

Ahsay Online Backup Manager v9

Microsoft Exchange Database Backup & Restore Guide

Ahsay Systems Corporation Limited

27 January 2023

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1 Overview

1.1 Introduction

This user guide aims at providing detailed information for backing up and restoring Microsoft Exchange Database 2007/2010/2013/2016/2019 with AhsayOBM.

Microsoft Exchange Server is a mail server and calendar server, that helps small and medium scale organization to achieve better reliability and improved performance. It centralizes emails so that they can be backed up. It can also share calendars between different members of your organization.

AhsayOBM supports Standalone backup and Database Availability Group (DAG) backup option for Microsoft Exchange Server Database backup.

Microsoft Exchange Server Database 2013 backup and restore can be performed by installing AhsayOBM on Windows Server 2012 Standard and Windows Server 2012 R2.

Microsoft Exchange Server Database 2016 backup and restore can be performed by installing AhsayOBM either on Windows Server 2012 Standard, Windows Server 2012 R2, or Windows Server 2016 Standard.

Microsoft Exchange 2019 is supported on Windows 2019. Please refer to section, [Supported operating systems for Exchange 2019](#).

1.2 What is this software?

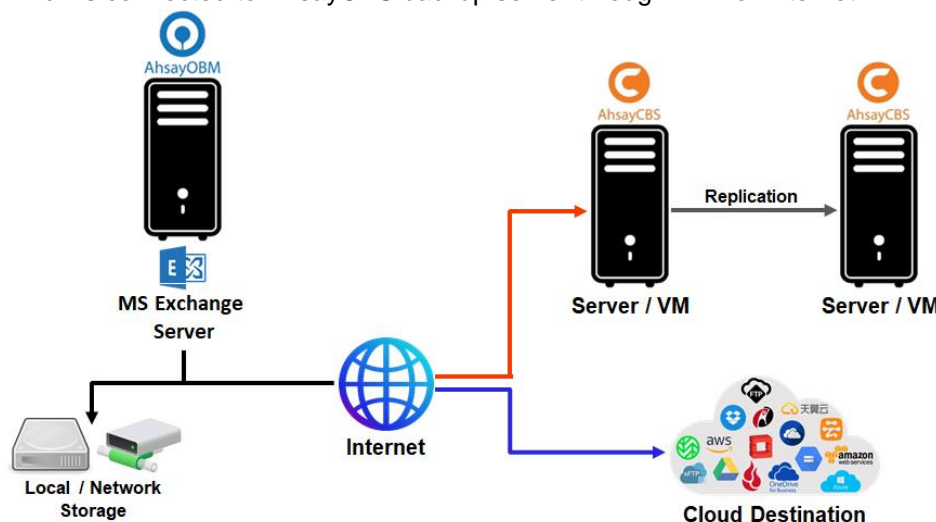
Ahsay brings you specialized client backup software, namely the AhsayOBM, to provide a set of tools to protect your databases on Microsoft Exchange Server 2007/2010/2013/2016/2019.

1.3 System Architecture

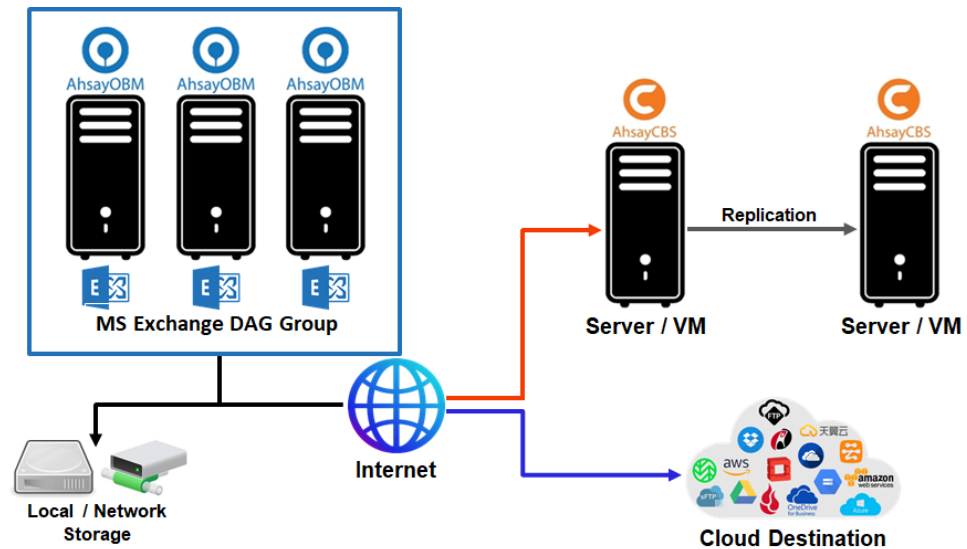
Below is the system architecture diagram illustrating the major elements involved in the backup and restore process among the Microsoft Exchange Server Database 2007/2010/2013/2016/2019, AhsayOBM and AhsayCBS.

AhsayOBM v9.0.0.0 or above installed on Microsoft Exchange Server Database 2007/2010/2013/2016/2019

- **Standalone:** The latest version of AhsayOBM is installed on Microsoft Exchange Server which is connected to AhsayCBS backup server through LAN or Internet.

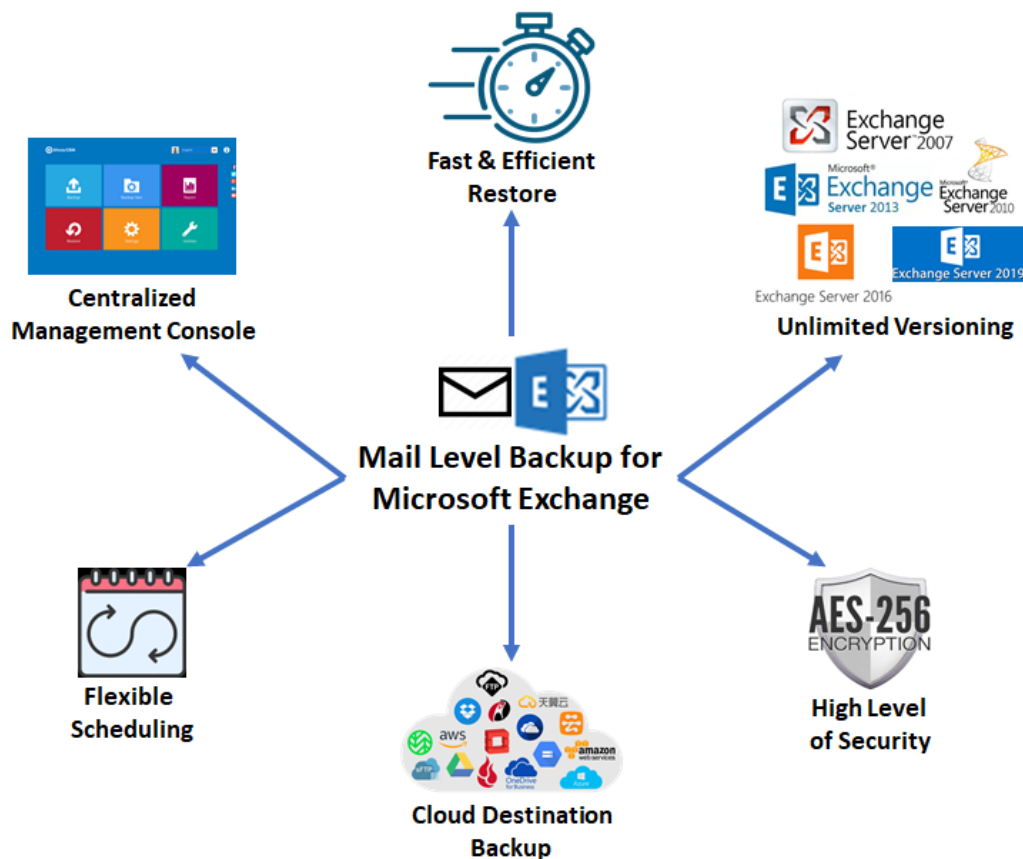


- Database Availability Group (DAG):** The latest version of AhsayOBM is installed on all the DAG members on Microsoft Exchange Server which is connected to AhsayCBS backup server through LAN or internet, and all the DAG members share the same backup set. Exchange DAG support for Microsoft Exchange Server Database 2013/2016/2019.



1.4 Why should I use AhsayOBM to backup Microsoft Exchange Server's full database?

We are committed to bringing you a comprehensive Microsoft Exchange Server Database 2007/2010/2013/2016/2019 backup solution with AhsayOBM. Below are some key areas that can help to make your backup experience a better one.



1. Fast and Efficient Restore

We understand that restore could be a time and resources consuming process, which is why AhsayOBM is designed with advanced technologies to make restore a fast and efficient process by restoring Microsoft Exchange Server full database.

AhsayOBM supports recovery directly to a live production MS Exchange server, so there is no service interruption or downtime incurred, and the user mailboxes do not have to be disabled and can function normally during the recovery procedure.

2. Unlimited Versioning

AhsayOBM provides backup and restore option for different version of exchange server to fulfill your requirement.

3. Flexible Scheduling

You may wish to run backup at a specified time interval of your choice, that's why we also allow you to set your own backup schedules so that you can take full control of the time when to perform backup.

- ⦿ **Block Level Incremental Backup** – This technology breaks down the backup files into multiple blocks and only the changed blocks will be backed up each time.

4. High Level of Security with AES 256-bit Encryption

We understand your Exchange mail objects may contain sensitive information that requires to be protected, that is why your backup data will be encrypted with the highest level of security measure.

5. Centralized Management Console

















Our enriched features on the centralized web console offers you a one-stop location for monitoring and managing your backup and restore. Below is an overview of what you can do with it. For more details regarding the setup and operations of the centralized management console, refer to the [AhsayCBS v9 User's Guide](#) for details.

- ⦿ Create / update / delete backup set
- ⦿ Configure user settings
- ⦿ Configure backup settings
- ⦿ View and download backup and restore reports
- ⦿ Monitor backup and restore live activities
- ⦿ Monitor storage statistic

6. Cloud Destination Backup

To offer you with the highest flexibility of backup destination, you can now back up mail objects to a wide range of cloud storage destinations. Utilizing cloud destination backup gives you an extra layer of protection in the event of a local drive corruption, where you will still be able to retrieve data from the cloud destination.

Below is a list of supported cloud destinations.

	Aliyun*		Microsoft Azure
	CTYun*		Microsoft OneDrive
	Amazon S3		Microsoft OneDrive for Business
	AWS S3 Compatible Cloud Storage		Rackspace
	Wasabi		OpenStack
	Backblaze		Dropbox
	Google Cloud Storage		FTP
	Google Drive		SFTP

1.5 About this document

1.5.1 Document Main Part

The document can be divided into two (2) main parts.

Part 1: Preparation for Exchange Database 2007/2010/2013/2016/2019 Backup & Restore

Requirements

Requirements on AhsayOBM, Exchange Database 2007 / 2010 / 2013 / 2016 / 2019 and Windows Operating System

Supported Backup Source & Limitation

Supported backup source of Exchange Server 2007 / 2010 / 2013 / 2016 / 2019 and limitation

Best Practice and Recommendation

Items recommended to pay attention to before backup and restore

Part 2: Perform Database Backup and Restore for Microsoft Exchange 2007 / 2010 / 2013 / 2016 / 2019 on Exchange Server

Standalone Backup Option

Create Microsoft Exchange Server backup set, run database Level backup job and restore database backup

Database Availability Group (DAG) Backup Option

Create Microsoft Exchange Server backup set, run database backup job and restore database backup

1.5.2 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 make Database backup of Exchange Server 2007/ 2010/ 2013 / 2016 / 2019 on AhsayOBM, as well as to carry out an end-to-end backup and restore process.

1.5.3 Who should read this document?

This documentation is intended for backup administrators and IT professionals who are responsible for the Exchange Server 2007/ 2010/ 2013 / 2016 / 2019 Mail Level backup and restore.

2 Preparing for Backup and Restore

2.1 Requirement

You are strongly recommended to configure or check all the settings below to confirm all the requirements are met before you proceed with the Exchange Database backup and restoration.

2.1.1 Software Requirement

Refer to the following article for the list of compatible operating systems and application versions.

[FAQ: Ahsay Software Compatibility List \(SCL\) for version 9.1 or above](#)

2.1.2 Antivirus Exclusion Requirement

To optimize performance of AhsayOBM on Windows, and to avoid conflict with your antivirus software, refer to the following article 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](#)

NOTE

The bJW.exe process is automatically added to Windows Defender exclusion list for Windows 2016 and 2019, during installation / upgrade via installer or upgrade via AUA.

2.1.3 AhsayOBM Installation

AhsayOBM v9.0.0.0 or above must be installed directly on the MS Exchange Server 2007/2010/2013/2016/2019 hosting the database.

AhsayOBM v9.0.0.0 or above must be installed directly on the individual nodes for MS Exchange Server 2013/2016/2019 DAG.

2.1.4 Microsoft Exchange Server Add-On Module

Make sure the Microsoft Exchange Server feature has been enabled as an add-on module in your AhsayOBM user account. Please contact your backup service provider for more details.

The screenshot shows the 'User Profile' settings for a user, with the 'Backup Client Settings' tab selected. The 'Backup Client' section has 'AhsayOBM User' selected. The 'Add-on Modules' section lists various backup modules, with 'Microsoft Exchange Server' checked and highlighted by a red box. Other modules include MySQL Database Server, Lotus Domino, Windows System Backup, VMware, Microsoft Exchange Mailbox, NAS - QNAP, Mobile (max. 10), Volume Shadow Copy, OpenDirect / Granular Restore, MariaDB Database Server, Microsoft SQL Server, Oracle Database Server, Lotus Notes, Windows System State Backup, Hyper-V, ShadowProtect System Backup, NAS - Synology, Continuous Data Protection, In-File DeltaOnly apply to v8 or before, Office 365 Backup, and Deduplication.

2.1.5 Backup Quota Requirement

Make sure that your AhsayOBM user account has sufficient storage quota assigned to accommodate the storage of additional Microsoft Exchange Server backup set and retention policy.

Please contact your backup service provider for more details.

2.1.6 Continuous Backup Module

The Continuous backup add-on module is required if you would like to enable the continuous backup feature.

2.1.7 Java Heap Size

The default Java heap size setting on AhsayOBM is 2048MB. For Exchange Server 2007/2010/2013/2016/2019 Database backup, it is highly recommended to increase the Java heap size setting to be at least 4096MB to improve backup and restore performance. The actual heap size is dependent on amount of free memory available on your Exchange 2007/2010/2013/2016/2019 server.

2.1.8 Temporary Directory

Temporary Directory folder is used by AhsayOBM for storing backup set index files and any incremental or differential delta files generated during a backup job. To ensure optimal backup/restoration performance, it is highly recommended that the temporary directory folder is located on a local drive with sufficient free disk space. It should be on another location other than Drive C: (e.g. Drive E:).

The Exchange Server 2007/2010/2013/2016/2019 database files are no longer stored in the temporary directory during backup. However, the VSS-based Exchange backup will still require certain amount of disk space to operate. Microsoft suggested that certain shadow copy mechanism may require free space around 100% of the original database. Refer to the following URL for more information.

[Exchange Online and Exchange Development](#)

2.1.9 System State

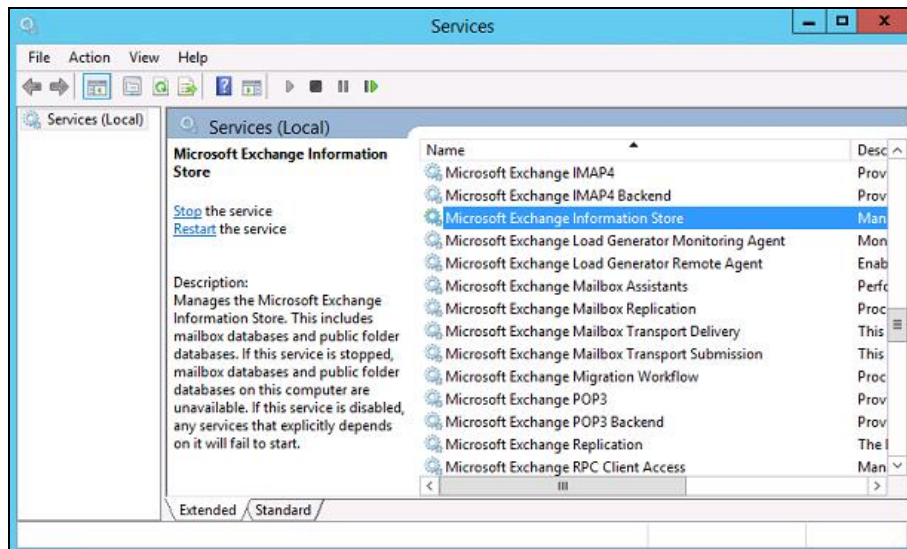
For Exchange server with Active Directory installed, as part of the restore, the system state of the server must also be restored.

Running regular system state backups of the Exchange is therefore crucial, as it ensures that the system state data is synchronized with the Exchange database data.

2.1.10 MS Exchange Information Store Service

Ensure that all MS Exchange related services have been started, particularly the **MS Exchange Information Store Service**.

To verify this setting, launch **Services** in Windows by clicking **Start** then typing "Services" in the search box. All Exchange related services should be started by default, in case if it is not, turn it on by right clicking the item then selecting **Start**.



Also make sure that circular logging is disabled for all Information Store(s) or Public Folder selected for backup.

I. Information Store – Exchange 2007

The Information Store of Exchange 2007 contains both mailbox store and public folder store data.

The server stores data in two files, namely the .edb and the .stm file, that form an Exchange store repository.

The default mailbox store on an Exchange 2007 server uses filename Priv1.edb and Priv1.stm; the default public folder store uses the filename Pub1.edb and Pub1.stm.

The .edb file contains tables that hold metadata for all e-mail messages and other items in the Exchange store, while .stm stores native Internet content.

II. Information Store – Exchange 2010/2013/2016/2019

The Information Store of Exchange 2010/2013 contains data, data definitions, indexes, checksums, flags, and other information that comprise mailboxes in Exchange.

Mailbox databases hold data that is private to individual user and contain mailbox folders generated when a mailbox is created for that user. A mailbox database is stored as an Exchange database .edb file.

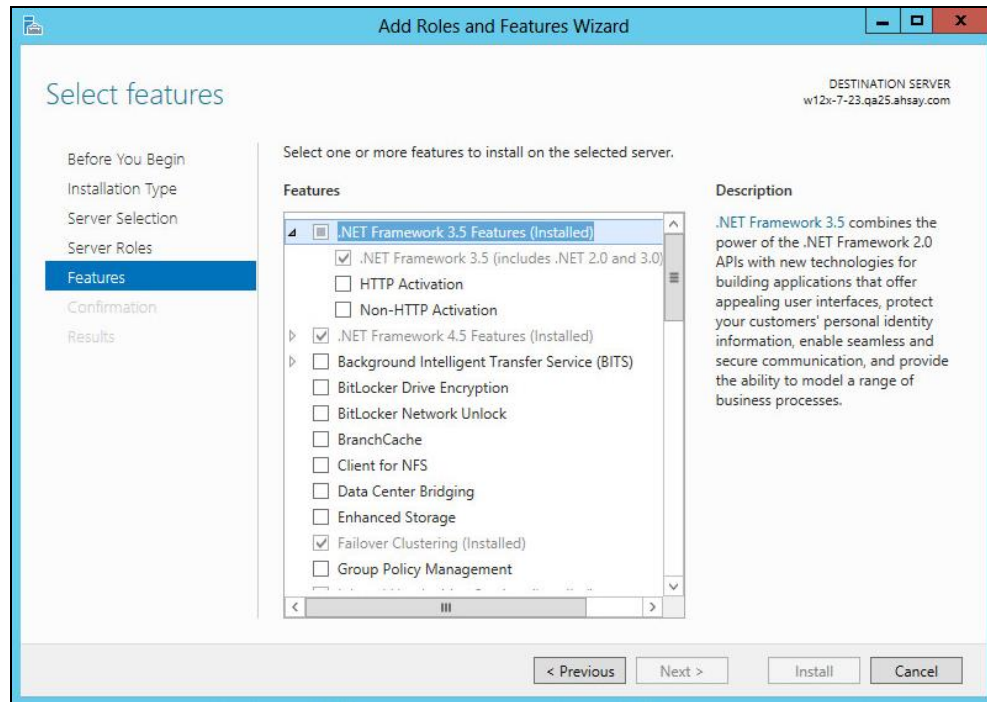
Public folder databases contain the data, data definitions, indexes, checksums, flags, and other information that comprise any public folders in your Exchange organization.

In Exchange Server 2010/2013, public folder is an optional feature.

2.1.11 .Net Framework

Net Framework 3.5 Features for Exchange Server 2013/2016/2019

Ensure that **.Net Framework 3.5 Features** is installed. This feature can be enabled by accessing Server Manager > Dashboard > Add Roles and Features Wizard > Feature Page.



2.1.12 Microsoft Exchange Writer

Ensure that the **Microsoft Exchange Writer** is installed and running on the Exchange Server, and the writer state is **Stable**. This can be verified by running the **vssadmin list writers** command.

Example:

```
C:\Users\Administrator>vssadmin list writers
vssadmin 1.1 - Volume Shadow Copy Service administrative
command-line tool
(C) Copyright 2001-2013 Microsoft Corp.

Writer name: 'System Writer'
  Writer Id: {e8132975-6f93-4464-a53e-1050253ae220}
  Writer Instance Id: {a2f2507d-b348-493a-9685-da3f20959e9d}
  State: [1] Stable
  Last error: No error

Writer name: 'COM+ REGDB Writer'
  Writer Id: {542da469-d3e1-473c-9f4f-7847f01fc64f}
  Writer Instance Id: {60b9b261-ab81-4c4d-be0f-5d432a4dea64}
  State: [1] Stable
  Last error: No error

Writer name: 'ASR Writer'
  Writer Id: {be00cbe-11fe-4426-9c58-531aa6355fc4}
  Writer Instance Id: {1aab9829-3b91-46bc-a7f1-ae9e1123c2fe}
  State: [1] Stable
```

Last error: No error

Writer name: 'Microsoft Exchange Writer'

Writer Id: {76felac4-15f7-4bcd-987e-8e1acb462fb7}

Writer Instance Id: {2e8409fa-1dd8-483c-ba95-5c9277be0509}

State: [1] Stable

Last error: No error

Writer name: 'IIS Metabase Writer'

Writer Id: {59b1f0cf-90ef-465f-9609-6ca8b2938366}

Writer Instance Id: {3303e28e-afae-4c99-8f1a-2ce23e6455a7}

State: [1] Stable

Last error: No error

Writer name: 'FRS Writer'

Writer Id: {d76f5a28-3092-4589-ba48-2958fb88ce29}

Writer Instance Id: {d35e3901-f9b9-4fa6-86af-36b8a4872933}

State: [1] Stable

Last error: No error

Writer name: 'Shadow Copy Optimization Writer'

Writer Id: {4dc3bdd4-ab48-4d07-adb0-3bee2926fd7f}

Writer Instance Id: {8e19e851-95ca-4c97-813d-4bc51898c7ac}

State: [1] Stable

Last error: No error

Writer name: 'WMI Writer'

Writer Id: {a6ad56c2-b509-4e6c-bb19-49d8f43532f0}

Writer Instance Id: {0619e684-14f3-495b-be59-e35fc0ec212b}

State: [1] Stable

Last error: No error

Writer name: 'BITS Writer'

Writer Id: {4969d978-be47-48b0-b100-f328f07ac1e0}

Writer Instance Id: {94991e66-e5c7-47a4-a0c9-3771e4761262}

State: [1] Stable

Last error: No error

Writer name: 'Registry Writer'

Writer Id: {afbab4a2-367d-4d15-a586-71dbb18f8485}

Writer Instance Id: {73c66436-c2e8-4d46-b88a-d866617eb95d}

State: [1] Stable

Last error: No error

Writer name: 'NTDS'

Writer Id: {b2014c9e-8711-4c5c-a5a9-3cf384484757}

Writer Instance Id: {14cedc8b-4c51-4a12-85c4-8cf8aa3545b6}

State: [1] Stable

Last error: No error

Writer name: 'IIS Config Writer'

Writer Id: {2a40fd15-dfca-4aa8-a654-1f8c654603f6}

Writer Instance Id: {5939e29f-bf43-4a39-a6b7-e3a838e75e3e}

State: [1] Stable

Last error: No error

2.2 Best Practices and Recommendations

1. For Exchange server with Active Directory installed, a Windows System State backup must be performed regularly with the MS Exchange Server backup.
2. System State backup must be performed regularly for the domain controller of the Exchange DAG setup.
3. Scheduled backup is required if you choose to back up with DAG option, as AhsayOBM on all DAG members will base on the scheduled backup time to start backups on individual DAG member at the same time.

A DAG backup cycle is considered complete only when scheduled backup on all DAG members have been carried out. An email report will be generated when a complete DAG backup cycle has taken place.

Please keep in mind that manual backup will only be considered as individual mail-level backup, and therefore will not be counted as part of the DAG backup cycle.

4. The MS Exchange Server Backup module will protect the Exchange server at the database level. If a full system backup (for bare-metal recovery) is required, please consider setting up a MS System Backup for each DAG member server.
5. To back up mailbox database within an Exchange DAG, AhsayOBM is required to be installed on each DAG member with mailbox role (e.g. servers that are hosting the mailbox databases). It is not necessary to install AhsayOBM on Exchange server with CAS (Client Access Server) role only.
6. 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 and must be on another location other than Drive C: (e.g. Drive E:).
7. The periodic backup schedule should be reviewed regularly to ensure that the interval is sufficient to handle the data volume on the machine. Over time, data usage pattern may change on a production server, i.e. the number of new files created, the number of files which are updated/deleted, and new users may be added etc.

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

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

3 Overview of MS Exchange Database Backup Process

The following steps are performed during an Exchange Database backup job. For more information on the detailed process for Steps 3, 5, 13, and 15, please refer to [Chapter 12](#) of the AhsayOBM v9 Quick Start Guide for Windows.

- Periodic Data Integrity Check (PDIC) Process (**Step 3**)
- Backup Set Index Handling Process
 - Start Backup Job (**Step 5**)
 - Completed Backup Job (**Step 15**)
- Data Validation Check (**Step 13**)



4 Standalone Backup and Restore option for Microsoft Exchange Server 2007/2010/2013/2016/2019

4.1 Creating a MS Exchange Server Backup Set for Exchange Server 2007/2010/2013/2016/2019

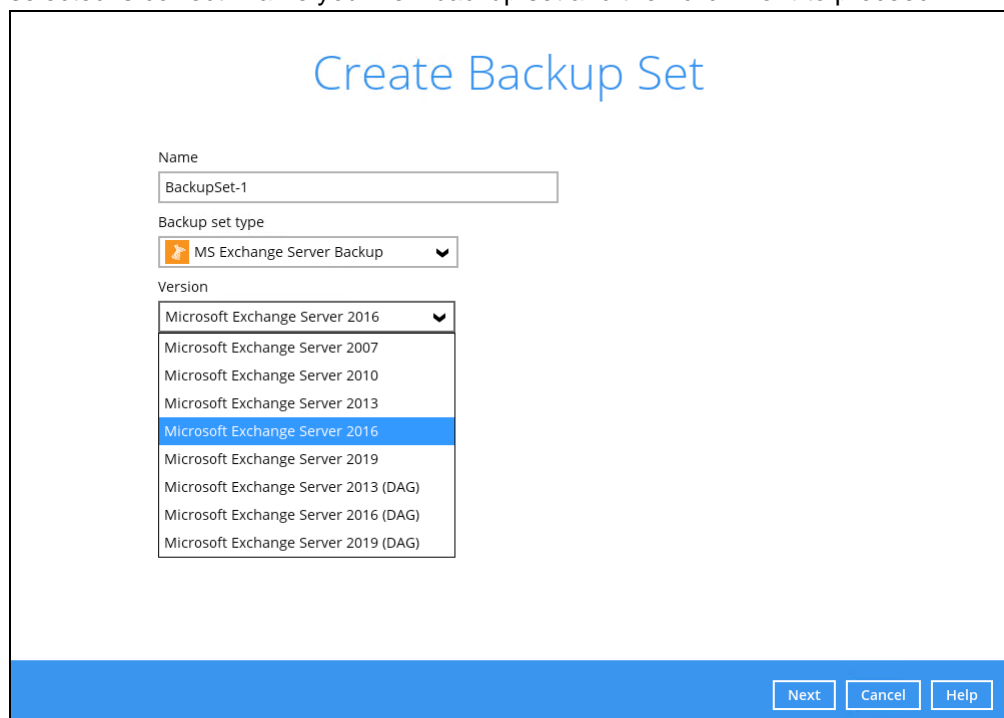
1. Log in to AhsayOBM.

For instructions on how to do this please refer to [Chapter 8](#) of the AhsayOBM v9 Quick Start Guide for Windows.

2. Click the **Backup Sets** icon on the main interface of AhsayOBM.



3. Create a new backup set by clicking the “+” icon next to **Add new backup set**.
4. Select the Backup set type as **MS Exchange Server Backup**. The system will automatically detect and select the Exchange Server version, make sure the version selected is correct. Name your new backup set and then click **Next** to proceed.



Create Backup Set

Name
BackupSet-1

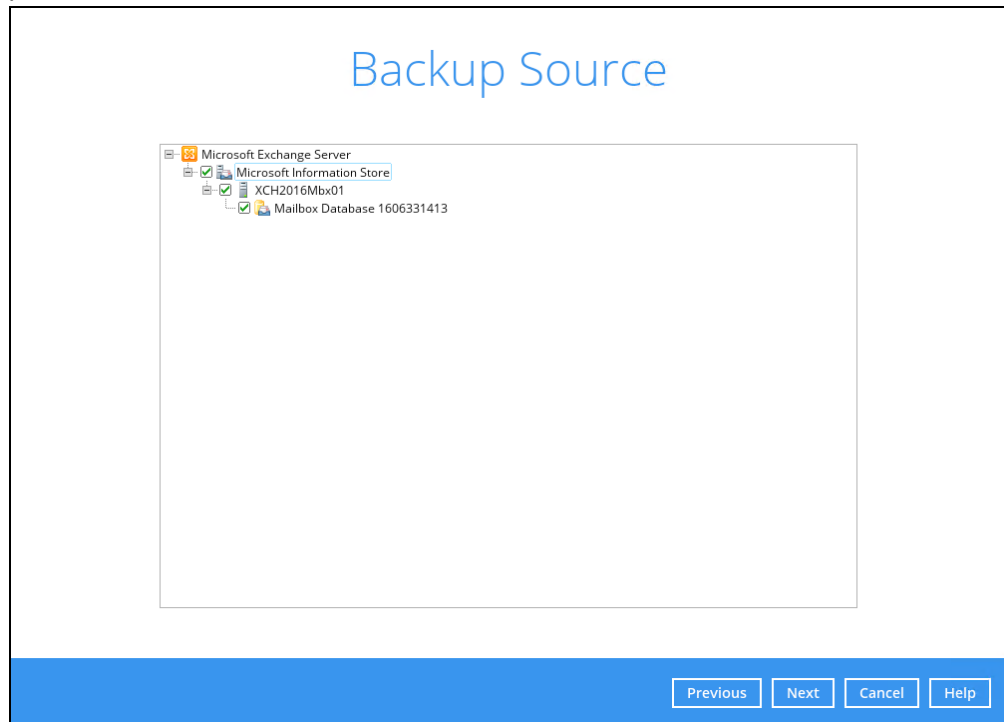
Backup set type
MS Exchange Server Backup

Version
Microsoft Exchange Server 2016

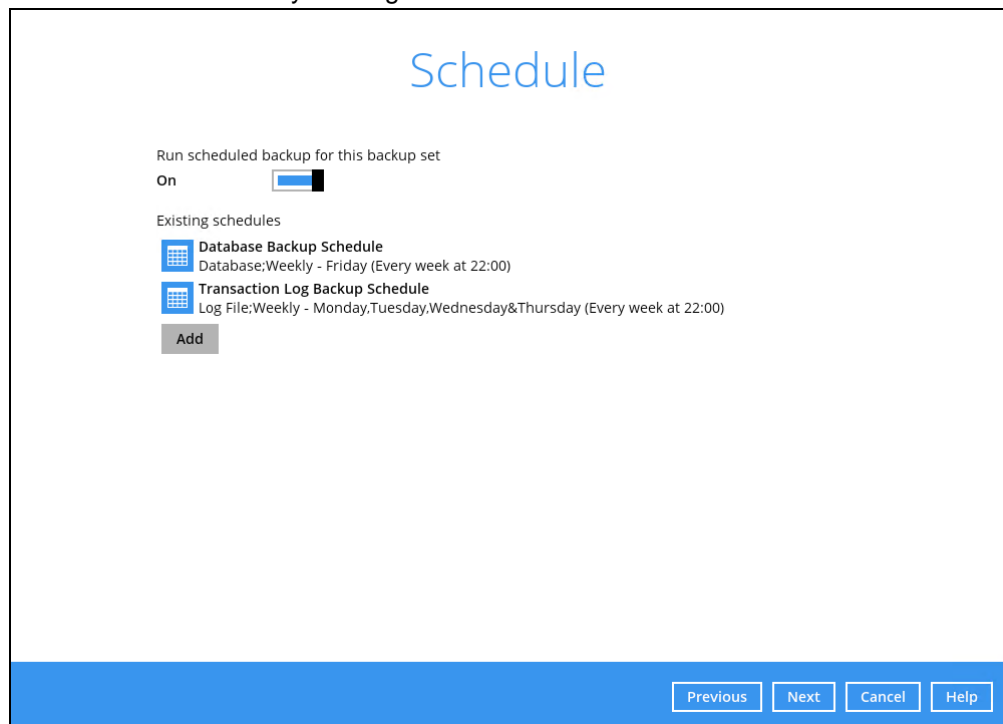
Microsoft Exchange Server 2007
Microsoft Exchange Server 2010
Microsoft Exchange Server 2013
Microsoft Exchange Server 2016
Microsoft Exchange Server 2019
Microsoft Exchange Server 2013 (DAG)
Microsoft Exchange Server 2016 (DAG)
Microsoft Exchange Server 2019 (DAG)

Next Cancel Help

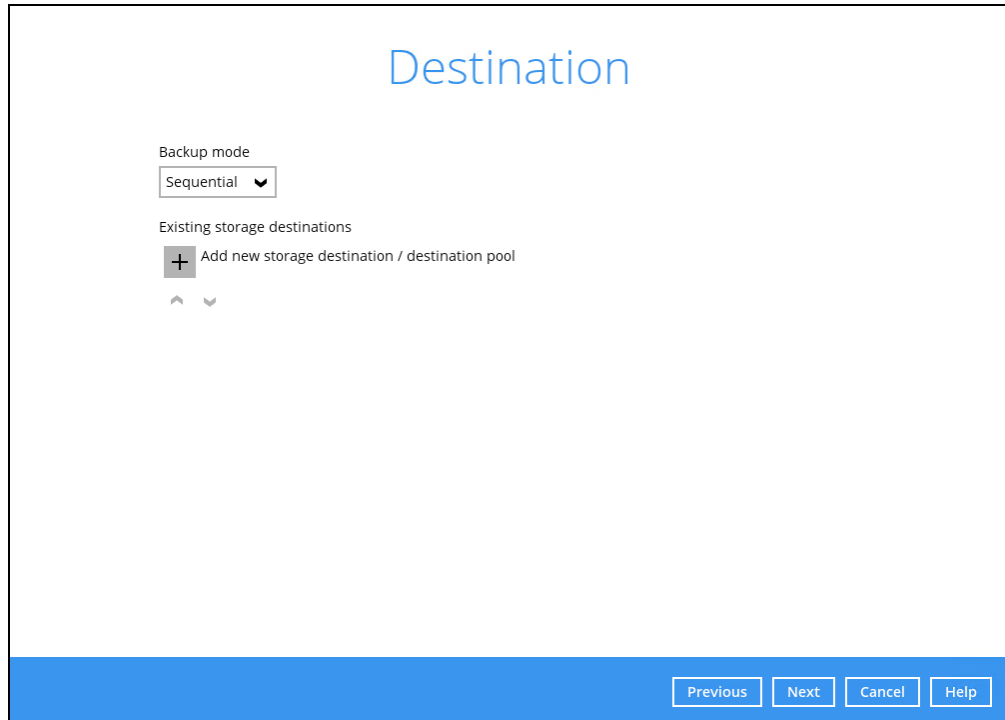
5. In the **Backup Source** window, select the Information Store for backup. Click **Next** to proceed.



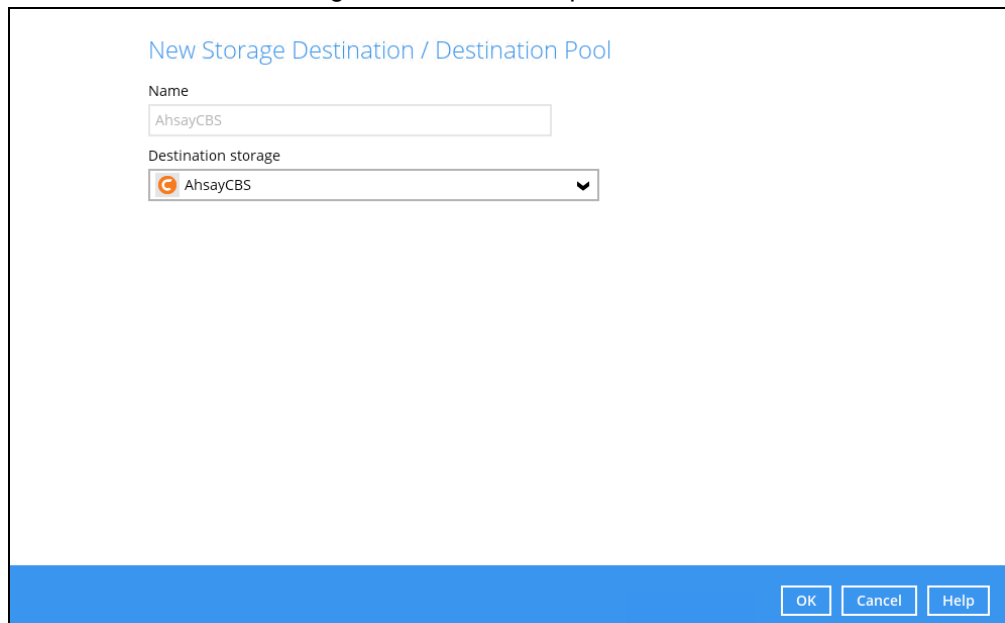
6. In the **Schedule** window, you can configure a backup schedule for backup job to run automatically at your specified time interval. By default, the **Run scheduled backup for this backup set** option is enabled. You can modify the existing schedules, or you can create a new one by clicking the "Add" button.



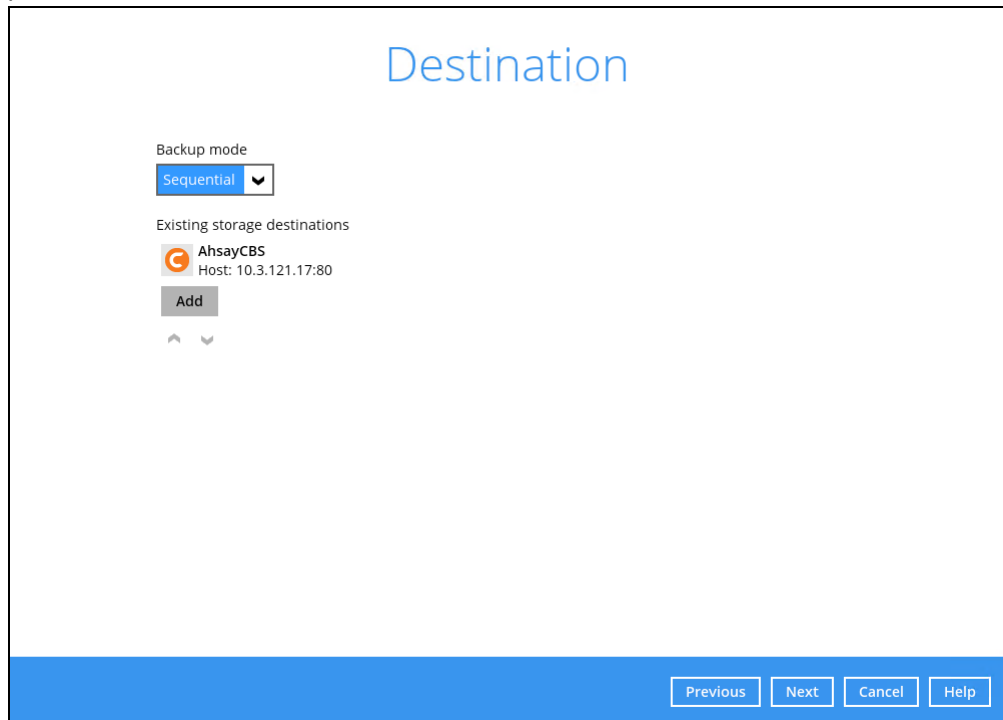
7. In the **Destination** window, select a backup destination where the backup data will be stored. Click the “+” icon next to **Add new storage destination / destination pool**.




8. Select the destination storage, then click **OK** to proceed.



9. When you are done with the settings, click **Next** on the **Destination** window to proceed.



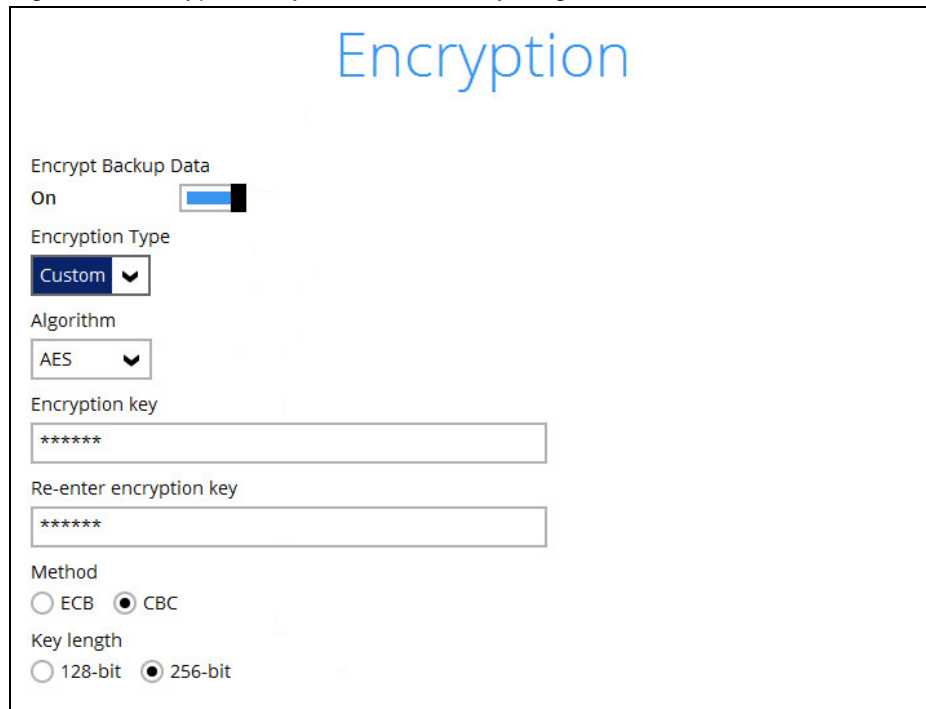
10. In the Encryption window, the default **Encrypt Backup Data** option is enabled with an encryption key preset by the system which provides the most secure protection.



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.



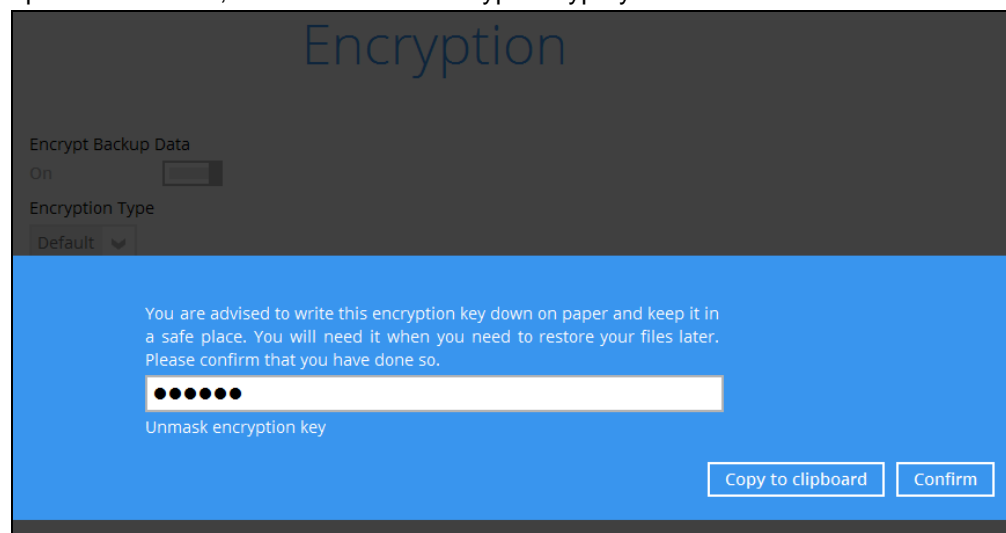
The screenshot shows the 'Encryption' settings window. At the top, the title 'Encryption' is displayed in blue. Below it, the 'Encrypt Backup Data' toggle is set to 'On'. The 'Encryption Type' dropdown is set to 'Custom'. The 'Algorithm' dropdown is set to 'AES'. The 'Encryption key' field contains seven asterisks. The 'Re-enter encryption key' field also contains seven asterisks. 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 article. [FAQ: Best practices for managing encryption key.](#)

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

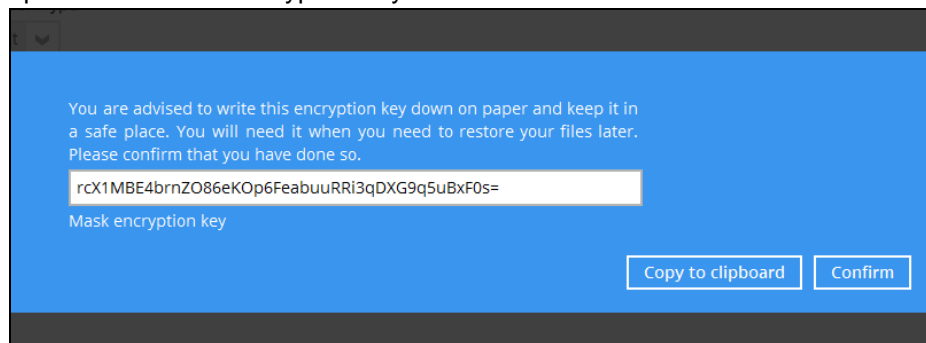
11. If you have enabled the Encryption Key feature in the previous step, the following pop-up window shows, no matter which encryption type you have selected.



The screenshot shows a pop-up window titled 'Encryption'. It has a dark grey header with the title in blue. Below the header, the 'Encrypt Backup Data' toggle is set to 'On'. The 'Encryption Type' dropdown is set to 'Default'. A blue banner contains the following 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 the banner, there is a text input field containing seven asterisks. Below the input field, the text 'Unmask encryption key' is displayed. 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.



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.

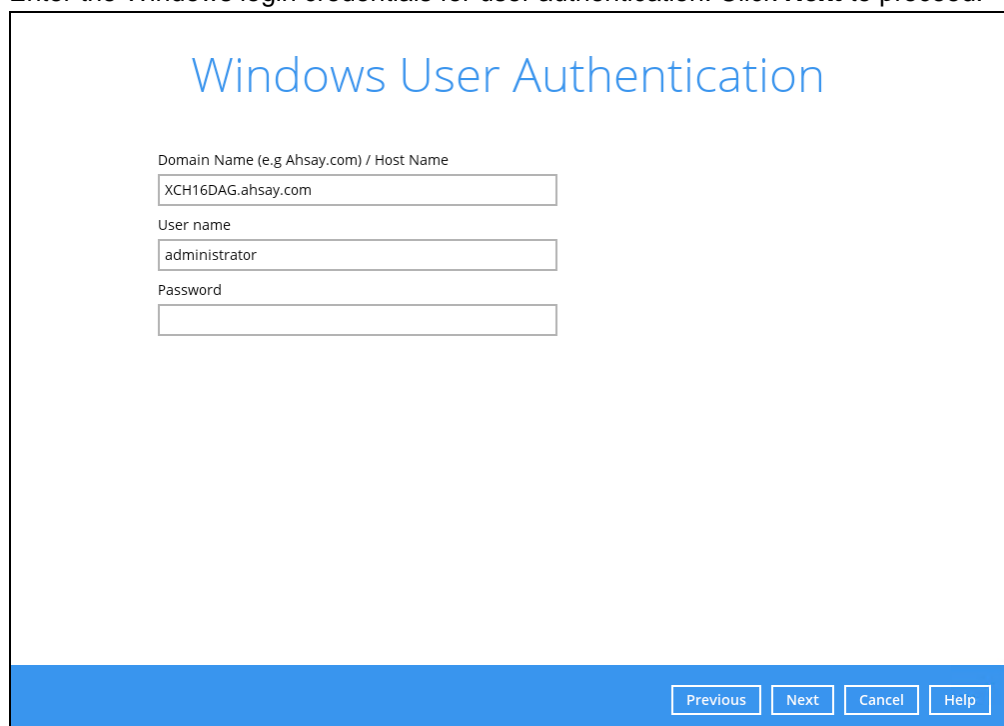
rcX1MBE4brnZO86eKOp6FeabuuRRI3qDXG9q5uBxF0s=

Mask encryption key

Copy to clipboard Confirm

- **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

12. Enter the Windows login credentials for user authentication. Click **Next** to proceed.



Windows User Authentication

Domain Name (e.g. Ahsay.com) / Host Name

XCH16DAG.ahsay.com

User name

administrator

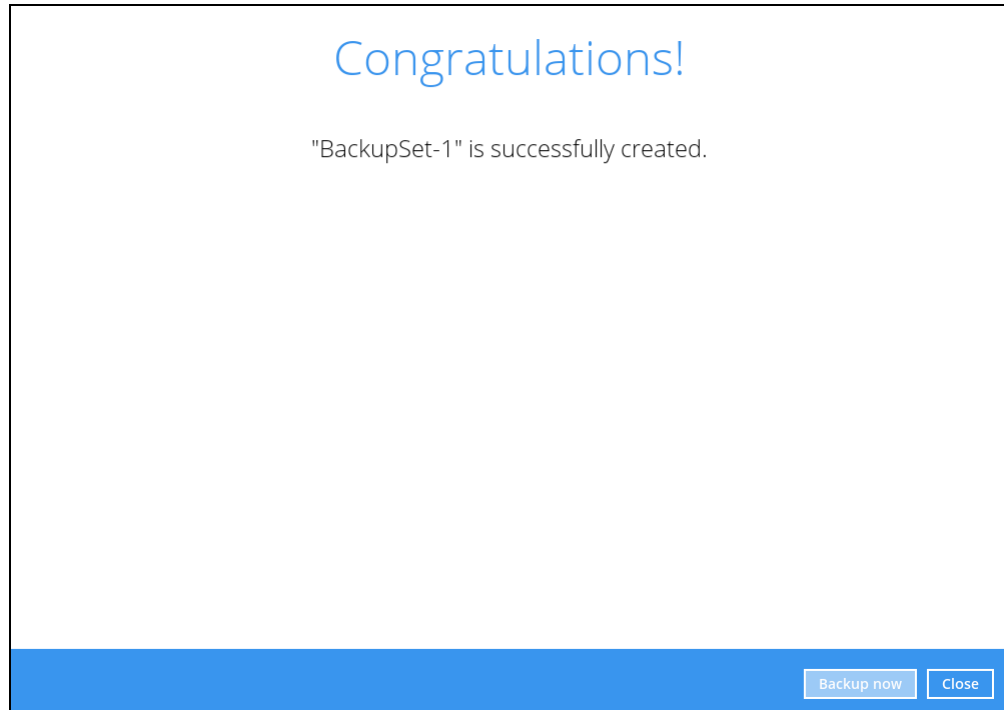
Password

Previous Next Cancel Help

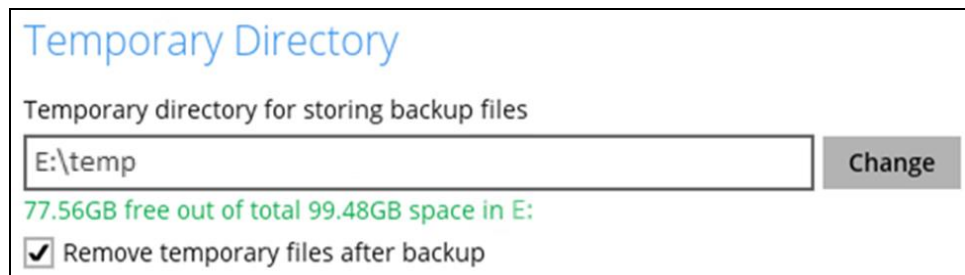
NOTE

The Windows User Authentication interface will show only if scheduled backup is enabled and set successfully.

13. The following screen shows when the new backup set is created successfully.

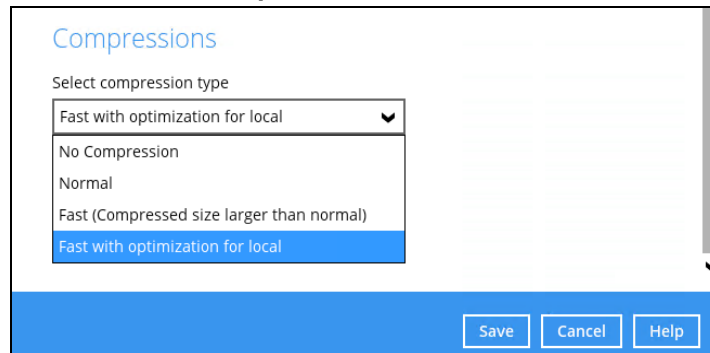


14. You can click **Backup now** to start a backup immediately, or you can run a backup job later by following the instructions in [Running Backup Job for Microsoft Exchange Server 2007/2010/2013/2016/2019](#).
15. Based on [Best Practices and Recommendations](#), it is highly recommended to set the **temporary directory** to another location other Drive C: (e.g. Drive E:). To do this, go to **Backup Sets > Others > Temporary Directory** and click the **Change** button to browse for another location.



16. Optional: Select your preferred **Compression** type. By default, the compression type is Fast with optimization for local.

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



4.2 Running Backup Job for Microsoft Exchange Server 2007/2010/2013/2016/2019

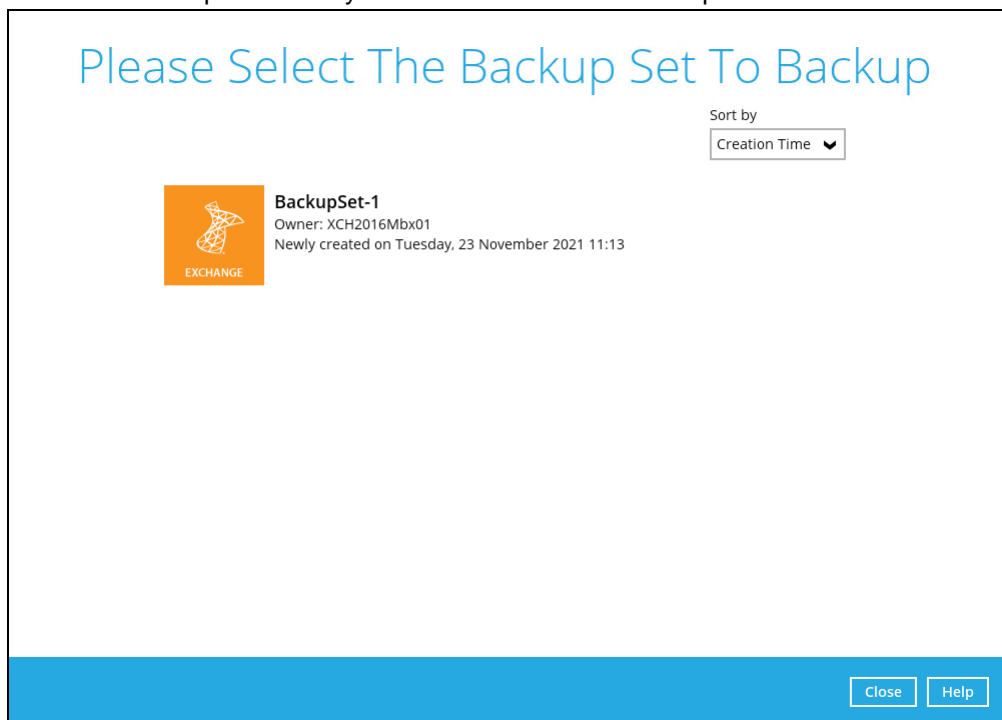
1. Log in to AhsayOBM.

For instructions on how to do this please refer to [Chapter 8](#) of the AhsayOBM v9 Quick Start Guide for Windows.

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




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



4. Select the Backup set type. If you would like to modify the Destinations, Migrate Data and Retention Policy settings, click **Show advanced option**.

Choose Your Backup Options

 BackupSet-1

Backup set type


☒ Database

☐ Log File

[Show advanced option](#)

[Previous](#) [Backup](#) [Cancel](#) [Help](#)

Choose Your Backup Options


 BackupSet-1

Backup set type

☒ Database

☐ Log File

Destinations

☒  AhsayCBS (Host: 10.3.121.17:80)

Migrate Data

☐ Migrate existing data to latest version

Retention Policy

☐ Run Retention Policy after backup

[Hide advanced option](#)

[Previous](#) [Backup](#) [Cancel](#) [Help](#)

NOTE

Refer to [Appendix A Exchange Server Backup Type](#) for more information regarding the backup set type.

The Migrate Data option will only be available if Deduplication is enabled for the backup set.

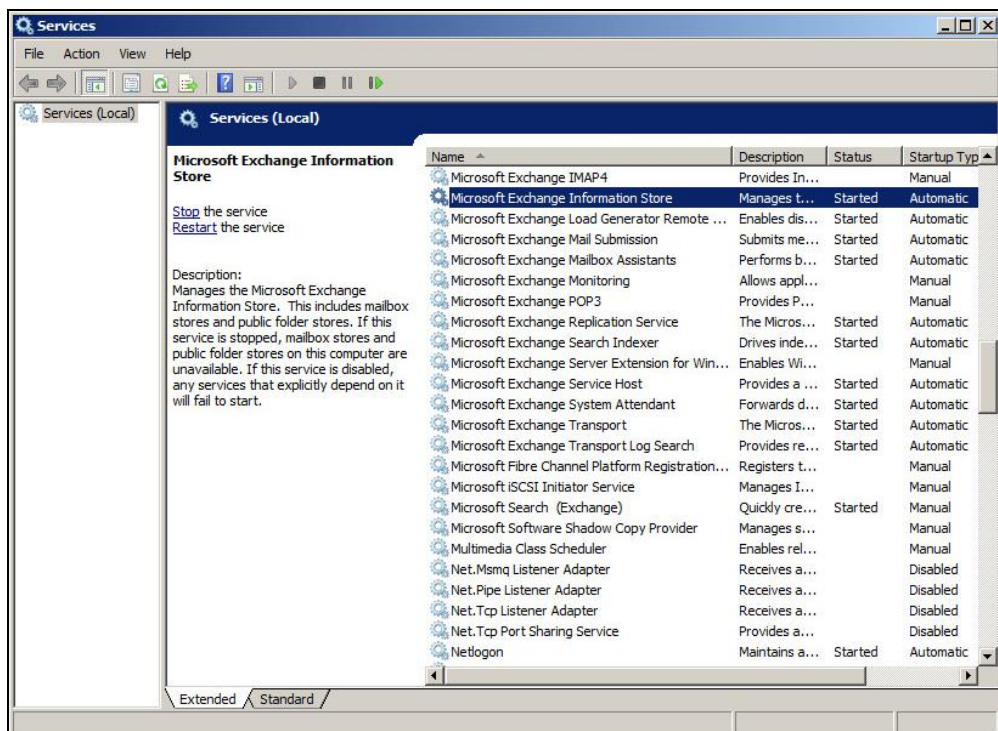
5. Click **Backup** to start the backup job.

4.3 Pre-restoration Requirements

Before you get started with restoring your database using AhsayOBM, there are a couple of steps you may need to perform first.

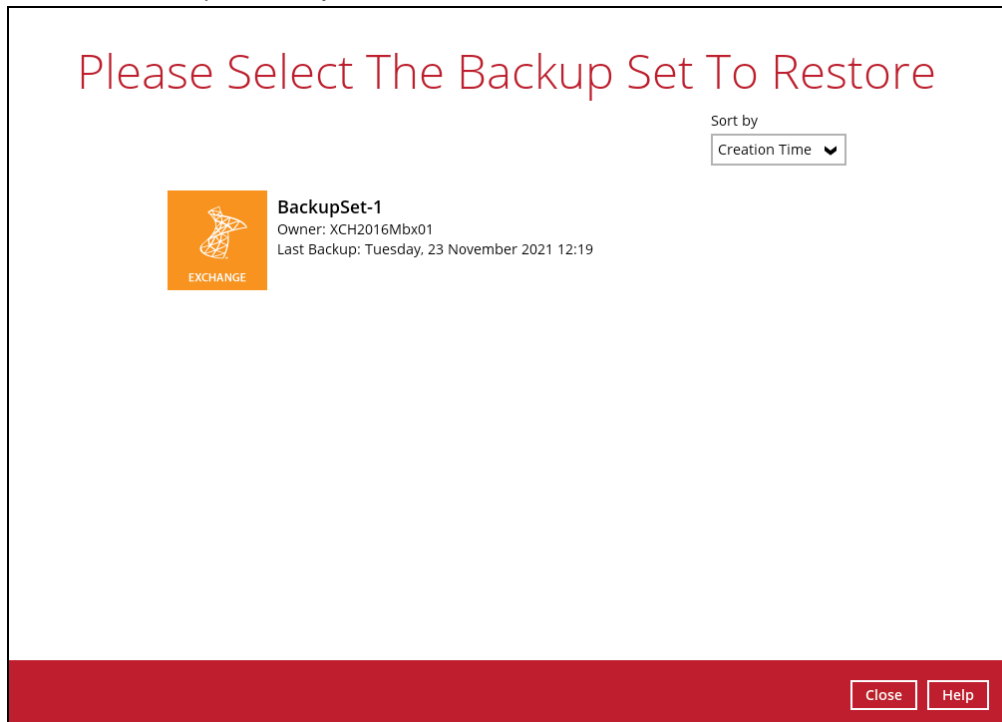
1. Prepare the operating system for the Exchange Server restore (if required). Install the original version of Windows and Exchange Server (with the same level of service pack installed as in the original system).
2. Restore Windows Active Directory (if required). Restore the System State data from the backup server, and then restore the System State using WBAdmin.exe.
3. Install AhsayOBM (if required). Refer to the [Ahsay Online Backup Manager v9 Quick Start Guide for Windows](#).
4. Make sure the **Microsoft Exchange Information Store** services from Windows Services is started.

Launch **Services** in Windows by clicking **Start** then typing “Services” in the search box. After launching the Services window, look for **Microsoft Exchange Information Store** and check the Status column to confirm if it is started. If it is not, right-click the item then select **Start**.

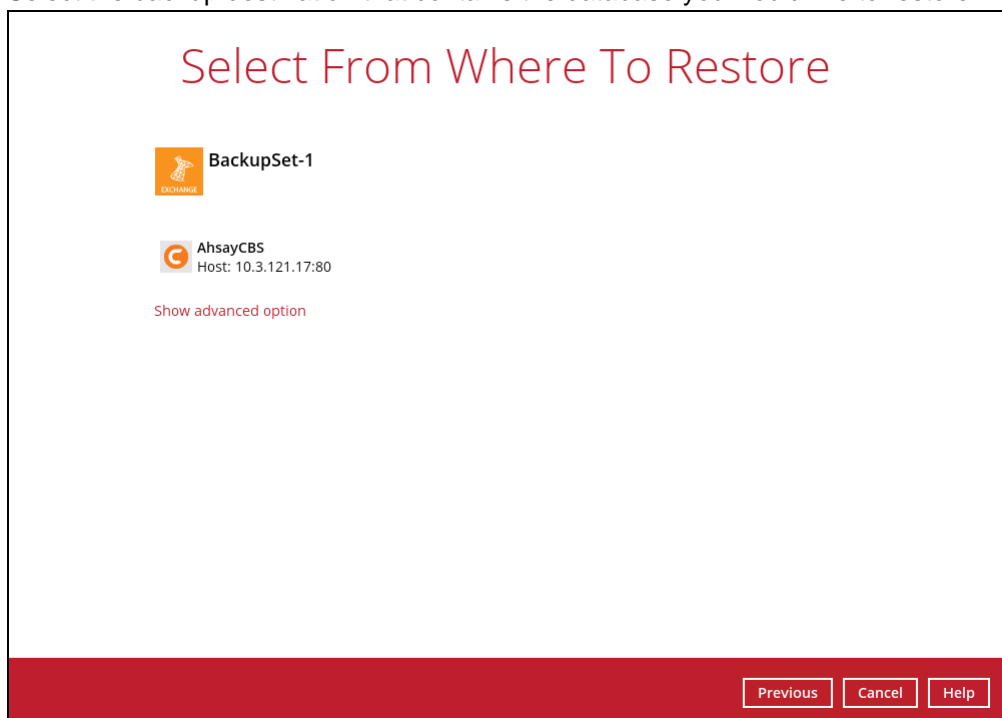


4.4 Restoring Exchange Database for Microsoft Exchange Server 2007/2010/2013/2016/2019

1. Make sure you have followed the steps in [Chapter 4.3](#) before proceeding to this section.
2. In the AhsayOBM main interface, click the **Restore** icon.
3. Select the backup set that you would like to restore database from.



4. Select the backup destination that contains the database you would like to restore.



You may configure the **Temporary directory for storing restore files** by clicking **Show advanced option**. This will allow you to select the directory that will be used to store temporary files by clicking the **Browse** button.

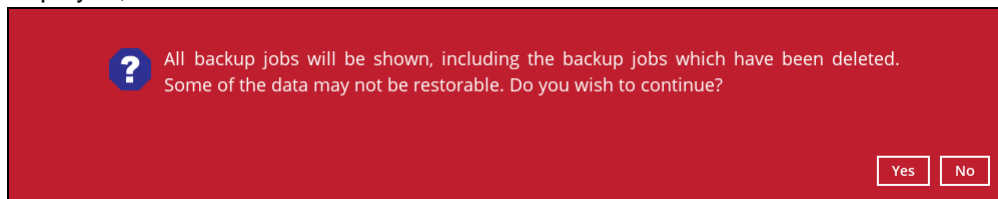
Temporary directory for storing restore files

[Hide advanced option](#)

5. Tick **Show backup job(s) outside retention** if you want all backup jobs to be displayed, even the deleted ones.

☐ Show backup job(s) outside retention

Once ticked, this message will be displayed. Click **Yes** if you want all backup jobs to be displayed, otherwise click **No**.



6. Click to expand the menu tree to select which Information Store to restore. You can also select individual database file to restore by clicking the **Restore raw file** checkbox at the bottom left corner

In addition, you can also choose to restore backup item(s) from a specific backup job using the drop-down menu at the top. Click **Next** to proceed when you are done with the selection.

Select Your Databases To Be Restored

Select what to restore
 23/11/2021 Latest ☐ Show backup job(s) outside retention

Folders	Name	Size	Date modified
AhsayCBS	E00.chk	8KB	23/11/2021 10:41
Microsoft Exchange Serv	E0000000645.log	1MB	22/11/2021 22:52
Microsoft Information	E0000000646.log	1MB	22/11/2021 23:11
XCH2016Mbx01	E0000000647.log	1MB	22/11/2021 23:26
Mailbox Data	E0000000648.log	1MB	22/11/2021 23:41
	E0000000649.log	1MB	22/11/2021 23:56
	E000000064A.log	1MB	23/11/2021 00:11
	E000000064B.log	1MB	23/11/2021 00:26
	E000000064C.log	1MB	23/11/2021 00:41
	E000000064D.log	1MB	23/11/2021 00:56
	E000000064E.log	1MB	23/11/2021 01:11
	E000000064F.log	1MB	23/11/2021 01:26
	E0000000650.log	1MB	23/11/2021 01:41
	E0000000651.log	1MB	23/11/2021 01:56
	E0000000652.log	1MB	23/11/2021 02:11
	E0000000653.log	1MB	23/11/2021 02:26
	E0000000654.log	1MB	23/11/2021 02:41
	E0000000655.log	1MB	23/11/2021 02:56
	E0000000656.log	1MB	23/11/2021 03:11
	E0000000657.log	1MB	23/11/2021 03:27

☐ Restore raw file
Items per page 50 Page 1 / 2

7. Select where to restore the database.

• Restore raw file

If Restore raw file is ticked in the previous step, click **Browse** to select the path where the database will be restored.

The dialog box is titled "Choose Where The Databases To Be Restored" in red text. It contains a text input field labeled "Restore databases to" with a "Browse" button to its right. Below the input field is a checkbox labeled "Verify checksum of in-file delta files during restore" and a link "Hide advanced option" in red. At the bottom, there is a red bar with four buttons: "Previous", "Restore", "Cancel", and "Help".

• Restore to Original location

Select the **Original location** option.

The dialog box is titled "Choose Where The Databases To Be Restored" in red text. It contains two radio button options under the label "Restore databases to": "Original location" (which is selected) and "Alternate location". Below these options is a link "Show advanced option" in red. At the bottom, there is a red bar with four buttons: "Previous", "Restore", "Cancel", and "Help".

• Restore to Alternate location

Select the **Alternate location** option. Click **Next** to proceed.

Choose Where The Databases To Be Restored

Restore databases to

☐ Original location

☒ Alternate location

☐ Verify checksum of in-file delta files during restore

[Hide advanced option](#)

Previous Next Cancel Help

Select the locations where you would like to restore the database to. Name the new mailbox store, then click **Browse** to modify the database, log and checksum file location if necessary. Click **Next** to proceed when you are done with the settings.

Alternate database

Database name

Mailbox Database 1606331413-1

Original Name	New Location
Mailbox Database 1606331413.edb	F:\Microsoft\Exchange Server\W15\Mailbox\Mailbox D Browse
E00*.log	F:\Microsoft\Exchange Server\W15\Mailbox\Mailbox D Browse
E00.chk	F:\Microsoft\Exchange Server\W15\Mailbox\Mailbox D Browse

Previous Restore Cancel Help

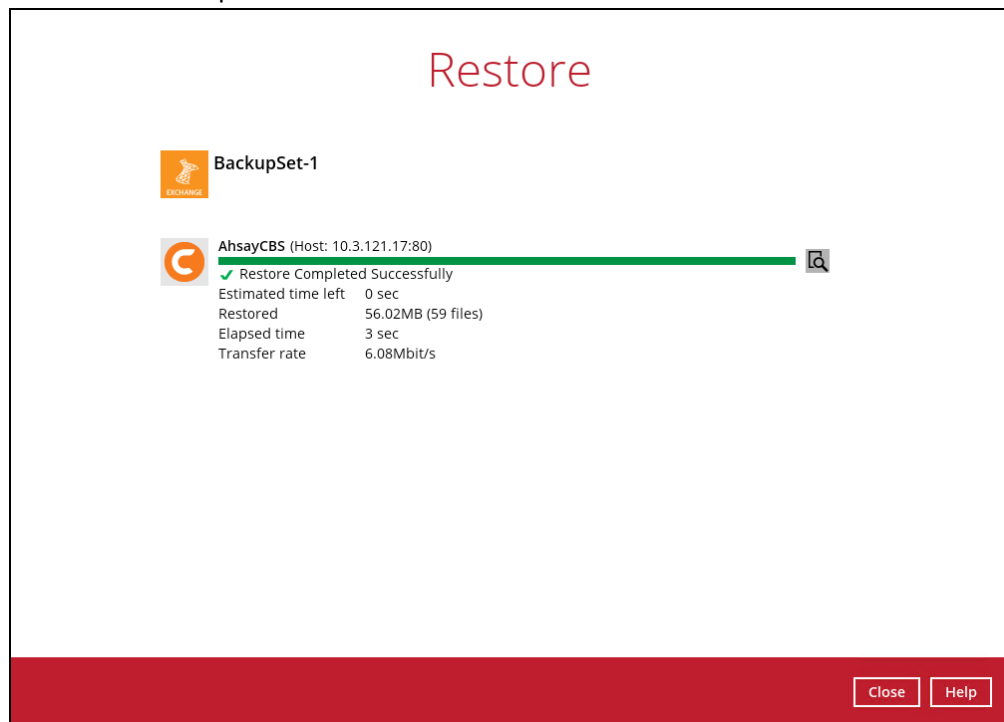
If you would like to modify the Verify checksum of in-file delta files setting, click **Show advanced option**.

☐ Verify checksum of in-file delta files during restore

[Hide advanced option](#)

Click **Restore** to start the restoration.

8. The following screen with the text **Restore Completed Successfully** shows when the restoration is completed.



For details regarding verifying the restoration activities log between AhsayOBM and the Exchange Server, refer to [Appendix B Restore Activities Log](#).

5 Backup and Restore option for Microsoft Exchange Server in Database Availability Group (DAG)

5.1 License Requirement to Back up all Exchange Server 2013/2016/2019 in DAG environment

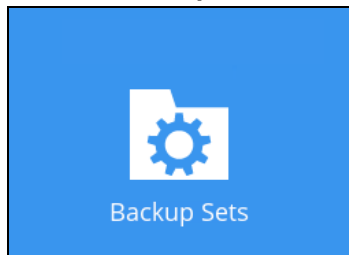
One AhsayOBM license CAL with one Exchange Server Add-on Module is deducted from each installation of the AhsayOBM on the DAG environment. Please check with your backup service provider if more AhsayOBM with Exchange backup is required.

5.2 Creating Backup Set for Microsoft Exchange Server 2013/2016/2019 (DAG)

NOTE

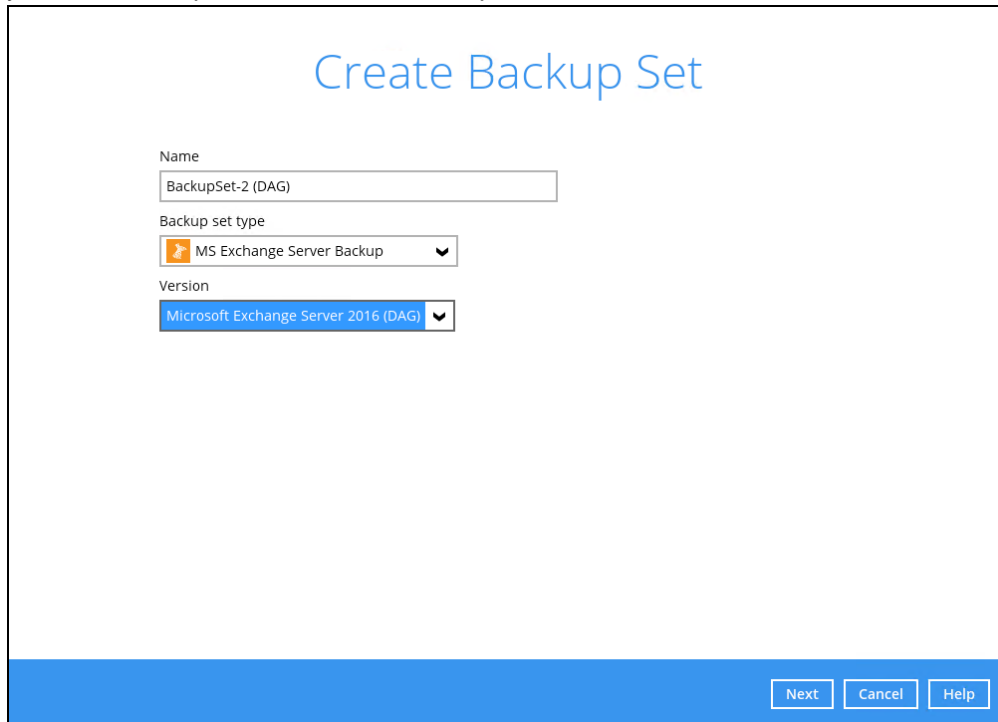
Creation of backup set for Microsoft Exchange Server 2010 in Database Availability Group (DAG) has been desupported. However, if there are existing backup sets created prior to upgrading to AhsayOBM v9.0.0.0 or later, the existing Microsoft Exchange Server 2010 DAG backup set will still be available.

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



2. Create a new backup set by clicking the **Add** button.

3. Select the Backup set type as **MS Exchange Server Backup**. Make sure you choose the correct Exchange Server version with “Database Availability Group (DAG)”. Name your new backup set, then click **Next** to proceed.



Create Backup Set

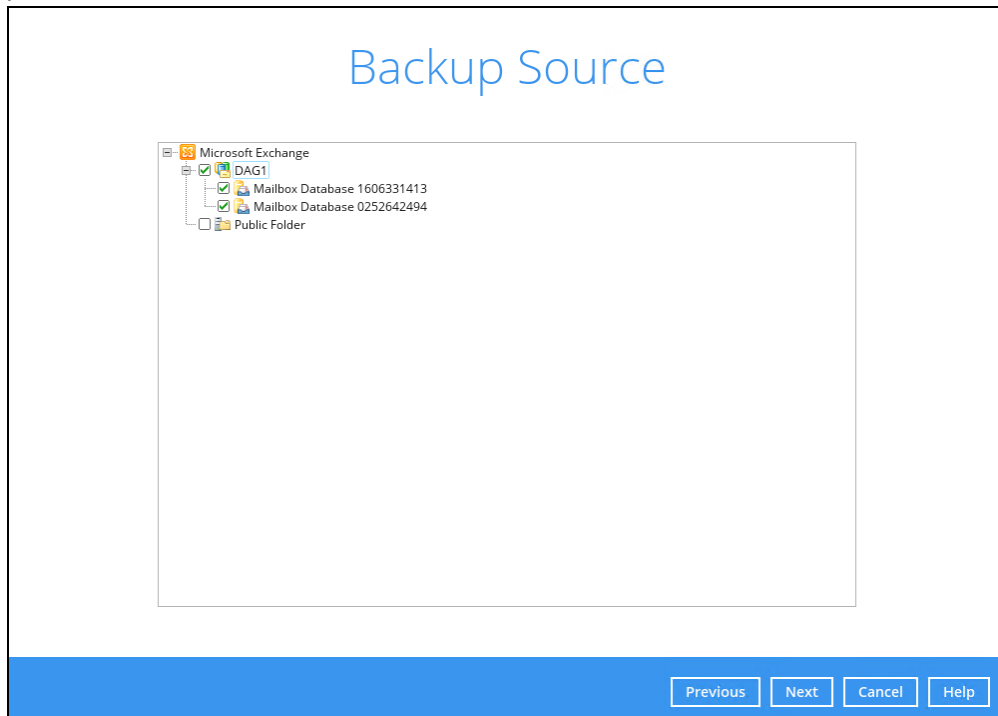
Name
BackupSet-2 (DAG)

Backup set type
MS Exchange Server Backup

Version
Microsoft Exchange Server 2016 (DAG)

Next Cancel Help

4. In the Backup Source menu, select the DAG / Public Folder for backup. Click **Next** to proceed.



Backup Source

Microsoft Exchange

- DAG1
 - Mailbox Database 1606331413
 - Mailbox Database 0252642494
 - Public Folder

Previous Next Cancel Help

5. To finish creating the DAG backup set please refer to [steps 6 – 13](#) discussed in Chapter 4.1.

6. On all other Exchange Servers within the same DAG, logon to AhsayOBM using the same login account. Click the same backup set, and make sure the **Run scheduled backup for this backup set** is turned on in the **Backup Schedule** page. Make sure you save the setting before exiting the application.

BackupSet-2 (DAG)

General

Source

Backup Schedule

Destination

[Show advanced settings](#)

Schedule

Run scheduled backup for this backup set

On ☒

Existing schedules

- Database Backup Schedule**
Database; Weekly - Friday (Every week at 22:00)
- Weekly-1**
Log File; Weekly - Monday, Tuesday, Wednesday & Thursday (Every week at 22:00)

[Add](#)

Delete this backup set

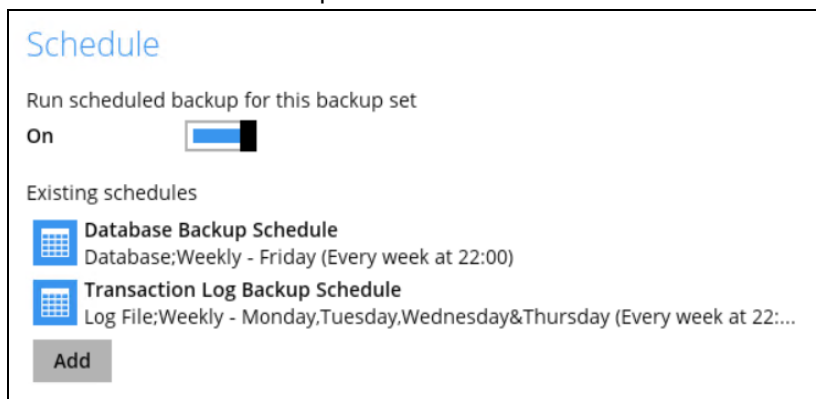
[Save](#) [Cancel](#) [Help](#)

5.3 Configure Backup Schedule for Automated Backup

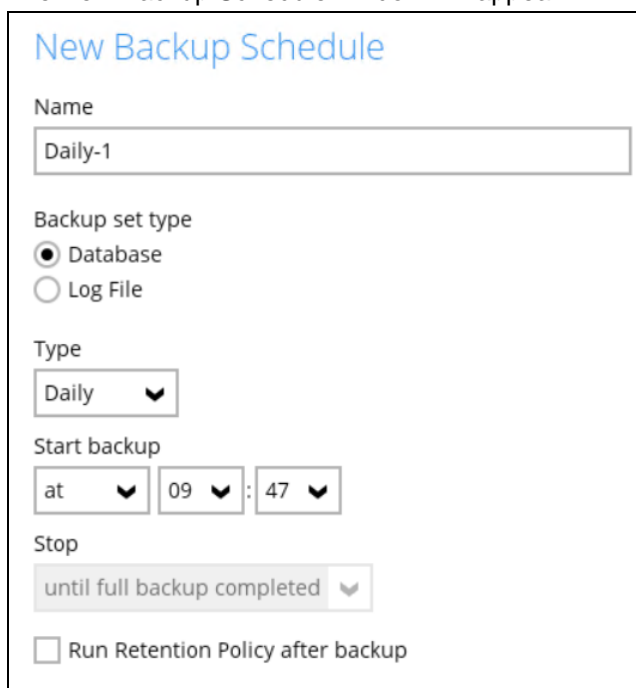
1. Click the Backup Sets icon on the AhsayOBM main interface.



2. All backup sets will be listed. Select the backup set that you would like to create a backup schedule for.
3. Go to the **Backup Schedule** tab. If the **Run scheduled backup for this backup set** option is off, switch it **On**. Existing schedules will be listed by default. Click the **Add** button to add a new backup schedule.



4. The New Backup Schedule window will appear.



Configure the following backup schedule settings.

- **Name** – the name of the backup schedule.
- **Backup Set Type** – the type of backup set (i.e. Database or Log File). For more information, refer to [Appendix A Exchange Server Backup Type](#).
- **Type** – the type of backup schedule. There are four (4) different types of backup schedule: Daily, Weekly, Monthly and Custom.
 - **Daily** – the time of the day or interval in minutes/hours when the backup job will run.

The screenshot shows the 'New Backup Schedule' form with the following settings: Name is 'Daily-1'; Backup set type is 'Database' (selected); Type is 'Daily'; Start backup is 'at 09:47'; Stop is 'until full backup completed'; and 'Run Retention Policy after backup' is unchecked.

- **Weekly** – the day of the week and the time of the day or interval in minutes/hours when the backup job will run.

The screenshot shows the 'New Backup Schedule' form with the following settings: Name is 'Weekly-1'; Backup set type is 'Database' (selected); Type is 'Weekly'; Backup on these days of the week has 'Sat' checked; Start backup is 'at 09:47'; Stop is 'until full backup completed'; and 'Run Retention Policy after backup' is unchecked.

- **Monthly** – the day of the month and the time of that day when the backup job will run.

New Backup Schedule

Name
Monthly-1

Backup set type
☒ Database
☐ Log File

Type
Monthly ▼

Backup on the following day every month
☒ Day 1 ▼
☐ First ▼ Sunday ▼

Start backup at
09 ▼ : 47 ▼ on the selected days

Stop
until full backup completed ▼

☐ Run Retention Policy after backup

- **Custom** – a specific date and the time of that date when the backup job will run.

New Backup Schedule

Name
Custom-1

Backup set type
☒ Database
☐ Log File

Type
Custom ▼

Backup on the following day once
2020 July ▼ 15 ▼

Start backup at
09 ▼ : 47 ▼

Stop
until full backup completed ▼

☐ Run Retention Policy after backup

- **Start backup** – the start time of the backup job.
 - **at** – this option will start a backup job at a specific time.
 - **every** – this option will start a backup job in intervals of minutes or hours.

Here is an example of a backup set that has a periodic and normal backup schedule.

Figure 1.1

Figure 1.2

Figure 1.1 – Periodic backup schedule runs every 4 hours from Monday – Friday during business hours

Figure 1.2 – Normal backup schedule runs at 21:00 or 9:00 PM on Saturday and Sunday on weekend non-business hours

- **Stop** – the stop time of the backup job. This only applies to schedules with start backup “at” and is not supported for periodic backup schedule (start backup “every”)
 - **until full backup completed** – this option will stop a backup job once it is complete. This is the configured stop time of the backup job by default.
 - **after (defined no. of hrs.)** – this option will stop a backup job after a certain number of hours regardless of whether the backup job has completed or not. This can range from 1 to 24 hrs.

The number of hours must be enough to complete a backup of all files in the backup set. For small files in a backup, if the number of hours is not enough to back up all files, then the outstanding files will be backed up in the next backup job. However, if the backup set contains large files, this may result in partially backed up files.

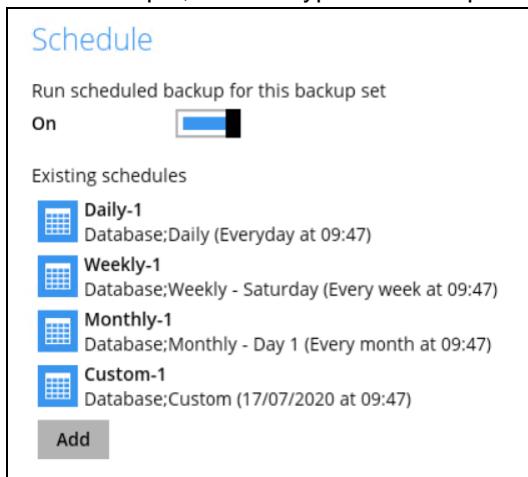
For example, if a backup has 100GB file size which will take approximately 15 hours to complete on your environment, but you set the “stop” after 10 hours, the file will be partially backed up and cannot be restored. The next backup will upload the files from scratch again.

The partially backed up data will have to be removed by running the data integrity check.

As a general rule, it is recommended to review this setting regularly as the data size on the backup machine may grow over time.

- ▶ **Run Retention Policy after backup** – if enabled, the AhsayOBM will run a retention policy job to remove files from the backup destination(s) which have exceeded the retention policy after performing a backup job. To save hard disk quote in the long run, it is recommended to enable this option.

As an example, the four types of backup schedules may look like the following:



5. Click **Save** to confirm your settings once done.

5.4 Pre-restoration requirements

Refer to the following instructions to restore your Exchange database in Database Availability Group (DAG).

The database restoration is required to restore on the active database only. You can identify the Exchange server with the active database from the Exchange Management Shell.

Type the following command in the Exchange Management Shell.

```
Get-MailboxDatabase | ft name, server
```

It will show which Exchange server is hosting the active mailbox database, i.e. Mailbox Database 01 and 03 are hosted on EX1, while Mailbox Database 02 and 04 are hosted on EX2.

```
[PS] C:\>Get-MailboxDatabase | ft name, server
```

<i>Name</i>	<i>Server</i>
----	----
<i>Mailbox Database 02</i>	<i>EX2</i>
<i>Mailbox Database 01</i>	<i>EX1</i>
<i>Mailbox Database 03</i>	<i>EX1</i>
<i>Mailbox Database 04</i>	<i>EX2</i>

When you can identify which Exchange server is hosting the active database, you can logon to that Exchange server to restore the database.

5.5 Restore Exchange Database to the Exchange with the active database

Please refer to [Chapter 4.4](#) for instructions on how to perform the restore process.

6 Contacting Ahsay

6.1 Technical Assistance

To contact Ahsay support representatives for technical assistance, visit the Partner Portal:

<https://www.ahsay.com/partners/>

Also use the Ahsay Wikipedia for resource such as Hardware Compatibility List, Software Compatibility List, and other product information:

<https://wiki.ahsay.com/>

6.2 Documentation

Documentations for all Ahsay products are available at:

https://www.ahsay.com/jsp/en/downloads/ahsay-downloads_documentation_guides.jsp

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

<https://www.ahsay.com/partners/>

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

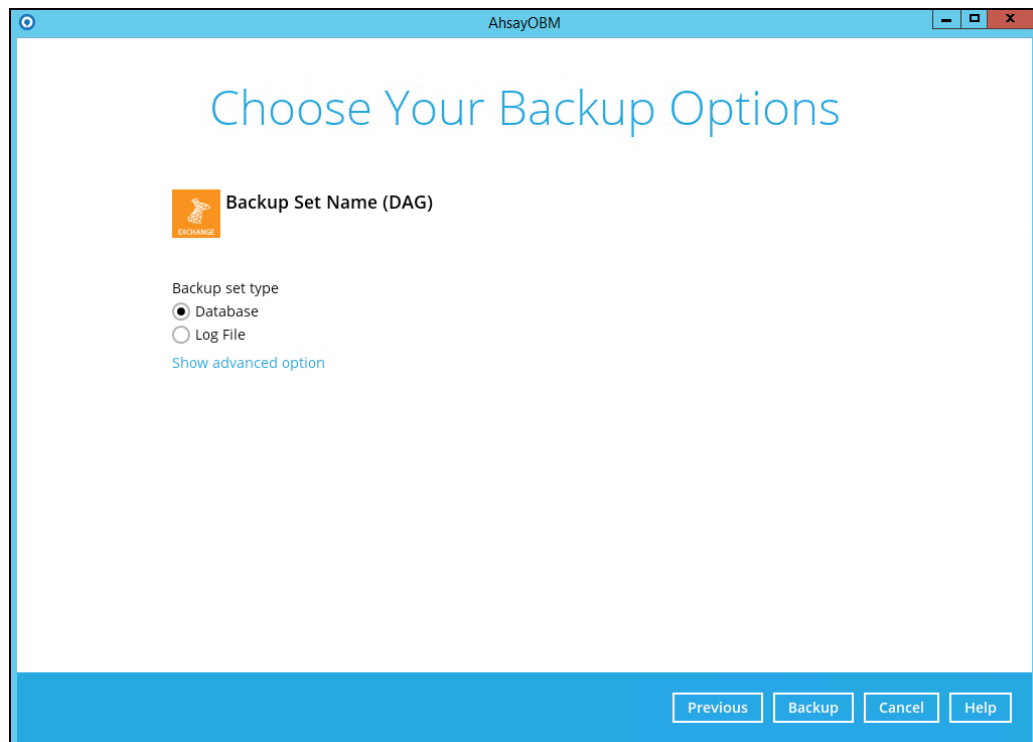
Appendix

Appendix A Exchange Server Backup Type

AhsayOBM utilizes the Volume Shadow Copy Service and the Microsoft Exchange Server 2010 Writers for backup of MS Exchange 2010/2013/2016/2019 databases. It offers the following types of backup options:

Database backup

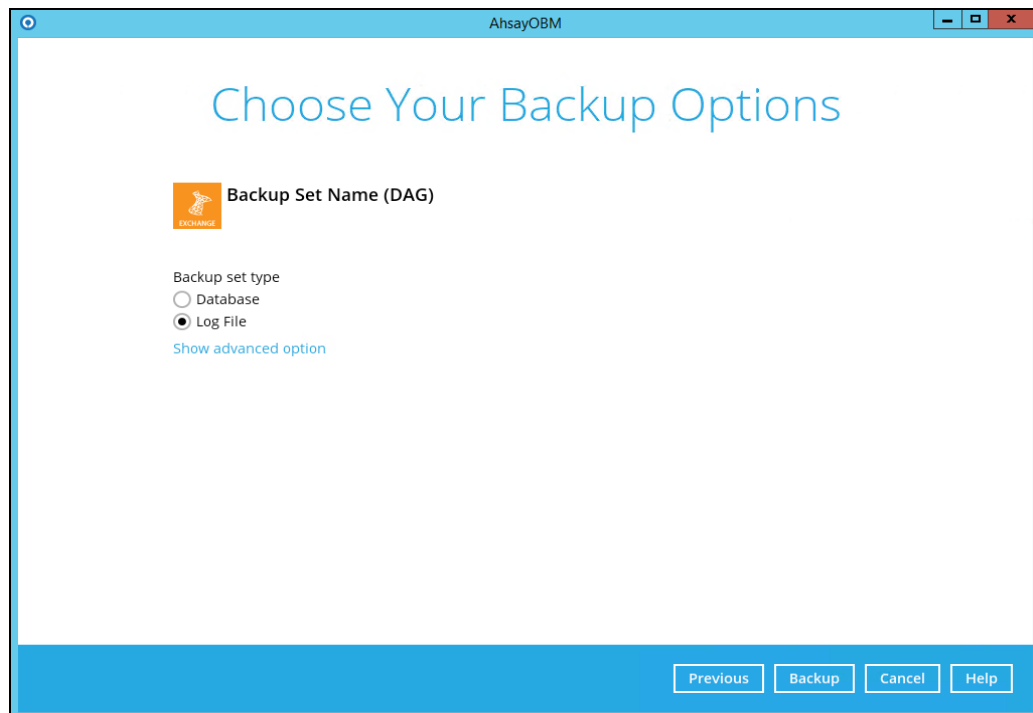
Backs up the databases (EDB), transaction logs (LOG), checkpoint files (CHK), and then truncates the transaction logs for a specific database.



Exchange database will always backup in Full, AhsayOBM will request from the Exchange server to provide a full snapshot of the database. Deduplication will be used when generating delta to minimize the data uploaded in each backup. If deduplication is off, the full database will be backed up in each backup job.

• Log File backup

Backs up the transaction logs (LOG) to record changes since the last full backup, and then truncates the transaction logs.



Transaction logs will always backup in Full. Deduplication will be used when generating delta to minimize the data uploaded in each transaction log backup. If deduplication is off, the full transaction log will be backed up in each backup job.

Appendix B Restore Activities Log

The information below demonstrates how you can verify the restoration activities log between the AhsayOBM and the Microsoft Exchange Server.

To verify the restoration activities log, open both the Restore Report in AhsayOBM and the Event Viewer in the Microsoft Exchange Server.

Opening Restore Report in AhsayOBM

1. Open AhsayOBM, then click the **Report** icon on the main interface page.
2. Click the Restore option on the left, then click the restore report you want to verify on the right..

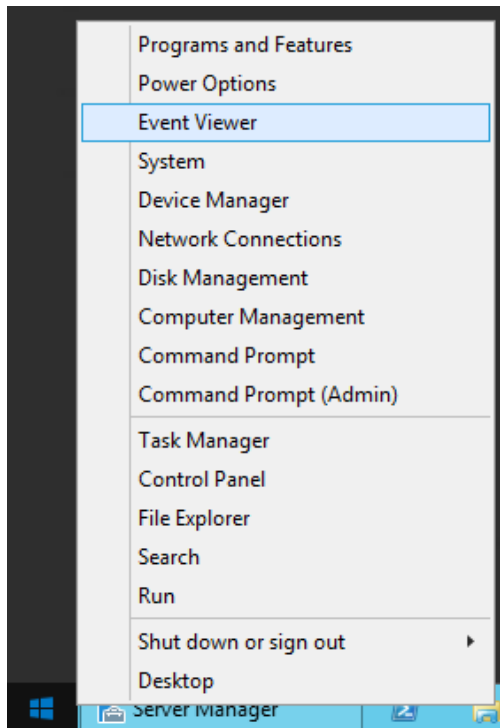
The screenshot shows the AhsayOBM Report interface. On the left, there is a sidebar with 'Report' selected, and sub-options: 'Backup', 'Restore' (highlighted), and 'Usage'. The main area is titled 'Restore Report'. It includes filters for 'From' (16 Nov 2021) and 'To' (23 Nov 2021), a 'Go' button, and tabs for 'Backup set', 'Destination', 'Job', and 'Status'. The 'Job' tab is active, showing details for 'BackupSet-1': Destination is 'AhsayCBS', Job is '23/11/2021 16:05', Time is 'Today 16:05 - 16:05 (CST)', Status is 'Completed successfully', and Downloaded files are '59 (1.7MB)'. A 'View log' button is at the bottom. At the bottom of the main area, there are 'No. of records per page' (50) and 'Page' (1 / 1) dropdowns. 'Close' and 'Help' buttons are at the bottom right.

Click the **View Log** button to show all the restoration activities log.

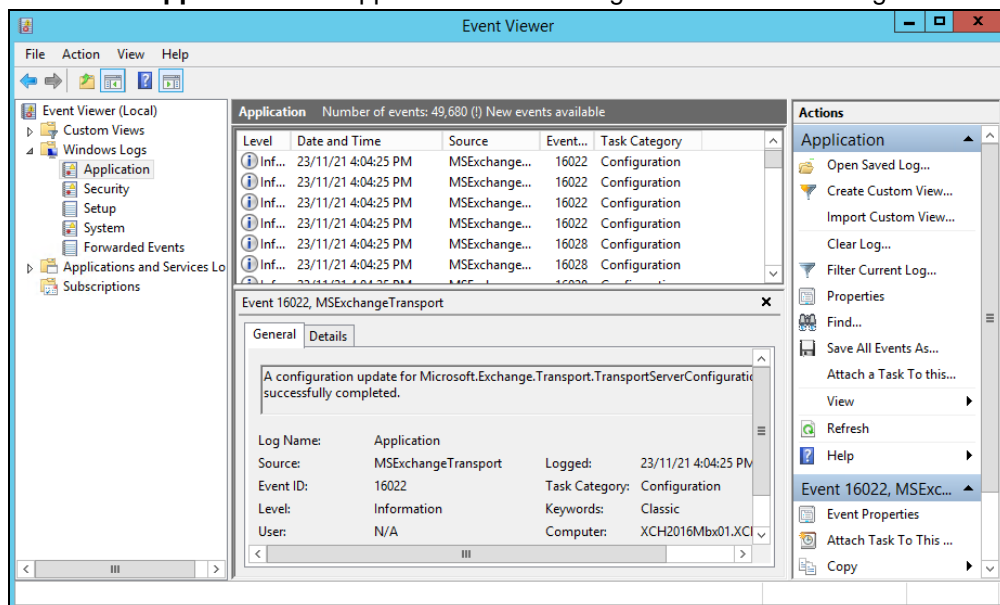
The screenshot shows the AhsayOBM View Log interface. At the top, there is a 'Backup set' dropdown (BackupSet-1) and a 'Log' dropdown (23/11/2021 16:05). A 'Show' dropdown is set to 'All'. Below is a table with columns 'Type', 'Log', and 'Time'. The table contains 17 rows of log entries, starting with 'Start [AhsayOBM v9.0.1.0]' and followed by 'Creating new directory...' and multiple 'Downloading...' entries. The 'Time' column shows all entries at '23/11/2021 16:05:51'. At the bottom, there are 'Logs per page' (50) and 'Page' (1 / 2) dropdowns. A 'Close' button is at the bottom right.

Opening Event Viewer in Microsoft Exchange Server

1. Right-click the Start menu button on the bottom left corner in the Exchange Server, then click on Event Viewer.



2. When the Event Viewer is opened, click **Windows Log** on the left to expand the menu tree, then select **Application**. All Application activities logs are shown on the right now.



Cross-checking activities log on AhsayOBM Restore Report and Exchange Server Event Viewer

Each restoration action item initiated by AhsayOBM represented by individual activity log in the Restore Report in AhsayOBM, and the corresponding action taken place in the Exchange Server is shown in the Event Viewer as well.

There are 5 major parts to take place during the database restoration progress as shown below.

1. Download files from AhsayCBS to Temp Folder

AhsayOBM Restore Report

- Downloading... "C:\Users\Administrator\temp\RestoreSet\1550473417612\RestoreDatabase\Microsof...
- Downloading... "C:\Users\Administrator\temp\RestoreSet\1550473417612\RestoreDatabase\Microsof...

2. Dismount Exchange Server Database

AhsayOBM Restore Report

- Dismount Microsoft Exchange Server Database... "Mailbox Database 0998420039"

Event Viewer in Exchange Server

Information	2/18/2019 4:02:25 PM	MSExchangeRepl	3161	Service
General	Details			
Active Manager dismounted database Mailbox Database 0998420039 on server w2k16-xch2k16.x2k16.local.				

3. Restore files to Exchange Server Database

AhsayOBM Restore Report

- Restoring files to Microsoft Exchange Server Database... "C:\Program Files\Microsoft\Exchange Server...
- Restoring files to Microsoft Exchange Server Database... "C:\Program Files\Microsoft\Exchange Server...

Event Viewer in Exchange Server


Information	2/18/2019 4:03:00 PM	ESE (ESE)	302	Logging/Reco...
General	Details			
msexchangerepl (9076,U,0,15.01.1591.008) Mailbox Database 0998420039\W2K16-XCH2K16: The database engine has successfully completed recovery steps.				

4. Remount Exchange Server Database

AhsayOBM Restore Report

 Re-mount Microsoft Exchange Server Database... "Mailbox Database 0998420039"

Event Viewer in Exchange Server

 Information	2/18/2019 4:04:12 PM	MSExchangeRepl	3156	Service
General	Details			
<div>Active Manager successfully mounted database Mailbox Database 0998420039 on server w2k16-xch2k16.x2k16.local.</div>				

5. Delete files from Temp Folder

By default, temporary files will be deleted from the temp folder after backup. This feature can be turned on or off by following the steps below:

1. Open AhsayOBM, then click the Backup Set icon on the main interface.
2. Select the backup set you would like to change this setting.
3. Click "Show advanced settings" on the left, then select "Others".
4. Use the "Remove temporary files after backup" checkbox to enable or disable this feature.

