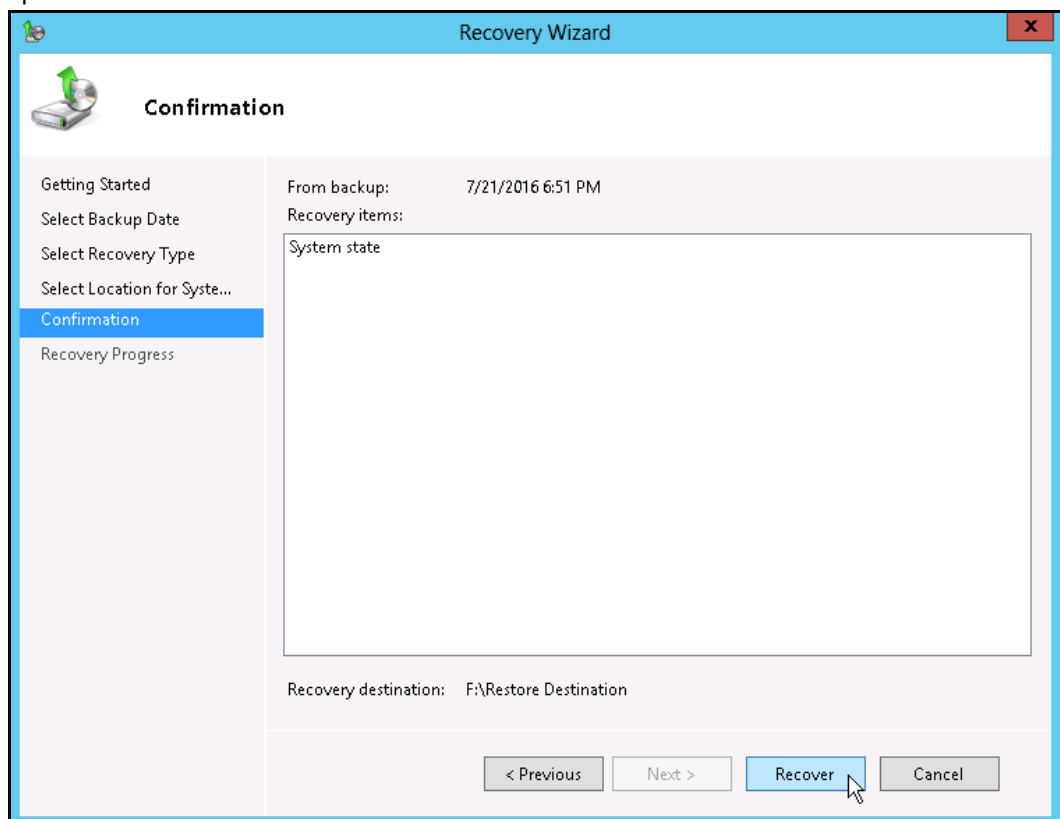
Note: The options displayed are different for system state containing Active Directory Domain Services.

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

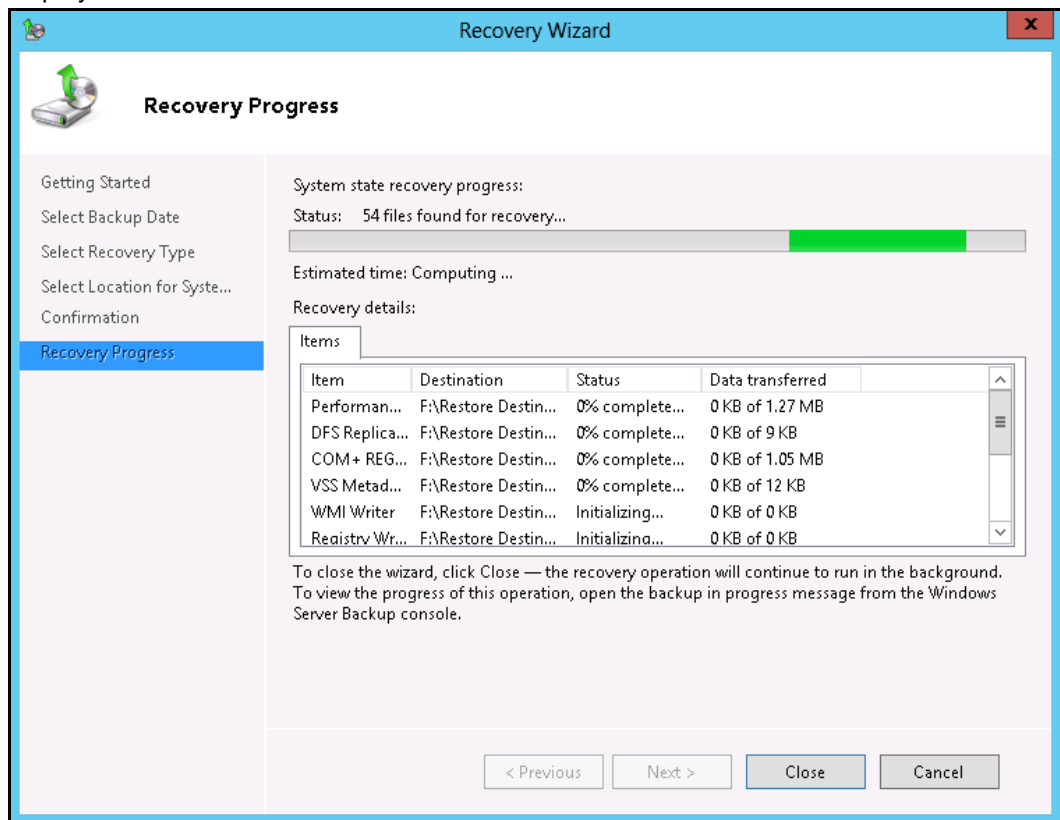
For instructions specific to recovering system state to Active Directory server, see <http://go.microsoft.com/fwlink/?LinkId=143754>



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.

7 Contact Ahsay

7.1 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:

<http://wiki.ahsay.com/doku.php?id=public:home>

7.2 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.

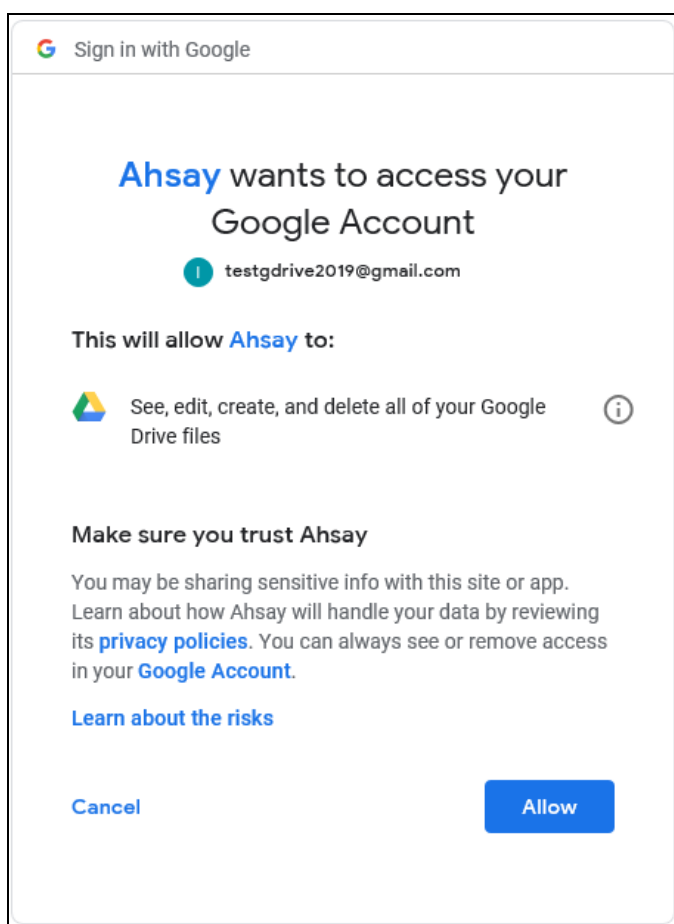
Appendix

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 this link:

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

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