Microsoft Exchange 2016 / 2019 Mail Level Backup Set

Last modified: 2020/04/27 (Note: Content written for AhsayCBS v7+v8, and may generally apply to latest product release)

AhsayOBM allows you to back up individual mailboxes in your Microsoft Exchange Server 2016 / 2019 with the MS Exchange Mail Level Backup Module. This module provides a set of tools to protect your mailboxes and public folders on Microsoft Exchange Server 2016. This includes backup and recovery of individual emails, contacts, calendars and other mail items in your mailboxes and public folders, with snapshots / versioning, and retention policy to protect even email that you may have accidentally deleted from your Exchange 2016 / 2019 mailboxes or public folders.

Mail Level Backup must be utilized in conjunction with full Information Store Backup as Mail Level backup for Microsoft Exchange Server is not designed to fully protect an Exchange Server, but to facilitate easy backup and fast restoration of individual emails, contacts, calendars or public folder, etc.

AhsayOBM supports standalone backup option and Database Availability Group (DAG) backup option for Exchange server Mail Level backup.

Exchange Server 2016 Mail Level backup and restore can be performed by installing AhsayOBM either on the Exchange server 2016 hosting the database or on a remote backup machine.

System Architecture

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

AhsayOBM installed on Exchange Server 2016 / 2019

Standalone: The latest version of AhsayOBM is installed on the 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 Exchange server which is connected to AhsayCBS backup server through LAN or internet, and all the DAG members share the same backup set.

AhsayOBM installed on Remote Backup Machine

Standalone: The latest version of AhsayOBM is installed on the remote backup machine which is connected to Exchange server and AhsayCBS backup server through LAN or internet.

Database Availability Group (DAG): The latest version of AhsayOBM is installed on the remote backup machine which is connected to DAG members on Exchange server and AhsayCBS backup server though LAN or internet, and all the DAG members share the same backup set.

Requirements

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 Mail Level backup and restoration.

Software Requirement

For the list of compatible operating systems and application versions, refer to: Ahsay Software Compatibility List (SCL)

Antivirus Exclusion Requirement

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

> The bJW.exe process is automatically added to Windows Defender exclusion list for Windows 10 and 2016, during installation / upgrade via installer or upgrade via AUA.

AhsayOBM Installation

AhsayOBM v8.1.0.0 or above must be installed either on the Exchange Server 2016 hosting the database or on the remote backup machine.

Microsoft Exchange Mailbox Add-On Module

One Microsoft Exchange Mailbox license is required for the backup of each user mailbox. No license is required for public folder.

Make sure the Microsoft Exchange Mailbox feature has been enabled as an add-on module in your AhsayOBM user account and there is sufficient Microsoft Exchange Mailbox license quota to cover the backup of your mailboxes.

AhsayOBM Licenses

AhsayOBM licenses are calculated on a per device basis.

   1. For backup of mailboxes on a standalone Microsoft Exchange 2016 Server, one AhsayOBM

license is required.

2. For backup of mailboxes on a Microsoft Exchange Server 2016 DAG setup, the number of AhsayOBM licenses required is equal to the number of DAG members in the DAG. For example, if there are three DAG members then three AhsayOBM licenses are required.

Backup Quota Requirement

Make sure that your AhsayOBM user account has sufficient storage quota assigned to accommodate the storage of additional Exchange mailbox and public folder items for the new mail level backup set and retention policy. Please contact your backup service provider for more details.

Continuous Backup Module

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

Java Heap Size

The default Java heap size setting on AhsayOBM is 2048MB. For Exchange 2016 / 2019 mail level 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 2016 server.

Temporary Directory Folder

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 recommended that the temporary directory folder is located on a local drive with sufficient free disk space.

Scheduled Backup for Exchange Server in Data Availability Group (DAG)

Scheduled backup is required if you choose to back up in DAG option on Exchange server as AhsayOBM on all DAG members will base on the scheduled backup time to start backup on all the 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. However, for backup and restore on a remote backup machine, as the operation for single node can be done either manually or automatically, a scheduled backup is not required.

Mailbox Role

Ensure all nodes have mailbox role. This can be checked by accessing the Exchange admin center (EAC).

Operating System

- For AhsayOBM installed on the Exchange Server 2016 / 2019, the operating system must be Windows Server 2012/ 2012 R2/ 2016 or above.
- For AhsayOBM installed on the remote backup machine, the operating system must be Windows 7/ 8/ 8.1/ 10 or Windows Server 2008/ 2008 R2/ 2012/ 2012 R2/ 2016 or above.
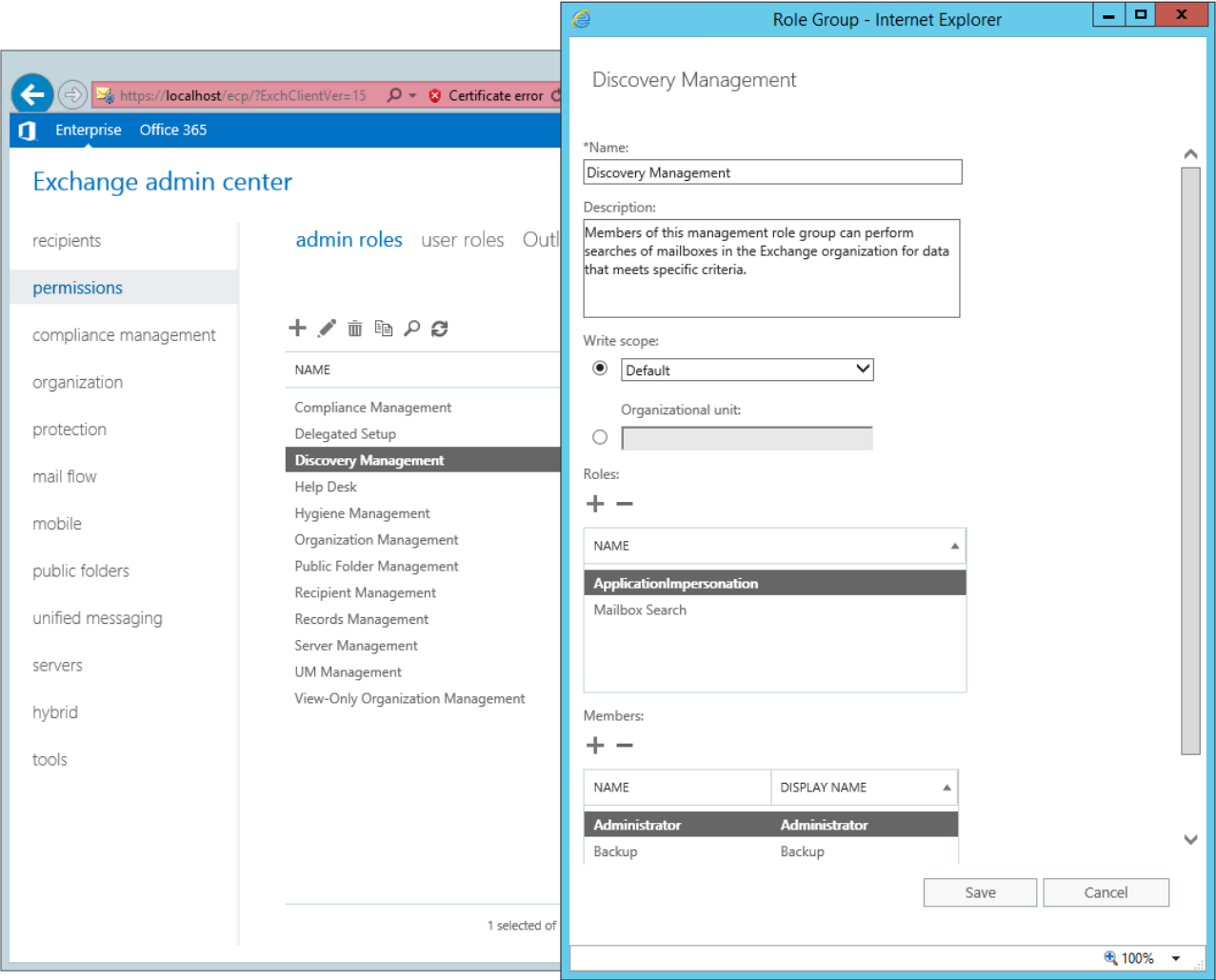
Supported Exchange Server 2016 Version

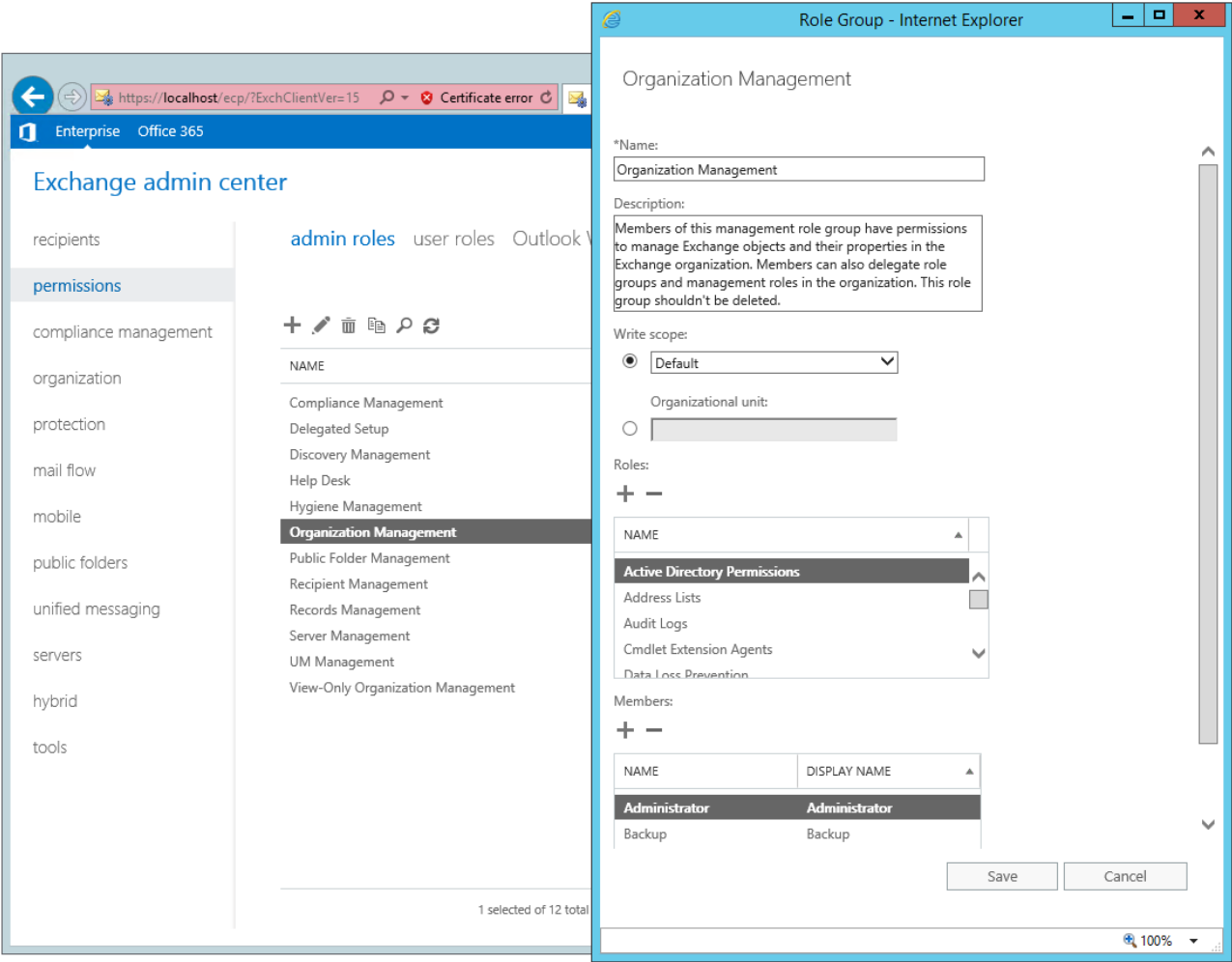MS Exchange Server 2016 Cumulative Update 4 (CU4) or above is supported.

Windows User Account Permission

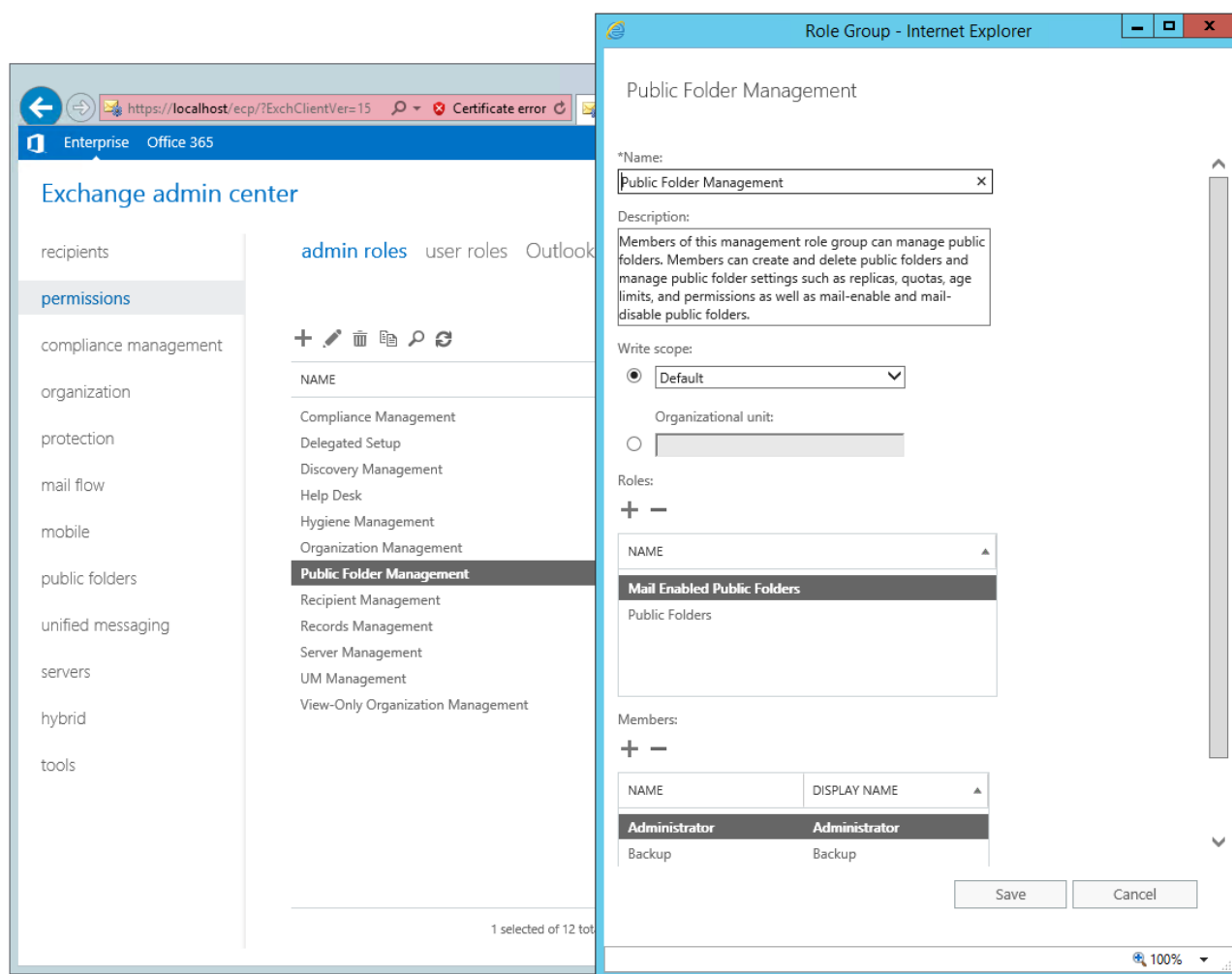The Windows user account used for the backup must be a member of the following security groups.

- Discovery Management (including ApplicationImpersonation and Mailbox Search)

- Organization Management

- Public Folder Management

Login to the Exchange admin center, under permissions, admin roles. Assign the user to be running the backup as member of the following admin roles:

- Discovery Management (including the following Roles):
    - ApplicationImpersonation
    - Mailbox Search
- Organization Management
- Public Folder Management

Enabling Mailbox

The Windows user account must have an Exchange Server mailbox. Refer to the URL below for more information.

Refer to the following article from Microsoft for more details on how to check if an account is mailbox enabled and how to enable it:

https://docs.microsoft.com/en-us/Exchange/recipients/create-user-mailboxes?view=exchserver-2019

Backup Source Requirement

Ensure that the "Hide from address lists" option is unchecked for all mailboxes to be selected for backup. Mailbox hidden from the address list will not be shown in the backup source selection menu.

Port Configuration

As Exchange 2016 mail level backup and restore is implemented using Microsoft EWS API (Exchange Web Services), which enables AhsayOBM to access mailbox items such as email message, meetings, notes, calendar, contact, etc, without any additional installation or complicated setup required on the Exchange 2016 Server or remote backup machine, only port 443 must be configured to allow communication between AhsayOBM and Exchange server.

Exchange related Windows Services

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

To verify this setting, launch the Services menu by clicking Start then typing "Services" in the search box. All Exchange related services should be started by default, in case it is not, turn it on by right clicking the item and then select Start.
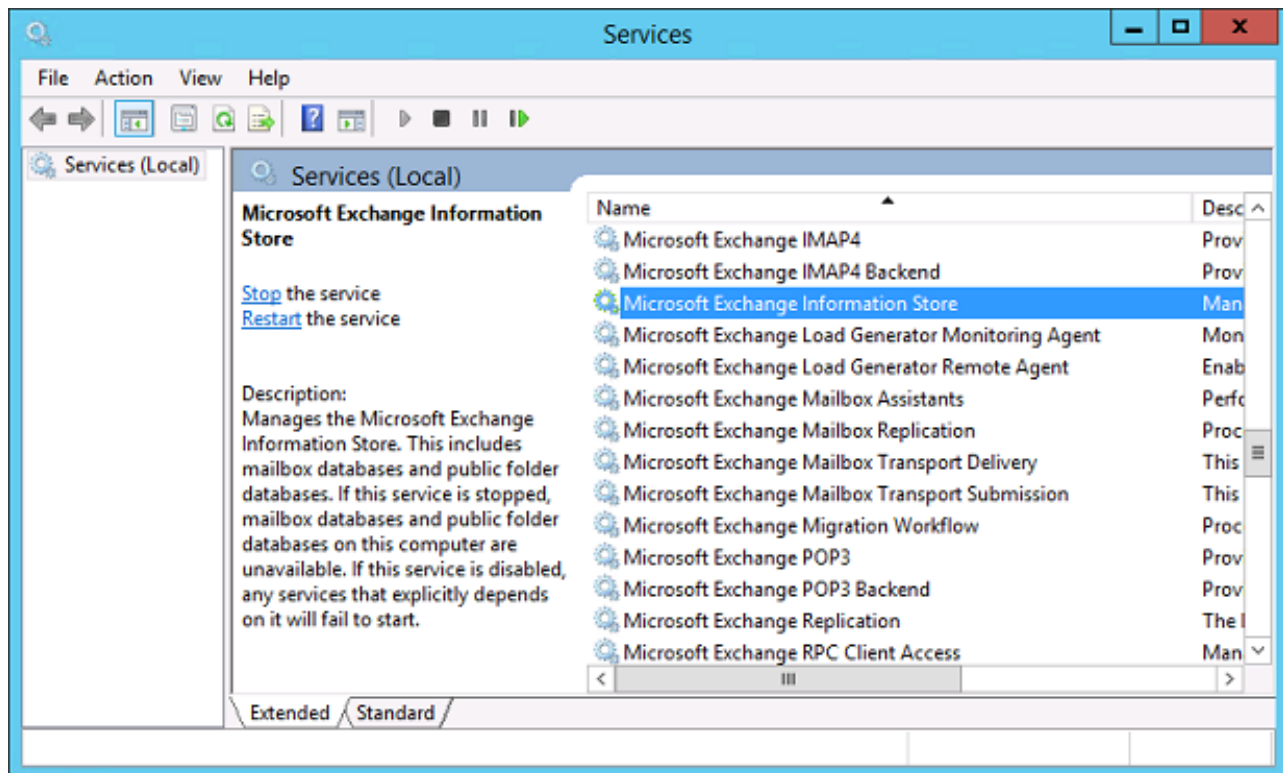
MS Exchange Databases

Ensure the MS Exchange Mailbox and Public Folder databases are mounted. This can be verified by Exchange Management Shell or Exchange Admin Center (EAC).

- Type the following command in the Exchange Management Shell.

```
Get-MailboxDatabase
```


- Exchange Admin Center (EAC)

Windows PowerShell 5.1 Engine

Ensure that Windows PowerShell 5.1 Engine is installed. To install the feature:

1. Navigate to Server Manager > Manage, then select Add Roles and Features.
2. On the Select installation type screen, select Role-based or feature-based installation.
3. Select the target server.
4. On the Select features screen, go to the Features option, check the box next to Windows PowerShell 5.1 Engine.
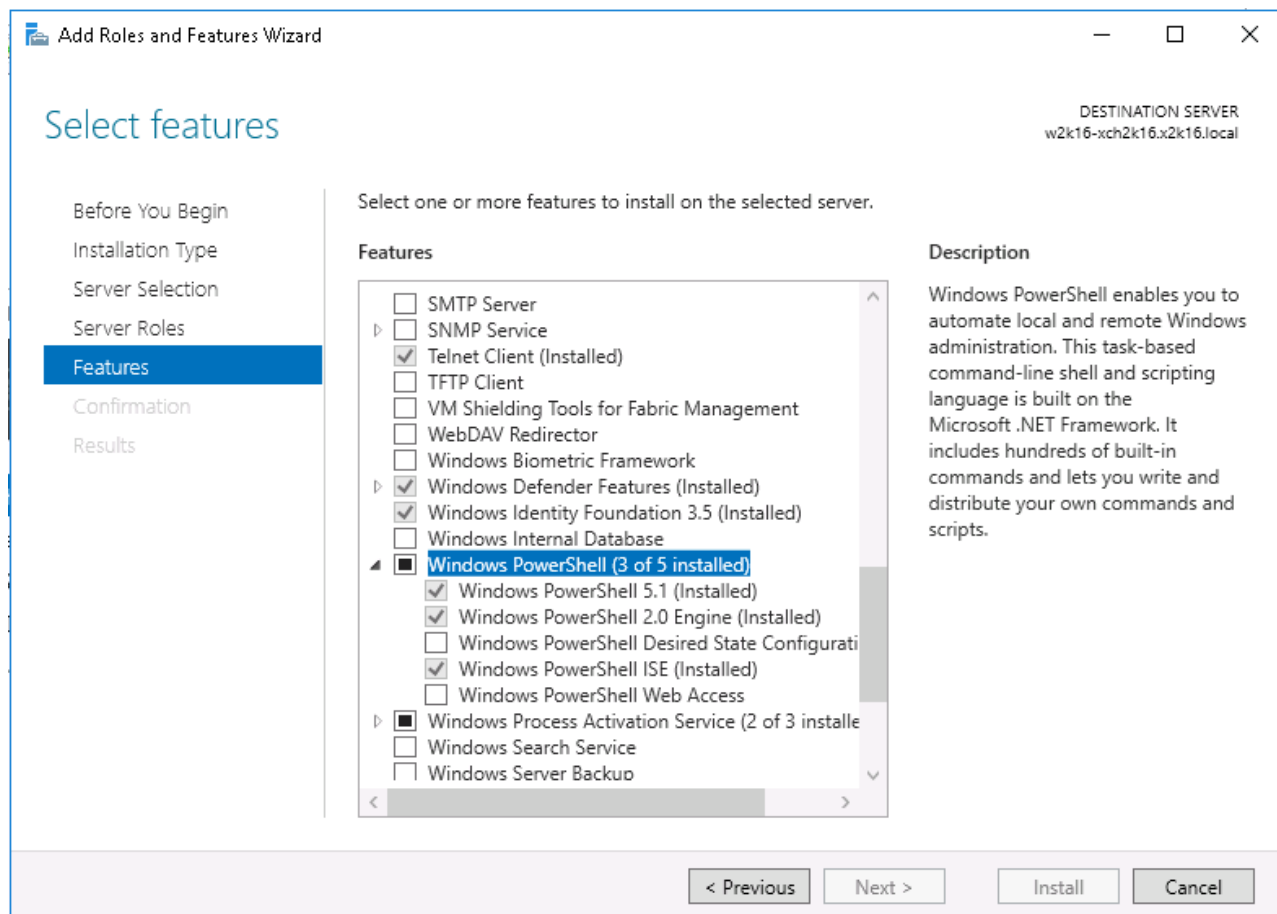
.Net Framework 4.6.2 Features

Ensure .Net Framework 4.6.2 Features is installed. Please refer to the following URL for detailed information:
https://docs.microsoft.com/en-us/Exchange/plan-and-deploy/system-requirements?view=exchserver-2016

This feature can be enabled by accessing Server Manager > Dashboard > Manage > Add Roles and Features Wizard > Feature Page.
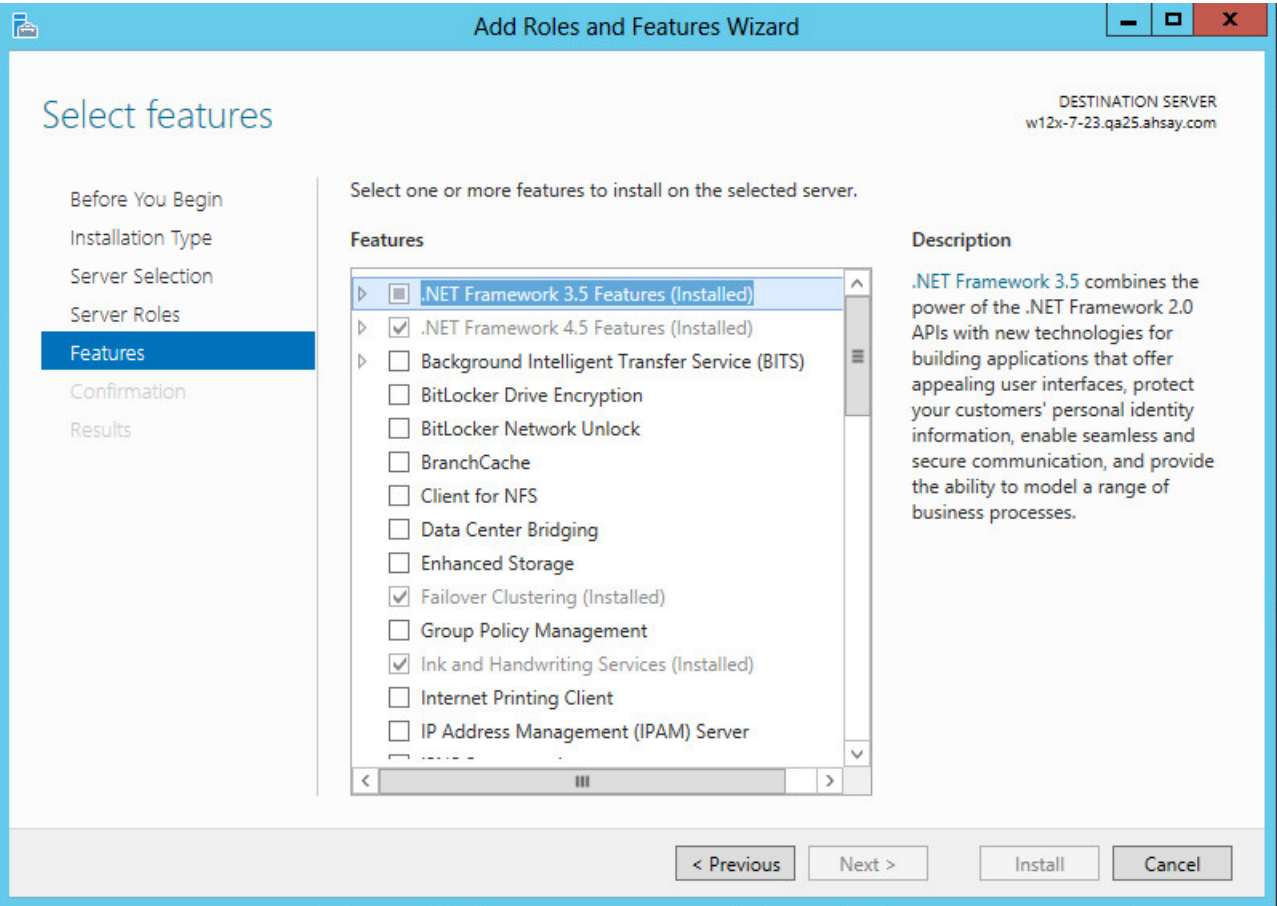
Supported Source

Mailbox Level

Below are the supported mailbox types of Exchange Server 2016 Mail Level backup.

Type	Supported?
User mailbox	✔
Room Mailbox	✔
Equipment Mailbox	✔
Public Folder	✔
Public Folder Mailbox	✔
Shared Mailbox	✔

Folder Level

Below are the items that you can backup or restore from an Exchange Server 2016 Mail Level backup set.

Folder	Supported?
Inbox	✔

Folder	Supported?
RSS Feeds	✔
Drafts	✔
Junk Email	✔
Sent Items	✔
Tasks	✔
Deleted Items	✔
Calendar	✔
Contacts	✔
Notes	✔
Archive	✔

Limitation

For backup and restoration of Exchange 2016 Mail Level backup set, there is some limitation:

1. If you are trying to restore item(s) from one mailbox to an alternate location mailbox, AhsayOBM will restore the item(s) to their respective destination folder(s) with the same name of the original folder(s).

   Example: Item from "Inbox" folder of Mailbox-A will be restored to the "Inbox" folder of the alternate location Mailbox-B; Item from "Drafts" folder of Mailbox-A will be restored to the "Drafts" folder of the alternate location Mailbox-B.
2. If you are trying to restore item(s) from several mailboxes to an alternate location mailbox, AhsayOBM will restore the item(s) to their respective destination folder(s) in alternate location mailbox with the same name of the original folder(s).

   Example: Item from "Inbox" folder of Mailbox-A and Mailbox-B will be restored to the "Inbox" folder of the alternate location Mailbox-C.
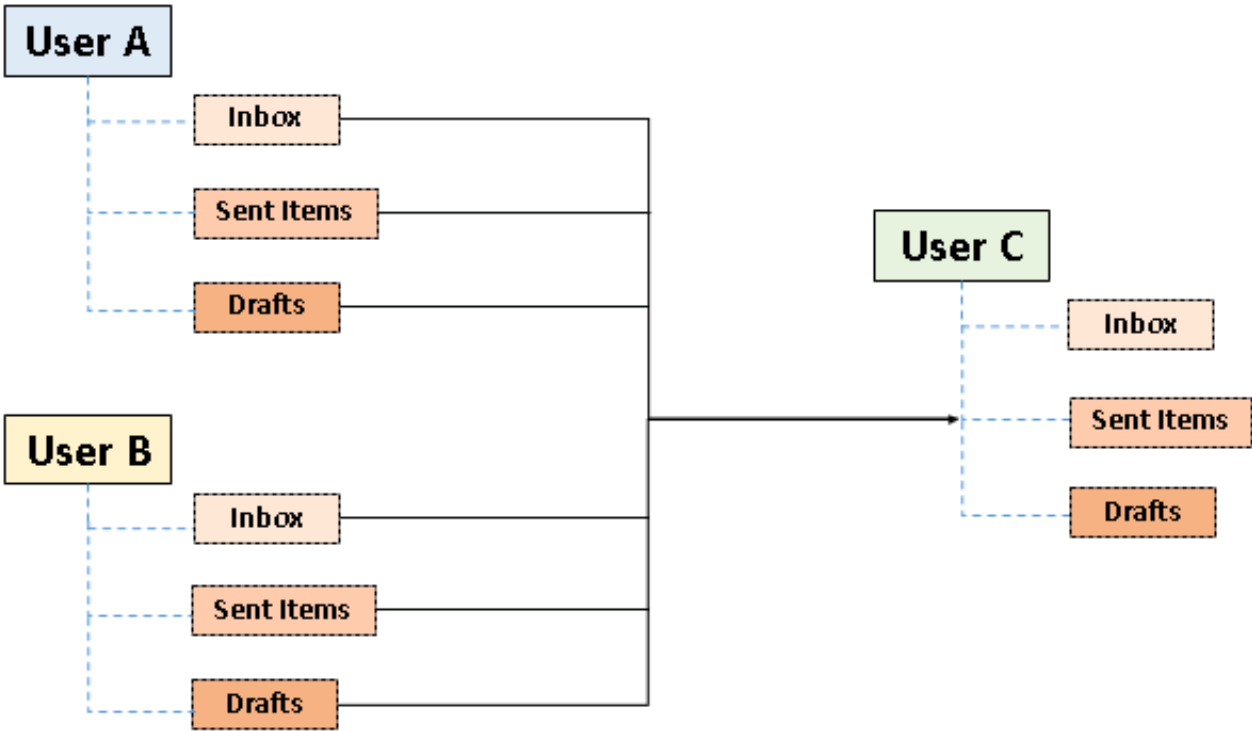
3. Restore of mailbox items or public folder items is only supported if the according mailbox or public folder exists.
4. Only Alternate Location is supported for restoring mailbox items to another domain.
5. Restore of mailbox item(s) in public folder to an alternate location mailbox is not supported.

   Example: Restore of mailbox item(s) in public folder from Mailbox-A to alternate location Mailbox-B is not supported.
6. If you are trying to restore the mailbox item to a destination mailbox which has a different language setting than the original mailbox, AhsayOBM will restore mailbox item(s) to their respective destination folder based on the translation listed below.

   For folders such as 'Calendar' or 'Notes', a new folder 'Calendar' or 'Notes' will be created.

Backup source (English)	Action	Destination User with Chinese as default language settings
Inbox	Merge	收件箱
Outbox	Merge	寄件匣
Sent Items	Merge	寄件備份
Deleted Items	Merge	刪除的郵件
Drafts	Merge	草稿
Junk E-Mail	Merge	垃圾電郵
Calendar	Create new folder	Calendar
Notes	Create new folder	Notes

Best Practice and Recommendation

The following are some best practices or recommendations we strongly recommend you follow before you start any Exchange Server 2016 Mail Level backup and restore.

- Mail Level Backup must be utilized in conjunction with Database Level Backup to fully protect an Exchange Server.
- Active Directory server should be protected by regular full Window System Backup at least once every two weeks.
- For AhsayOBM installed on Exchange Server, enable scheduled backup jobs when system activity is low to achieve the best possible performance.
- The remote backup machine should be on the same LAN as the MS Exchange server for optimal backup and restore performance.
- 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
- 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.
- **Distributed Backup Solution:** For backup of multiple or mass backup sets, to achieve better backup performance and to minimize any unnecessary loading on the Exchange server, please consider deploying AhsayOBM on remote backup machines as distributed backup solution instead of on the MS Exchange server.
- For backup of a large number of mailboxes, it is recommended to divide all mailboxes into multiple backup sets. By default, the MS Exchange 2016 mail level backup module can back up a maximum of 4 mailboxes concurrently (4 concurrent backup threads), while backing up a maximum of 4 mail items concurrently per mailbox (4 concurrent backup threads). Therefore, each backup set supports a maximum of $4 \times 4 = 16$ backup threads at a time. By splitting up all mailboxes into separate backup sets, the more backup sets, the faster the backup process can achieve.

Example-1: There are 100 mailboxes that need to be backup, you can divide 20 mailboxes into one backup set.

Backup Set Name	Mailbox Number
Backup-Set-1	No.1 – 20
Backup-Set-2	No.21 – 40
Backup-Set-3	No.41 – 60
Backup-Set-4	No.61 – 80
Backup-Set-5	No.81 – 100

If there are new mailboxes added, you can create new backup set for the new mailboxes.

Example-2: There are 100 mailboxes that needs to be backup, you can divide mailboxes into backup sets in alphabetic order.

Backup Set Name	Mailbox Name Start with
Backup-Set-1	A – E
Backup-Set-2	F – J

Backup Set Name	Mailbox Name Start with
Backup-Set-3	K – O
Backup-Set-4	P – T
Backup-Set-5	U – Z

> If there are new mailboxes added, you can add the new mailboxes into the original backup set by the corresponding alphabetic order.

Backup Process Overview

The following steps are performed during an Exchange Mail Level backup job:

Documentation

- Microsoft Exchange Server 2016 Mail Level Backup and Restore Guide

FAQs

- How to create a MS Exchange mail level backup set with AhsayOBM (MS Exchange 2007 / 2010)?
- How to create a MS Exchange mail level backup set with AhsayOBM (MS Exchange 2013)?

Issues

- Duplicate databases are displayed under empty DAG group when creating a MS Exchange mail level backup set (MS Exchange mail level backup)
- Incorrect error message 'Another backup job is still running' is displayed (MS Exchange mail level backup)
- MS Exchange mail level backup job cannot run to completion (for backup set with backup schedule disabled)

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