Dell EMC Avamar for Exchange VSS

User Guide

19.1

Dell Inc.

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Notes, cautions, and warnings

NOTE: A NOTE indicates important information that helps you make better use of your product.

CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.

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Preface

As part of an effort to improve its product lines, Dell EMC periodically releases revisions of its software and hardware. Therefore, some functions that are described in this document might not be supported by all versions of the software or hardware currently in use. The product release notes provide the most up-to-date information on product features.

Contact a technical support professional when a product does not function correctly or does not function as described in this document.

NOTE: This document was accurate at publication time. To find the latest version of this document, go to Online Support (https://www.dell.com/support).

Purpose

This guide describes how to install Avamar in a Microsoft Exchange Server 2019, 2016, 2013, or 2010 environment, and how to back up and restore data by using Avamar with Microsoft Volume Shadow Copy Service (VSS) technology.

Audience

The information in this document is primarily intended for:

- System administrators who are responsible for installing software and maintaining servers and clients on a network.
- Microsoft Exchange Administrators who are responsible for backing up and maintaining Microsoft Exchange servers.

Persons using this document should have current practical experience with the following:

- Operating system shell commands on the Exchange platform. Root permission is required.
- The specific version of Microsoft Exchange currently deployed at the site.

Revision history

The following table presents the revision history of this document:

Revision	Date	Description
04	June, 2021	Updated the "Backup fails due to case sensitivity" section in the "Troubleshooting" chapter.
03	August, 2020	Updated the "Restoring a database to the original client" and "Restoring a database to a different client" sections.
02	November, 2019	Updated the "Requirements to perform GLR" section.
01	May 20, 2019	First release of this document for Avamar 19.1.

Related documentation

The following publications provide additional information:

- *Avamar Administration Guide*
- *Avamar for Windows Server User Guide*
- *Avamar Backup Clients User Guide*
- *Avamar Operational Best Practices Guide*
- *Avamar Release Notes*
- *Avamar Config Checker for Microsoft Windows Technical Note*

Typographical conventions

Table 1. Typographical conventions

Bold	Used for names of interface elements, such as names of windows, dialog boxes, buttons, fields, tab names, key names, and menu paths (what the user specifically selects or clicks)
Italic	Used for full titles of publications that are referenced in text
`Monospace`	Used for: ● System code ● System output, such as an error message or script ● Pathnames, filenames, prompts, and syntax ● Commands and options
Monospace italic	Used for variables
`Monospace bold`	Used for user input
[ ]	Square brackets enclose optional values
|	Vertical bar indicates alternate selections - the bar means "or"
{ }	Braces enclose content that the user must specify, such as x or y or z
...	Ellipses indicate nonessential information that is omitted from the example

Where to get help

The Avamar support page provides access to licensing information, product documentation, advisories, and downloads, as well as how-to and troubleshooting information. This information may resolve a product issue before contacting Customer Support.

To access the Avamar support page:

1. Go to https://www.dell.com/support.
2. Type a product name in the **Enter a Service Tag, Serial Number, Service Request, Model, or Keyword** search box.
3. Select the product from the list that appears. When you select a product, the **Product Support** page loads automatically.
4. (Optional) Add the product to the **My Products** list by clicking **Add to My Saved Products** in the upper right corner of the **Product Support** page.

Documentation

The Avamar product documentation provides a comprehensive set of feature overview, operational task, and technical reference information. To supplement the information in product administration and user guides, review the following documents:

- Release notes provide an overview of new features and known limitations for a release.
- Technical notes provide technical details about specific product features, including step-by-step tasks, where necessary.
- White papers provide an in-depth technical perspective of a product or products as applied to critical business issues or requirements.

Knowledgebase

The Knowledgebase contains applicable solutions that you can search for either by solution number (for example, KB000xxxxxx) or by keyword.

To search the Knowledgebase:

1. Go to https://www.dell.com/support.
2. Under the **Support** tab, click **Knowledge Base**.
3. Type either the solution number or keywords in the search box. Optionally, you can limit the search to specific products by typing a product name in the search box and then selecting the product from the list that appears.

Online communities

Go to Community Network at https://www.dell.com/community for peer contacts, conversations, and content on product support and solutions. Interactively engage online with customers, partners, and certified professionals for all products.

Live chat

To engage Customer Support by using live interactive chat, click **Join Live Chat** on the **Service Center** panel of the Avamar support page.

Service requests

For in-depth help from Customer Support, submit a service request by clicking **Create Service Requests** on the **Service Center** panel of the Avamar support page.

NOTE: To open a service request, you must have a valid support agreement. Contact a sales representative for details about obtaining a valid support agreement or with questions about an account.

To review an open service request, click the **Service Center** link on the **Service Center** panel, and then click **View and manage service requests**.

Enhancing support

It is recommended to enable ConnectEMC and Email Home on all Avamar systems:

- ConnectEMC automatically generates service requests for high priority events.
- Email Home sends configuration, capacity, and general system information to Customer Support.

Comments and suggestions

Comments and suggestions help to continue to improve the accuracy, organization, and overall quality of the user publications. Send comments and suggestions about this document to DPAD.Doc.Feedback@emc.com.

Include the following information:

- Product name and version
- Document name and revision (for example, 01)
- Page numbers
- Other details to help address documentation issues

1

Introduction

Topics:

- Overview of the AUI
- Architecture
- Backup
- Exchange database restore
- Granular level recovery
- Disaster recovery
- Overview of the AUI

Overview of the AUI

The Avamar Web User Interface is a web management application that is used to administer an Avamar server.

You can use the AUI to monitor and configure the Avamar server. Use the AUI to monitor backups, restore operations, and system maintenance activities, and to configure backup policies, manage clients and user accounts, and configure other system settings.

You can administer one Avamar server at a time from the AUI.

The AUI dashboard appears when you log in to Avamar. The dashboard provides an at-a-glance view of Avamar system status. A navigation pane provides access to all functionality.

Architecture

You can use Avamar to back up and restore Microsoft Exchange Server data in a variety of environments.

Stand-alone environments

In a stand-alone Exchange server environment, all mailbox databases, log files, and checkpoint files reside on one server.

The following figure illustrates a basic system architecture when you use Avamar to back up a stand-alone Exchange server.

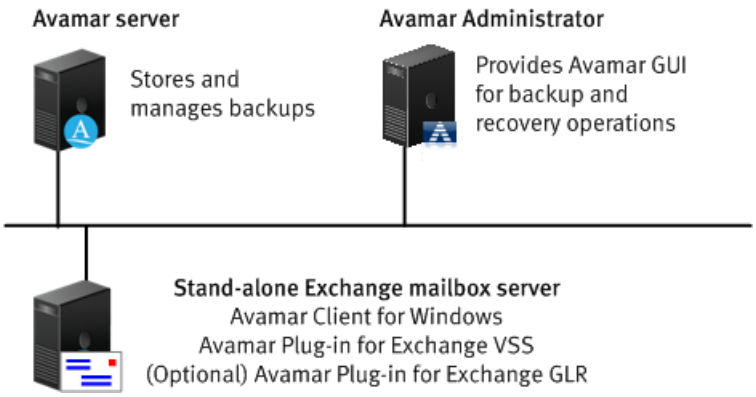

Figure 1. Stand-alone Exchange server environment with Avamar

Avamar Client for Windows

You can use the Windows File System plug-in to back up operating system and Exchange Server binary files, which are required for disaster recovery.

When you install the Avamar Client for Windows, the installation includes the Avamar Plug-in for Windows File System and the Avamar agent, which is required for the Avamar Plug-in for Exchange VSS.

Avamar Plug-in for Exchange VSS

The Exchange VSS plug-in enables you to back up and restore Exchange Server databases.

The Exchange VSS plug-in uses Microsoft Volume Shadow Copy Service (VSS) technology to perform backups. VSS is a framework that enables performance of volume backups while applications on a system continue to write to the volumes.

Avamar Plug-in for Exchange GLR

The Exchange GLR plug-in enables you to perform GLR of individual mailboxes, mail folders, or messages from full backups of Exchange Server database.

GLR can be performed in two ways:

- From the Avamar Administrator using native Microsoft Exchange MAPI CDO support.
- By using ItemPoint for Exchange. This option is the only version of GLR supported with Exchange 2016 and Exchange 2019. For other versions of Exchange, it is the recommended method for performing GLR.

Exchange Server DAG environments

There are two mechanisms to configure an Exchange Server Database Availability Group (DAG) environment:

- The standard IP based DAG implementation, applicable for IP based DAG only.
- Proxy for DAG implementation, applicable for both IP based and IP less DAG.

IP based DAG environments without a proxy client

In an IP based Exchange Server Database Availability Group (DAG) environment without a proxy client, install the Avamar Client for Windows and the Avamar Plug-in for Exchange VSS on each Exchange server with the Mailbox server role. Then use the Avamar Cluster Configuration Tool to configure the Exchange DAG client.

You can also configure an IP based DAG environment using a proxy client, as described inProxy-based DAG implementation on page 14.

The following figure illustrates an IP based Exchange Server DAG environment with Avamar without a proxy client.

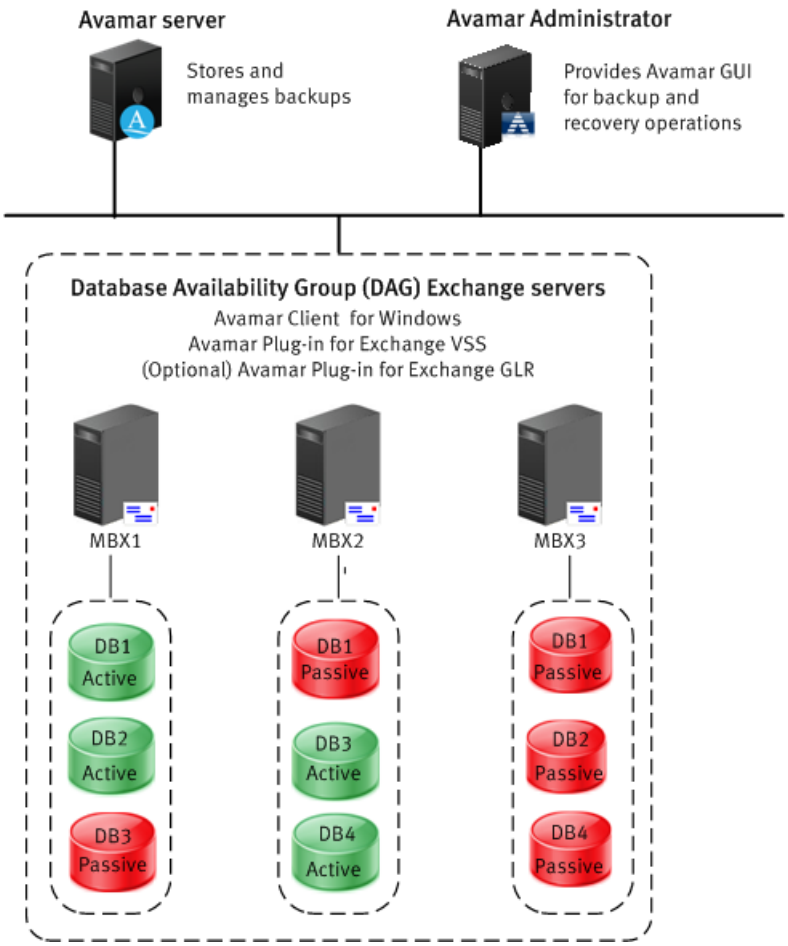

Figure 2. IP based Exchange Server DAG environment with Avamar without a proxy client

During configuration of an IP based DAG without a proxy client with the Avamar Cluster Configuration Tool, select **Configure a new DAG client for all nodes**. The Avamar Cluster Configuration Tool creates the DAG backup agent on each server in the DAG. The tool also creates a cluster group that contains the IP address, hostname, and service resources for the Exchange DAG client.

The Exchange DAG client enables you to perform federated backups of the databases in the DAG. During a federated backup, the Exchange DAG client passes backup requests to one or more servers in the DAG based on the specified backup settings. You can back up passive or active database copies, or a combination of both.

During a restore, the Exchange DAG client automatically determines the server with the active copy of the database, and restores to the active copy.

You can also back up and restore Exchange data on a specific server in a DAG.

Proxy-based DAG implementation

A proxy-based DAG implementation is required when configuring an IP less Exchange Server Database Availability Group (DAG) environment, and can also be used for IP based DAG implementations. With a proxy-based DAG implementation, install the Avamar Client for Windows and the Avamar Plug-in for Exchange VSS on each Exchange server with the Mailbox server role. Then use the Avamar Cluster Configuration Tool to select a node to serve as a proxy for the DAG.

The proxy-based DAG approach:

- Is required for IP less DAG implementations.
- Is optional for IP based DAG implementations.
- Shared `var` directory is not required.
- No additional cluster client is created on the Avamar server.
- No additional IP address is required for this client.
- There is no additional backup agent running on the client.

The following figure illustrates an IP less Exchange Server DAG environment with Avamar.

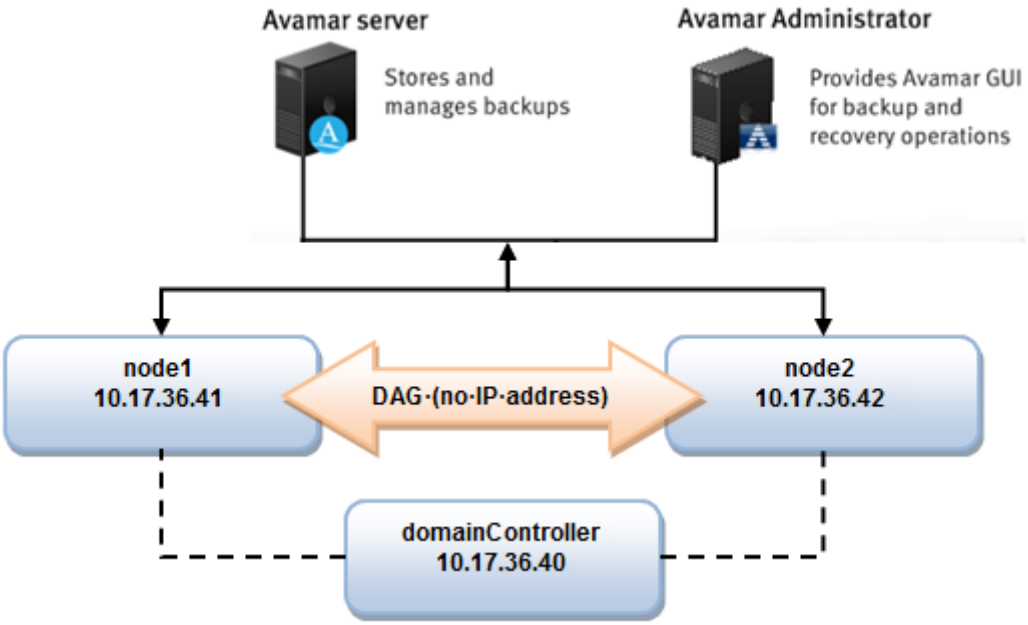

Figure 3. IP less Exchange Server DAG environment with Avamar

From this figure, the IP Less DAG consists of two nodes, node1 and node2, which are hostnames of two physical machines that have the same domain controller. All physical machines have their own IP addresses and hostnames, and all have to be registered on the same Avamar server.

During configuration of a proxy-based DAG implementation with the Avamar Cluster Configuration Tool, select **Configure new node as proxy for DAG** and then identify the node to be configured as the proxy. The Avamar Cluster Configuration Tool configures the proxy node. The node is then used as the Avamar client to backup, browse, and recovery files to all databases that are part of the DAG.

Local databases that are not part of the DAG but are present on the host that is configured as the proxy node cannot be backed up. Otherwise it is backed up when the ownership of the proxy node is transferred to another node in the DAG. To backup these local databases, rerun the Avamar Cluster Configuration Tool and select an alternate node to serve as the proxy node for the DAG.

Similarly, if you want to change proxy node ownership, you can rerun the Avamar Cluster Configuration Tool and select an alternate node to serve as the proxy node for the DAG. When a new node is selected to serve as the proxy, all subsequent backups are indexed to this client. All previous backups were indexed to the Avamar client for the previous proxy node. Also, the initial backup of the DAG with the new node serving as proxy is a full backup.

Avamar architecture for GLR

GLR can be performed in two ways:

- From the Avamar Administrator using native Microsoft Exchange MAPI CDO support.
- By using ItemPoint for Exchange. This option is the only version of GLR supported with Exchange 2016 and Exchange 2019. For other versions of Exchange, it is the recommended method for performing GLR.

GLR using ItemPoint for Exchange

ItemPoint is a tool that allows for granular email recovery. ItemPoint is simple to install and requires no changes or reconfiguration to your existing Exchange or Avamar environments.

To perform GLR using ItemPoint for Exchange, you must have ItemPoint software that is installed. This software is available as a part of the Avamar Plugin for Exchange installation. If you plan to perform GLR of public folder databases, you must use the GLR with ItemPoint for Exchange solution.

GLR on a proxy server

The recommended configuration for GLR in most environments is to use a proxy server. The proxy server can be any host (with or without Exchange mailbox server role) for EMC ItemPoint, or a separate Exchange mailbox server for Microsoft Exchange MAPI CDO. This server should be in the same Active Directory forest as the servers to which you back up and restore. Before you install the Exchange GLR plug-in on the proxy server, ensure that the proxy server meets the requirements.

You install both the Exchange VSS plug-in and the Exchange GLR plug-in on the proxy server. On Exchange servers with the active database copies, you install only the Exchange VSS plug-in.

NOTE: If you use EMC ItemPoint to perform GLR, you can install Exchange VSS plug-in and Exchange GLR plug-in (with EMC ItemPoint) on a host that does not have the Exchange server role installed. It is not required to configure an Avamar Backup User on this host. This method of performing GLR reduces the impact to the production server load that may increase while performing GLR.

When you perform GLR, the Exchange GLR plug-in on the proxy server mounts the temporary virtual drive on the proxy server. You can browse Exchange data on the proxy server and restore the data to the Exchange server with the active database copies.

The following figure illustrates an environment with a proxy server for GLR.

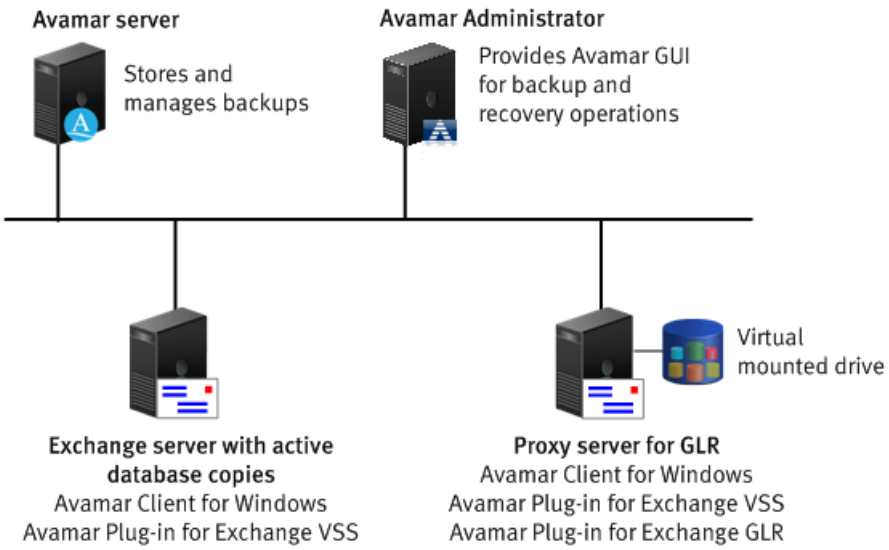

Figure 4. Exchange server environment with proxy server for Avamar GLR

Using a proxy server for GLR enables you to minimize the performance impact of GLR on the server with the active database copies. Offload system intensive GLR activities, such as mounting the virtual drive and browsing data, to the proxy server.

GLR on a stand-alone server

In an environment with a single stand-alone Microsoft Exchange server, you must install both the Exchange VSS plug-in and the Exchange GLR plug-in on the server to perform GLR.

When you perform GLR, the Exchange GLR plug-in mounts the temporary virtual drive on the stand-alone server. You can browse Exchange data on the virtual drive and restore the data to the Exchange server.

The following figure illustrates an environment with a stand-alone Exchange server for GLR.

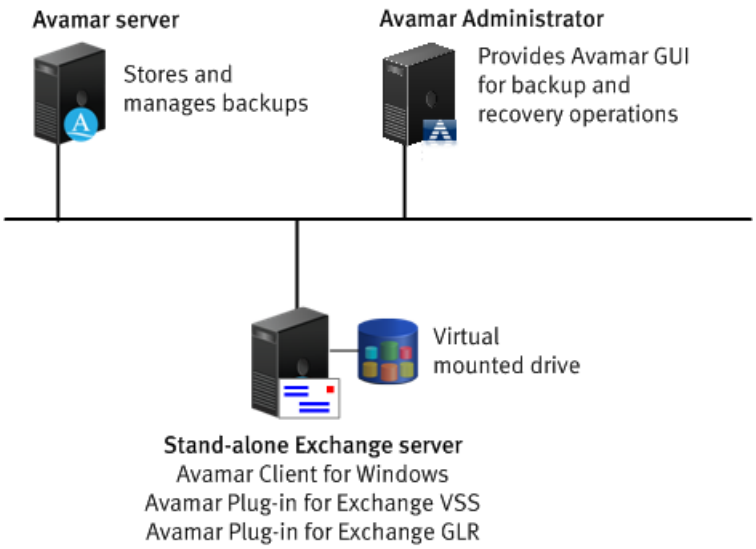

Figure 5. Stand-alone Exchange server environment with GLR

The GLR process places additional demands on computer hardware and resources beyond the base requirements for backup and restore. Ensure that the server meets the requirements.

GLR in a DAG environment

You can use any server in a DAG as the target server for GLR. You may want to use a DAG server that hosts primarily passive database copies. Alternatively, you may want to install the Exchange GLR plug-in on all servers in the DAG so that you can decide which server to use at the time that you perform GLR.

When you perform GLR, the Exchange GLR plug-in on the target server mounts the temporary virtual drive on the target server. You can browse Exchange data on the target server and restore the data to the Exchange server with the active database copies.

The GLR process of mounting and browsing an RDB when performing GLR by using the native MAPI CDO approach requires additional computer hardware and resources. Use a server that hosts passive database copies to minimize the performance impact on mail users. The servers that you use for GLR must meet the requirements to ensure sufficient performance.

The following figure illustrates a DAG environment where the Exchange GLR plug-in is installed on all servers in the DAG, but the DAG server with only passive database copies is the target server for GLR.

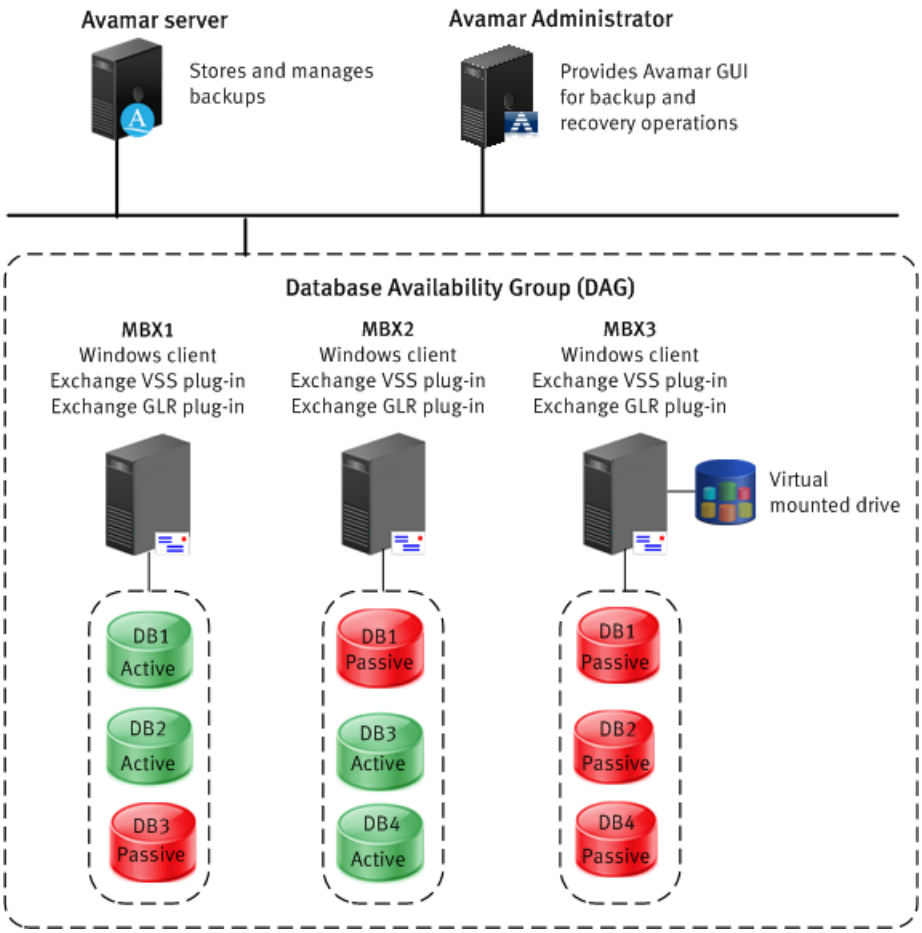

Figure 6. Exchange DAG environment with GLR

Data Domain system support

You can store backups on either the Avamar server or a Data Domain® system. Backup metadata is stored on the Avamar server.

Before you can store backups on a Data Domain system, add the Data Domain system to the Avamar configuration by using Avamar Administrator. Then select the Data Domain system in the plug-in options when you perform an on-demand backup or when you create a dataset for a scheduled backup. You can also use the command line interface (CLI) to perform backups to a Data Domain system.

The steps to restore backups are the same whether you restore from the Avamar server or a Data Domain system. The restore process determines the location of the backup and restores the backup.

Avamar also supports Data Domain Cloud Tier. DD Cloud Tier moves data from Data Domain to the cloud. From the Avamar Administrator, you can configure cloud tiering to move Avamar backups from Data Domain to the cloud, and perform seamless recovery of these backups.

The *Avamar and Data Domain System Integration Guide* provides more information about Data Domain systems in an Avamar environment, including detailed steps to add a Data Domain system to the Avamar configuration.

Backup

When you perform a backup with the Avamar Plug-in for Exchange VSS, you can back up the entire Exchange Information Store or specific databases. You cannot back up individual mailboxes, folders, or messages with the Exchange VSS plug-in. You also cannot back up an RDB.

Exchange data included in backups

Backups of a specific database include the database file and the transaction log and checkpoint files for the database.

When you back up the Exchange Information Store with the Exchange VSS plug-in, the backup includes the following data:

- All Exchange database (`.edb`) files for mailbox databases and public folder databases.
- The transaction log (`.log`) files for each database, which store operations such as a message creation and modification. Committed operations are written to the `.edb` file.
- The checkpoint (`.chk`) files for each database, which store information about successful operations when they are committed to the database.

Backup types

Perform a full backup of all databases after you upgrade Exchange Server or install service packs. Also perform a full backup when the proxy for a node had been changed when using proxy-based IP-less DAG.

The Exchange VSS plug-in can perform either full or incremental online backups of Exchange data:

- Full backups include the database files, transaction log files, and checkpoint files. Full backups are also called normal backups.
- Incremental backups include only the transaction log files and checkpoint files for a database.

The Exchange VSS plug-in does not support copy, differential, or offline backups.

NOTE: Restore from a full backup when you perform granular level recovery with the Avamar Plug-in for Exchange GLR.

Circular logging and incremental backups

Avamar does not support incremental backups of databases with circular logging enabled. When you enable circular logging for a database, Exchange overwrites transaction log files after the data in the log files is committed to the database. Circular logging enables you to save disk space by reducing the number of log files, but you can recover data only up until the last full backup.

If there are databases with circular logging that is enabled in the backup set and you perform an incremental backup, you can choose how the Exchange VSS plug-in handles the databases in the backup:

- Back up all databases but promote the backup to a full backup.
- Perform a full backup of only databases with circular logging enabled, and skip databases where circular logging is not enabled.
- Perform an incremental backup of only databases where circular logging is not enabled, and skip databases where circular logging is enabled.

Backup methods

You can perform both on-demand and scheduled backups with the Exchange VSS plug-in.

Use one of the following methods to perform backups with the Exchange VSS plug-in:

- Use Avamar Administrator, or the AUI to perform both on-demand and scheduled backups.
- Use the `avexvss` command line interface on the Exchange server to perform on-demand backups.

Backup of a stand-alone server

When you back up a stand-alone Exchange server, you can back up the entire Exchange Information Store or specific databases.

Backups in a DAG environment

You can perform either federated backups or backups of a specific server in an Exchange Server DAG environment.

Federated backups with the Exchange DAG client

With a federated backup, select the Exchange DAG client (see IP based DAG environments without a proxy client on page 13 for further information) or the proxy node (see Proxy-based DAG implementation on page 14 for further information) that you configure with the Avamar Cluster Configuration Tool as the client to back up. The Exchange DAG client passes backup requests to the servers in the DAG.

You can choose whether to back up active or passive database copies, or a combination of both. The Exchange VSS plug-in provides the following options for selecting the type of database for a federated backup of a DAG:

- Back up a preferred passive copy of each database, if a healthy passive copy is available. If a healthy passive copy is not available, then back up the active copy.
- Back up only the passive copy of each database.
- Back up only the active copy of each database.

Backups of the passive database copies are recommended in most environments because the backups have less impact on Exchange server performance and mail users.

You also can specify the priority of the servers to which the Exchange DAG client passes backup requests. The prioritized list of servers is called the preferred server order list (PSOL). If you do not specify a list, then the Exchange VSS plug-in adds all servers in the DAG to the list in alphabetical order.

To optimize backup performance, specify servers with passive copies first in the PSOL if you are backing up passive database copies. Specify the server with the active copy first in the PSOL if you are backing up active database copies.

NOTE: DAGs configured without a cluster administrative access point (IP less DAG) are supported. Proxy-based DAG implementation on page 14 contains further information about IP less DAG implementations.

Backups of a specific server in a DAG environment

You can back up databases on a specific server in a DAG environment by selecting the server name as the client to back up. You can specify whether the Exchange VSS plug-in backs up only active database copies, only passive database copies, or all databases on the server.

NOTE: When a proxy node implementation is used, the node that is configured as the proxy for the DAG cannot be used for backup of databases that are not part of the DAG.

Backup performance optimization

You can optimize backup performance by storing backups on a Data Domain system, implementing an efficient backup scheduling strategy, enabling multi-streaming, and managing consistency checks.

Backup storage

Performance is typically faster when you store backups on a Data Domain system instead of the Avamar server.

Backup scheduling

Schedule backups occur at times of minimal user activity, and avoid backups during memory intensive system maintenance activities.

Back up the passive copy of a database in a DAG or cluster environment to minimize the impact on Exchange server performance and mail users.

Multi-streaming

Multi-streaming enables parallel processing of backup jobs by using multiple processors.

You can use a maximum of 10 streams for each server for backups and four streams for each server for restores. In a DAG environment, you can use a maximum of 10 streams for each DAG server for backups and four streams for each DAG server for restores.

Each stream requires a separate processor. If you have multiple processors, multi-streaming enables you to improve backup performance when you store backups on either the Avamar server or on a Data Domain system.

Avamar consumes significantly more CPU during backups with multi-streaming. This additional CPU consumption on an active Exchange server can impact performance and affect end users. As a result, multi-streaming is recommended in DAG and cluster environments when you are backing up passive databases and nodes.

You can configure multi-streaming to create streams which are based on the number of volumes or on the number of databases. Balanced multi-stream backup performance occurs when all volumes are similar in overall size or when all databases are similar in size. Creating streams which are based on the number of volumes is recommended in most environments. If you balance databases across volumes so that each database is about the same size and each volume contains about the same number of databases, then there is little difference between creating streams by database or volume.

Consistency check management

A consistency check with the Exchange `eseutil` utility can cause severe performance issues or failure during a backup, especially in environments with many transaction logs.

If performance issues occur, you can throttle the consistency check by pausing the consistency check after a specific number of I/Os during the backup. The duration of the pause can be between 100 and 10,000 milliseconds.

You also can completely disable the consistency check during the backup. However, disabling the consistency check is recommended only in DAG environments with more than two servers. A consistency check verifies the integrity of a database. Disabling the consistency check increases the risk of backups of databases that are corrupt or missing files.

To throttle or disable the consistency check, specify the plug-in options when you perform an on-demand backup or create a dataset for scheduled backups.

Exchange database restore

You can restore an entire Exchange Information Store or database from a backup with the Exchange VSS plug-in.

Exchange database restore is most useful when an entire Exchange server or database has been lost or corrupted, or as part of a disaster recovery.

You can restore the Exchange Information Store or database by using either Avamar Administrator or the `avexvss` command line interface.

When performing restore operations, please note:

- Databases that are backed up in previous Exchange versions cannot be restored in new Exchange versions (for example, databases backed up in Exchange 2010 cannot be restored in Exchange 2013).
- Restoring databases from backups with lower Cumulative Update or Service Pack levels is supported.
- Restoring databases from backups with higher Cumulative Update or Service Pack levels is not supported.

After restoring data into the recovery database (RDB), the restored database may be in "dirty shutdown" state. To bring the restored database into a clean shutdown state, use the `eseutil /R` command. The “Eseutil” article on the Microsoft TechNet website describes how to use this tool.

Restoring to a stand-alone server

When you restore the Exchange Information Store or database to a stand-alone server from an Exchange VSS plug-in backup, the restore process overwrites the current databases at that location with the restored databases.

You can choose whether to replay transaction logs and automatically mount the databases after a successful restore. If you restore but do not replay the transaction logs, then you can manually copy additional logs before you manually mount the database.

Restore to a DAG

You can restore databases in a DAG from the following types of backups:

- Federated backup with the Exchange DAG client of either an active copy or a passive copy of the database.
- Backup of either an active copy or a passive copy of the database on a specific server in a DAG.

When you restore databases from a federated backup in a DAG, select the Exchange DAG client as the target client for the restore. The Exchange DAG client automatically determines the server with the active copy of the database, and restores to the active copy.

When you restore databases from a backup of a specific server in a DAG, select the DAG server with the active database copies as the target client for the restore.

Database restore to a file

With Exchange 2013 or 2010, you can restore databases from an Exchange VSS plug-in backup to a file either on the original server or on a different server. Specify the file system location for the restored files.

After the restore, you can configure the Exchange server to use the databases at the new location. You can also use third party tools such as Kroll OnTrack PowerControls to perform data mining and advanced data recovery.

This action is not supported for Exchange 2016 recoveries.

Database restore to an RDB

You can restore a database from a backup to an RDB, and then perform GLR from the RDB.

Granular level recovery

You can restore individual mailboxes, mail folders, and messages by performing granular level recovery (GLR) from a backup of an Exchange database.

Avamar supports three methods to perform GLR:

- GLR using Native Microsoft Exchange MAPI CDO.
- GLR from a recovery database (RDB).
- GLR using ItemPoint for Exchange. This is the only version of GLR supported with Exchange 2016 and 2019; for other versions of Exchange, it is the recommended method for performing GLR.

GLR using Native Microsoft Exchange MAPI CDO

The Avamar Plug-in for Exchange GLR mounts a temporary virtual drive on the target server and restores an Exchange database from a backup to an RDB on the virtual drive. The drive mounts to the `C:\Program Files\avs\var\avfscache` folder, where `C:\Program Files\avs` is the Avamar installation folder. The backup must be a full backup with the Exchange VSS plug-in.

You can then browse and extract individual mailboxes, folders, or messages from the database to restore. The selected items restore from the Avamar server to a Recovered Items folder in the original mailbox or in a target mailbox that you specify. A user can browse and select the items to keep.

The virtual drive automatically dismounts and the RDB is deleted from the target server for GLR after one of the following specified periods:

- The restore completes.
- The folder is inactive for 1 hour.
- The folder is inactive for 2 hours.

NOTE: You cannot perform GLR of items in public folder databases. Microsoft does not support public folder databases in RDBs. You also cannot restore individual items from archive and disconnected mailboxes. Restore the entire mailbox to a different live mailbox.

Delete all RDBs on the target server before the restore. You cannot browse a backup for mailboxes, folders, or messages to restore when there is an RDB on the server.

The following figure illustrates the GLR process with the Exchange GLR plug-in.

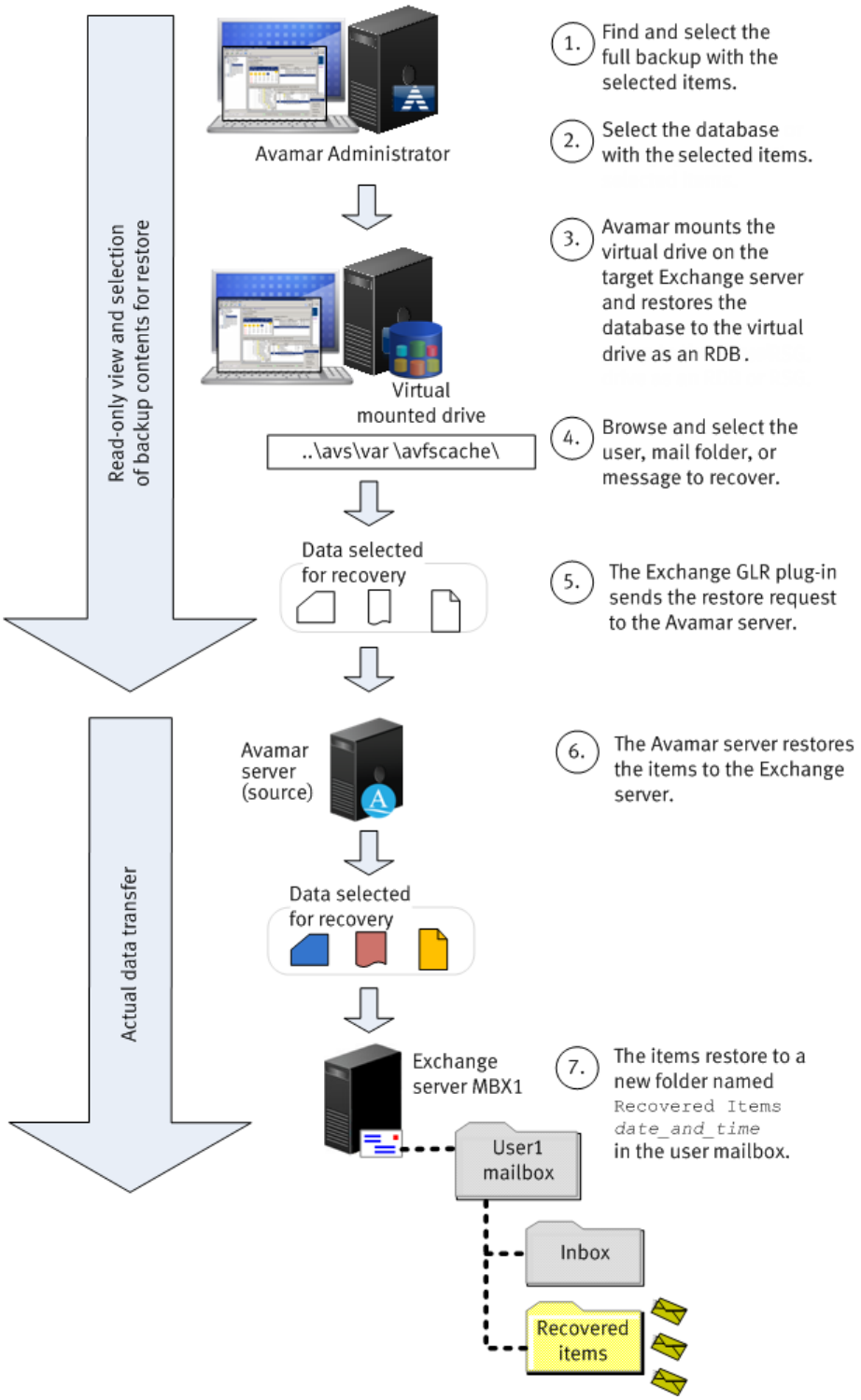

Figure 7. GLR process when you restore with the Exchange GLR plug-in

GLR from an existing RDB

You can restore a database from a backup to an RDB, and then perform GLR from the RDB. You can only restore to a single RDB at a time. The backup can be either a full or incremental backup with the Exchange VSS plug-in.

If an RDB is mounted on the target server, you must unmount or delete the RDB before the restore.

After you restore to an RDB, you can perform GLR by using one of the following methods:

- Restore specific mailboxes by using Exchange Management Shell commands.

- Browse the RDB by using the Avamar Plug-in for Exchange GLR, and restore specific mailboxes, folders, or messages. The selected items restore from the RDB to a `Recovered Items` folder in the original mailbox or in a target mailbox that you specify. A user can browse and select the items to keep.

NOTE: You cannot perform GLR of items in public folder databases. Microsoft does not support public folder databases in RDBs. You also cannot restore individual items from archive and disconnected mailboxes. You must restore the entire mailbox to a different live mailbox. This method of GLR is not supported for Exchange 2016 and 2019.

The following figure illustrates the GLR process when you restore to an RDB.

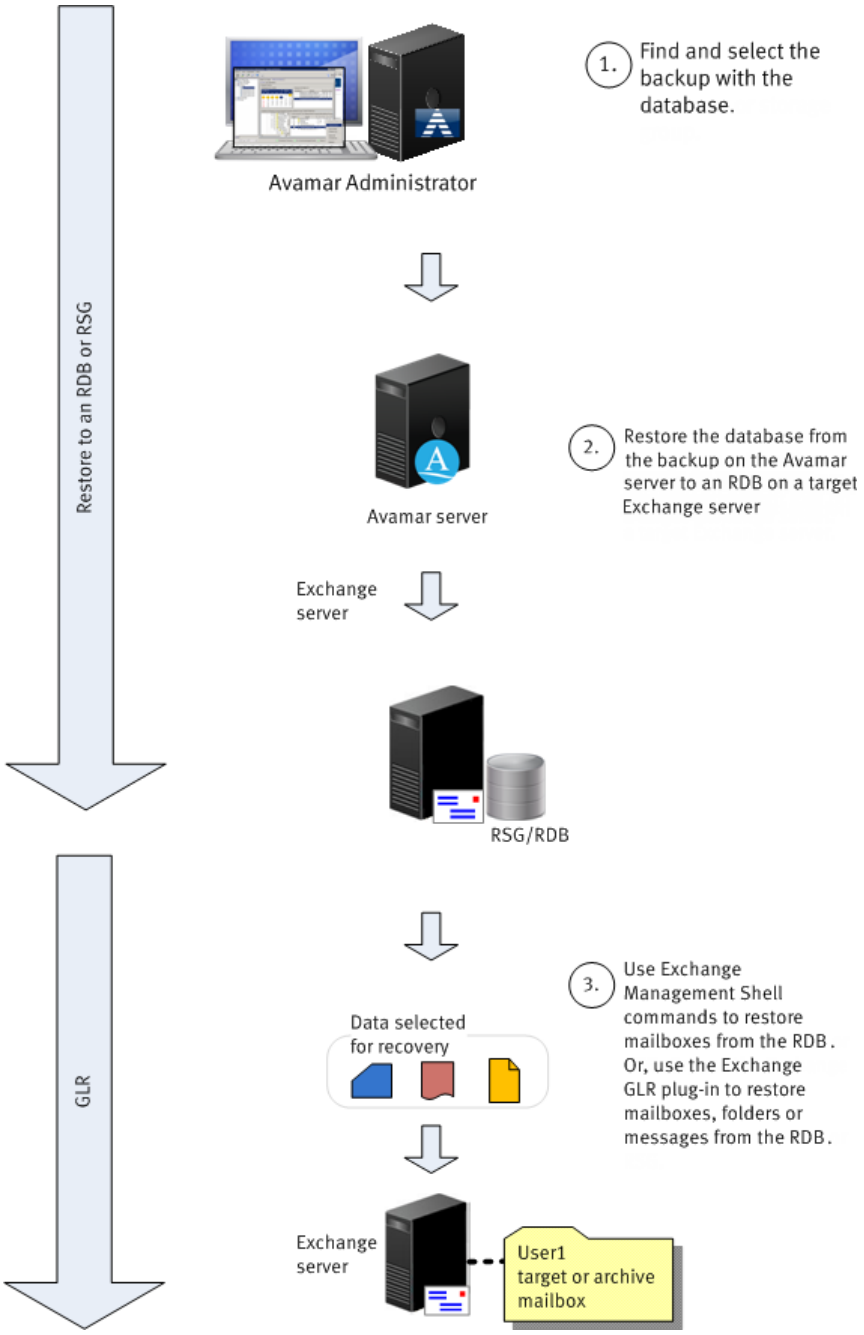

Figure 8. GLR process when you restore to an RDB

GLR using ItemPoint for Exchange

ItemPoint is a tool that allows for granular email recovery. ItemPoint is simple to install and requires no changes or reconfiguration to your existing Exchange or Avamar environments.

To perform GLR using ItemPoint for Exchange, you must have ItemPoint software that is installed. This software is available as a part of the Avamar Plugin for Exchange installation. If you plan to perform GLR of public folder databases, you must use the GLR with ItemPoint for Exchange solution.

Disaster recovery

The redundancy and replication of a clustered environment reduces the need for full disaster recovery, or at least the urgency of an emergency. Often if one server in the cluster fails, the cluster fails over to another server and there is little or no noticeable disruption to users or service. This result may give you some time to rebuild or bring replacement backup servers or cluster nodes online.

However, catastrophic events such as storms, power outages, earthquakes, fire, or intentional sabotage of physical equipment can take multiple machines or entire sites out of service. Even with remote mirror sites or other offsite backup servers, you may need to rebuild entire Exchange servers.

To ensure that you can perform a complete disaster recovery of a Microsoft Exchange environment when necessary, you must develop a comprehensive backup strategy to protect each component in the environment. Disaster recovery requires good planning, expertise in Exchange server installation, and regular scheduled full backups of the databases and servers.

Overview of the AUI

The Avamar Web User Interface is a web management application that is used to administer an Avamar server.

You can use the AUI to monitor and configure the Avamar server. Use the AUI to monitor backups, restore operations, and system maintenance activities, and to configure backup policies, manage clients and user accounts, and configure other system settings.

You can administer one Avamar server at a time from the AUI.

The AUI dashboard appears when you log in to Avamar. The dashboard provides an at-a-glance view of Avamar system status. A navigation pane provides access to all functionality.

2

Installation

Topics:

- Preparing to install the Avamar Plug-in for Exchange VSS
- Installing the Avamar client software
- Upgrading the Avamar client software
- Uninstalling the Avamar client software

Preparing to install the Avamar Plug-in for Exchange VSS

Review the system requirements for the Avamar client software, and ensure that the environment meets the requirements before performing the installation.

The Avamar Config Checker for Microsoft Windows provides an additional automated verification of the environment. You also must download the Windows client and plug-in installation package from the Avamar server.

System requirements

Ensure that the environment meets the client compatibility requirements in the *E-LAB Navigator* at https://elabnavigator.emc.com/eln/modernHomeDataProtection. The requirements in the *E-LAB Navigator* include supported operating systems and application versions, and supported high availability configurations.

The Avamar Client for Windows and the Exchange VSS plug-in that you install on the host must be the same version number.

Configuration recommendations

Perform a full backup of all databases after you upgrade Exchange server or install service packs.

When performing restore operations, please note:

- Databases that are backed up in previous Exchange versions cannot be restored in new Exchange versions (for example, databases backed up in Exchange 2010 cannot be restored in Exchange 2013).
- Restoring databases from backups with lower Cumulative Update or Service Pack levels is supported.
- Restoring databases from backups with higher Cumulative Update or Service Pack levels is not supported.

The Exchange VSS plug-in does not support the following configurations:

- Microsoft Exchange Server on Windows Small Business Server.
- Installation of Microsoft Exchange Server and Microsoft SharePoint Server on the same server.
- Microsoft Exchange Server 2003. For backup and recovery for Exchange Server 2003, use the Avamar 6.0 Exchange Database plug-in and the Exchange Message plug-ins.
- Microsoft Exchange Server 2007. For backup and recovery for Exchange Server 2007, use the Avamar 7.2 Service Pack 1 Exchange Database plug-in and the Exchange Message plug-ins.

Microsoft .NET Framework 4 requirement

The Exchange VSS plug-in requires installation of Microsoft .NET Framework 4 on each server in the Exchange forest. Search the Microsoft Download Center for “Microsoft .NET Framework 4” to find downloads and additional information.

High availability configuration recommendations

The Microsoft documentation for Exchange Server 2019, 2016, 2013 and 2010 recommends separate networks for public traffic and replication traffic. Using only one network connection can lead to unstable operations, such as databases that fail over to other systems when they experience network connection timeouts.

Hardware requirements

The following table lists the hardware requirements for the Avamar Plug-in for Exchange VSS.

Table 2. Hardware requirements

Requirement	Minimum
Memory (RAM)	64 MB
Hard drive space	Software installation requires at least 100 MB of permanent hard drive space. Local cache files require an additional 12 MB of permanent hard drive space for each 64 MB of physical RAM.
Network interface	10BaseT or higher, configured with the latest drivers for the operating system.

Exchange transaction log and database file storage location requirements

Microsoft best practices recommend that you store transaction log files and database files on separate volumes. Backup failures can occur when the database and system path are in a subfolder of the transaction logs folder.

The Microsoft TechNet articles in the following table describe Microsoft best practices for transaction log and database file storage locations.

Table 3. Best practices for transaction log and database file locations

Exchange Server version	Microsoft TechNet article title
2016, 2019	"Exchange Server 2016 Planning and Deployment"
2013	“Exchange 2013 Storage Configuration Options"
2010	“Understanding Storage Configuration”

Backups with the Exchange VSS plug-in fail if the path to database, transaction log, or checkpoint files includes symbolic links (symlinks) or directory junctions. Exclude databases with files available through symlinks or directory junctions from backups with the Exchange VSS plug-in.

Granular level recovery requirements

The requirements for granular level recovery (GLR) depend on whether you use a proxy server for GLR or a production Exchange server.

GLR proxy server requirements

The proxy server can be any host (with or without Exchange mailbox server role) for EMC ItemPoint, or a separate Exchange mailbox server for Microsoft Exchange MAPI CDO. This server should be in the same Active Directory forest as the servers to which you back up and restore.

If possible, use an Exchange proxy server for Exchange GLR operations. Using a proxy server enables you to install the Exchange GLR plug-in on only the proxy server instead of on all Exchange servers in the forest. You also do not need to restart the production Exchange Server during the Exchange GLR plug-in installation when Avamar upgrades the drivers for GLR operations.

ItemPoint for Exchange

Support for GLR using ItemPoint for Exchange requires that ItemPoint for Exchange is installed on the same host as the Exchange GLR plug-in. ItemPoint requires a minimum of Microsoft Outlook 2007 and cannot have MAPI installed. This is required for Exchange 2016 and 2019 GLR, and is supported for Exchange 2010 and 2013.

Granular level recovery system requirements

The GLR process with the Avamar Plug-in for Exchange GLR places additional demands on computer hardware and resources beyond the base requirements for backup and restore.

The following table describes the system requirements for the Avamar Plug-in for Exchange GLR.

Table 4. Exchange GLR plug-in system requirements

Requirement	Description
Memory (RAM)	The Avamar Plug-in for Exchange GLR requires additional memory (RAM). Start with1 GB of RAM. The required amount of additional or total memory depends on current system performance with existing memory: ● If resources are already strained and performance is slow with regular operations of the Avamar Plug-in for Exchange VSS, then add significantly more memory to support Avamar Plug-in for Exchange GLR operations. ● If performance is adequate with regular operations of the Avamar Plug-in for Exchange VSS, then additional memory may not be required to support Avamar Plug-in for Exchange GLR operations.
Disk staging area	Additional disk space is required to provide a disk staging area to hold writes to the Exchange database and log files.

For versions of Exchange before 2016, you must also download the MAPI client libraries and CDO 1.2.1 from the Microsoft website. Then install the libraries and CDO on each Exchange server with the Exchange GLR plug-in. While performing GLR by using the MAPI CDO approach, you must install the MAPI client. If Exchange 2016 or 2019 is being used with ItemPoint, you cannot have the MAPI libraries, MAPI client, and CDO installed.

Backup requirements for GLR

The Exchange database backup that you use to perform GLR must meet the following requirements:

- Must be a full backup.
- To perform backups of public folder databases, you must use the GLR with ItemPoint solution.

Multi-streaming requirements

Multi-streaming places additional demands on computer hardware and resources beyond the base requirements for the Avamar Plug-in for Exchange VSS. In addition, there are several configuration recommendations for multi-streaming.

Multi-streaming hardware and software recommendations

The following table lists hardware and software recommendations for multi-streaming.

Table 5. Multi-streaming hardware and software recommendations

Hardware and Software	Recommendations
CPU	At least one processor core per stream
Memory (RAM)	48 GB or more

Table 5. Multi-streaming hardware and software recommendations (continued)

Hardware and Software	Recommendations
Hard disk	• 1 disk drive for operating system/Exchange installation • 1 to 2 disk drives or RAID drive group for each Exchange database • 7200 RPM or faster disk drives
Network adapter	1 GB
Operating system	Windows Server 2008 R2 or later

Multi-streaming Exchange configuration requirements

Avamar consumes significantly more CPU during backups with multi-streaming. This additional CPU consumption on an active Exchange server can impact performance and affect end users. As a result, multi-streaming is recommended in DAG and cluster environments when you are backing up passive databases and nodes.

Ensure that the Exchange environment meets the following requirements for multi-streaming:

- Locate each database on a separate physical disk. If possible, locate the database file on one disk.
- For each database, locate the transaction logs on a separate disk.
- Best results occur when each database is approximately the same size.

When you specify multi-streaming options for a backup, specify a maximum of one backup stream for each disk in the backup set. For example:

- If you are backing up two databases, with each database on its own disk, specify a maximum of two streams.
- If you are backing up two databases where each database includes its logs on two disks (for a total of four disks), specify a maximum of four streams.

VSS requirements

The Avamar Plug-in for Exchange VSS uses Microsoft Volume Shadow Copy Service (VSS) technology to perform backups. VSS is a framework that enables performance of volume backups while applications on a system continue to write to the volumes.

The Exchange VSS plug-in uses the Microsoft Software Shadow Copy Provider and the following VSS writers:

- Microsoft Exchange Store VSS Writer
- Microsoft Exchange Replication VSS Writer

The Exchange VSS plug-in does not support hardware providers.

The Microsoft VSS framework supports as many as 64 volumes in a VSS snapshot. When you create a dataset or perform an on-demand backup, do not include more than 64 volumes. If you include more than 64 volumes in a snapshot, the backup fails and the Avamar event log lists the following error:

```
VSS_E_MAXIMUM_NUMBER_OF_VOLUMES_REACHED.
```

The VSS framework also limits the number of shadow copies to 64 per volume. If the number of shadow copies in a volume exceeds 64, the backup fails and the Avamar event log lists the following error:

```
VSS_E_MAXIMUM_NUMBER_OF_SNAPSHOTS_REACHED.
```

Downloading the software

Download the installation packages for the Avamar for Windows Client, the Avamar Plug-in for Exchange VSS, and the Avamar Config Checker from the Avamar server. Then save the installation packages to a temporary folder.

Prerequisites

Before installing the Avamar client software, you must first download the UpgradeClientDownloads package from the repository to the Avamar server. After downloading the file, you must install it on the server for the client installation packages to be available. Follow instructions for downloading and installing new packages from the repository in the Avamar Administration Guide to download and install the client installation packages to the server.

Steps

1. Log in to the Exchange server as an administrator.
2. Open a web browser and type the following URL:
   `https://Avamar_server/dtlt/home`

   where *Avamar_server* is the DNS name or IP address of the Avamar server.

   The **Avamar Web Restore** page appears.
3. Click **Downloads.**
   The **Downloads** list appears.
4. Click **+** next to the operating system headings until the applicable software installation packages appear.
5. Click the Avamar Client for Windows installation package, `AvamarClient-windows-x86_64-version.msi` (64-bit), where *version* is the Avamar plug-in version.
6. Save the Windows client installation package to a temporary folder.
7. Click the Avamar Plug-in for Exchange VSS installation package, `AvamarExchangeVss-windows-x86_64-version.exe`, where *version* is the Avamar plug-in version.
8. Save the Exchange VSS plug-in installation package to a temporary folder.
9. Click the Avamar Config Checker installation package, `Avamar_ConfigChecker_win_x64.zip` (64-bit).
10. Save the Config Checker installation package to a temporary folder.

Verifying the environment

Use the Avamar Config Checker for Microsoft Windows to verify that you correctly configured the Windows environment for Avamar backup and recovery. The Config Checker checks the configuration for problems that can lead to installation, backup, or recovery failures. These failures can affect the operating system for the application host or the application itself.

About this task

You can run the Avamar Config Checker either before or after you install Avamar software on the client computer.

The Config Checker supports only English language operating systems.

Steps

1. Unzip the Avamar Config Checker installation package. To install the software, run the setup program.
2. Start the Config Checker:
   a. Open the **Start** screen.
   b. Select **Avamar Config Checker**.
3. Click **Next** on the welcome page.
   The **Avamar Application and User Settings** page appears.
4. Select the version number from the **Avamar version** list.
5. In the application list, select the checkbox next to the applications on the client computer. Specify credentials, if required.
6. Click **Next**.
7. Review the summary information.
8. Click **Run Tests**.
   When the verification completes, the **Config Check Results** window appears.
9. Save or open the results in HTML format.

   NOTE: The Config Checker does not automatically save the results. If you do not save the results, you must rerun the Config Checker to view them.

10. Click **Finish** to exit the Config Checker.
11. Review the HTML result file, and correct all failed checks.
12. Rerun the Config Checker to ensure that all the checks are successful.
    The *Avamar Config Checker for Microsoft Windows Technical Note*, available on Online Support at https://support.EMC.com, provides troubleshooting information and details about the results that appear for each application.

Installing the Avamar client software

To install the Avamar client software, install the Avamar Client for Windows and the Exchange VSS plug-in on the client computer. Then register the client with the Avamar server. In a cluster environment, perform these steps on each node, and then configure the cluster client.

Installation road map

The steps to install the Avamar software for Microsoft Exchange depend on whether the Exchange server is on a stand-alone server or in a DAG or cluster environment.

Installing Avamar client software on a stand-alone server

Steps

1. Install the Avamar Client for Windows on the Microsoft Exchange server with the Mailbox server role.
2. Install the Avamar Plug-in for Exchange VSS on the Microsoft Exchange server with the Mailbox server role.

   If you intend to use a server for granular level recovery, two installation options are available:
   - GLR using ItemPoint for Exchange
   - GLR using Native Microsoft Exchange MAPI CDO

   With either of these options, also install the Exchange VSS plug-in. For Exchange 2016 or 2019 with GLR, ItemPoint software is required.
3. Register the Exchange server as a client with the Avamar server.
4. Create and configure the AvamarBackupUser account.

Installing the Avamar software in a DAG or cluster environment

Steps

1. Install the Avamar Client for Windows on each Microsoft Exchange server with the Mailbox server role.
2. Install the Avamar Plug-in for Exchange VSS on each Microsoft Exchange server with the Mailbox server role.

   If you intend to use a server for granular level recovery, two installation options are available:

   - GLR using ItemPoint for Exchange
   - GLR using Native Microsoft Exchange MAPI CDO

   With either of these options, also install the Exchange VSS plug-in. For Exchange 2016 or 2019 with GLR, ItemPoint software is required. In a DAG environment, you should configure at least one server for GLR.
3. Register each Exchange server as a client with the Avamar server.
4. Create and configure the AvamarBackupUser account.
5. Use the Cluster Configuration Tool to configure the Exchange DAG client, proxy client, or the Avamar cluster client.

Installing the Avamar Client for Windows

The Avamar Client for Windows includes the Avamar agent, the Windows File System plug-in, Windows VSS plug-in, and Windows Cluster File Server plug-in.

About this task

The Avamar agent is required for backups and restores with application plug-ins. The Windows File System plug-in enables you to back up and restore the file system, application binary files, and non-critical volumes. The Windows VSS plug-in enables you to back up and restore the system state and critical disks for bare metal recovery (BMR) of a Windows computer. Backups with the Windows File System, Windows VSS, and the Exchange VSS plug-ins are required for disaster recovery. The Windows Cluster File Server plug-in enables you to back up and restore file system data on shared storage in a Windows Server 2012 cluster.

A setup wizard leads you through the steps to install the Windows client. If the User Account Control (UAC) feature is enabled on the client computer, then you must start the setup wizard by using administrator privileges. Otherwise, the software does not install correctly. This procedure provides one method to bypass UAC. The Microsoft documentation provides other methods and additional information.

NOTE: When the client installer does not detect the cluster on Windows Server 2012 R2, the Avamar Cluster Configuration Tool is then not being installed. You can force installation of the Avamar Cluster Configuration Tool by adding `WIN_CLUSTER_DETECTED=1` for `msiexec` command installation of the Avamar Client.

Steps

1. Log in to the Exchange server with the Mailbox server role as an administrator.
2. Go to the temporary folder that contains the Avamar installation files that you downloaded.
3. Start the installer by using the appropriate method:
   - If UAC is disabled, double-click the installation file to open it.
   - If UAC is enabled, open a command prompt as an administrator, change directory to the location of the installation package, and then type the following command:

     `msiexec /i AvamarClient-windows-x86_64-`*`version`*`.msi`

     where *version* is the Avamar client version.

   The installation wizard opens at the welcome page.
4. Click **Next.**
   The **End-User License Agreement** page appears.
5. Review the license agreement.
6. To accept the terms in the license agreement, select the checkbox, and click **Next.**
   The **Custom Setup** page appears.
7. Ensure that **Avamar Client User Interface** is selected for installation.
8. (Optional) Specify a folder for the Avamar client installation by clicking **Browse** and selecting a location.
9. Click **Next** on the **Custom Setup** page.
   The **Please enter server information** page appears.
10. Complete the information about the Avamar server and click **Next** on the **Please enter server information** page.
    The **Ready to Install for Windows** page appears.
11. Click **Install.**
12. When the installation completes, click **Finish.**

Installing the Exchange VSS plug-in

Steps

1. Log in to the Exchange server with the Mailbox server role as an administrator.
2. Go to the temporary folder that contains the Avamar installation files that you downloaded.
3. To open the installation file, start the installer by double-clicking the file.

   The installation wizard opens at the welcome page with the **Avamar Exchange VSS Plugin** selected by default. This option cannot be unselected.

   NOTE: If a **Windows Security** dialog box appears during installation and indicates a possible security risk because of an unsigned driver or device, then click **Install** or **Install this driver software anyway**. The exact message varies, depending on the operating system, and may identify the software publisher EldoS Corporation.

4. (Optional) For GLR support, you have two options to select from the following:
   - GLR using ItemPoint for Exchange
   - GLR using Native Microsoft Exchange MAPI CDO

   For Exchange 2016 and 2019 GLR, ItemPoint for Exchange must be selected.

   NOTE: GLR using Itempoint for Exchange is selected by default in Avamar 18.1. You can unselect the option if you do not wish to install GLR using Itempoint for Exchange.

5. Click **Install**.
   - If ItemPoint for Exchange was kept selected in the previous step, the ItemPoint software is then installed:

a. If the machine on which ItemPoint for Exchange is being installed does not have the Exchange role, a message indicates that the no Exchange role has been found. To continue the installation, click **Yes**.

   NOTE: This option is applicable only for GLR operations using ItemPoint for Exchange. In this new feature of Avamar 7.5.1, machines with no Exchange role can also perform GLR operations using ItemPoint for Exchange.

b. A message indicates that the installation was successful. After clearing the message, the **Avamar Backup Plug-in for Exchange VSS Setup** page appears.

- If ItemPoint for Exchange was not selected in the previous step, the **Avamar Backup Plug-in for Exchange VSS Setup** page appears.

NOTE: The Exchange VSS plug-in automatically installs to the same folder as the Avamar Client for Windows.

6. Click **Next.**

   If you selected the option to install the Exchange GLR plug-in, then the **Exchange GLR WriteCache Folder** page appears. Go to the next step.

   Otherwise, the **Ready to Install Avamar Backup Plug-in for Exchange VSS** page appears.

7. Specify the location for the `WriteCache` folder. The folder contains a log of changes that the Exchange server makes to a dataset when it mounts the dataset for granular level recovery.

   The `WriteCache` acts as a filter to store and interpret those changes. This feature applies to the changes in the viewing and use of the mounted dataset without changing the original recovery dataset on the Avamar server. Generally, these log files are not large. They are temporary for the current granular level recovery session.

   NOTE: Do not specify a location on a Resilient File System (ReFS) volume on Windows Server 2012, 2016, and 2019. Avamar does not support writing to the `WriteCache` folder on ReFS volumes.

8. Select the **Launch Avamar Exchange Backup User Configuration Tool** checkbox to set up the AvamarBackupUser account after the plug-in installation.

   The account must have sufficient privileges on the Exchange server and domain to perform backup and recovery tasks.

9. Click **Install.**
   A message appears to confirm the installation of EldoS.
10. Click **Install**.

    The EldoS components are required for granular and message level recovery.

11. When the installation completes, click **Finish.**
12. If you selected the option to install the Exchange GLR plug-in, then you do not need to restart the server after installation.

Registering the client

Before you can back up or restore data on a server, you must register the server as a client with the Avamar server. Specify the name of the Avamar server, the Avamar domain for the client, and the port on the Avamar server for client/server communication. Avamar domains enable you to group clients and limit backup, restore, and monitoring privileges for the group to certain accounts.

Prerequisites

In a DAG or cluster environment, register each Microsoft Exchange server with the Mailbox server role as Avamar clients.

Steps

1. Log in to the Microsoft Exchange server.
2. Right-click the Avamar client system tray icon.
   A menu appears.
3. Select **Manage** > **Activate Client**.
   The **Activate Client Setup** dialog box appears.
4. In the **Administrator Address** box, type the DNS name or IP address for the Avamar server.
5. In the **Administrator Server Port** box, specify the port on the Avamar server for client/server communication.
6. In the **Client Domain** box, type the name of the Avamar domain for the client.

   The default name is **`clients`**.

7. Click **Activate**.
   A confirmation message appears.

8. Click **OK.**

AvamarBackupUser account

The AvamarBackupUser account provides Avamar services access to and privileges on Active Directory and Exchange servers with the Avamar Plug-in for Exchange VSS. In earlier versions, the AvamarBackupUser account was necessary only for GLR. However, all Exchange VSS plug-in installations now require this account.

After you install the Avamar Client for Windows and the Avamar Plug-in for Exchange VSS, you must create the AvamarBackupUser account once on the Exchange domain. Then configure the Avamar services on each Exchange server to log in as the AvamarBackupUser account.

NOTE: AvamarBackupUser account configuration is not required only on the machines that does not have Exchange role. You can still install ItemPoint for Exchange and perform GLR operations using ItemPoint for Exchange on such machines.

In most environments, you can use the Avamar Exchange Backup User Configuration Tool to automatically create the account with the required permissions and configure Avamar services. You can also manually create the account and configure services in the following situations:

- You want to use an existing mailbox for the AvamarBackupUser account.
- Automatic creation of the account with the Avamar Exchange Backup User Configuration Tool failed.

Creating and configuring the account with the Avamar Exchange Backup User Configuration Tool

Run the Avamar Exchange Backup User Configuration Tool on one Exchange server. This action is performed to create the AvamarBackupUser account and configure the Avamar Backup Agent and Exchange GLR services on the Exchange server to log in as the account.

About this task

In an environment with multiple Exchange servers, a DAG environment, or a cluster environment, run the tool on the remaining Exchange servers and select the **Existing user** option to configure the services on each server.

Steps

1. If you plan to use an existing account for the AvamarBackupUser account, ensure that the account is a member of the following Active Directory groups:
   - Avamar Roles

     Avamar Roles is a customized role group that is created by the Avamar Backup User Configuration Tool. The following roles are assigned to the Avamar Roles group: Database Copies, Databases, Disaster Recovery, Mail Recipient Creation, Mail Recipients, View-Only Configuration, and View-Only Recipients.
   - Domain Users
   - Exchange Servers
   - Exchange Trusted Subsystem
2. Log in to the Exchange server as a domain administrator. In an Exchange Server 2019, 2016, 2013 or 2010 DAG, log in to any server.
3. Start the Avamar Exchange Backup User Configuration Tool:
   - On Windows Server 2012, 2016, and 2019 open the **Start** screen and select **Backup User Configuration Tool**.
   - On Windows Server 2008 R2, open the **Start** menu and select **Program Files** > **Avamar** > **Backup User Configuration Tool**.

   The **Avamar Exchange Backup User Configuration Tool** appears.

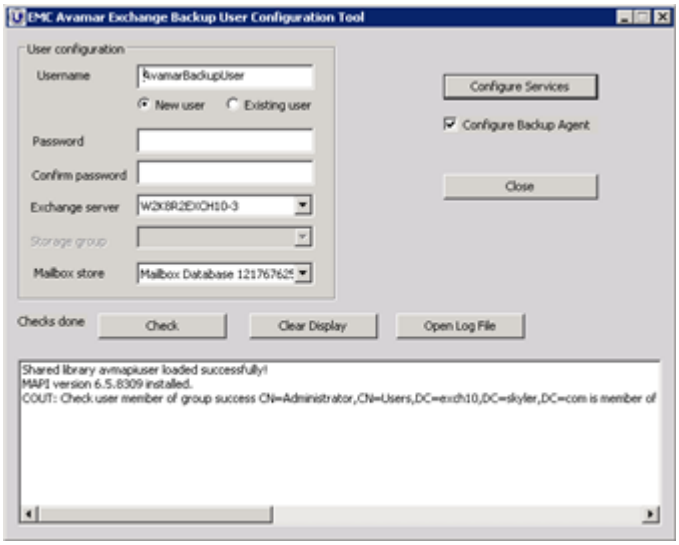

Figure 9. Avamar Exchange Backup User Configuration Tool

4. Specify whether to create an account or use an existing account:
   - Select **New user** to create an account.
   - Select **Existing user** to configure an existing account.
5. Specify the name for the account in the **Username** box.
6. In the **Password** box, type a password for the account.
7. Retype the password in the **Confirm Password** box.

   The password must comply with domain password policy settings. Otherwise, activation of the mailbox fails. Typically the domain administrator sets the password policy by using Group Policy at the domain level.
8. Select the Exchange server for the account from the **Exchange Server** list.
9. Select the mailbox store for the account from the **Mailbox store** lists.
10. Leave the **Configure Backup Agent** checkbox selected.

    This option automatically configures the Avamar Backup Agent service to log in as the AvamarBackupUser account.

    NOTE: Leave the checkbox selected unless you are configuring the account on a server where you perform backups with multiple Avamar plug-ins and one of the plug-ins requires that the Backup Agent service that is run as the local system account. When you perform backups of the server, you must specify the username and password for the AvamarBackupUser account in the plug-in options.
11. Click **Configure Services**.

    The tool performs the following tasks:
    - Creates, enables, and adds the AvamarBackupUser account to the necessary domain groups.
    - Creates a mailbox for the user.
    - Configures the Backup Agent service to run as the AvamarBackupUser account (when you select the **Configure Backup Agent** checkbox).
    - On servers with the Exchange GLR plug-in, configures the GLR service to run as the AvamarBackupUser account.
    - Verifies that the user can successfully log in.
12. Click **Check** to test the user settings.
    The message log lists the test results.
13. If all of the tests are successful, click **Close**.

    If any of the tests fail, then you may need to manually configure the AvamarBackupUser account.
14. In an environment with multiple Exchange servers, a DAG environment, or a cluster environment, run the tool on each of the remaining servers to configure the Avamar Backup Agent and Exchange GLR services:
    a. Log in to one of the other Exchange servers as a domain administrator.
    b. Start the Avamar Exchange Backup User Configuration Tool.
    c. Select **Existing user** to configure an existing account.
    d. Specify the name of the AvamarBackupUser account in the **Username** box.
    e. In the **Password** box, type the password for the account.

f. Retype the password in the **Confirm Password** box.
g. Leave the **Configure Backup Agent** checkbox selected.
h. Click **Configure Services**.

   The tool configures the Backup Agent and Exchange GLR services to log in as the AvamarBackupUser account.
i. Click **Check** to test the user settings.
   The message log lists the test results.
j. If all of the tests are successful, click **Close.**

   If any of the tests fail, then you may need to manually configure the services to log in as the AvamarBackupUser account.
k. Repeat these steps on each of the remaining Exchange servers in the environment.

Manually creating and configuring the AvamarBackupUser account

Steps

1. Log in to the domain controller as an administrator, and create a user account with the following settings:
   - The recommended name for the account is AvamarBackupUser.
   - The password for the account must comply with domain password policy settings. Otherwise, activation of the mailbox fails. Typically the domain administrator sets the password policy by using Group Policy at the domain level.
   - The password for the account should never expire.
2. Add the account as a member of the following groups:
   - Avamar Roles

     Avamar Roles is a customized role group that is created by the Avamar Backup User Configuration Tool. The following roles are assigned to the Avamar Roles group: Database Copies, Databases, Disaster Recovery, Mail Recipient Creation, Mail Recipients, View-Only Configuration, and View-Only Recipients.
   - Domain Users
   - Exchange Servers
   - Exchange Trusted Subsystem
3. Log in to the Exchange server as an administrator. In an Exchange Server 2019, 2016, 2013 or 2010 DAG, log in to any server.
4. From the Exchange Management Console, create an AvamarBackupUser mailbox that uses the default settings.

   Do not hide the mailbox from Exchange address lists.
5. Add FullAccess permission to the AvamarBackupUser account in the Exchange Management Shell by typing the following command on a single command line:

   ```
   get-exchangeserver -identity 'Exchange-server'|add-adpermission-user avamarbackupuser
   -ExtendedRights Receive-As,Send-As
   ```

   where *Exchange-server* is the name of the Exchange server.
6. Activate the AvamarBackupUser Exchange server mailbox by using one of the following methods:
   - Access the AvamarBackupUser mailbox with an Outlook email client.
   - Send a test email message to the AvamarBackupUser email account.
7. On all servers in the environment with the Exchange VSS plug-in, configure the Backup Agent service to run as AvamarBackupUser:
   a. Log in to the Exchange server as AvamarBackupUser.
   b. Open the Windows **Services** console.
   c. Right-click the **Backup Agent** service and select **Properties.**

      The **Backup Agent Properties** dialog box appears.
   d. Click the **Logon** tab.
   e. Select **This account**.
   f. Type the AvamarBackupUser account name in the **This account** box.

      If there is more than one Active Directory domain, then type the username with the syntax *domain\account*, where *domain* is the Active Directory domain for the AvamarBackupUser user account, and *account* is the name of the AvamarBackupUser account.
   g. Type the password for the AvamarBackupUser account in the **Password** and **Confirm Password** text boxes.
   h. Click **OK**.
   i. Restart the Backup Agent service by right-clicking the service and selecting **Restart.**

8. On all servers in the environment with the Exchange GLR plug-in, configure the Avamar Exchange GLR service to run as AvamarBackupUser:
   a. Log in to the Exchange server as AvamarBackupUser.
   b. Open the Windows **Services** console.
   c. Right-click the **Avamar Exchange GLR** service and select **Properties**.

      The **Avamar Exchange GLR Properties** dialog box appears.
   d. Click the **Logon** tab.
   e. Select **This account**.
   f. Type the AvamarBackupUser account name in the **This account** box.

      If there is more than one Active Directory domain, then type the username with the syntax *domain\account*, where *domain* is the Active Directory domain for the AvamarBackupUser account, and *account* is the name of the AvamarBackupUser account.
   g. Type the password for the AvamarBackupUser account in the **Password** and **Confirm Password** text boxes.
   h. Click **OK.**
   i. If the Avamar Exchange GLR service is started, then right-click the service and select **Stop.**

      If the service is already stopped, then do not start the service.

Specifying an Exchange Legacy Distinguished Name

You can specify an Exchange Legacy Distinguished Name for the AvamarBackupUser account.

Steps

1. Find the Exchange Legacy Distinguished Name by typing the following command in the Exchange Management Shell:

   `Get-Mailbox "AvamarBackupUser" | f1 LegacyExchangeDN`
2. Use a text editor to create a command file that is named `avmapi.cmd` in the `C:\Program Files\avs\var` folder, where `C:\Program Files\avs` is the Avamar installation folder.
3. Add the following line to the `avmapi.cmd` file:

   `--legacy_exch_dn=`*name*

   where *name* is the Exchange Legacy Distinguished Name for the AvamarBackupUser acount.

   For example:

   ```
   --legacy_exch_dn='/o=First Organization /ou=Exchange Administrative Group
   (FYDIBOHF23SPDLT) /cn=Recipients /cn=Administrator"
   ```
4. Save and close the file.

Configuration of Exchange DAG environments

Using the Avamar Cluster Configuration Tool, you can configure DAG environments either for standard IP based DAG or to use a proxy client, which is supported for both IP based and IP less DAG environments.

Configuring a standard IP based Exchange DAG client

Configuring an IP based Exchange DAG client allows you to perform federated backups of databases in an Exchange Server 2019, 2016, 2013 or 2010 DAG.

Steps

1. Log in to an Exchange server that is a member of the DAG with the AvamarBackupUser account.
2. Start the Cluster Configuration Tool:
   - On Windows Server 2012, 2016 or 2019, open the **Start** screen and select **Cluster Configuration Tool**.
   - On Windows Server 2008 R2, open the Start menu and select **Program Files** > **Avamar** > **Cluster Configuration Tool**.

   The welcome page appears.
3. Click **Next.**
   The **Plug-Ins** page appears.

4. Select **Exchange DAG** and click **Next.**
   The **DAG Nodes** page appears with a list of DAG servers and their status.
5. Ensure that the environment meets the following requirements:
   - The status for each Exchange server is Up.
   - The installation status of the Windows client software for each server is installed.
   - The installation status of the Exchange VSS plug-in on each server is installed.
6. Click **Next.**
   The **Operations** page appears.
7. Select **Configure a new DAG client for all nodes** and click **Next**.
   The **Prerequisites** page appears. A check mark next to a prerequisite indicates that the environment meets the prerequisite.
8. Ensure that the environment meets all prerequisites on the **Prerequisites** page.
   If the environment does not meet a prerequisite, then exit the wizard, resolve the issue, and restart the wizard.
9. Select the Internet Protocol version that the environment uses, and then click **Next.**
   The **DAG Client Settings** page appears.
10. Specify the IP address and network mask for the cluster group for the DAG client:
    a. Select the network in the network list.
    b. Type the IP address for the DAG client cluster group in the **Exchange DAG client IPv4/IPv6 address** box. The IP address must be a unique, unused IP address. Do not use the IP address for the DAG.
    c. Type the network mask for the DAG client cluster group in the **Exchange DAG client IP subnet mask** box.
11. Click **Next.**
    The **User Settings** page appears.
12. Select one of the following to specify which account to use for log in:
    - **Local System account**

      You are required to enter the AvamarBackupUser credentials each time you perform backup or restore. Select this option if you plan to use other Avamar solutions on the system which require the Backup Agent service to run under the Local System account.

    - Locate **This account**, and specify the **Account Name** and **Password** for the AvamarBackupUser account.

      The service runs under the AvamarBackupUser account, so you are not required to enter credentials each time you perform backup or restore.

13. Click **Next.**
    The **Server Settings** page appears.
14. Specify the settings for the Avamar server:
    a. Type either the DNS name of the Avamar server in the **Name** box or the IP address in the **IPv4/IPv6** address box.
    b. Type the name of the Avamar domain for the Exchange DAG client in the **Avamar client domain for the DAG client** box.
    c. Type the data port for the Avamar client/server communication in the **Port number** box.
    d. Type the path to the `var` folder for the cluster client in the **Cluster client's var directory** box, or click **Browse** to select a location.

       The `var` folder stores the Exchange DAG client configuration and log files. The AvamarBackupUser account and all nodes in the cluster must have write access to this location.

       NOTE: Select a volume that each server in the DAG can access.

15. Click **Next.**
    The **Summary** page appears.
16. Review the settings that you specified in the wizard, and click **Configure.**
    The **Progress** page provides the status of the configuration. When the configuration is complete, the **Results** page appears.
17. Click **Close.**

Adding servers to an IP based DAG configuration

You can add servers to the IP based Exchange DAG client configuration after you configure the client with the Cluster Configuration Tool. The servers that you add might be new servers in the DAG, or they might have been offline when you configured the Exchange DAG client.

Steps

1. Log in to the new server with the AvamarBackupUser account.
2. Install the Avamar Client for Windows on the new server.
3. Install the Avamar Plug-In for Exchange VSS on the new server.
4. Set the Backup Agent service to run as the AvamarBackupUser account.
5. If you install the Exchange GLR plug-in on the server, then set the Exchange GLR service to run as the AvamarBackupUser account.
6. Open the Cluster Configuration Tool:
   - On Windows Server 2012, 2016 or 2019, open the **Start** screen and select **Cluster Configuration Tool**.
   - On Windows Server 2008 R2, open the **Start** menu and select **Program Files** > **Avamar** > **Cluster Configuration Tool**.

   The wizard opens at the **Welcome to Avamar Windows Cluster Configuration** page.
7. Click **Next.**
   The **Plug-Ins** page appears.
8. Select **Exchange DAG** and click **Next.**
   The **DAG Nodes** page appears with a list of servers and their status.
9. Ensure that the environment meets the following requirements:
   - The status for each Exchange server is Up.
   - The installation status of the Windows client software for each server is Installed.
   - The installation status of the Exchange VSS plug-in on each server is Installed.
10. Click **Next.**
    The **Operations** page appears.
11. Select **Configure new nodes with the existing DAG client configuration** and click **Next.**
    The **Prerequisites** page appears. A check mark next to a prerequisite indicates that the environment meets the prerequisite.
12. Ensure that the environment meets all prerequisites on the **Prerequisites** page.

    If the environment does not meet a prerequisite, then exit the wizard, resolve the issue, and restart the wizard.
13. Click **Next.**
    The **Summary** page appears.
14. Review the settings that you specified in the wizard, and click **Configure.**
    The **Progress** page provides the status of the configuration. When the configuration is complete, the **Results** page appears.
15. Click **Close.**

Configuring an Exchange DAG proxy client

About this task

Configuring an IP Less Exchange DAG client allows you to perform federated backups of databases in the following environments:

- IP based DAGs in an Exchange Server 2010, 2013, 2016 or 2019 environment.
- IP less DAGs in an Exchange Server 2013 or Service Pack 1 2016 or 2019 environments.

Steps

1. Log in to an Exchange server that is a member of the DAG with the AvamarBackupUser account.
2. Start the Cluster Configuration Tool by opening the **Start** screen and select **Cluster Configuration Tool**.
   The welcome page appears.
3. Click **Next.**
   The **Plug-Ins** page appears.
4. Select **Exchange DAG** and click **Next.**
   The **DAG Nodes** page appears with a list of DAG servers and their status.

5. Ensure that the environment meets the following requirements:
   - The status for each Exchange server is Up.
   - The installation status of the Windows client software for each server is installed.
   - The installation status of the Exchange VSS plug-in on each server is installed.
6. Click **Next.**
   The **Operations** page appears.
7. Select **Configure new node as proxy for DAG** and click **Next**.
   The **Proxy for DAG** page appears.
8. Select the node that serves as the proxy for this DAG from the **Available nodes** list and move it to the **Proxy For DAG** list and click **Next**.
   The **Summary** page appears.
9. Review the settings that you specified in the wizard, and click **Close**

Upgrading the Avamar client software

The following sections contains information about upgrading the Avamar client and Exchange VSS plug-in software.

Upgrading on a stand-alone server

Steps

1. Ensure that the environment meets all system requirements for the new version.
2. Uninstall the current version of the Avamar client and plug-in:
   a. Uninstall the earlier version of the Exchange VSS plug-in.

      The Exchange GLR plug-in uninstalls automatically when you uninstall the Exchange VSS plug-in. If a dialog box prompts you to restart the computer after you uninstall the Exchange GLR plug-in, then restart it.
   b. Uninstall the earlier version of the Avamar Client for Windows.

      The plug-in guide for the earlier version provides instructions for each of these steps.
3. Install and configure the new version of the Avamar client and plug-in:
   a. Install the new version of the Avamar Client for Windows.
   b. Install the new version of the Exchange VSS plug-in, and optionally the Exchange GLR plug-in. If you install the Exchange GLR plug-in, then you do not need to restart the server after installation.
   c. Register the Exchange server as a client with the Avamar server.
   d. Create the AvamarBackupUser account, if the account does not exist.

      If the account exists, ensure that the Backup Agent service on each server with the Exchange VSS plug-in and the Exchange GLR service on each server with the Exchange GLR plug-in use the AvamarBackupUser account.

Using push upgrade on a stand-alone server

You can also "push" upgrades to stand-alone exchange servers using the Avamar push installation feature.

Push upgrades are supported for stand-alone computers only and are not supported for the GLR plug-in. *Avamar Administration Guide* contains information about using push installation.

Upgrading in a DAG or cluster

When you upgrade Avamar client and plug-in software in a cluster, you must uninstall the current Avamar clients and plug-ins from each node, and then install the new versions.

Steps

1. Ensure that the environment meets all system requirements for the new version.
2. Uninstall the current version of the Avamar client and plug-in:
   a. Use the Cluster Configuration Tool to uninstall the Exchange DAG client or the Avamar cluster client.

b. Uninstall the earlier version of the Avamar Plug-in for Exchange VSS.

   The Exchange GLR plug-in uninstalls automatically when you uninstall the Exchange VSS plug-in.

c. Uninstall ItemPoint, if it was installed. It is not uninstalled automatically when the plug-in is uninstalled.

d. Uninstall the earlier version of the Avamar Client for Windows.

   The user guide for the earlier version provides instructions for each of these steps.

3. Install and configure the new version of the Avamar client and plug-in:

   a. Install the new version of the Avamar Client for Windows on each Exchange server with the Mailbox server role.

   b. Install the new version of the Exchange VSS plug-in, and optionally the Exchange GLR plug-in, on each Exchange server with the Mailbox server role. If you install the Exchange GLR plug-in, then you do not need to restart the server after installation.

   c. Register each Exchange server as a client with the Avamar server.

   d. Create the AvamarBackupUser account, if the account does not exist.

      If the account exists, ensure that the Backup Agent service on each server with the Exchange VSS plug-in and the Exchange GLR service on each server with the Exchange GLR plug-in use the AvamarBackupUser account.

   e. Use the Cluster Configuration Tool to configure the Exchange DAG client or Avamar cluster client.

Uninstalling the Avamar client software

You can uninstall Avamar client and plug-in software on a stand-alone server, a DAG environment, or a cluster environment.

Uninstall road map

To uninstall Avamar client and plug-in software from a stand-alone server, uninstall the plug-in and Windows client by using standard Windows uninstall features. In a DAG or cluster, first uninstall the Avamar cluster client. Then uninstall the plug-in and Windows client on each node.

Steps

1. (DAG or cluster only) Uninstall the Exchange DAG client or the Avamar cluster client.
2. Uninstall the Exchange VSS plug-in.

   The Exchange GLR plug-in uninstalls automatically when you uninstall the Exchange VSS plug-in. If a dialog box prompts you to restart the computer after you uninstall the Exchange GLR plug-in, then restart it.
3. Uninstall the Avamar Client for Windows.
4. (DAG and cluster only) Repeat the steps on each server or node.

Uninstalling the Exchange DAG client, proxy for DAG, or Avamar cluster client

Steps

1. Log in to a DAG server or an active cluster node with the AvamarBackupUser account.
2. Start the Cluster Configuration Tool:

   - On Windows Server 2012, 2016 or 2019, open the **Start** screen and select **Cluster Configuration Tool**.
   - On Windows Server 2008 R2, open the **Start** menu and select **Program Files** > **Avamar** > **Cluster Configuration Tool**.

   The welcome page appears.
3. Click **Next.**
   The **Plug-Ins** page appears.
4. Select **Exchange DAG** and click **Next.**

   The **DAG Nodes** page appears with a list of servers and their status.
5. Ensure that the status of each server or node is Up. Otherwise, the Cluster Configuration Tool cannot uninstall the Exchange DAG client from the server.

6. Click **Next.**
   The **Operations** page appears.
7. Select **Remove the DAG client from all nodes**, **Remove Proxy for DAG**, or **Remove the cluster client from all nodes**, and then click **Next.**
   The **Prerequisites** page appears.
8. Ensure that the environment meets all prerequisites on the page, and click **Next.**
   The **Select Service** page appears.
9. Select the service that you want to remove the DAG or cluster client from, and then click **Next.**
   The **Summary** page appears.
10. Review the settings that you specified in the wizard, and click **Uninstall.**
    The **Progress** page provides the status of the uninstall. When the uninstall is complete, the **Results** page appears.
11. Click **Close.**

Manually uninstalling the DAG client by Failover Cluster Manager

If the Cluster Configuration Tool to uninstall is not an option, you can manually remove the DAG client using the Failover Cluster Manager.

Steps

1. Log in to an Exchange server in the DAG with the Domain Administrator account and open Windows Failover Cluster Manager.
   - On Windows Server 2012, 2016 or 2019, open the **Start** screen and select **Failover Cluster Manager**.
   - On Windows Server 2008 R2, open the **Start** menu and select **All Programs** > **Administrative Tools** > **Failover Cluster Manager**.
2. In Failover Cluster Manager list all cluster groups.
   - On Windows Server 2012, 2016 or 2019, in Failover Cluster Manager select **Roles**.
   - On Windows Server 2008 R2, in Failover Cluster Manager select **Services and applications**.
3. Stop the Avamar cluster group for DAG client.
   - On Windows Server 2012 or 2016, right-click the Avamar cluster group for the DAG client and select **Stop Role**.
   - On Windows Server 2008 R2, right-click the Avamar cluster group for the DAG client and select **Take this service or application offline**.
4. Delete the Avamar cluster group for DAG client.
   - On Windows Server 2012, 2016 or 2019, right-click the Avamar cluster group for the DAG client and select **Remove**.
   - On Windows Server 2008 R2, right-click the Avamar cluster group for the DAG client and select **Delete**.

   This action deletes the service's resource and the Avamar DAG client network resource.
5. Delete the Avamar DAG client's computer name from the Active Directory.
   a. Log in to a domain controller with Domain Administrator credentials and open **Active Directory Users and Groups**.
   b. Select **Computers** to list all computers in the domain.
   c. Right-click the Avamar DAG client's computer name and select **Delete**.
6. On each member of the DAG group, perform the following steps:
   a. Open the **Windows Command Prompt** as **Administrator**.
   b. Delete the Avamar Backup Agent for DAG client services with the following command:
      `sc delete SERVICENAME`

      Where *SERVICENAME* is the name of the backup service for Avamar DAG client.
7. If you do not intend to configure the DAG client again, remove the `cid.bin` file from the DAG client's `var` folder.
   After removing the `cid.bin` file, the DAG client is not able to re-register on the Avamar server with another DAG client configuration.

   In Windows File Explorer, open the DAG client's `var` folder and remove the `cid.bin` file.

   The DAG client's `var` folder was specified in the Cluster Configuration Tool during previous configuration.

Uninstalling the Exchange VSS plug-in

To uninstall the Exchange VSS plug-in, use **Programs and Features**.

The Exchange GLR plug-in uninstalls automatically when you uninstall the Exchange VSS plug-in. ItemPoint for Exchange software does not uninstall automatically and must be uninstalled separately.

Uninstalling the Avamar Client for Windows

To uninstall the Avamar Client for Windows, use **Programs and Features**.

3

Backup

Topics:

- Perform an on-demand Exchange backup by using AUI
- Performing on-demand backups by using Avamar Administrator
- Scheduling backups using the AUI Policy wizard
- Monitoring backups
- Cancel backups
- Enforcement of backups to Data Domain

Perform an on-demand Exchange backup by using AUI

An on-demand backup is a user-initiated backup of Exchange data on a client. You can perform an on-demand backup for the first backup of the client immediately after you install the Avamar client software. Perform also an on-demand backup before system maintenance, software installations, or software upgrades.

About this task

You can perform a client backup that is independent of existing schedules and policies.

Steps

1. In the AUI navigation pane on the left, click ≫, and then click **Asset Management**.
   The **Asset Management** window is displayed.
2. Select the domain that contains the host of the Exchange server.
   A list of Avamar clients is displayed in the pane under the domains list.
3. In the list of clients, select the client computer to back up.
4. Click the **Backup** tab.
   The Backup wizard is displayed. In the **Plugin** pane, a list of plug-ins on the client is displayed.
5. In the **Plugins** pane, perform the following steps:
   a. Select the *Exchange* plug-in for the platform.
   b. Browse to and select one or more databases for the backup.
   c. Click **NEXT**.

   The **Basic Configuration** window is displayed.
6. Select the backup retention policy settings:
   - To automatically delete this backup from the Avamar server after a specific amount of time, select **Retention period**. Specify the number of days, weeks, months, or years for the retention period.
   - To automatically delete this backup from the Avamar server on a specific calendar date, select **End date** and browse to that date on the calendar.
   - To keep this backup for as long as this client remains active in the Avamar server, select **No end date**.
7. From the **Avamar encryption method** list, select the encryption method to use for data transfer between the client and the Avamar server during the backup.

   The encryption technology and bit strength for a client/server connection depends on several factors, including the client operating system and Avamar server version. The *Avamar Product Security Guide* provides additional information.
8. From the **Optionally select a proxy to perform backup** list, select the proxy.

   The default setting is **Automatic**, which enables the Avamar server to choose the best proxy for this operation.
9. Click **NEXT**.

   The **More Options** window is displayed.
10. Set the plug-in options. Exchange VSS plug-in backup options provides more information about the basic backup options.

11. (Optional) Toggle the **Show Advanced Options** switch to view advanced configuration options.
    Exchange VSS plug-in backup options provides more information about the advanced backup options.
12. Click **FINISH**.

Performing on-demand backups by using Avamar Administrator

An on-demand backup is a user-initiated backup of Exchange data on a client. You can perform an on-demand backup for the first backup of the client immediately after you install the Avamar client software. Perform also an on-demand backup before system maintenance, software installations, or software upgrades.

Backing up a stand-alone environment

You can back up the entire Exchange server, or a specific database.

About this task

The following steps explain how to perform an on-demand backup in a stand-alone Exchange environment.

Steps

1. In Avamar Administrator, click the **Backup & Restore** launcher link button.
   The **Backup, Restore and Manage** window appears.
2. In the domain tree, select the domain for the client.
3. From the list of clients, select the Exchange server.
   You cannot view clients outside the domain for the login account. To view all clients, log in to the root domain.
4. Click the **Backup** tab.
   A list of plug-ins on the client appears in the left pane of the **Backup** tab.
   NOTE: When you install the Avamar Plug-in for Exchange GLR, Windows Exchange GLR appears in the list of plug-ins when you browse for backups. However, the Exchange GLR plug-in is for recovery only. When you perform granular level recovery, it uses backups that are created with the Exchange VSS plug-in.
5. Select the **Windows Exchange VSS** plug-in.
6. Select the data to back up:
   - To back up the entire Exchange server, select the checkbox next to **Exchange Information Store**.

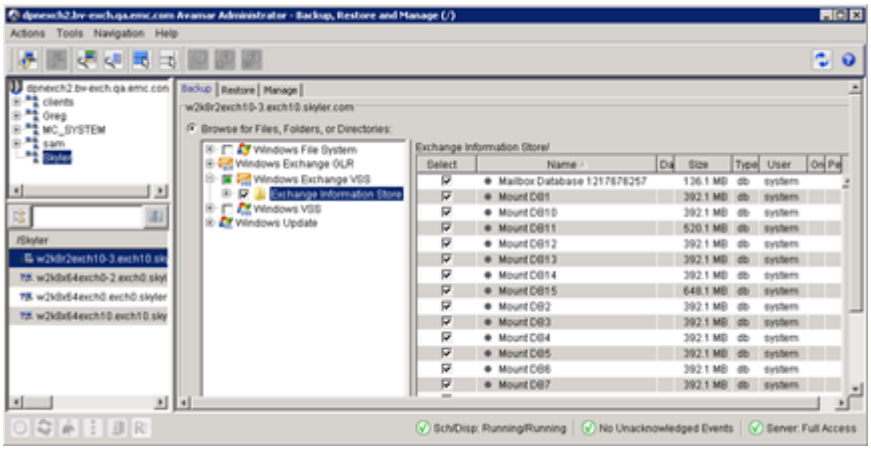

Figure 10. Select the data to back up illustration

   - To back up specific databases, select **Exchange Information Store** in the left pane and then select the checkbox next to the databases in the right pane.
7. Select **Actions** > **Back Up Now**.

The **On Demand Backup Options** dialog box appears.

8. Select the backup retention setting:
   - To automatically delete this backup from the Avamar server after a specific amount of time, select **Retention period**. Specify the number of days, weeks, months, or years for the retention period.
   - To automatically delete this backup from the Avamar server on a specific calendar date, select **End date** and browse to that date on the calendar.
   - To keep this backup for as long as this client remains active in the Avamar server, select **No end date**.
9. From the **Avamar encryption method** list, select the encryption method to use for data transfer between the client and the Avamar server during the backup.

   The encryption technology and bit strength for a client/server connection depends on several factors, including the client operating system and Avamar server version. The *Avamar Product Security Guide* provides additional information.
10. Click **More Options**.
    The **Backup Command Line Options** dialog box appears.
11. Select the **Show Advanced Options** checkbox.

    Additional options appear in red.
12. From the **Select type of backup to perform** list, select whether to perform a full or incremental backup.

    NOTE: You can use only full backups for granular level recovery.
13. Disregard the following options, which do not apply to backups of a stand-alone server:
    - **Set when backup occurs on clustered or DAG systems**
    - **Preferred server order list**
    - **Set the preference for what types of databases to back up**
14. If you are performing an incremental backup and you enable circular logging on any of the selected databases, select the backup behavior:
    - To perform a full backup of all databases if any of the databases use circular logging, select **Promote - Back up all, promote all to full**.
    - To perform a full backup of databases with circular logging and skip other databases, select **Circular - Only back up circular logging-enabled databases, promote all to full**.
    - To skip databases with circular logging and perform an incremental backup of other databases, select **Skip - Skip circular logging-enabled databases, allow incremental**.
15. To store the backup on a Data Domain system instead of the Avamar server, select **Store backup on Data Domain system** and select the Data Domain system from the list.
16. From the **Encryption method to Data Domain system** list, select the encryption method for data transfer from the client to the Data Domain system during the backup.
17. To enable multi-streaming, which enables you to simultaneously back up multiple databases or volumes to reduce backup time, select the **Enable multi-streaming** checkbox and then set the following options:
    - Select the maximum number of streams to use for the backup.
    - From the **Group by** list, select how to group the streams. Select **Database** to create one stream for each database, or **Volume** to create one stream for each volume.
18. If you did not configure an AvamarBackupUser account, then specify the **Username** and **Password** for an account that has sufficient permissions to perform the backup.
19. To write maximum information to log files for debugging, select **Enable debugging messages**. Selecting this option creates large log files.
20. Disregard the consistency check options unless Customer Support instructs otherwise.
21. Click **OK** on the **Backup Command Line Options** dialog box.
22. Click **OK** on the **On Demand Backup Options** dialog box.
    The **On Demand Backup Request** dialog box indicates that the backup started.
23. Click **Close.**

Performing a federated backup in a DAG environment

You can perform an on-demand federated backup of databases in an Exchange Server DAG environment. This procedure is the same for IP based DAG environments and IP less DAG environments.

Steps

1. In Avamar Administrator, click the **Backup & Restore** launcher link button.
   The **Backup, Restore and Manage** window appears.
2. In the domain tree, select the domain for the client.
3. From the list of clients, select the Exchange DAG client that you configured with the Avamar Cluster Configuration Tool.

   You cannot view clients outside the domain for the login account. To view all clients, log in to the root domain.
4. Click the **Backup** tab.
   A list of plug-ins on the client appears in the left pane of the **Backup** tab.
5. Select the **Windows Exchange VSS** plug-in.
6. Select the data to back up:
   - To back up all databases in the DAG, select the checkbox next to **Exchange Information Store**. You can select whether to back up only active or passive copies of the databases later in this procedure.
   - To back up specific databases, select **Exchange Information Store** in the left pane. Then select the checkbox next to the databases in the right pane.

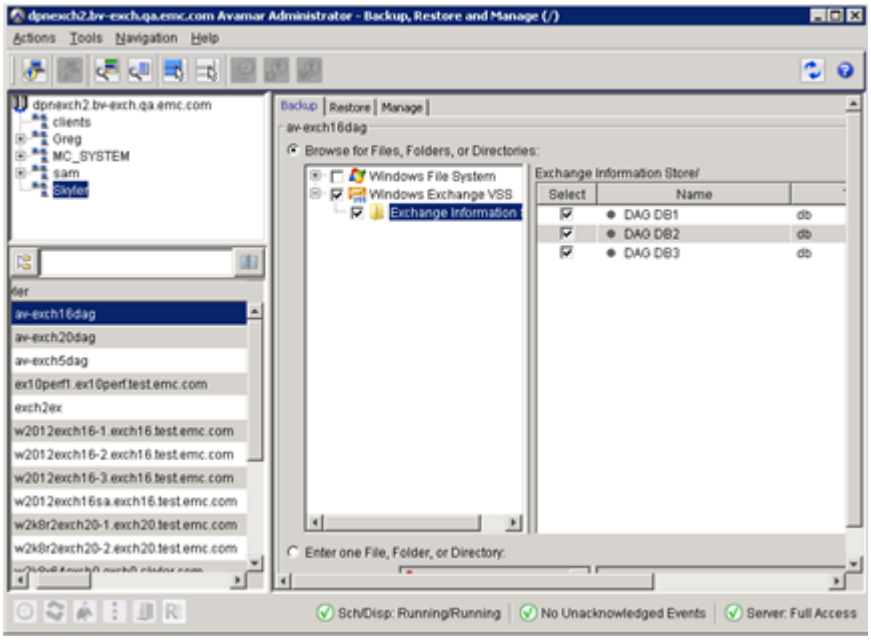

Figure 11. Back up specific databases

7. Select **Actions** > **Back Up Now**.
   The **On Demand Backup Options** dialog box appears.
8. Select the backup retention setting:
   - To automatically delete this backup from the Avamar server after a specific amount of time, select **Retention period**. Specify the number of days, weeks, months, or years for the retention period.
   - To automatically delete this backup from the Avamar server on a specific calendar date, select **End date** and browse to that date on the calendar.
   - To keep this backup for as long as this client remains active in the Avamar server, select **No end date**.
9. From the **Avamar encryption method** list, select the encryption method to use for data transfer between the client and the Avamar server during the backup.

   The encryption technology and bit strength for a client/server connection depends on several factors, including the client operating system and Avamar server version. The *Avamar Product Security Guide* provides additional information.
10. Click **More Options**.
    The **Backup Command Line Options** dialog box appears.
11. Select the **Show Advanced Options** checkbox.

Additional options appear in red.

12. From the **Select type of backup to perform** list, select whether to perform a full or incremental backup.

    NOTE: You can use only full backups for granular level recovery.

13. Disregard the **Set when backup occurs on clustered or DAG systems** list. This option does not apply to federated backups.
14. In the **Preferred server order list** box, specify the priority of servers to use to back up the Exchange databases. Specify the server name, not the FQDN. Separate multiple entries with commas.

    If you do not specify a list, the Exchange VSS plug-in adds all servers in the DAG to the list in alphabetical order. When you specify a list, but a node is missing from the preferred server order list, the backup does not perform from that node. Any databases that can only be backed up from specific node are not being backed up.

15. From the **Set the preference for what types of database to back up** list, select the type of database to back up:
    - Select **Prefer passive** to back up a passive copy of each database, if a healthy passive copy is available. If a healthy passive copy is not available, then Avamar backs up the active copy.
    - Select **Active only** to back up only the active copy of each database.
    - Select **Passive only** to back up only the passive copy of each database. If a healthy passive copy is not available, then the backup does not include the database.
16. If you are performing an incremental backup and you enable circular logging on any of the selected databases, select the backup behavior:
    - To perform a full backup of all databases if any of the databases use circular logging, select **Promote - Back up all, promote all to full**.
    - To perform a full backup of databases with circular logging and skip other databases, select **Circular - Only back up circular logging-enabled databases, promote all to full**.
    - To skip databases with circular logging and perform an incremental backup of other databases, select **Skip - Skip circular logging-enabled databases, allow incremental**.
17. To store the backup on a Data Domain system instead of the Avamar server, select **Store backup on Data Domain system** and select the Data Domain system from the list.
18. From the **Encryption method to Data Domain system** list, select the encryption method for data transfer from the client to the Data Domain system during the backup.
19. To enable multi-streaming, which enables you to simultaneously back up multiple databases or volumes to reduce backup time, select the **Enable multi-streaming** checkbox and then set the following options:
    - Select the maximum number of streams to use for the backup.
    - From the **Group by** list, select how to group the streams. Select **Database** to create one stream for each database, or **Volume** to create one stream for each volume.
20. Specify the **Username** and **Password** for the AvamarBackupUser account.
21. To write maximum information to log files for debugging, select **Enable debugging messages**. Selecting this option creates large log files.
22. Select whether to disable the consistency check by selecting or clearing the **Disable consistency check (recommended only if 2+ members in DAG)** checkbox.

    A consistency check can cause severe performance issues or failure during a backup, especially in environments with many transaction logs.

23. (Optional) If you leave consistency check enabled, throttle the utility by pausing the consistency check after a specified number of I/Os:
    - Select the **Enable consistency check throttling** checkbox.
    - Specify the number of I/Os between pauses when throttling in the **#I/Os between pauses** box. The value must be between 100 and 10000.
    - Specify the duration of the pause in milliseconds in the **Duration of pauses (ms)** box. The value must be between 1000 and 60000.
24. Click **OK** on the **Backup Command Line Options** dialog box.
25. Click **OK** on the **On Demand Backup Options** dialog box.
    The **On Demand Backup Options** dialog box closes and the following status message appears: `Backup initiated`.
26. Click **OK.**

Backing up a specific server in a DAG environment

You can perform an on-demand backup of a specific server in an Exchange Server DAG environment.

About this task

NOTE: This procedure does not apply to the proxy node of an IP less DAG configuration. To back up this host, you need to change the proxy ownership of the DAG by running the Avamar Configuration Tool again.

Steps

1. In Avamar Administrator, click the **Backup & Restore** launcher link button.
   The **Backup, Restore and Manage** window appears.
2. In the domain tree, select the domain for the client.
3. From the list of clients, select the Exchange server.

   You cannot view clients outside the domain for the login account. To view all clients, log in to the root domain.
4. Click the **Backup** tab.
   A list of plug-ins on the client appears in the left pane of the **Backup** tab.

   NOTE: When you install the Avamar Plug-in for Exchange GLR, Windows Exchange GLR appears in the list of plug-ins when you browse for backups. However, the Exchange GLR plug-in is for recovery only. When you perform granular level recovery, it uses backups that are created with the Exchange VSS plug-in.
5. Select the **Windows Exchange VSS** plug-in.
6. Select the data to back up:
   - To back up all databases, select the checkbox next to **Exchange Information Store**. You can select whether to back up only active databases, passive databases, or both later in this procedure.

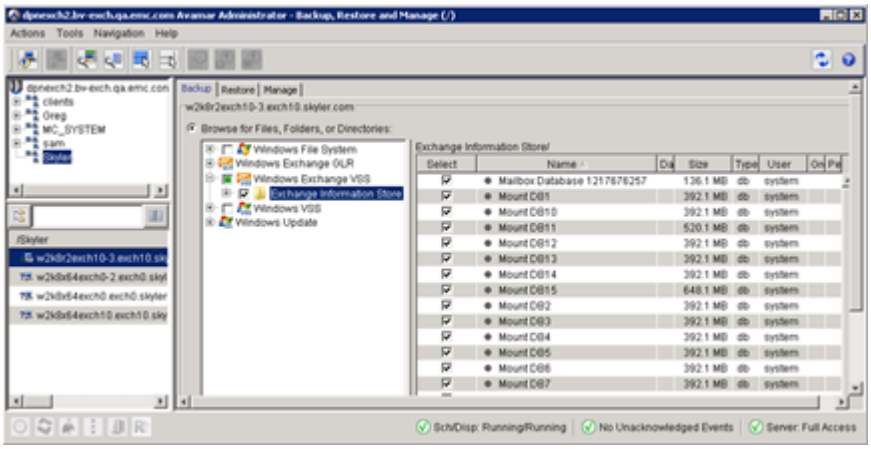

Figure 12. Back up all databases

   - To back up specific databases, select **Exchange Information Store** in the left pane and then select the checkbox next to the databases in the right pane.
7. Select **Actions** > **Back Up Now**.

   The **On Demand Backup Options** dialog box appears.
8. Select the backup retention setting:
   - To automatically delete this backup from the Avamar server after a specific amount of time, select **Retention period**. Specify the number of days, weeks, months, or years for the retention period.
   - To automatically delete this backup from the Avamar server on a specific calendar date, select **End date** and browse to that date on the calendar.
   - To keep this backup for as long as this client remains active in the Avamar server, select **No end date**.
9. From the **Avamar encryption method** list, select the encryption method to use for data transfer between the client and the Avamar server during the backup.

   The encryption technology and bit strength for a client/server connection depends on several factors, including the client operating system and Avamar server version. The *Avamar Product Security Guide* provides additional information.

10. Click **More Options**.
    The **Backup Command Line Options** dialog box appears.
11. Select the **Show Advanced Options** checkbox.

    Additional options appear in red.
12. From the **Select type of backup to perform** list, select whether to perform a full or incremental backup.

    NOTE: You can use only full backups for granular level recovery.

13. From the **Set when backup occurs on clustered or DAG systems** list, select whether to back up passive databases, active databases, or both:
    - Select **Replica (passive) writer only** to back up only passive databases.
    - Select **Store (active) writer only** to back up only active databases.
    - Select **Always** to back up both passive and active databases.
14. Disregard the **Preferred server order list** and **Set the preference for what types of databases to back up** options. These options do not apply when you back up a single server in a DAG environment.
15. If you are performing an incremental backup and you enable circular logging on any of the selected databases, select the backup behavior:
    - To perform a full backup of all databases if any of the databases use circular logging, select **Promote - Back up all, promote all to full**.
    - To perform a full backup of databases with circular logging and skip other databases, select **Circular - Only back up circular logging-enabled databases, promote all to full**.
    - To skip databases with circular logging and perform an incremental backup of other databases, select **Skip - Skip circular logging-enabled databases, allow incremental**.
16. To store the backup on a Data Domain system instead of the Avamar server, select **Store backup on Data Domain system** and select the Data Domain system from the list.
17. From the **Encryption method to Data Domain system** list, select the encryption method for data transfer from the client to the Data Domain system during the backup.
18. To enable multi-streaming, which enables you to simultaneously back up multiple databases or volumes to reduce backup time, select the **Enable multi-streaming** checkbox and then set the following options:
    - Select the maximum number of streams to use for the backup.
    - From the **Group by** list, select how to group the streams. Select **Database** to create one stream for each database, or **Volume** to create one stream for each volume.
19. If you did not configure an AvamarBackupUser account, then specify the **Username** and **Password** for an account that has sufficient permissions to perform the backup.
20. To write maximum information to log files for debugging, select **Enable debugging messages**. Selecting this option creates large log files.
21. Select whether to disable the consistency check by selecting or clearing the **Disable consistency check (recommended only if 2+ members in DAG)** checkbox.

    A consistency check can cause severe performance issues or fail during a backup, especially in environments with many transaction logs.
22. (Optional) If you leave consistency check enabled, throttle the utility by pausing the consistency check after a specified number of I/Os:
    - Select the **Enable consistency check throttling** checkbox.
    - Specify the number of I/Os between pauses when throttling in the **#I/Os between pauses** box. The value must be between 100 and 10000.
    - Specify the duration of the pause in milliseconds in the **Duration of pauses (ms)** box. The value must be between 1000 and 60000.
23. Click **OK** on the **Backup Command Line Options** dialog box.
24. Click **OK** on the **On Demand Backup Options** dialog box.
    The On Demand Backup Options dialog box closes and the following status message appears: `Backup initiated`.
25. Click **OK.**

Scheduling backups using the AUI Policy wizard

Scheduled backups run automatically to ensure that backups occur on an ongoing basis. You can schedule backups to run daily, weekly, or monthly.

About this task

You can schedule backups by using the Policy wizard to create a backup policy.

Perform the following steps within the **Policy** wizard. The *Avamar Administration Guide* provides more information about policies, datasets, schedules, and retention settings.

Steps

1. Assign members to the new backup policy.
2. Assign a dataset to the new backup policy.
   To create a dataset, use the Policy wizard or select **Settings** > **Dataset** > **Add**.
3. Assign a schedule to the new backup policy.
   To create a schedule, use the Policy wizard or select **Settings** > **Schedule** > **Add**.
4. Assign a retention policy to the new backup policy.
   To create a retention policy, use the Policy wizard or select **Settings** > **Retention** > **Add**.
5. Enable scheduling for the backup policy.

Creating datasets

A dataset defines the data to include in a scheduled backup and the options to use for the backup.

You should define a dataset for scheduled backups of specific Exchange data on a client or group of clients. You may want to create multiple datasets to back up different types of data for different groups of clients.

Strategies for creating datasets

The strategy that you use to create datasets for scheduled backups depends on the environment.

- On a stand-alone server, you can create a dataset to back up all data or a dataset to back up specific databases.
- In an Exchange Server DAG environment, you can create a dataset for federated backups of databases in the DAG or a dataset to back up databases on a specific server. In an IP less DAG configuration, the node that is configured as the proxy node cannot be backed up as a specific server.

Creating a dataset

A dataset specifies the data to include in a scheduled backup and the options to use for the backup. Create at least one dataset for scheduled backups on a client or group of clients. Create multiple datasets to segregate client data.

Steps

1. In the AUI navigation pane on the left, click ≫, and then click **Settings**.
   The **Setting** pane is displayed.
2. Click the **Dataset** tab.
3. Click **ADD**.
   The **Create Dataset** window is displayed.
4. In the **Dataset Name** field, type a name for the dataset.
   The name can include alphanumeric characters (A-Z, a-z, 0–9) and the following special characters: period (.), hyphen (-), and underscore (_). Do not use Unicode characters or the following special characters: ` ~ ! @ # $ % ^ & * ( ) = + [ ] { } | \ / ; : ' " < > , ?
5. From the **Plugins** list, select the Windows Exchange VSS plug-in for the platform.
   The Exchange plug-in options is displayed.

6. Click the **Options** tab, and set the plug-in options.

   Setting Exchange VSS plug-in optioon for a dataset provides detailed information about each option.

7. Click the **Source Data** tab, and set the following plug-in options:
   - To back up all databases, select **Exchange VSS**.
   - To back up specific databases, perform the following steps:
     a. Select **Select Files and/or Folders**.
     b. In the **File/Folder Path**, type the file path.
     c. Click **ADD**.
     d. Click **SUBMIT**.

Setting Exchange VSS plug-in options for a dataset

Steps

1. Select the **Windows Exchange VSS** plug-in from the **Select Plug-In Type** list on the **Options** tab in the **New Dataset** dialog box.
2. From the **Select type of backup to perform** list, select whether to perform a full or incremental backup.

   NOTE: You can use only full backups for granular level recovery.

3. Select an option from the **Set when backup occurs on clustered or DAG systems** list:
   - Disregard this option for scheduled backups of a stand-alone server or federated backups in a DAG environment.
   - For scheduled backups of a specific server in a DAG environment, select **Replica (passive) writer only** to back up only passive databases, **Store (active) writer only** to back up only active databases, or **Always** to back up both passive and active databases.
4. If you are performing a federated backup in a DAG environment, specify the priority of servers to use to back up the Exchange databases in the **Preferred server order** list box. Specify the server name, not the FQDN. Separate multiple entries with commas.

   If you do not specify a list, the Exchange VSS plug-in adds all servers in the DAG to the list in alphabetical order. When you specify a list, but a node is missing from the preferred server order list, the backup does not perform from that node. Any databases that can only be backed up from specific node are not being backed up.

   For all other backup types, disregard this option.
5. If you are performing a federated backup in a DAG environment, select the type of database to back up from the **Set the preference for what types of databases to back up** list:
   - Select **Prefer passive** to back up a passive copy of each database, if a healthy passive copy is available. If a healthy passive copy is not available, then Avamar backs up the active copy.
   - Select **Active only** to back up only the active copy of each database.
   - Select **Passive only** to back up only the passive copy of each database. If a healthy passive copy is not available, then the backup does not include the database.

   For all other backup types, disregard this option.
6. If you are performing an incremental backup and you enabled circular logging on any of the selected databases, select the backup behavior:
   - To perform a full backup of all databases if any of the databases use circular logging, select **Promote - Back up all, promote all to full**.
   - To perform a full backup of databases with circular logging and skip other databases, select **Circular - Only back up circular logging-enabled databases, promote all to full**.
   - To skip databases with circular logging and perform an incremental backup of other databases, select **Skip - Skip circular logging-enabled databases, allow incremental**.
7. To store the backup on a Data Domain system instead of the Avamar server, select **Store backup on Data Domain system** and select the Data Domain system from the list.
8. From the **Encryption method to Data Domain system** list, select the encryption method for data transfer from the client to the Data Domain system during the backup.
9. To enable multi-streaming, which enables you to simultaneously back up multiple databases or volumes to reduce backup time, select the **Enable multi-streaming** checkbox and then set the following options:
   - Select the maximum number of streams to use for the backup from the **Maximum number of streams** list.

- From the **Group by** list, select how to group the streams. Select **Database** to create one stream for each database, or **Volume** to create one stream for each volume.

10. Specify the **Username** and **Password** for the AvamarBackupUser account if you are performing a federated backup in a DAG environment.

    For other backup types, specify the username and password for an account that has sufficient permissions to perform the backup only if you did not configure an AvamarBackupUser account.

11. To write maximum information to log files for debugging, select **Enable debugging messages**. Selecting this option creates large log files.

12. Select whether to disable the consistency check by selecting or clearing the **Disable consistency check (recommended only if 2+ members in DAG)** checkbox.

    A consistency check can cause severe performance issues or failure during a backup, especially in environments with many transaction logs.

13. (Optional) If you leave consistency check enabled, throttle the utility by pausing the consistency check after a specified number of I/Os:
    - Select the **Enable consistency check throttling** checkbox.
    - Specify the number of I/Os between pauses when throttling in the **#I/Os between pauses** box. The value must be between 100 and 10000.
    - Specify the duration of the pause in milliseconds in the **Duration of pauses (ms)** box. The value must be between 1000 and 60000.

Creating a backup policy

A backup policy is a collection of Avamar clients that use the same dataset, schedule, and retention settings to implement scheduled backups.

About this task

Member clients must all be in the same Avamar domain. When you create a backup policy, you define the dataset, schedule, and retention settings that apply for scheduled backups. These settings comprise the backup policy, which controls backup behavior for all members of the backup policy unless you override these settings at the client level.

The *Avamar Administration Guide* provides information about creating and editing backup policies, schedules, or retention settings.

Enabling a scheduled backup for a backup policy

Scheduled backups occur only for enabled backup policies. Backup policies are disabled by default unless you select the **Enabled** check box on the first page of the **New Policy** wizard. If you did not enable the backup policy when you created it, use the menu options in the **Policy** window to enable backups.

Steps

1. In the AUI navigation pane on the left, click ≫, and then click **Backup Policy**.
   The **Policy** page is displayed.
2. In the domain tree, select a domain or subdomain for the backup policy.

   To select a subdomain for the backup policy, toggle the **Include Sub-domain** switch to on.
3. Select a backup policy from the list.
4. To enable a backup policy, click **MORE ACTIONS** > **Enable Policy**.
5. To disable a backup policy, click **MORE ACTIONS** > **Disable Policy**.

Monitoring backups

You can monitor and view status information for backup and restore operations by using the **Activity Monitor**.

About this task

To access the **Activity Monitor**, open the navigation pane, and then click **Activity**. The **Activity Monitor** appears with a list of all activities.

NOTE: The AUI **Activity Monitor** window has been optimized for at least 1366 pixels-wide screens. Display issues might occur for smaller screens. To properly display the AUI, ensure that your display is at least 1366 pixels wide.

The **Activity Monitor** provides you with options to filter the information that appears:

- Filter activities by duration—By default, the **Activity Monitor** displays the most recent 5,000 client activities. To select a different duration, in the **Filter activities by duration** drop-down list, select **Last 24 hours** or **Last 72 hours**.
- Filter activities by domain—By default, the **Activity Monitor** displays all activities regardless of domain. To display only the activities for a specific domain, in the **Filter activities by domain** drop-down list, select a domain or subdomain.
- Filter activities by status—By default, the **Activity Monitor** displays all activities regardless of status.

  To display only activities with a specific status, at the top of the **Activity Monitor**, select one of the following options:

  - Canceled
  - Completed
  - Completed with Exceptions
  - Failed
  - Running
  - Waiting

To filter activities by client, start time, plug-in, or type, click in their respective column.

The **Activity Monitor** displays the date and time that an activity began, and the total number of bytes examined during an activity.

To view activity details, expand the **Details** pane, by clicking .

Cancel backups

You can cancel a backup any time before it completes. The cancellation might take 5 minutes or longer. The backup might complete before the cancellation finishes.

Steps

1. In the AUI navigation pane on the left, click , and then click **Activity**.
   The **Activity Monitor** appears with a list of activities.
2. Select the backup from the list.
3. Click **CANCEL**.
   A confirmation dialog box is displayed.
4. Click **YES**.

Enforcement of backups to Data Domain

If the Avamar server is configured to enforce backups to a Data Domain system, the server rejects backups that are not destined for the Data Domain. This enforcement covers backups that you configure through the Avamar Administrator and the AUI, as well as from command-line interfaces and other tools.

These backups must have additional flags that indicate the storage target. The *Avamar and Data Domain System Integration Guide* provides more information about backup enforcement and the related client version requirements. Backup enforcement is disabled by default.

4

Exchange Database Restore

Topics:

- Restore requirements
- Restoring a database to the original client
- Restoring a database to a different client
- Restore features available by using Avamar Administrator
- Monitor restores
- Cancel restores

Restore requirements

To ensure a successful database restore, the environment must meet the necessary requirements.

Exchange server version requirements

When performing restore operations, please note:

- Databases that are backed up in previous Exchange versions cannot be restored in new Exchange versions (for example, databases backed up in Exchange 2010 cannot be restored in Exchange 2013).
- Restoring databases from backups with lower Cumulative Update or Service Pack levels is supported.
- Restoring databases from backups with higher Cumulative Update or Service Pack levels is not supported.

Suspending replication in a DAG or cluster

Avamar automatically suspends replication from active databases to passive databases during a restore when you select the **Automate replication suspension** checkbox during a restore.

About this task

You also can manually suspend replication to the passive databases by using the Exchange Management Shell before you perform the restore.

Type the following command in the Exchange Management Shell on any server in the DAG:

```
suspend-MailboxDatabaseCopy -Identity
                      database\server
```

where *database* is the name of the database and server is the name of the DAG server with the passive copy.

Restoring a database to the original client

You can restore Exchange databases to the original directory on the original client.

Steps

1. In the AUI navigation pane on the left, click ≫, and then click **Asset Management**.
   The **Asset Management** window is displayed.
2. In the domain tree, select the domain that contains the Exchange server.
   You cannot view clients outside the domain for the login account. To view all clients, log in to the root domain.

A list of Avamar clients is displayed in the pane below the domains list.

3. From the list of clients, select the client that runs the Exchange server.
4. (Optional) To locate backups by date:
   a. In the right pane, click **VIEW MORE**.
   b. Click **SEARCH**.
   c. In the **From** and **To** fields, specify the date range.
   d. Click **RETRIEVE**.
   e. In the list of backups, select a backup.

   The list of backups for the date range is displayed.
5. Click the **Restore** tab.

   The **Restore** wizard is displayed and the **Destination Client** pane is displayed on the right.
6. In the **Destination Client** pane, perform the following steps:
   a. Select **Restore to original client**.
   b. Click **NEXT**.

   The **Backup Content** pane is displayed.
7. In the **Backup Content** pane, perform the following steps:
   a. In the left pane, click on Exchange information store from the tree.

      The **Backup Content** pane displays a list of databases within the backup.
   b. Select the databases that you want to restore.
   c. Click **NEXT**.

   The **Destination Location** pane is displayed.
8. In the **Destination Location** pane, perform the following steps:
   a. Select **Restore everything to its original location**.
   b. Click **Next**.

   The **More Options** pane is displayed.
9. In the **More Options** pane, set the plug-in options.

   Exchange VSS plug-in restore options provides more information about the restore options.
   a. To view advanced options, select **Show Advanced Options**.
   b. Click **NEXT**.

   The **Summary** pane is displayed.
10. Review the provided information, and then click **FINISH**.

Restoring a database to a different client

You can restore Exchange databases to a different client.

Steps

1. In the AUI navigation pane on the left, click ≫, and then click **Asset Management**.
   The **Asset Management** window is displayed.
2. In the domain tree, select the domain that contains the Exchange server.

   You cannot view clients outside the domain for the login account. To view all clients, log in to the root domain.

   A list of Avamar clients is displayed in the pane below the domains list.
3. From the list of clients, select the client that runs the Exchange server.
4. (Optional) To locate backups by date:
   a. In the right pane, click **VIEW MORE**.
   b. Click **SEARCH**.
   c. In the **From** and **To** fields, specify the date range.
   d. Click **RETRIEVE**.
   e. In the list of backups, select a backup.

   The list of backups for the date range is displayed.

5. Click the **Restore** tab.

   The **Restore** wizard is displayed and the **Destination Client** pane is displayed on the right.
6. In the **Destination Client** pane, perform the following steps:
   a. Select **Restore everything to a different client**.
   b. In the domain tree, select the domain for the client.
   c. In the list of clients, select the destination client.
      The client is displayed in the **Destination Client** field.
   d. Click **NEXT**.

      The **Backup Content** pane is displayed.
7. In the **Backup Content** pane, perform the following steps:
   a. In the left pane, click on Exchange information store from the tree.

      The **Backup Content** pane displays a list of databases within the backup.
   b. Select the databases that you want to restore.
   c. Click **NEXT**.

   The **Destination Location** pane is displayed.
8. In the **Destination Location** pane, perform the following steps:
   a. Select **Restore everything to its different location**.
   b. In the **Restore location** field, type an alternate location in the destination client where the database will be restored. For example, `C:\restore`.
   c. Click **NEXT**.

      The **More Options** pane is displayed.
9. In the **More Options** pane, set the plug-in options.

   a. To view advanced options, select **Show Advanced Options**.

      Exchange VSS plug-in restore options provides more information about the restore options.
   b. Click **NEXT**.

   The **Summary** pane is displayed.
10. Review the provided information, and then click **FINISH**.

Restore features available by using Avamar Administrator

This section describes the restore features that are available by using Avamar Administrator.

Finding a backup

You can find Avamar client backups for a restore by searching either for a certain date or for a specific database.

When to find a backup by date

Locate backups by date when:

- All databases that you want to restore are included in a single backup set.
- The exact path or name of the databases that you want to restore are unknown.
- The content from a backup you want to restore precedes a specific date or event. For example, know approximately when a database was lost or corrupted, then find the last backup before that date.

Finding a backup by date

Steps

1. In Avamar Administrator, click the **Backup & Restore** launcher link button.

The **Backup, Restore and Manage** window appears.

2. In the domain tree, select the domain for the client.
3. From the list of clients, select the client on which the backup was performed:
   - In a stand-alone environment, select the Exchange server.
   - To restore from a federated backup in a DAG environment, select the Exchange DAG client or the proxy node that you configured with the Avamar Cluster Configuration Tool.
   - To restore from a backup of a specific server in a DAG environment, select the server.

   You cannot view clients outside the domain for the login account. To view all clients, log in to the root domain.
4. Click the **Restore** tab.
5. Click the **By Date** tab.
6. Select the backup date from the calendar. Valid backups occurred on dates with a yellow highlight.
   A list of backups on that date appears in the **Backups** table next to the calendar.
7. Select the backup to restore from the **Backups** table.

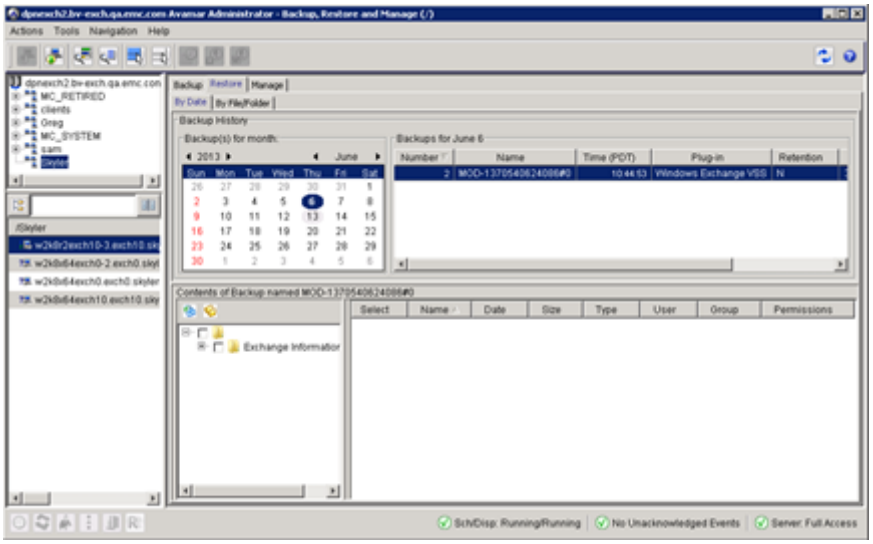

Figure 13. Backups table

8. Select the data to restore, and perform the restore.

When to find a backup for a specific database

Locate backups for a specific database when:

- You back up each database in a separate backup set.
- You want to see multiple versions of the same database.

Finding a backup for a specific database

Steps

1. In Avamar Administrator, click the **Backup & Restore** launcher link button.
   The **Backup, Restore and Manage** window appears.
2. In the domain tree, select the domain for the client.
3. From the list of clients, select the client on which the backup was performed:
   - In a stand-alone environment, select the Exchange server.
   - To restore from a federated backup in a DAG environment, select the Exchange DAG client or the proxy node that you configured with the Avamar Cluster Configuration Tool.
   - To restore from a backup of a specific server in a DAG environment, select the server.

   You cannot view clients outside the domain for the login account. To view all clients, log in to the root domain.
4. Click the **Restore** tab.
5. Click the **By File/Folder** tab.

6. Specify the data to restore by using one of the methods in the following table.

Table 6. Data to restore methods

Method	Description
Type the value in the **Enter path to retrieve history for** box.	• To restore all databases on the client, type **`Exchange Information Store`**. • To restore a specific database, type **`Exchange Information Store/`*`name`***, where *name* is the name of the database.
Browse to the data.	a. Click **Browse.** The **Select File or Folder** dialog box appears. b. Select the client in the left pane. c. Expand the Windows Exchange VSS plug-in in the middle pane. d. Select **Exchange Information Store** in the middle pane. e. To find backups of the Exchange Information Store, select the checkbox next to **Exchange Information Store**. To find backups of a specific database, select the checkbox next to the database. f. Click **OK.**

7. Click **Retrieve.**
8. Select a version in the **Version History** table.

   NOTE: The **Version History** table does not provide the correct date and time for Microsoft Exchange data. However, you can select any version in the list to view all backups for the selected data.

   All backups for the specified Exchange Information Store or database appear in the **Backups** table next to the **Version History** table.
9. Select the backup to restore from the **Backups** table.

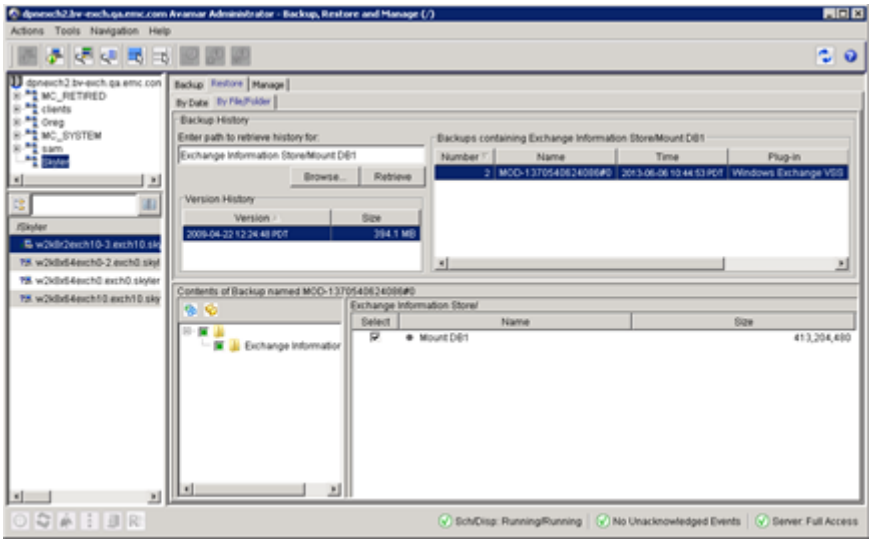

Figure 14. Backups table

10. Select the data to restore, and then perform the restore.

Restoring to a stand-alone server

You can restore databases or the entire Exchange Information Store to a stand-alone server.

Steps

1. In Avamar Administrator, click the **Backup & Restore** launcher link button.
   The **Backup, Restore and Manage** window appears.
2. Find the backup to restore:
   - Finding a backup by date
   - Finding a backup for a specific database on page 59

   The backup to restore from is selected in the **Backups** table.
3. Select the data to restore:
   - To restore the entire Exchange Information Store, select the **Exchange Information Store** checkbox in the lower-left pane.
   - To restore a specific database, select **Exchange Information Store** in the lower-left pane, and then select the checkbox next to the database in the lower-right pane.
4. Select **Actions** > **Restore Now**.

   The **Restore Options** dialog box appears.
5. Leave the default selection of the original client in the **Restore Destination Client** box.
6. Ensure that **Windows Exchange VSS** appears in the **Restore Plug-in** list.
7. From the **Avamar encryption method** list, select the encryption method for data transfer from the Avamar server to the client during the restore.

   The encryption technology and bit strength for a client/server connection depend on several factors, including the client operating system and Avamar server version. The *Avamar Product Security Guide* provides additional information.
8. Leave the default selection of **Restore everything to its original location**.
9. Click **More Options**.

   The **Restore Command Line Options** dialog box appears.
10. Specify whether to overwrite all databases or only specific databases during the restore:
    - To enable the overwrite of all databases when you perform a restore, in the **Restore Command Line Options** dialog box, select the **Allow database overwrite** checkbox.
    - To enable the overwrite of only specific databases, leave the **Allow database overwrite** checkbox clear. Then select the **This database can be overwritten by a restore** option in the recovery options for the databases in the **Exchange Management Console**.

    NOTE: The restore fails if you do not enable overwrite by using one of these methods, even if the database you are restoring was deleted on the target server.
11. Select whether to automatically mount the databases after a successful restore by selecting or clearing the **Mount the database(s) after successful restore** checkbox.
12. From the **Encryption method from Data Domain system** list, select the encryption method for data transfer between the Data Domain system and the client during the restore.
13. Select whether to restore but not replay transaction logs by selecting or clearing the **Do not replay the transaction logs** checkbox.

    If you select this option, then you can manually copy additional transaction logs before you mount the database.
14. If log file conflicts occur during the restore, then use the **Move logs path** box to specify a location to which to move the existing log files before the restore.

    If you do not specify a path for the log files and there is a gap in the transaction log, then the restore process automatically moves the current transaction logs to a subfolder named `logs_time_date`. The *time* and *date* values are the time and date of the restore. The subfolder is in the transaction log folder for the database. You can use these logs to analyze the restore operation, if necessary, or apply those logs up to where the failure occurred.
15. Select whether to retain or delete metadata files that are used during the restore:
    - Select the **Retain recovery metadata** checkbox to retain the files.
    - Clear the checkbox to automatically delete the files after the restore completes.

    You can use these metadata files to investigate any restore issues that occur. The files are located in the `C:\Program Files\avs\var\avexvss_restore` folder, where `C:\Program Files\avs` is the Avamar installation folder.

16. Enable and specify the multi-streaming options if applicable. These options are described in Exchange VSS plug-in restore options.
17. (Optional) Select **Show Advanced Options**, and set the advanced options as described in Exchange VSS plug-in restore options.
18. Disregard the **Automate replication suspension** checkbox. This option does not apply when you restore to a stand-alone server.
19. If you did not configure the AvamarBackupUser account, then specify the **Username** and **Password** for an Exchange administrator account that has permissions to perform the restore.
20. Disregard the options in the **RSG/RDB Restore Options** sections. These options do not apply unless you are restoring to an RDB.
21. Click **OK** on the **Restore Command Line Options** dialog box.
22. Click **OK** on the **Restore Options** dialog box.
    The **Restore Request** dialog box indicates that the restore started.
23. Click **Close.**

Restore to a DAG

You can restore databases in a DAG from the following types of backups:

- Federated backup with the Exchange DAG client of either an active copy or a passive copy of the database.
- Backup of either an active copy or a passive copy of the database on a specific server in a DAG.

When you restore databases from a federated backup in a DAG, select the Exchange DAG client as the target client for the restore. The Exchange DAG client automatically determines the server with the active copy of the database, and restores to the active copy.

When you restore databases from a backup of a specific server in a DAG, select the DAG server with the active database copies as the target client for the restore.

Restoring databases in a DAG

Steps

1. In Avamar Administrator, click the **Backup & Restore** launcher link button.
   The **Backup, Restore and Manage** window appears.
2. Find the backup to restore:
   - Finding a backup by date
   - Finding a backup for a specific database on page 59

   The backup to restore from is selected in the **Backups** table.
3. Select the data to restore:
   - To restore the entire Exchange Information Store, select the **Exchange Information Store** checkbox in the lower-left pane.
   - To restore a specific database, select **Exchange Information Store** in the lower-left pane, and then select the checkbox next to the database in the lower-right pane.
4. Select **Actions > Restore Now**.
   The **Restore Options** dialog box appears.
5. Specify the target client for the restore:
   - If you are restoring from a federated backup, then leave the default selection of the Exchange DAG client in the **Restore Destination Client** box.
   - If you are restoring from a backup of a specific server in a DAG, then either type the name of the DAG server with the active database copies, or click **Browse** to browse to the server.
6. Ensure that **Windows Exchange VSS** appears in the **Restore Plug-in** list.
7. From the **Avamar encryption method** list, select the encryption method for data transfer from the Avamar server to the client during the restore.

   The encryption technology and bit strength for a client/server connection depend on several factors, including the client operating system and Avamar server version. The *Avamar Product Security Guide* provides additional information.
8. Leave the default selection of **Restore everything to its original location**.

9. Click **More Options**.
   The **Restore Command Line Options** dialog box appears.
10. Specify whether to overwrite all databases or only specific databases during the restore:
    - To enable the overwrite of all databases when you perform a restore, in the **Restore Command Line Options** dialog box, select the **Allow database overwrite** checkbox.
    - To enable the overwrite of only specific databases, leave the **Allow database overwrite** checkbox clear. Then select the **This database can be overwritten by a restore** option in the recovery options for the databases in the **Exchange Management Console**.

    NOTE: The restore fails if you do not enable overwrite by using one of these methods, even if the database you are restoring was deleted on the target server.

11. Select whether to automatically mount the databases after a successful restore by selecting or clearing the **Mount the database(s) after successful restore** checkbox.
12. From the **Encryption method from Data Domain system** list, select the encryption method for data transfer between the Data Domain system and the client during the restore.
13. Select whether to restore but not replay transaction logs by selecting or clearing the **Do not replay the transaction logs** checkbox.

    If you select this option, then you can manually copy additional transaction logs before you mount the database.
14. If log file conflicts occur during the restore, then use the **Move logs path** box to specify a location to which to move the existing log files before the restore.

    If you do not specify a path for the log files and there is a gap in the transaction log, then the restore process automatically moves the current transaction logs to a subfolder named `logs_time_date`. The *time* and *date* values are the time and date of the restore. The subfolder is in the transaction log folder for the database. You can use these logs to analyze the restore operation, if necessary, or apply those logs up to where the failure occurred.
15. Choose whether to retain or delete metadata files that are used during the restore:
    - Select the **Retain recovery metadata** checkbox to retain the files.
    - Clear the checkbox to automatically delete the files after the restore completes.

    You can use these metadata files to investigate any restore issues that occur. The files are in the `C:\Program Files\avs\var\avexvss_restore` folder, where `C:\Program Files\avs` is the Avamar installation folder.
16. Select the **Automate replication suspension** checkbox to suspend replication to the passive nodes during the restore.

    If you do not select this option, you must manually suspend replication before you perform the restore.
17. If you are restoring from a federated backup, specify the **Username** and **Password** for the AvamarBackupUser account.

    If you are restoring from a backup of a specific server in the DAG, then you only need to specify the username and password for an Exchange administrator account with permissions to perform the restore if you did not configure the AvamarBackupUser account.
18. Disregard the options in the **RSG/RDB Restore Options** section. These options do not apply unless you are restoring to an RDB.
19. Click **OK** on the **Restore Command Line Options** dialog box.
20. Click **OK** on the **Restore Options** dialog box.
    The **Restore Request** dialog box indicates that the restore started.
21. Click **Close.**
22. After the restore completes, manually resume replication:
    a. Review the steps to resume and update a database copy in the "Suspend or Resume a Mailbox Database Copy" and "Update a Mailbox Database Copy" articles on the Microsoft TechNet website.
    b. Use the `Resume-MailboxDatabaseCopy` command to resume replication for all passive copies of the restored database.

       Replication sometimes fails because you must reseed the database on the current passive node.
    c. If replication fails, run the `Update-MailboxDatabaseCopy` command for all passive copies of the restored database.

Restoring to a file

You can restore databases to a file either on the original server or on a different server. After the restore, you can configure the Exchange server to use the databases at the new location. You can also use the flat file with ItemPoint to perform data mining and GLR.

Prerequisites

If performing the restore to a different server, the target server must have the Avamar Plug-in for Exchange VSS installed.

Steps

1. In Avamar Administrator, click the **Backup & Restore** launcher link button.
   The **Backup, Restore and Manage** window appears.
2. Find the backup to restore:
   - Finding a backup by date
   - Finding a backup for a specific database on page 59

   The backup to restore from is selected in the **Backups** table.
3. Select the data to restore:
   - To restore the entire Exchange Information Store, select the **Exchange Information Store** checkbox in the lower-left pane.
   - To restore a specific database, select **Exchange Information Store** in the lower-left pane, and then select the checkbox next to the database in the lower-right pane.
4. Select **Actions** > **Restore Now**.

   The **Restore Options** dialog box appears.
5. Specify the target client for the restore:
   - To restore to a file system location on the original server, leave the default selection of the original server in the **Restore Destination Client** box.
   - To restore to a file system location on a different server, either type the name of the server or click **Browse** to browse to the server.
6. Ensure that **Windows Exchange VSS** appears in the **Restore Plug-in** list.
7. From the **Avamar encryption method** list, select the encryption method for data transfer from the Avamar server to the client during the restore.

   The encryption technology and bit strength for a client/server connection depend on several factors, including the client operating system and Avamar server version. The *Avamar Product Security Guide* provides additional information.
8. Select **Restore everything to a different location**.
9. Click **Set Destination**.
   The **Set Destination** dialog box appears.
10. Specify the file system location for the restored files:
    a. Click **Browse.**

       The **Browse for File, Folder, or Directory** dialog box appears.
    b. Expand the **Windows File System** item in the left pane, and browse the file system.
    c. In the right pane, select the checkbox next to the target folder for the restored files.
    d. Click **OK.**
11. Click **OK** on the **Set Destination** dialog box.
12. Click **More Options**.
    The **Restore Command Line Options** dialog box appears.
13. Select whether to automatically mount the databases after a successful restore by selecting or clearing the **Mount the database(s) after successful restore** checkbox.
    - If selected, this option uses the Exchange VSS Writer to restore databases to a file.
    - If unselected, the restore is performed without the VSS operation. However, the target server must still have the Avamar Plug-in for Exchange VSS installed.
14. To restore but not replay transaction logs, select or clear the **Do not replay the transaction logs** checkbox.

    If you select this option, then you can manually copy additional transaction logs before you mount the database.
15. Select whether to retain or delete metadata files that are used during the restore:
    - Select the **Retain recovery metadata** checkbox to retain the files.

- Clear the checkbox to automatically delete the files after the restore completes.

  You can use these metadata files to investigate any restore issues that occur. The files are located in the `C:\Program Files\avs\var\avexvss_restore` folder, where `C:\Program Files\avs` is the Avamar installation folder.

16. Enable and specify multi-streaming options if applicable. These options are described in Exchange VSS plug-in restore options.
17. (Optional) Select **Show Advanced Options**. Set the advanced options as described in Exchange VSS plug-in restore options.
18. If you did not configure the AvamarBackupUser account, then specify the **Username** and **Password** for an Exchange administrator account that has permissions to perform the restore.
19. Disregard the remaining options in the **Restore Command Line Options** dialog box. These options do not apply when you restore to a file.
20. Click **OK** on the **Restore Command Line Options** dialog box.
21. Click **OK** on the **Restore Options** dialog box.
    The **Restore Request** dialog box indicates that the restore started.
22. Click **Close.**

Results

Monitor restores

You can monitor and view status information for backup and restore operations in the **Activity Monitor**.

About this task

To access the **Activity Monitor**, open the navigation pane, and then click **Activity**. The **Activity Monitor** appears with a list of all activities.

NOTE: The AUI **Activity Monitor** window has been optimized for at least 1366 pixels-wide screens. Display issues might occur for smaller screens. To properly display the AUI, ensure that your display is at least 1366 pixels wide.

The **Activity Monitor** provides you with options to filter the information that appears:

- Filter activities by duration—By default, the **Activity Monitor** displays the most recent 5,000 client activities. To select a different duration, in the **Filter activities by duration** drop-down list, select **Last 24 hours** or **Last 72 hours**.
- Filter activities by domain—By default, the **Activity Monitor** displays all activities regardless of domain. To display only the activities for a specific domain, in the **Filter activities by domain** drop-down list, select a domain or subdomain.
- Filter activities by status—By default, the **Activity Monitor** displays all activities regardless of status.

  To display only activities with a specific status, at the top of the **Activity Monitor**, select one of the following options:

  - Canceled
  - Completed
  - Completed with Exceptions
  - Failed
  - Running
  - Waiting

To filter activities by client, start time, plug-in, or type, click in their respective column.

The **Activity Monitor** displays the date and time that an activity began, and the total number of bytes examined during an activity.

To view activity details, expand the **Details** pane, by clicking .

Cancel restores

You can cancel a restore any time before it completes. The cancellation might take 5 minutes or longer. The restore might complete before the cancellation finishes.

Steps

1. In the AUI navigation pane on the left, click ≫, and then click **Activity**.
   The **Activity Monitor** appears with a list of activities.
2. Select the restore from the list.
3. Click **CANCEL**.
   A confirmation dialog box is displayed.
4. Click **YES**.

5

Granular Level Recovery

Topics:

- Requirements to perform GLR
- Searching a large backup with browse filtering
- Searching with Restore Browse Options
- Performing GLR with the Exchange GLR plug-in for Exchange 2013 and 2010 using Microsoft Exchange MAPI CDO
- Performing GLR with ItemPoint for Exchange by using the AUI
- Performing GLR with ItemPoint for Exchange by using Avamar Administrator
- Performing GLR from an existing RDB
- Monitoring GLR
- Canceling GLR

Requirements to perform GLR

You can use only ItemPoint for Exchange to perform GLR on Exchange 2016 and 2019 systems. You can use native Microsoft Exchange MAPI CDO from the Avamar Administrator to perform GLR on older versions of Exchange, but ItemPoint for Exchange is the recommended method.

To perform GLR using ItemPoint for Exchange, the environment must meet the following requirements:

- You must have ItemPoint for Exchange software installed. This software is available as a part of the Avamar Plugin for Exchange installation.
- The server must have a minimum of Microsoft Outlook 2007 installed, and cannot have MAPI installed.

  NOTE: You cannot have Outlook 2016 installed on the same machine as ItemPoint unless your version of ItemPoint is 8.3 or later. ItemPoint 8.3 is bundled with the Avamar Exchange VSS plug-in in Avamar 18.2 and later.

Any GLR Proxy used with ItemPoint for Exchange must have the following components installed:

- Exchange Management Tools matching the version of Exchange.
- Remote Server Administration Tools (RSAT).
- Microsoft .NET Framework 3.5 SP1, 4.0, or above.
- An enabled IIS Manager 6.0 role.
- 32-bit Outlook 2010 or 2013.

  NOTE: 32-bit Outlook 2016 may be used if your version of ItemPoint is 8.3 or later. ItemPoint 8.3 is bundled with the Avamar Exchange VSS plug-in in Avamar 18.2 and later.

The following general requirements must also be met:

- To perform GLR with the Exchange GLR plug-in, the plug-in must be installed on the target server for the restored items.

  If you are planning to restore to an RDB and then perform GLR with Exchange Management Shell commands, then only the Exchange VSS plug-in is required on the target server for the restored items.
- Restore from a full backup when you perform GLR with the Exchange GLR plug-in. You can restore a database to an RDB from either a full or incremental backup.
- You cannot restore public folder database backups to RDBs, and perform GLR of items in public folder databases. Microsoft does not support public folder databases in RDBs.
- You cannot restore individual items from archive and disconnected mailboxes. Restore the entire mailbox to a different live mailbox.
- The GLR proxy client, when used for MAPI GLR, should have minimum of Exchange Mailbox role that is installed. The Backup Agent should also be configured with the Backup User Configuration tool.
- Do not install `MFCMapi.exe` on the GLR proxy client when performing GLR with ItemPoint.

Searching a large backup with browse filtering

You can use the **Restore Browse Options** to filter a backup for browsing by searching for specific mailboxes, contents of messages, date, or size criteria.

By default, the Exchange VSS GLR plug-in displays a **Restore Browse Options** dialog box when you browse a database, mailbox, or mailbox folder in a backup that contains 10,000 or more items. You can also create the command file `avexchglr.cmd` to specify a smaller threshold number to display this dialog box. When the threshold is set to a low number, browsing the backup triggers the **Restore Browse Options** dialog box where you can search by general message (text), date, or size criteria. For example, if you specify a threshold of 10, then the **Restore Browse Options** is displayed when there are 10 or more items in the selected container.

The search criteria that is displayed in **Restore Browse Options** depends on the level you select in the mailbox database. The following image and table describe the criteria available.

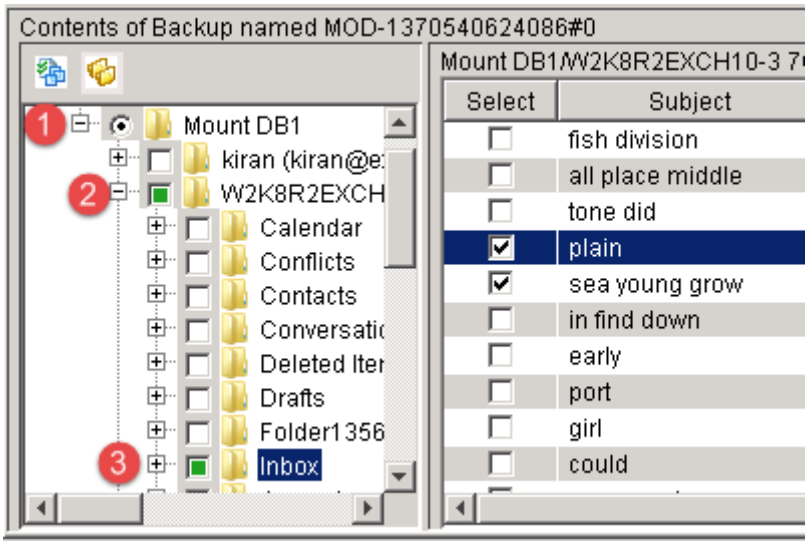

Figure 15. Database, user mailbox, and user mailbox folder levels

Table 7. Mailbox database level criteria

Mailbox database level	Selection criteria	Results
1. Mailbox database	• Mailbox name • Item count	User mailboxes that match the criteria
2. User mailbox	• Subject • Date range • Size range	Messages or folders at the root level of the user mailbox that match the criteria
3. User mailbox folder	• From • To • Type • Date range • Size range	Items within the selected folder in the user mailbox that match the criteria

Any of the fields in the **General Message Criteria** that allow text entries (**Mailbox name**, **Subject**, **From**, **To**) use regular expressions, including wildcards. You can enable or disable case-sensitive matching for text entries.

- Type **`TEST`** in the **Subject** field to display items that contain TEST anywhere in the subject.
- Use **`.`** as the equivalent of a single-character wildcard (?). For example, **`TE.`**
- Use **`.*`** as the equivalent of a wildcard (*). For example, **`TEST.*`**

Searching with Restore Browse Options

Create a command file and add a command specify a lower threshold than the default 10,000 items to display the **Restore Browse Options** dialog box. Then search by specific mailboxes, contents of messages, date, or size criteria.

Prerequisites

Create this command file before you open Avamar Administrator to browse backups for GLR

Steps

1. Use a text editor to create a command file that is named **`avexchglr.cmd`** in the `C: \Program Files\avs\var` folder, where `C:\Program Files\avs` is the Avamar installation folder
2. Add the following line to the file:

   `--browse_filter_threshold_value=`*n*

   where *n* is a low number such as 10. Any number that is less than or equal to the number of entries in the selected container automatically displays the **Restore Browse Options** dialog box. This action is performed when you expand or select a database, mailbox, or folder in the backup

3. Save and close the file
4. Follow the steps in Performing GLR with the Exchange GLR plug-in for Exchange 2013 and 2010 using Microsoft Exchange MAPI CDO on page 70 until the contents of the selected database appear in the pane
5. Select or expand a mailbox database, mailbox, or mailbox folder
   The **Restore Browse Options** dialog box appears. The fields available for searching depend on the type of container.

   The following figure displays the options available when you select a user mailbox folder.

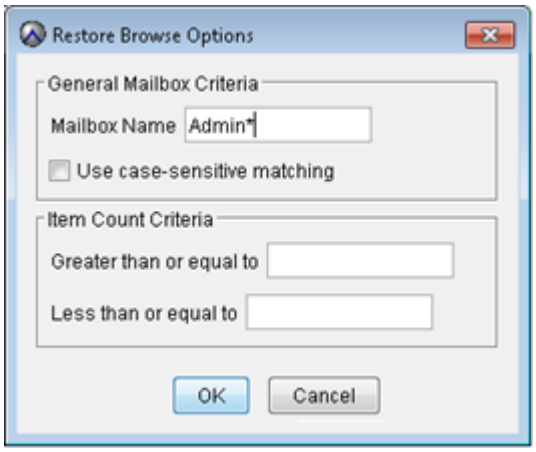

Figure 16. Restore Browse Options dialog

> **NOTE:** All string values are expressions. Special characters a backslash (\) character. Filtering with regex characters fails provides more details.

   The most common expression uses:

   - Wildcard for single (period)
   - Wildcard for any number of *

6. Specify browse criteria, and click **OK**
   A filtered list of mailboxes, folders, or messages that match the criteria appears
7. Browse to and select the checkbox next to the mailbox, folder, or message to recover
8. Continue with the remaining steps in Performing GLR with the Exchange GLR plug-in for Exchange 2013 and 2010 using Microsoft Exchange MAPI CDO on page 70.

Performing GLR with the Exchange GLR plug-in for Exchange 2013 and 2010 using Microsoft Exchange MAPI CDO

You can use the Exchange GLR plug-in to restore mailboxes, folders, and messages from a database backup to the original location. You can also restore to a different mailbox.

Steps

1. Delete all RDBs on the target Exchange server with the Exchange GLR plug-in.
2. In Avamar Administrator, click the **Backup & Restore** launcher link button.
   The **Backup, Restore, and Manage** window appears.
3. Find a full backup that contains the items to restore:
   - Finding a backup by date
   - Finding a backup for a specific database on page 59

   NOTE: When you move a user mailbox from one database to another, you may be able to find backups for the mailbox in both the original and current databases. Backups of the original database contain the contents of the mailbox from before you moved the mailbox to the new database. To restore recent data for the mailbox, restore from backups of the current database. To restore items from before you moved the mailbox to the new database, restore from backups of the original database.

   The backup to restore from is selected in the **Backups** table.
4. Select the **Browse for Granular Restore** icon in the lower-left pane of the **Restore** tab.
   The **Select Destination Client** dialog box appears.
5. Select the target server for GLR. The Exchange GLR plug-in must be installed on the target server.
   - If you configured a GLR proxy server, select **Restore everything to a different location**, and then browse to the GLR proxy server.
   - On a stand-alone server with the Exchange GLR plug-in, select **Restore everything to its original location**.
   - In a DAG environment, select **Restore everything to a different location**, and then browse to a DAG server with the GLR plug-in.
6. Click **OK.**

   If a dialog box prompts you for Exchange credentials, type the AvamarBackupUser name and password, and then click **OK.**

   The **Browse Progress** message box displays the progress of the operation as the Exchange GLR plug-in retrieves the contents of the backup and mounts the backup to a virtual drive. The virtual drive provides only a view of the contents of the backup. The GLR plug-in does not restore data at this point.
7. In the lower-left pane of the **Restore** tab, select the database that contains the mailbox, folder, or messages to recover.
   A message box informs you that the database mount may take a long time and that any existing RDB is deleted.
8. Click **OK.**

   The contents of the selected database appear in the lower right pane.

   NOTE: If the number of items is greater or equal to 10,000 items, a dialog box appears that allows you to filter the results to a smaller number of items. Browsing fails when a mailbox folder contains a large number of items describes strategies for browsing mailboxes with a large number of items.
9. Browse to and select the checkbox next to the mailbox, folder, or message to recover.

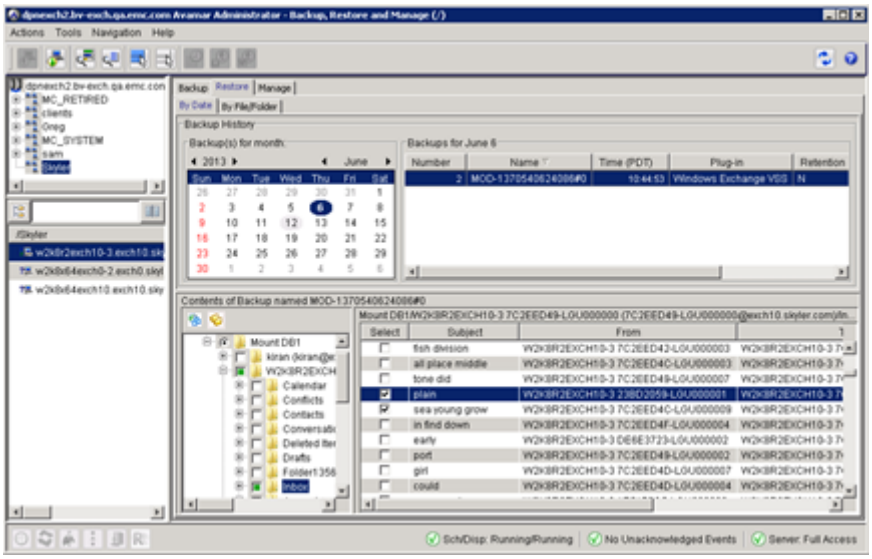

Figure 17. Recovering a mailbox, folder, or message

> **NOTE:** You cannot perform GLR of items in public folder databases, and you cannot restore individual items from archive and disconnected mailboxes. Restore the entire archive or disconnected mailbox to a different live mailbox.

10. Select **Actions** > **Restore Now**.
    The **Restore Options** dialog box appears.

    > **NOTE:** When you restore from a federated backup and click **Cancel** in the **Restore Options** dialog box, Avamar resets the destination client for GLR to the Exchange DAG client. This action is not performed on the Exchange client that you selected in the **Select Destination Client** dialog box. If you try to perform the restore again, reset the destination client to the client with the Exchange GLR plug-in. Otherwise, the restore fails.

11. Leave the default selections in the **Restore Destination Client** box and the **Restore Plug-in** list.
12. From the **Avamar encryption method** list, select the encryption method for data transfer from the Avamar server to the client during the restore.

    The encryption technology and bit strength for a client/server connection depend on several factors, including the client operating system and Avamar server version. The *Avamar Product Security Guide* provides additional information.

13. Click **More Options**.
    The **Restore Command Line Options** dialog box appears.
14. From the **Amount of time to leave AvFS mounted** list, select when to automatically dismount the temporary file system from the Exchange server that you are using for GLR:
    - **Dismount after restore completes**.
    - **Dismount after 1 hour of inactivity**.
    - **Dismount after 2 hours of inactivity**.

    The default is 2 hours. The drive dismounts even if the drive is in use.

15. (Optional) Redirect the restore to a different mailbox than the original mailbox by specifying the target mailbox address in the **Target mailbox address** box with the format `name@domain.subdomain.suffix`.
16. If you did not configure the AvamarBackupUser account, then specify the **Username** and **Password** for an Exchange administrator account that has permissions to perform the restore.
17. Click **OK** on the **Restore Command Line Options** dialog box.
18. Click **OK** on the **Restore Options** dialog box.
    The **Restore Request** dialog box indicates that the restore started.
19. Click **Close**.

Performing GLR with ItemPoint for Exchange by using the AUI

You can use the Exchange GLR plug-in with ItemPoint for Exchange to restore mailboxes, folders, and messages for Exchange 2010 and 2013. However, for Exchange 2016 and 2019 this option is the only supported GLR method.

Steps

1. In the AUI navigation pane on the left, click ≫, and then click **Asset Management**.
   The **Asset Management** window is displayed.
2. In the domain tree, select the domain that contains the Exchange server.

   You cannot view clients outside the domain for the login account. To view all clients, log in to the root domain.

   A list of Avamar clients is displayed in the pane below the domains list.
3. From the list of clients, select the client that runs the Exchange server.
4. (Optional) To locate a full backup that contains the items to restore by date:
   a. In the right pane, click **VIEW MORE**.
   b. Click **SEARCH**.
   c. In the **From** and **To** fields, specify the date range.
   d. Click **RETRIEVE**.
   e. In the list of backups, select a backup.

   The list of backups for the date range is displayed.
5. Click the **Restore** tab.

   The **Restore** wizard is displayed and the **Destination Client** pane is displayed on the right.
6. In the **Destination Client** pane, select the target server for GLR.

   NOTE: The Exchange GLR plug-in and ItemPoint must be installed on the target server.

   - In a stand-alone server with the Exchange GLR plug-in, perform the following steps:
     a. Select **Restore to original client**.
     b. Click **NEXT**.
   - If you configured a GLR proxy server or are using DAG environment, perform the following steps:
     a. Select **Restore everything to a different client**.
     b. In the domain tree, select the domain for the client.
     c. In the list of clients, select the destination client.

        The client is displayed in the **Destination Client** field.

     d. Click **NEXT**.

   The **Backup Content** pane is displayed.
7. To enable granular level recovery, perform the following steps:
   a. In the **Backup Content** pane, toggle the **GLR** switch to ON.
   b. If you configured a GLR proxy server, browse to and select the GLR proxy server.
   c. In a DAG environment, browse to and select the DAG server or GLR proxy server with the GLR plug-in.

   NOTE: The target server must have a minimum of Microsoft Outlook 2007 installed, and cannot have MAPI installed.

   NOTE: Because of an ItemPoint limitation, you also cannot have Outlook 2016 installed on the same machine as ItemPoint.
8. Select the target server for GLR. The Exchange GLR plug-in and ItemPoint must be installed on the target server.
   -
   - On a stand-alone server with the Exchange GLR plug-in, select **Restore everything to its original location**.
   - In a DAG environment, select **Restore everything to a different location**, and then browse to a DAG server or GLR proxy server with the GLR plug-in.
9. Click **FINISH**.
   A message is displayed indicating that the database is mounted on the target machine. The location of this mount point will be displayed in the Management Console **Restore** window after the restore has successfully completed.

10. On the target server, open ItemPoint from the Microsoft Windows **Start** menu:
    a. Select **Programs**.
    b. Select the **ItemPoint for Microsoft Exchange** folder.
    c. Select the **ItemPoint for Microsoft Exchange** program.

    The **Data Wizard** opens at the **Source Selection** window.
11. In the **Source Selection** window, browse to the mount location of the database's .edb and .log files.

    This is the mount point that is displayed in 5 on page 73.

    NOTE: Arbitration mailboxes, starting with the **HealthMailbox** mailbox, are displayed once the restored database has been mounted in ItemPoint. These mailboxes are non-restorable and can be ignored.
12. Click **Next**.
    The **Target Selection** window opens.
13. Click **Skip**.
    Processing of source files begin. When completed, mail items available for recovery are displayed in ItemPoint.
14. Right-click a mail item and select **Export**.
    The **Export Folder** window is displayed. Mail items can be restored and access through Microsoft Outlook by exporting them into the following three data types:
    - .PST
    - .TXT
    - .MSG

    You can also perform live migration using ItemPoint for Microsoft Exchange Server, by opening a target mailbox and copying email messages directly into that mailbox. For further information and additional recovery options, see the ItemPoint for Microsoft Exchange Server documentation.

Performing GLR with ItemPoint for Exchange by using Avamar Administrator

You can use the Exchange GLR plug-in with ItemPoint for Exchange to restore mailboxes, folders, and messages for Exchange 2010 and 2013. However, for Exchange 2016 and 2019, this option is the only supported GLR method.

Steps

1. In Avamar Administrator, click the **Backup & Restore** launcher link button.
   The **Backup, Restore, and Manage** window appears.
2. Find a full backup that contains the items to restore:
   - Finding a backup by date
   - Finding a backup for a specific database on page 59
3. Select the **Browse for Granular Restore** icon in the lower-left pane of the **Restore** tab.
   The **Select Destination Client** dialog box appears.
4. Select the target server for GLR. The Exchange GLR plug-in and ItemPoint must be installed on the target server.
   - If you configured a GLR proxy server, select **Restore everything to a different location**, and then browse to the GLR proxy server.
   - On a stand-alone server with the Exchange GLR plug-in, select **Restore everything to its original location**.
   - In a DAG environment, select **Restore everything to a different location**, and then browse to a DAG server or GLR proxy server with the GLR plug-in.

   NOTE: The target server must have a minimum of Microsoft Outlook 2007 installed, and cannot have MAPI installed.

   NOTE: Because of an ItemPoint limitation, you also cannot have Outlook 2016 installed on the same machine as ItemPoint.
5. Click **OK.**
   A message is displayed indicating that the database is mounted on the target machine. The location of this mount point will be displayed in the Management Console **Restore** window after the restore has successfully completed.
6. On the target server, open ItemPoint from the Microsoft Windows **Start** menu:
   a. Select **Programs**.

b. Select the **ItemPoint for Microsoft Exchange** folder.
c. Select the **ItemPoint for Microsoft Exchange** program.

The **Data Wizard** opens at the **Source Selection** window.

7. In the **Source Selection** window, browse to the mount location of the database's .edb and .log files.
   This is the mount point that is displayed in 5 on page 73.
   NOTE: Arbitration mailboxes, starting with the **HealthMailbox** mailbox, are displayed once the restored database has been mounted in ItemPoint. These mailboxes are non-restorable and can be ignored.
8. Click **Next**.
   The **Target Selection** window opens.
9. Click **Skip**.
   Processing of source files begin. When completed, mail items available for recovery are displayed in ItemPoint.
10. Right-click a mail item and select **Export**.
    The **Export Folder** window appears. Mail items can be restored and access through Microsoft Outlook by exporting them into the following three data types:
    - .PST
    - .TXT
    - .MSG

    You can also perform live migration using ItemPoint for Microsoft Exchange Server, by opening a target mailbox and copying email messages directly into that mailbox. For further information and additional recovery options, see the ItemPoint for Microsoft Exchange Server documentation.

Performing GLR from an existing RDB

You can restore a database backup to an RDB, and then perform GLR from the RDB. You can only restore to a single RDB at a time.

After you restore to an RDB, you can use either Exchange Management Shell commands or the Avamar Plug-in for Exchange GLR to perform GLR of mailboxes, folders, or messages from the RDB.

NOTE: GLR to an RDB is not supported with the Avamar plugin for Exchange 2016.

Restoring a database backup to an RDB

Steps

1. If an RDB is mounted on the target server, then unmount or delete the RDB.
2. In Avamar Administrator, click the **Backup & Restore** launcher link button.
   The **Backup, Restore, and Manage** window appears.
3. Find the backup to restore:
   - Finding a backup by date
   - Finding a backup for a specific database on page 59

   You can restore a database to an RDB from either a full backup or an incremental backup.

   NOTE: When you move a user mailbox from one database to another, you may be able to find backups for the mailbox in both the original and current databases. Backups of the original database contain the contents of the mailbox from before you moved the mailbox to the new database. To restore recent data for the mailbox, restore from backups of the current database. To restore items from before you moved the mailbox to the new database, restore from backups of the original database.

   The backup to restore from is selected in the **Backups** table.
4. Select **Exchange Information Store** in the lower-left pane of the **Restore** tab.
5. In the lower-right pane of the **Restore** tab, select the checkbox next to the database to restore to an RDB.
6. Select **Actions > Restore Now**.
   The **Restore Options** dialog box appears.

7. In the **Restore Destination Client** box, type the name of the target client for the RDB, or click **Browse** to browse to the target client.

   The Exchange GLR plug-in must be installed on the target client if you plan to perform GLR from the RDB with the Exchange GLR plug-in.
8. Ensure that **Windows Exchange VSS** appears in the **Restore Plug-in** list.
9. From the **Avamar encryption method** list, select the encryption method for data transfer from the Avamar server to the client during the restore.

   The encryption technology and bit strength for a client/server connection depend on several factors, including the client operating system and Avamar server version. The *Avamar Product Security Guide* provides additional information.
10. Leave the default selection of **Restore everything to its original location**.
11. Click **More Options**.
    The **Restore Command Line Options** dialog box appears.
12. Disregard the **Allow database overwrite** checkbox. This option does not apply when you restore to an RDB.
13. Select whether to automatically mount the RDB after a successful restore by selecting or clearing the **Mount the database(s) after successful restore** checkbox.
14. From the **Encryption method from Data Domain system** list, select the encryption method for data transfer between the Data Domain system and the client during the restore.
15. To restore but not replay transaction logs, select or clear the **Do not replay the transaction logs** checkbox.

    If you select this option, then you can manually copy additional transaction logs before you mount the database.
16. Disregard the **Move logs path** box. This option does not apply when you restore to an RDB.
17. Choose whether to retain or delete metadata files that are used during the restore:
    - Select the **Retain recovery metadata** checkbox to retain the files.
    - Clear the checkbox to automatically delete the files after the restore completes.

    You can use these metadata files to investigate any restore issues that occur. The files are in the `C:\Program Files\avs\var\avexvss_restore` folder, where `C:\Program Files\avs` is the Avamar installation folder.
18. Disregard the **Automate replication suspension** checkbox. This option does not apply when you restore to an RDB.
19. If you did not configure the AvamarBackupUser account, then specify the **Username** and **Password** for an Exchange administrator account that has permissions to perform the restore.
20. Select the **Restore into RDB** checkbox.
21. In the **RDB** name box, type the name for the restored RDB.

    The restore process creates the RDB if the RDB does not exist.

    If you do not specify a name, then the restore uses the following naming convention: *`database`*`_rdb`, where *database* is the original name of the database.
22. If an RDB with the same name exists on the target server, select the **Overwrite existing RDB** checkbox to overwrite the RDB.

    If you select the checkbox, do not specify a new location for the RDB database and log files. The restore process ignores the values that you specify in the **RDB database** path and **RDB Log path** boxes and restores the files to the Exchange server DataPath, which is the default location for new databases.
23. Specify the location for the RDB database files in the **RDB database path** box.

    If you do not specify a location, then the files restore to the Exchange server DataPath, which is the default location for new databases.
24. Specify the location for the RDB log files in the **RDB Log path** box.

    If you do not specify a location, then the files restore to the Exchange server DataPath, which is the default location for new databases.
25. Click **OK** on the **Restore Command Line Options** dialog box.
26. Click **OK** on the **Restore Options** dialog box.
    The **Restore Request** dialog box indicates that the restore started.
27. Click **Close.**

Performing GLR from an RDB with Exchange Management Shell commands

After you restore a database from a backup to an RDB, you can use Exchange Management Shell commands to perform GLR of specific mailboxes.

Steps

1. Ensure that the RDB is mounted on the Exchange server.
2. Perform the steps in the "Restore Data Using a Recovery Database" Microsoft TechNet article at http://technet.microsoft.com/en-us/library/ee332351.aspx to restore specific mailboxes from the RDB by using Exchange Management Shell commands.

Performing GLR from an existing RDB with the Exchange GLR plug-in

You can browse a restored RDB on an Exchange server with the Exchange GLR plug-in and perform GLR of specific mailboxes, folders, and messages.

Steps

1. In Avamar Administrator, click the **Backup & Restore** launcher link button.
   The **Backup, Restore, and Manage** window appears.
2. Find the original backup with the database that you restored to an RDB:
   - Finding a backup by date
   - Finding a backup for a specific database on page 59

   The backup to restore from is selected in the **Backups** table.
3. Select the **Browse for Granular Restore** icon in the lower-left pane of the **Restore** tab.

   The **Select Destination Client** dialog box appears.
4. Select the target server for GLR. The Exchange GLR plug-in must be installed on the target server.

   If you know that the target server for GLR is the same server that you used for the backup, then select **Restore everything to its original location**.

   Otherwise, select **Restore everything to a different location**, and then browse to the server with the restored RDB. The Exchange GLR plug-in must be installed on the target server.
5. Click **OK.**

   If a dialog prompts you for Exchange credentials, type the AvamarBackupUser name and password, and then click **OK.**

   The **Browse Progress** message box displays the progress of the operation.
6. In the lower-left pane of the **Restore** tab, select the restored RDB. The RDB appears with (existing) appended to the name.
7. Browse to and select the checkbox next to the mailbox, folder, or message to recover.

   You cannot restore individual items from archive and disconnected mailboxes. You must restore the entire archive or disconnected mailbox to a different live mailbox.
8. Select **Actions** > **Restore Now**.
   The **Restore Options** dialog box appears.
9. Leave the default selections in the **Restore Destination Client** box and the **Restore Plug-in** list.
10. From the **Avamar encryption method** list, select the encryption method for data transfer from the Avamar server to the client during the restore.

    The encryption technology and bit strength for a client/server connection depend on several factors, including the client operating system and Avamar server version. The *Avamar Product Security Guide* provides additional information.
11. Click **More Options**.
    The **Restore Command Line Options** dialog box appears.
12. Disregard the **Amount of time to leave AvFS mounted** list. This option does not apply when you restore from an existing RDB.
13. (Optional) Redirect the restore to a different mailbox than the original mailbox by specifying the target mailbox in the **Target mailbox address** box using the format `name@domain.subdomain.suffix`.

14. If you did not configure the AvamarBackupUser account, then specify the **Username** and **Password** for an Exchange administrator account that has permissions to perform the restore.
15. Click **OK** on the **Restore Command Line Options** dialog box.
    The **Restore Request** dialog box indicates that the restore started.
16. Click **Close.**

Monitoring GLR

You can monitor GLR activity to ensure that the restores complete successfully and to troubleshoot restores if a failure occurs. Information about GLR activity is available in the Activity Monitor in Avamar Administrator, Avamar log files, and the Windows Application Event log.

NOTE: Exchange logging is not available in the Avamar Management Console. All logging that is related to GLR using ItemPoint is available on the client side only.

Monitoring GLR in Avamar Administrator

The Activity Monitor in Avamar Administrator enables you to monitor GLR and restores to an RDB.

About this task

NOTE: Exchange logging is not available in the Avamar Management Console. All logging that is related to GLR using ItemPoint is available on the client side only.

Steps

1. In Avamar Administrator, click the **Activity** launcher link button.
   The **Activity** window appears.
2. Select the **Activity Monitor** tab.
   A list of all activities appears.
3. To filter the results to display only restore activity, select **Actions** > **Filter**.
   The **Filter Activity** dialog box appears.
4. In the **Filter Activity** dialog box, select **Restore** from the **Type** list.
   GLR appears as a restore activity.
5. Click **OK.**

   The **Progress Bytes** and **New Bytes** columns in the Activity Monitor contain a value of `0` (zero) for GLR activity with the Exchange GLR plug-in. The Exchange GLR plug-in does not report restore size to Avamar Administrator.

GLR log files

Avamar log files enable you to trace and debug GLR, and the flags and command files that you use to enable the logging.

Table 8. Avamar log files for troubleshooting GLR

Log file	Contents	Flag to enable debugging	Command file for flags
`Axionfs.log`	Trace and debugging information for AvFS file system calls	`--debug` `--x19=327680`	`axionfs.cmd`
`avmapi.log`	Trace and debugging information for MAPI calls	`--debug`	`avmapi.cmd`
`avexglr_plugin.log`	Trace and debugging information for RDB creation, mount, browse, and restore	`--debug`	`avexchglr.cmd`

Table 8. Avamar log files for troubleshooting GLR (continued)

Log file	Contents	Flag to enable debugging	Command file for flags
`Avexchlrsvc.log`	Trace and debugging information for RDB creation, mount, browse, and restore	`--debug`	`avexchglrsvc.cmd`
`ps_exec.log`	Trace and debugging information for execution of PowerShell commands on the Exchange client	`--debug`	`ps_exec.cmd`

Enabling GLR log files

Before you perform GLR, you can enable GLR log files to trace and debug GLR.

Steps

1. Use a text editor to create the command file in the `C:\Program Files\avs\var` folder, where `C:\Program Files\avs` is the Avamar installation folder.
2. Open the command file in the text editor, and add the flags to enable debugging.
3. Save and close the command file.

Monitoring Exchange events in the Windows Application Event log

The Windows Application Event log contains Exchange events for I/O activity, restores to an RDB, and GLR from an RDB. The Microsoft Windows documentation provides more information on viewing the Windows Application Event log.

Canceling GLR

You can cancel GLR or a restore to an RDB any time before the restore completes. The cancellation may take five minutes or more. The GLR may complete before the cancellation finishes. You can cancel a browse operation with the Exchange GLR plug-in by clicking **Cancel** on the **Browse Progress** dialog box.

Steps

1. In Avamar Administrator, click the **Activity** launcher link button.
   The **Activity** window appears.
2. Select the **Activity Monitor** tab.
   A list of all activities appears.
3. From the list of activities, click the restore to highlight it.
4. Select **Actions** > **Cancel Activity**.
   A confirmation message appears.
5. Click **Yes.**

6

Disaster Recovery

Topics:

- Preparing for disaster recovery
- Performing disaster recovery

Preparing for disaster recovery

You can prepare for disaster recovery of a Microsoft Exchange Server environment.

Steps

1. Ensure that you have onsite and offsite copies of the installation disks for the operating system, Exchange Server, and any software updates.
2. Perform full Windows server backups by using the Avamar Client for Windows. Include System State and all critical and noncritical disks in the backups. The *Avamar for Windows Server User Guide* provides full backup instructions.
3. Back up all Exchange databases by using the Avamar Plug-in for Exchange VSS.

   NOTE: If you perform the full Windows server backup and the database backups at different times, then perform the full Windows server backup first.

Performing disaster recovery

You can recover a Microsoft Exchange Server environment after a disaster.

Steps

1. Restore the server from the Windows client backup as described in the *Avamar for Windows Server User Guide*.
2. Complete the recommended Microsoft Exchange Server disaster recovery procedure by using the steps in one of the "Recover an Exchange Server" Microsoft TechNet at http://technet.microsoft.com/en-us/library/dd876880.aspx.
3. Use the Exchange VSS plug-in to restore the Exchange databases.
4. Restore the Exchange databases by using one of the following methods, depending on the environment:
   - Restore the databases from the Exchange VSS plug-in backups.
   - Bring the Exchange server back online in the DAG or cluster. Allow the mailbox databases to synchronize from the current versions on the other servers in the DAG or cluster.
   - Use a combination of both methods. Reseed the mailbox databases with the Exchange VSS plug-in backups, and then synchronize the newly-restored Exchange server with the current version on the other servers in the DAG or cluster.
5. When you are sure that the restore of the environment is correct and complete, perform a full backup of the newly restored environment.

A

Troubleshooting

Topics:

- Troubleshooting backups
- Troubleshooting database restores
- Troubleshooting GLR browse issues
- Troubleshooting GLR restore issues

Troubleshooting backups

Troubleshooting backup topics explain issues that can occur during the backup process for an Exchange environment, and steps to resolve or work around the issues.

Microsoft Exchange Writer fails when backup is canceled

Canceling a backup before it has completed may temporarily leave the Microsoft Exchange Writer in a failed state. You can restart the writer, or wait for the Exchange server to automatically correct the writer.

When you cancel a backup in progress, it may produce an error in the event that the Microsoft Exchange Writer has failed. If this issue occurs, there are two solutions:

- If you should perform an immediate backup, stop and then restart the Microsoft Exchange Writer.
- If you wait about 15 minutes, the Exchange server automatically corrects this condition.

Unmounted or offline databases are skipped

If a database is unmounted or offline when a backup is performed, the backup skips that database. This action is not an issue because databases that are not mounted are not in production.

System Writer failure event in the Application log

A successful backup using the Exchange VSS plug-in might log an event in the Application log indicating a System Writer failure. The Exchange VSS plug-in does not use the System Writer, so you can safely ignore the error.

Backups may fail when drive letters and volumes are mixed

If you configure Exchange to point to the same database files through different paths, such as volume `G:\` and `C:\mountpoint`, then the backup may fail.

To avoid this backup failure, configure Exchange databases to point to the database files using the same path. For example, if you have three databases, DB1, DB2, and DB3, that are at the same location as either a drive location `G:\` or on a mountpoint `C:\mountpoint`, then use one of the following example paths:

- `G:\DB1, G:\DB2, G:\DB3`
- `C:\mountpoint\DB1, C:\mountpoint\DB2, C:\mountpoint\DB3`

Microsoft Exchange Replication service VSS Writer failed

A failed or canceled backup of a passive copy might produce an error in the event log that the Microsoft Exchange Replication service VSS Writer failed. However, this condition may be temporary.

If this backup failure and error occur, there are two solutions:

- If you should perform an immediate backup, stop and then restart the Microsoft Exchange Replication Service writer.
- If you wait about 15 minutes, the Exchange server automatically corrects this condition.

Backups fail when paths include symlinks or directory junctions

Backups with the Exchange VSS plug-in fail if the path to the database, transaction log, or checkpoint files include symbolic links (symlinks) or directory junctions.

Exclude databases with files available through symlinks or directory junctions from backups with the Exchange VSS plug-in.

Backups time out for large Exchange databases

Backups fail if the VSS writer cannot create the snapshot for the backup after five minutes.

To increase the amount of time for snapshot creation, use the following flag:

`--vss-snapshot-timeout`

Specifying the flag during an on-demand backup

Steps

1. Type **`--vss-snapshot-timeout`** in the **Enter Attribute** box.
2. Enter the number of minutes in the **Enter Attribute Value** box on the **Backup Command Line Options** dialog box.
3. Click **+**.

Specifying the flag for scheduled backups

Steps

1. To specify the flag for scheduled backups, type **`--vss-snapshot-timeout`** in the **Enter Attribute** box.
2. Enter the new number of minutes in the **Enter Attribute Value** box on the **Options** tab of the **New Dataset** dialog box.
3. Click **+**.

Specifying the flag for all backups of an Exchange server

Steps

1. Create a file that is called `avexvss.cmd` in the `C:\Program Files\avs\var` folder of the Exchange server, where `C:\Program Files\avs` is the Avamar installation folder.
2. Add the following line to the file:

   `--vss-snapshot-timeout=`*n*

   where *n* is the number of minutes to wait for snapshot creation to complete.

3. Save and close the file.
4. In a cluster or DAG environment, copy the file to the cluster client's shared folder that was specified in the Windows Cluster Configuration Tool.

Federated/DAG backups fail with error

In a dual NIC/dual stack environment, or in a setup where there is a DNS name resolution problem, Federated/DAG backups may fail with the following error:

```
Failed to start Work order
```

The solution to this problem is to add `--clusternode` entries to the `avexvss` file:

1. Change directory to the shared `var` folder.
2. Open the `avexvss` file in a text editor.
3. Add following flags:
   - `--clusternode=`*client1*(*client1_IP*)
   - `--clusternode=`*client2*(*client2_IP*)

   where *client1* and *client2* are the Fully Qualified Domain Names of the cluster node clients, and *client1_IP* and *client2_IP* are the IP addresses for each client.
4. Restart the Federated/DAG backup.

Backup fails due to case sensitivity

Sometimes backups by using the Avamar Plug-in for Exchange VSS can fail with the following similar error:

`Failed to create snapview, as one of the elements required for path "`*path*`" not found in backup account.`

This issue can occur in setups, where the path and database names require case-sensitivity. For example, the VSS writer can report the path `E:\DAG_DB_11\DAG_db_11.edb` as `E:\DAG_db_11\DAG_db_11.edb`, which causes `avtar` to be unable to locate the directory.

To resolve this issue, include the *--use-case-sensitive-paths* variable during the backup, and set its value to **`false`**. Perform the following steps:

1. On the Exchange Server, in the `C:\Program Files\avs\var` folder, create a file `avexvss.cmd`. The `C:\Program Files\avs` folder is the Avamar installation folder.
2. Add the following line in the file:

   `--use-case-sensitive-paths=false`
3. Save and close the file.

NOTE: In a DAG environment, perform these steps on each of the Exchange nodes to add the variable.

Troubleshooting database restores

Database restore topics explain issues that may occur during the restore process for an Exchange environment, and steps to resolve or work around the issues.

Restore moves the current log files if gaps are detected

The restore process automatically moves the current transaction logs to a subfolder named `logs_`*`time_date`* when the following actions occur:

- If you do not specify a path for the log files in the **Move logs path** box on the **Restore Command Line Options** dialog box.
- If there is a gap in the transaction log.

The *time* and *date* values are the time and date of the restore. The subfolder is in the transaction log folder for the database. You can use these logs to analyze the restore operation, if necessary, or apply those logs up to where the failure occurred.

"Range of log files is missing" error in the Event Log

An error message on mentioning a gap in the transaction log files might appear in the Exchange VSS plug-in log file and the Event Log when you restore a database in a DAG. This error may appear when the backup of the active copy occurred simultaneously with the backup of the passive copy. The backups succeed but the log files may not match.

If this error occurs, you may still be able to recover that backup by using the Exchange Server Database Utilities tool, `eseutil`. The “Eseutil” article on the Microsoft TechNet website describes how to use this tool.

Missing or inaccessible log files

The Exchange VSS plug-in restore process writes status and messages to the `MOD-XXX-3018-Exchange_VSS_Writer_nnnn.log` file. You can view this log file in the `C:\Program Files\avs\var` folder on the Exchange server.

Use the AvamarBackupUser account to perform the restore. The AvamarBackupUser account has the required restore privileges and write permissions to the `C:\Program Files\avs\var` folder on the Exchange server. Otherwise, the restore process cannot create or write to the log file, which makes the restore fails.

. The restore process writes messages and failure information to the `avexvss.log` file in the `var` folder when the following action occurs:

- If you perform the restore with a user that does not have the required restore privileges, but has write permissions to the `C:\Program Files\avs\var` folder on the Exchange server.

Selective restore of databases from an older backup may fail.

If you attempt to restore selected databases from an older backup when newer backups exist, then the restore may fail. To work around this issue, move the transaction log files during the restore by specifying a path in the **Move logs path** box on the **Restore Command Line Options** dialog box.

Check the event logs in the Event Viewer if one or more databases fail to mount.

Restore to RDB fails or results in an unusable RDB

Avamar uses wait times that Microsoft recommends for RDB stabilization in Exchange Server 2013 before the restore starts. The restore either fails or results in an unusable RDB if the stabilization exceeds the wait time. You can increase the wait time to allow more time for the RDB to stabilize.

Steps

1. To increase the RDB stabilization wait time, use a text editor to create an `avexchglr.cmd` file in the `C:\Program Files\avs\var` folder, where `C:\Program Files\avs` is the Avamar installation folder.
2. Type the following text in the command file:

   `--rdb_stabilize_wait=n`

   where *n* is the wait time in seconds. The default value is 60 s.
3. Save and close the file.

Troubleshooting GLR browse issues

This section explains issues that might occur when you browse database backups for GLR, and steps to resolve or work around the issues.

Filtering with regex characters fails

The message "There are no items that match filter criteria" appears when you filter GLR browsing using special regular expression (regex) characters like the following list, without a preceding backslash escape character:

- \
- ^
- $
- .
- |
- ?
- *
- +
- (
-)
- [
-]
- {
- }

In the following example, the parentheses (and) are special regex characters:

"MyMailBox24 (MyMailBox24@exchange.example.com)"

When using special regex characters, precede those characters with the backslash \ escape character. In the following example the special regex characters, the parentheses, are preceded with the backslash \:

"MyMailBox24 \(MyMailBox24@exchange.example.com"

Mailboxes do not appear when browsing

If mailboxes do not appear when you browse for items to restore during granular level recovery, then check the `avmapi.log` file, which is available in the `C:\Program Files\avs\var` folder.

Disable IPv6 support on all Exchange servers with Mailbox or Client Access Server roles that are when an `Unable to create MAPI profile due to a network issue` error appears in the log file and the network is a pure IPv4 network.

The Microsoft Support article "How to disable certain Internet Protocol version 6 (IPv6) components in Windows Vista, Windows 7, and Windows Server 2008" at http://support.microsoft.com/kb/929852 provides more information.

Browsing fails when you specify or change the Exchange Client Access service

You may not be able to browse a database backup for GLR if you recently specified or changed the Exchange Client Access Server. Changes that can cause this issue are to move the Client Access Server role to a different server, or change the server name or IP address of the server.

To resolve this issue, stop and restart the Exchange Client Access service on the Exchange Mailbox server.

Browsing fails when a mailbox folder contains a large number of items

You may not be able to browse a mail folder with a large number of items for GLR. The number of items that causes the failure is typically in the tens of thousands, although the exact number varies. If the number of messages in the folder exceeds the maximum that Avamar Administrator can display, then a `Backup Mailbox Browse result is empty` error message appears.

About this task

To work around this issue, use one of the following methods:

- Restore the entire folder, and then copy individual messages from the `Recovered Items` folder to the target mailbox folders.
- Specify a maximum number of mailbox items to display in Avamar Administrator in the `aveexchglr.cmd` file.

Steps

1. Use a text editor to create a command file that is named `aveexchglr.cmd` in the `C:\Program Files\avs\var` folder, where `C:\Program Files\avs` is the Avamar installation folder.
2. Add the following line to the file:

   `--max_browse_entries=n`

   where *n* is the maximum number of entries. The value should be less than `40000` (40,000).
3. Save and close the file.
4. Close the **Backup, Restore and Manage** window in Avamar Administrator, and then reopen the window and retry the GLR operation.

Browsing fails for user mailbox names with mismatched parentheses

You may not be able to browse mailboxes that have mismatched parentheses in the mailbox name. `Test mailbox (accounting` is an example of a mailbox name that can cause this problem.

Troubleshooting GLR restore issues

This section explains issues that might occur when you restore individual mailboxes, folders, or messages with the Exchange GLR plug-in, and steps to resolve or work around the issues.

Restore fails with sector size mismatch error code 546

The error `JET_errLogSectorSizeMismatch (-546)` may appear in event logs during Exchange GLR recovery.

About this task

This issue occurs when there is a mismatch between the logical disk sector size that is used when the backup was created and the sector size that is used when creating the Avamar Virtual Disk drive. Because of the mismatch in sector size, Avamar cannot read the content from database log files, and restore fails.

The solution is to create the `axionfs.cmd` file. To change the default properties of the Avamar Virtual Disk drive, add new flags.

Steps

1. Use a text editor to create the `axionfs.cmd` command file in the *`C:\Program Files\avs\var`* folder, where *C:\Program Files\avs* is the Avamar installation folder.
2. Add the flags in the following table to the `axionfs.cmd` file.

Table 9. Restore fails with sector size mismatch error code 546

Flag	Description
`--sector-size=n`	Sets the sector size of the Avamar Virtual Disk drive, where *n* is the sector size of the disk from which the backup was taken. The value should be at least 512, or a multiple of 512. The default value is 512.
`--cluster-size=n`	Sets the cluster size of the Avamar Virtual Disk drive, where *n* is the sector size of the disk from which the backup was taken. The value should be at least 512 and a multiple of the `--sector-size` flag. The default value is 4096.
`--storage-type=stDisk`	Sets the storage type of the Avamar Virtual Disk drive. Possible values include: • `stDisk` • `stCDROM`

Table 9. Restore fails with sector size mismatch error code 546 (continued)

Flag	Description
	• `stVirtualDisk` • `stDiskPnP` The default value is `stDiskPnP`.

3. Save and close the file.

GLR fails with the error "The semaphore timeout period has expired"

Exchange GLR may fail with the error `The semaphore timeout period has expired.` This error occurs most often when you store backups on a Data Domain system. To work around this issue, you can add flags to the `axionfs.cmd` file to either extend or disable the timeout period.

Steps

1. Use a text editor to create a command file that is named `axionfs.cmd` in the `C:\Program Files\avs\var` folder, where `C:\Program Files\avs` is the Avamar installation folder.
2. Add the following line to the file, which extends the timeout period to 130 s:

   `--largecallbacktimeout`
3. Save and close the file.
4. If GLR still fails with the extended timeout period, then remove the `--largecallbacktimeout` value from the `axionfs.cmd` file and add the following value to disable the timeout period:

   `--disablecallbacktimeout`
5. Save and close the file.

GLR fails with the error "Failed to mount database. Please check exchange GLR logs for more details"

About this task

Exchange GLR may fail with the error `Failed to mount database. Please check exchange GLR logs for more details.`

The `exchglr_plugin.log` file includes the following entries:

```
avexchlr Warning <9072>: PowerShell: Error Couldn't mount the database that you
specified... Error: Couldn't find the specified mailbox database with GUID...
```

To resolve this issue, specify a mount retry time in the `avexchlr.cmd` file

Steps

1. Use a text editor to create a command file that is named `avexchglr.cmd` in the `C:\Program Files\avs\var` folder, where `C:\Program Files\avs` is the Avamar installation folder.
2. Add the following line to the file:

   `--mount_retry_time=`*seconds*

   where *seconds* is the number of seconds to wait before retrying the database mount. A recommended value is 120.
3. Save and close the file.
4. If the error message continues to appear, then increase the value for the `--mount_retry_time` option.

GLR fails with restore deleted mailbox timeout error

During GLR recovery, when the source mailbox is in an archive or disconnected state, the Exchange plugin restores the mailbox by executing Powershell commands. The plugin uses the `restore_deleted_mailbox_timeout` flag to determine whether the command has completed successfully or not. By default this value is 20 seconds.

If the command execution has not completed within the time that is specified in the `restore_deleted_mailbox_timeout` flag, the following error is logged to `avmapi.log`:

```
Timeout "restore_deleted_mailbox_timeout": ( 20 sec )
has been reached.
Mailbox restore request is still in transient
state.
Please increase "restore_deleted_mailbox_timeout" parameter.
```

To solve this problem:

1. Use a text editor to create or edit the command file `avmapi.cmd` in the `C:\Program Files\avs\var` folder, where `C:\Program Files\avs` is the Avamar installation folder.
2. Add the following line to the `avmapi.cmd` file:

   `restore_deleted_mailbox_timeout=`*value*

   where *value* is the number of seconds for the plug-in to use to determine if the command has completed successfully. The default is 20 seconds. There is no specific maximum value for this flag.

GLR fails with the error "Failed to configure MAPI profile due to a network error"

Exchange GLR may fail with the error:

`Failed to configure MAPI profile due to a network error.`

When the following error appears in the `avmapi.log`, you may need to specify an Exchange Legacy Distinguished Name for the AvamarBackupUser account:

`Failed to configure MAPI profile due to a network error. If the network is not correctly configured to use IPv6, be sure to completely disable all IPv6 services as described in http://support.microsoft.com/kb/929852`

The following error also appears a few lines later:

`Error MAPI_E_LOGON_FAILED. (code: 0X800401111), ...`

GLR using native Microsoft Exchange MAPI CDO fails with LmCompatibilityLevel set to 5

When `LmCompatilityLevel` is set to 5 on the local Exchange server, GLR using native Microsoft Exchange MAPI CDO fails.

NOTE: This issue does not apply to GLR using Itempoint.

LmCompatilityLevel is set in the local registry at `HKLM\SYSTEM\CurrentControlSet\Control\Lsa`. A description of the allowed values can be found at https://technet.microsoft.com/en-us/library/cc960646.aspx?f=255&MSPPError=-2147217396. For GLR using native Microsoft Exchange MAPI CDO, the Avamar software requires that `LmCompatibilityLevel` is either not set, or is set to a value no greater than 3.

GLR may fail with invalid mount point error

Because of a change in the signing method for the Eldos driver, Exhange GLR may fail with the following error :- .

```
avexchglr Error <13530>: Invalid mount letter, most likely caused by AvFS
mount failure
```

To resolve this issue, upgrade to the latest Windows patches.

B

Plug-in Options

Topics:

- How to set plug-in options
- Exchange VSS plug-in backup options
- Exchange VSS plug-in restore options
- Exchange GLR plug-in restore options

How to set plug-in options

Plug-in options enable you to control specific actions for on-demand backups, restores, and scheduled backups. The available plug-in options depend on the operation type and plug-in type.

Specify plug-in options in the AUI for on-demand backup or restore wizards, or when a dataset for a scheduled backup is created. Set plug-in options with the graphical user interface (GUI) controls (text boxes, check boxes, radio buttons, and so forth). Type an option and its value in the **Key** and **Value** fields.

NOTE: The Avamar software does not check or validate the information that is typed in the **Show Free Form** section of the **More Options** pane. The values in the **Key** and **Value** fields override settings that are specified with the GUI controls for the options.

Exchange VSS plug-in backup options

Plug-in options are available for the Avamar Plug-in for Exchange VSS when you perform an on-demand backup or when you configure a dataset for scheduled backups.

Table 10. Backup options for the Exchange VSS plug-in

Option	Description
Select type of backup to perform	Specifies whether to perform a full or incremental backup. Incremental backups automatically promote to full backups when no previous full backup can be found. You can use only full backups for granular level recovery.
Set when backup occurs on clustered or DAG systems.	Specifies whether to back up passive databases, active databases, or both when you back up a specific server in an Exchange Server DAG environment. Select one of the following values: • Select **Replica (passive) writer only** to back up only passive databases. • Select **Store (active) writer only** to back up only active databases. • Select **Always** to back up both passive and active databases.
Federated Backup	
Preferred server order list	Sets the priority of the Exchange servers to use for a federated backup of an Exchange Server DAG environment. Type the server name, not the FQDN. Separate multiple entries with commas. If you do not specify a list, the Exchange VSS plug-in adds all servers in the DAG to the list in alphabetical order. When you specify a list, but a node is missing from the preferred server order list, the backup does not perform from that node. Any databases that can only be backed up from specific node are not being backed up.

Table 10. Backup options for the Exchange VSS plug-in (continued)

Option	Description
Set the preference for what types of databases to back up.	Specifies the type of database to back up in a federated backup of an Exchange Server DAG environment. Select one of the following values: ● **Prefer passive** — Avamar backs up a passive copy of each database, if a healthy passive copy is available. If a healthy passive copy is not available, then Avamar backs up the active copy. ● **Active only** — Avamar backs up only the active copy of each database. ● **Passive only** — Avamar backs up only the passive copy of each database. If a healthy passive copy is not available, then the backup does not include the database.
Backup policy when saveset includes circular logging-enabled databases	
Promote - Back up all, promote all to full	There are databases with circular logging that is enabled in the backup set and you select the option to perform an incremental backup. This option backs up all databases but promotes the backup to a full backup. When you enable circular logging for a database, Exchange overwrites transaction log files after the data in the log files is committed to the database. Circular logging enables you to save disk space by reducing the number of log files, but you can recover data only up until the last full backup. As a result, Avamar does not support incremental backups of databases with circular logging.
Circular - Only back up circular logging-enabled databases, promote all to full	There are databases with circular logging that is enabled in the backup set and you select the option to perform an incremental backup. This option performs a full backup of only databases with circular logging enabled. The backup skips databases where circular logging is not enabled.
Skip - Skip circular logging-enabled databases, allow incremental	There are databases with circular logging that is enabled in the backup set and you select the option to perform an incremental backup. This option performs an incremental backup of only databases where circular logging is not enabled. The backup skips databases where circular logging is enabled.
Data Domain system	
Store backup on Data Domain system	To store the backup on a Data Domain system instead of the Avamar server, select the checkbox and then select the Data Domain system from the list.
Encryption method to Data Domain system	Specifies the encryption method for data transfer from the client to the Data Domain system during the backup.
Multi-Streaming	
Enable multi-streaming	Select the checkbox to enable multi-streaming, which enables you to simultaneously back up multiple databases or volumes to reduce backup time.
Maximum number of streams	When you enable multi-streaming, this option specifies the maximum number of streams to use for the backup. Each stream requires one processor and one spindle.
Group by	When you enable multi-streaming, select the method that Avamar uses to group data for multi-streaming: ● Select **Database** to create one stream for each database. ● Select **Volume** to create one stream for each volume.
Exchange Administrator Credentials	
Username	Specifies the username of an Exchange administrator account, such as the AvamarBackupUser account, that has permissions to perform the backup. You only should specify an account if you did not configure the AvamarBackupUser account or if you are performing a federated backup in an Exchange Server DAG environment.

Table 10. Backup options for the Exchange VSS plug-in (continued)

Option	Description
	The Exchange VSS plug-in uses a different Avamar agent for the DAG or cluster when you perform backups with the Exchange DAG client or the Avamar cluster client. The Avamar agent for the DAG or cluster requires Exchange administrator credentials to perform backups. Therefore, you must manually specify the username and password for the AvamarBackupUser account when you perform a backup with the Exchange DAG client or Avamar cluster client.
Password	Specifies the password for the Exchange administrator account.
Advanced options	
Enable debugging messages	Select the checkbox to write maximum information to the log files for debugging. Use caution when you select this option. The backup process creates large log files.
Disable consistency check (recommended only if 2+ members in DAG)	Select the checkbox to disable consistency checks with the Exchange `eseutil` utility during the backup. A consistency check can cause severe performance issues or failure during a backup, especially in environments with many transaction logs.
Enable consistency check throttling	Select the checkbox to throttle consistency checks with the Exchange eseutil utility during the backup by pausing the consistency check after a specified number of I/Os. Then specify the number of I/Os by using the **#IOs between pauses** option and the length of the pauses by using the **Duration of pauses (ms)** option.
#IOs between pauses	Specifies the number of I/Os between pauses when you enable throttling of the consistency check. The value must be between 100 and 10000 (10,000). The default value is 1000 (1,000).
Duration of pauses (ms)	Specifies the duration of the pause in milliseconds when you enable throttling of the consistency check. The value must be between 1000 (1,000) and 60000 (60,000). The default value is 1000 (1,000).

Exchange VSS plug-in restore options

Plug-in options are available when you perform a restore with the Avamar Plug-in for Exchange VSS.

Table 11. Restore options for the Exchange VSS plug-in

Option	Description
Database Options	
Encryption method from Data Domain system	Specifies the encryption method for data transfer between the client and the Data Domain system during the backup.
Allow database overwrite	Select the checkbox to enable the overwrite of all target databases during the restore. To enable the overwrite of a specific database instead of all target databases: 1. Leave the **Allow database overwrite** checkbox clear. 2. In the Exchange Management Console, select **This database can be overwritten by a restore** in the recovery options for the database.
Mount the database(s) after successful restore	Select the checkbox to automatically mount databases after a successful restore.
Logs Options	

Table 11. Restore options for the Exchange VSS plug-in (continued)

Option	Description
Do not replay the transaction logs	Select the checkbox to restore but not replay transaction logs. This option enables you to manually copy additional transaction logs before you mount the database.
Move logs path	Specifies the location that the restore process moves existing log files to before restoring log files from the backup. Moving existing log files prevents log file conflicts during the restore. If you do not specify a path for the log files and there is a gap in the transaction log, then the restore process automatically moves the current transaction logs to a subfolder named `logs_time_date`. The *time* and *date* values are the time and date of the restore. The subfolder is in the transaction log folder for the database. You can use these logs to analyze the restore operation, if necessary, or apply those logs up to where the failure occurred.
Additional Restore Options	
Retain recovery metadata	Select the checkbox to retain the restore metadata files after the restore completes. Otherwise, the restore process automatically deletes the metadata files. You can use these metadata files to investigate any restore issues that occur. The files are in the `C:\Program Files\avs\var\avexvss_restore` folder, where `C:\Program Files\avs` is the Avamar installation folder.
Automate replicate suspension	Select the checkbox to automatically suspend replication to the passive nodes before the restore. If you leave the checkbox clear, then you must manually suspend replication before the restore. **NOTE:** You must manually resume replication after the restore whether you automatically or manually suspend replication before the restore.
Exchange Administrator Credentials	
Username	Specifies the username of an Exchange administrator account, such as the AvamarBackupUser account, that has permissions to perform the restore. You only should specify an account if you did not configure the AvamarBackupUser account or if you are performing a restore with either the Exchange DAG client or the Avamar cluster client. The Exchange VSS plug-in uses a different Avamar agent for the DAG or cluster when you perform restores with the Exchange DAG client or the Avamar cluster client. The Avamar agent for the DAG or cluster requires Exchange administrator credentials to perform restores. Therefore, you must manually specify the username and password for the AvamarBackupUser account when you perform a restore with the Exchange DAG client or Avamar cluster client.
Password	Specifies the password for the Exchange administrator account.
RDB Restore Options	
Restore into RSG/RDB	Select the checkbox to restore the selected database to a recovery database (RDB). When you restore to an RDB, you can browse the RDB to select individual mailboxes, folders, or messages to restore by using either the Exchange management tools or the Avamar Plug-in for Exchange GLR.

Table 11. Restore options for the Exchange VSS plug-in (continued)

Option	Description
Overwrite existing RSG/RDB	Select the checkbox to overwrite an RDB with the same name as the restored RDB. If you select the checkbox, do not specify a new location for the RDB database and log files. The restore process ignores the values that you specify in the **RDB database path** and **RDB Log path** boxes and restores the files to the Exchange server DataPath, which is the default location for new databases.
RSG/RDB name	Specifies the name for the RDB. If you do not specify a name, then the restore uses the following naming convention: `database_rdb`, where *database* is the original name of the database.
RSG/RDB database path	Specifies the location for the RDB database files. If you do not specify a location, then the files restore to the Exchange server DataPath, which is the default location for new databases.
RSG/RDB log path	Specifies the location for the RDB log files. If you do not specify a location, then the files restore to the Exchange server DataPath, which is the default location for new databases.
Multi-Streaming	
Enable multi-streaming	Specifies to simultaneously restore multiple databases or volumes to reduce restore time.
Maximum number of streams	Specifies the maximum number of streams to use for the restore. The default is 2, and the maximum value is 4. Each stream requires a separate processor.
Advanced options	
Enable debugging messages	Select the checkbox to write maximum information to the log files for debugging. Use caution when you select this option. The restore process creates large log files.
Group by	Specifies the method to group data for multi-streaming: ● Select **Database** to create one stream for each database. ● Select **Volume** to create one stream for each volume.

Exchange GLR plug-in restore options

Plug-in options are available when you perform granular level recovery with the Avamar Plug-in for Exchange GLR.

Table 12. Restore options for the Exchange GLR plug-in

Option	Description
Amount of time to leave AvFS mounted	Select when to automatically dismount the temporary file system from the Exchange server that you are using for GLR: ● **Dismount after restore completes** ● **Dismount after 1 hour of inactivity** ● **Dismount after 2 hours of inactivity** The default is 2 hours. The drive dismounts even if the drive is in use.
Target mailbox address	Specifies the name of a different target mailbox for the restore. The target mailbox address must use the form `name@domain.subdomain.suffix`.
Exchange Administrator Credentials	

Table 12. Restore options for the Exchange GLR plug-in (continued)

Option	Description
Username	Specifies the username of an Exchange administrator account, such as the AvamarBackupUser account, that has permissions to perform GLR. You only should specify the account if you did not configure the AvamarBackupUser account.
Password	Specifies the password for the Exchange administrator account.
Advanced Options	
Enable debugging messages	Select the checkbox to write maximum information to the log files for debugging. Use caution when you select this option. The restore process creates large log files.

C

Command Line Interface

Topics:

- Overview of the Exchange VSS plug-in
- Command reference
- Specifying command line options
- CLI examples
- Password encoding

Overview of the Exchange VSS plug-in

The Exchange VSS plug-in enables you to use a command line interface (CLI) with the `avexvss` command instead of Avamar Administrator to back up and restore Exchange data. You can use the CLI from all operating systems that the Exchange VSS plug-in supports.

When you use the CLI to perform a backup or restore, you specify the command options for the Exchange VSS plug-in binary at the command prompt. The plug-in interacts with the `avtar` process to write backup data to or read backup data from the Avamar server or a Data Domain system.

The `avexvss` binary is available in the `C:\Program Files\avs\bin` folder, where *C:\Program Files\avs* is the Avamar client installation folder.

To use the CLI, open a command prompt and change directory to the `bin` folder. Then type the command at the command prompt.

Command reference

The `avexvss` command enables you to browse for Exchange data to back up or restore, perform the backup, or perform the restore.

Synopsis

```
avexvss [--operation={browse | backup | restore}] [options]
```

Operations

The operation that you specify with the `avexvss` command controls the task that `avexvss` performs. Available operations include `browse`, `backup`, and `restore`.

Supply one of the operations in the following table for `avexvss` by using the `--operation` option.

Table 13. Operations for the `avexvss` command

Operation	Description
`browse`	Returns a list of Exchange objects available to back up. The command results appear as standard output in the command window. The following information appears for each entry: ● Database name

Table 13. Operations for the avexvss command (continued)

Operation	Description
	• Size • FStype (for example, db) • User The data sorts alphabetically by name.
backup	Performs an on-demand backup of the specified data. Include options with the backup operation to specify the data to back up, the Avamar server for the backup, Avamar login credentials, a label for the backup, and other options to control backup behavior. Many of these plug-in options are the same options that you specify when you perform an on-demand backup or configure a scheduled backup in Avamar Administrator.
restore	Restores the specified data. Include options with the restore operation to specify the data to restore, the Avamar server for the restore, Avamar login credentials, the target location for the restore, and other options to control restore behavior. Many of these plug-in options are the same options that you specify when you perform a restore in Avamar Administrator.

Options

The options that you specify with the avexvss command control browse, backup, and restore behavior. Some options are available for multiple operations, such as the account options for connecting to the Avamar server. Other options apply only to backups or restores.

Common options

Common options for the avexvss command are general options that are available for multiple operations.

The following common options are available for the avexvss command.

Table 14. Common avexvss options

Option	Description
--federated	Performs a federated browse, backup, or restore in an Exchange Server DAG environment.
--version	Displays the build version of the Avamar Plug-in for Exchange VSS.

Account options

Account options for the avexvss command enable you to specify credentials to connect to the Avamar server for backups and restores.

The following account options are available for the avexvss command.

Table 15. Account options for the avexvss command

Option	Description
--account=*domain/client* --path=*domain/client* --acnt=*domain/client*	Required for all backup and restore operations. Specifies the client to back up or restore from using the format, *domain/client*, where *domain* is the Avamar domain to which the client belongs and *client* is the name of the client computer.
--id=*user@domain/client*	Required for all backup and restore operations. Specifies the Avamar username for authentication. You can specify the values for the --id and --account options simultaneously by specifying --id=*user@domain/client*.
--password=*password* --ap=*password* --pswd=*password*	Required for all backup and restore operations. Specifies the password for the Avamar account.
--server=*Avamar_server* --hfsaddr=*Avamar_server*	Required for all backup and restore operations. Specifies the hostname or IP address of the Avamar server.

Logging options

Logging options for the avexvss command enable you to specify the path and file name for the avexvss log file, and to control how much information the plug-in writes to the log file.

Table 16. Logging options for the avexvss command

Option	Description
--informationals=*n*	Sets the information level for status messages, where *n* is a number such as 0, 1, 2.
--log=*file* --logfile=*file*	Specifies the full path and file name of the avexvss plug-in log file. The Activity Monitor in Avamar Administrator displays only avtar logs for backups with the command line interface. To create a plug-in log for CLI activities, you must specify the --log or --logfile option on the command line.
--noinformationals	Disables all status messages.
--nostdout	Disables output to STDOUT. However, if you supply --log and --logfile=file, then output still goes to the log file.
--nowarnings	Disables warning messages.
--quiet	Suppresses all debugging messages.
--verbose --v	Enables all messages, including status and warning messages.

Browse options

Browse options for the avexvss command allow you to specify a DAG node's network addresses.

The following browse option is available for the avexvss command.

Table 17. Browse option for the avexvss command

Option	Description
--clusternode=*HOSTNAME(IP)*	Statically defines the DAG node's network addresses, where *HOSTNAME* is the node's hostname and *IP* is the node's network address. **NOTE:** If the node to be browsed is configured as a proxy for DAG, only databases that are part of DAG is displayed.

Backup options

Backup options for the avexvss command enable you to control backup behavior. Many of these options are the same as the plug-in options that you specify in Avamar Administrator when you perform an on-demand backup or create a dataset for scheduled backups.

The following avexvss options are available for the backup operation.

Table 18. Backup options for the avexvss command

Option	Description
--[avtar]ddr-encrypt-strength={high | medium | none}	Specifies the encryption method for data transfer between the client and the Data Domain system when you store the backup on a Data Domain system. The default value is high.
--backup_exchangepassword=*password*	Specifies the password for the Exchange administrator account.
--backup_exchangeuser=*domain\username*	Specifies the username of an Exchange administrator account, such as the AvamarBackupUser account, that has permissions to perform the backup. You only should specify an account if you did not configure the AvamarBackupUser account or if you are performing federated backups in an Exchange Server DAG environment.
--backup-type=*type*	Specifies whether to back up passive databases, active databases, or both when you back up a specific server in a DAG environment. Specify one of the following values for *type*: • active — Backs up only active databases • passive — Backs up only passive databases • always — Backs up both active and passive databases
--brtype=*level*	Specifies whether to perform a full or incremental backup. Specify one of the following values for *level*: • full — Performs a full backup • incremental — Performs an incremental backup. Incremental backups automatically promote to full backups when no previous full backup can be found. You can use only full backups for granular level recovery.
--circular_only	There are databases with circular logging that is enabled in the backup set and you select the option to perform an incremental backup. This option performs a full backup of only databases with circular logging enabled. The backup skips databases where circular logging is not enabled. If you specify --circular_only, do not specify --circular_promote or --circular_skip.

Table 18. Backup options for the `avexvss` command (continued)

Option	Description
`--circular_promote`	There are databases with circular logging that is enabled in the backup set and you select the option to perform an incremental backup. This option backs up all databases but promotes the backup to a full backup. If you specify `--circular_promote`, do not specify `--circular_only` or `--circular_skip`.
`--circular_skip`	There are databases with circular logging that is enabled in the backup set and you select the option to perform an incremental backup. This option performs an incremental backup of only databases where circular logging is not enabled. The backup skips databases where circular logging is enabled. If you specify `--circular_skip`, do not specify `--circular_only` or `--circular_promote`.
`--clusternode=`*HOSTNAME(IP)*	Statically defines the DAG node's network addresses, where HOSTNAME is the node's hostname and IP is the node's network address. **NOTE:** Include the parentheses around the IP address. It should be defined on the Virtual DAG node, once for each node in the DAG cluster. This flag can be used in multi-homed environments (where there are separate production/backup networks) where DNS resolution is not possible for a certain network.
`--ddr={true | false}`	Specifies whether to store the backup on a Data Domain system instead of the Avamar server. To store the backup on a Data Domain system, specify `true`, and then specify the Data Domain system by using `--ddr-index`.
`--ddr-index=`*n*	Specifies the index number (1, 2, 3, and so forth) of the Data Domain system on which to store the backup. The index number is assigned to the Data Domain system when you add it to the Avamar server configuration.
`--disable_cc`	Disables consistency checks with the Exchange `eseutil` utility during the backup. A consistency check can cause severe performance issues or fail during a backup, especially in environments with many transaction logs.
`--disable-membership-check=`*true*	Specifies to disable AD group membership check of AvamarBackupUser account when running a backup or restore.
`--excludelist=`*string*	Specifies a *string* of database names to exclude from the backup. Separate multiple entries with a comma Example: `--excludelist=Exchange Information Store/My2010Db`
`--expires=`*{days | timestamp}*	Specifies backup expiration as a number of days from today (*days*) or an absolute *timestamp*. Specify the timestamp by using 24-hour local time zone values conforming to the syntax *yyyy-mm-dd hh:mm:ss*.

Table 18. Backup options for the `avexvss` command (continued)

Option	Description
	You can specify partial date strings. For example, `2014-02` is equivalent to `2014-02-01 00:00:00`.
`--federated_backup_policy=`*type*	Specifies the type of database to back up in a federated backup of an Exchange 2019, 2016, 2013 or 2010 DAG environment. Specify one of the following values for *type*: • `prefer-passive` — Avamar backs up a passive copy of each database, if a healthy passive copy is available. If a healthy passive copy is not available, then Avamar backs up the active copy. This option is the default value. • `active-only` — Avamar backs up only the active copy of each database. • `passive-only` — Avamar backs up only the passive copy of each database. If a healthy passive copy is not available, then the backup does not include the database.
`--includelist=`*string*	Specifies a string of database names to include in the backup that would otherwise be excluded based on the values you type in the `--excludelist` option. Separate multiple entries with a comma. Example: `--includelist=Exchange Information Store/My2010Db`
`--max-integrity-check-threads=`*n*	Specifies the maximum number of threads that can be started during databases integrity check (default is 4). Higher values may increase backup performance when backing up multiple databases but also use more system resources.
`--num_ios=`*n*	Specifies the number of I/Os between pauses when throttling the consistency check, where *n* is a value between 100 and 10000. The default value is 1000.
`--parallel={true | false}`	Specifies whether to use multi-streaming, which enables you to simultaneously back up multiple databases or volumes to reduce backup time. To use multi-streaming, specify `true`, and then specify values for the `--parallel-pool` and `--parallel-type` options.
`--parallel-pool=`*n*	Specifies the maximum number of streams, where *n* is a value between 2 and 10. Each stream requires one processor and one spindle.
`--parallel-type={by-target | by-volume}`	Specifies how to group streams: • Specify `by-target` to create one stream for each database. • Specify `by-volume` to create one stream for each volume.
`--pause_duration=`*ms*	Specifies the duration of the pause in milliseconds when throttling the consistency check utility, where *ms* is a value between 1000 and 60000. The default value is 1000.
`--retention-type`*type* `--retentiontype=`*type*	Assigns advanced retention to the backup. Assigns one of the following values:

Table 18. Backup options for the avexvss command (continued)

Option	Description
	• none — Do not explicitly assign any retention type to this backup. That is, treat the backup as a normal on-demand backup. • daily — Explicitly designate this backup as a daily backup. • weekly — Explicitly designate this backup as a weekly backup. • monthly — Explicitly designate this backup as a monthly backup. • yearly — Explicitly designate this backup as a yearly backup.
--serverorderlist=*server*	Sets the priority of the Exchange servers to use for a federated backup in an Exchange Server DAG environment. Type the server name, not the FQDN. Separate multiple entries with commas. If you do not specify a list, then the Exchange VSS plug-in adds all servers in the DAG to the list in alphabetical order.
--throttle_cc	Throttle consistency checks with the Exchange eseutil utility during the backup by pausing the consistency check after a specified number of I/Os. Specify the number of I/Os by using the --num_ios option and the length of the pauses by using the --pause_duration option.
--vss-snapshot-timeout=*minutes*	Specifies the number of minutes to wait for snapshot creation to complete before failing the backup. The default value is 5 minutes. Use this flag when VSS snapshot creation takes longer than 5 minutes, which may occur with large Exchange servers or databases.

Restore options

Restore options for the avexvss command enable you to control restore behavior. Many of these options are the same as the plug-in options that you specify in Avamar Administrator when you perform a restore.

The following avexvss options are available for the restore operation.

Table 19. Restore options for the avexvss command

Option	Description
--allowoverwrite={true | false}	Specifies whether to enable the overwrite of all target databases during the restore: • Specify true to enable the overwrite of all target databases. • Specify false to enable the overwrite of a specific database, and then select the **This database can be overwritten by a restore** option in the recovery options for the database in the Exchange Management Console.
--attachdb={true | false} --fAttachDBs={true | false}	Specifies whether to automatically mount databases after a successful restore. The default value is true.

Table 19. Restore options for the `avexvss` command (continued)

Option	Description
`--autosuspend`	Automatically suspends replication to the passive nodes before the restore. If you do not specify this option, then you must manually suspend replication before the restore. **NOTE:** You must manually resume replication after the restore whether you automatically or manually suspend replication before the restore.
`--[avtar]ddr-encrypt-strength={high | medium | none}`	Specifies the encryption method for data transfer between the Data Domain system and the client when the backup is stored on a Data Domain system. The default value is `high`.
`--browse_filter_threshold_value=`*n*	Specifies a lower threshold than the default 10,000 items to display the **Restore Browse Options** dialog box, where *n* is a low number such as 10. Any number that is less than or equal to the number of entries in the selected container automatically displays the **Restore Browse Options** dialog box when you expand or select a database, mailbox, or folder in the backup.
`--dbpath=`*name*	Specifies the path for the database files when you restore to an RDB.
`--deleteexistingrsgrdb`	Overwrites an RDB with the same name as the restored RDB. If you specify this option, do not specify the `--logpath` or `--dbpath` options. The restore process ignores the values that you specify for the `--logpath` or `--dbpath` options, and restores the files to the Exchange server DataPath, which is the default location for new databases.
`--disable-membership-check=`*true*	Specifies to disable AD group membership check of AvamarBackupUser account when running a backup or restore.
`--labelnum=`*n*	Specifies the label number of the backup to restore. The label appears in the **Backups** table in the **Backup, Restore and Manage** window. You can also use the `mccli backup show` command in the Avamar Management Console Command Line Interface (MCCLI). The *Avamar Management Console Command Line Interface (MCCLI) Programmer Guide* provides more information.
`--logpath=`*path*	Specifies the location for the log files when you restore to an RDB.
`--movelogspath=`*path*	Specifies the location that the restore process moves existing log files to before restoring log files from the backup. Moving existing log files prevents log file conflicts during the restore. If you do not specify a path for the log files and there is a gap in the transaction log, then the restore process automatically moves the current transaction logs to a subfolder named `logs_`*`time_date`*. The *time* and *date* values are the time and date of the restore. The subfolder is in the transaction log folder for the database. You can use these logs to analyze the restore operation, if necessary, or apply those logs up to where the failure occurred.
`--nologreplay`	Prevents the replay of the transaction logs during the restore. If you specify this option, then you can manually copy additional transaction logs before you mount the database.
`--restore_exchangepassword=`*password*	Specifies the password for the Exchange administrator account.

Table 19. Restore options for the `avexvss` command (continued)

Option	Description
`--restore_exchangeuser=`*domain\username*	Specifies the username of an Exchange administrator account, such as the AvamarBackupUser account, that has permissions to perform the restore. You only should specify the username and password if you did not configure the AvamarBackupUser account or if you are performing a restore with either the Exchange DAG client or the Avamar cluster client.
`--retainmetadata`	Retains the restore metadata files after the restore completes. Otherwise, the restore process automatically deletes the metadata files. You can use these metadata files to investigate any restore issues that occur. The files are in the `C:\Program Files\avs\var\avexvss_restore` folder, where `C:\Program Files\avs` is the Avamar installation folder.
`--rsgname=`*name*	Specifies the name for the RDB when you restore to an RDB.
`--rsgrestore`	Restores the selected database to an RDB, respectively. When you restore to an RDB, you can browse the RDB to select individual mailboxes, folders, or messages to restore by using either the Exchange management tools or the Avamar Plug-in for Exchange GLR.
`--target=`*path*	Specifies the `path` to the folder for database and log files when you restore to a file on the file system.

Help option

The `--help` option displays a list of available operations and options for the `avexvss` command. You can view all help output for `avexvss`, or only the options for a specific operation.

The following command displays all help output for the `avexvss` command:

```
avexvss --help
```

To view only the options for a specific operation, use the `--help` and `--operation=operation` options together.

The following command provides a list of options for the backup operation:

```
avexvss --help --operation=backup
```

When you include the `--debug` option in the `avexvss.cmd` file, the `avexvss --help` command displays debug messages. To prevent debug messages from appearing in online help content, use the following command:

```
avexvss --help --debug=false
```

Specifying command line options

About this task

Use one of the following methods to specify options for the `avexvss` command:

Steps

- Type the individual options on the command line.

- List the options in the `avexvss.cmd` file, which is in the `C:\Program Files\avs\var` folder, where *C:\Program Files\avs* is the Avamar client installation folder. List each option on its own line, as shown in the following example:

```
--debug
--logfile=avamarclient.log
--verbose=5
```

- Create an option file as a text file, and then specify the option file on the command line by using the `--flagile=` *pathname* option, where *pathname* is the full path and file name of the option file.
- You can pass certain options to the CLI as environment variables. For example, if you specify `Database1=Database1Name` in the environment variables, then you can perform a full backup of `Database1Name` in the command, as shown in the following example:

```
avexvss --operation=backup --server=12.34.56.78 --id=AvamarAdmin
--ap=password --account=/clients/Exchange1 --brtype=full
"%Database1%"
```

CLI examples

Review the `avexvss` command examples for details on how to use options to control browse, backup, and restore behavior.

Example browse commands

These command examples illustrate how to use options to browse different types of data in client backups with the `avexvss` command.

The following command returns a list of Exchange databases on the Exchange Server:

```
avexvss --operation=browse "Exchange Information Store"
```

The following command returns a list of databases in an Exchange Server DAG:

```
avexvss --operation=browse --federated "Exchange Information Store"
```

Example backup commands

These command examples illustrate how to use options to perform different types of backups with the `avexvss` command.

When you perform a backup, run the command on the server that you are backing up. In a federated backup of an Exchange Server DAG, run the command on any server in the DAG.

All backup commands require the following options:

- `--operation=backup`
- `--server=`*Avamar_server*
- `--id=`*Avamar_user*
- `--ap=`*password*
- `--account=`*domain/client*

Specify also a target in quotation marks (" ").

The following topics provide example backup commands with the additional options that each scenario requires.

Performing a full backup of a stand-alone server

To perform a full backup, use the `--brtype=full` option and specify `"Exchange Information Store"` as the target.

The following command performs a full backup of all databases on a stand-alone server named `Exchange1` in the `clients` domain on the Avamar server with an IP address of `12.34.56.78`:

```
avexvss --operation=backup --server=12.34.56.78 --id=AvamarAdmin
--ap=password --account=/clients/Exchange1 --brtype=full
"Exchange Information Store"
```

Performing an incremental backup of a stand-alone server

To perform an incremental backup, use the `--brtype=incremental` option. If the backup set includes databases with circular logging enabled, use one of the following options:

- `--circular_only`
- `--circular_promote`
- `--circular_skip`

The following command performs an incremental backup of all databases on a stand-alone server that is named `Exchange1` in the `clients` domain on the Avamar server with an IP address of `12.34.56.78`. If there are databases with circular logging enabled, then the backup skips those databases.

```
avexvss --operation=backup --server=12.34.56.78 --id=AvamarAdmin
--ap=password --account=/clients/Exchange1 --brtype=incremental
--circular_skip "Exchange Information Store"
```

Backing up a specific database on a stand-alone server

To back up a specific database, specify the database name in quotation marks (" ") in the format `"Exchange Information Store/`*name*`"`, where *name* is the name of the database.

The following command performs a full backup of the `DB1` database on a stand-alone server that is named `Exchange1` in the `clients` domain on the Avamar server with an IP address of `12.34.56.78`:

```
avexvss --operation=backup --server=12.34.56.78 --id=AvamarAdmin
--ap=password --account=/clients/Exchange1 --brtype=full
"Exchange Information Store/DB1"
```

Backing up multiple databases on a stand-alone server

To back up multiple databases, specify each database name in quotation marks (" ") in the format `"Exchange Information Store/`***name***`"`, where *name* is the name of the database.

The following command performs a full backup of the `DB1` and `DB2` databases on a stand-alone server that is named `Exchange1` in the `clients` domain on the Avamar server with an IP address of `12.45.56.78`:

```
avexvss --operation=backup --server=12.34.56.78 --id=AvamarAdmin
--ap=password --account=/clients/Exchange1 --brtype=full
"Exchange Information Store/DB1"
"Exchange Information Store/DB2"
```

Performing a federated backup in a DAG environment

The following table lists the options to use with the `avexvss` command to perform a federated backup in a DAG environment.

Table 20. Command line options for a federated backup in a DAG environment

Option	Description
`--account`	Specifies the Exchange DAG client that you configured with the Avamar Cluster Configuration Tool.
`--federated`	Performs a federated backup.
`--backup_exchangeuser` `--backup_exchangepassword`	Specify the AvamarBackupUser account and password.

Table 20. Command line options for a federated backup in a DAG environment (continued)

Option	Description
`--federated_backup_policy`	Specifies whether to back up passive database copies or active database copies
`--serverorderlist`	Specifies the priority of Exchange servers to use for the backup.

The following command performs a full backup of healthy passive database copies (or active database copies, if a healthy passive database is not available) by using the Exchange DAG client that is named `ExchDAG1` in the `clients` domain on the Avamar server with an IP address of `12.34.56.78`:

```
avexvss --operation=backup --server=12.34.56.78 --id=AvamarAdmin
--ap=password --account=/clients/ExchDAG1 --federated
--backup_exchangeuser=Domain1\AvamarBackupUser
--backup_exchangepassword=password --brtype=full
--federated_backup_policy=prefer-passive
--serverorderlist=Exchange6,Exchange2,Exchange1
"Exchange Information Store"
```

NOTE: The previous command line example is the same for IP-less DAG.

Backing up a specific server in a DAG environment

To back up a specific server in an Exchange Server 2019, 2016, 2013 or 2010 DAG environment, use the `--account` option to specify the Exchange server name and the `--backup-type` option. This action is to specify whether to back up passive database copies, active database copies, or both.

The following command performs an incremental backup of all passive database copies on a DAG server that is named `Exchange1` in the `clients` domain on the Avamar server with an IP address of `12.34.56.78`:

```
avexvss --operation=backup --server=12.34.56.78 --id=AvamarAdmin
--ap=password --account=/clients/Exchange1 --brtype=incremental
--backup-type=passive "Exchange Information Store"
```

NOTE: If the server to be backed up is configured as proxy for DAG, only databases that are part of DAG is backed up from this node.

Backing up to a Data Domain system

To store a backup on a Data Domain system instead of on the Avamar server, use the `--ddr` and `--ddr-index` options.

The following command performs a full backup of all databases on a stand-alone server that is named `Exchange1` in the `clients` domain on the Avamar server with an IP address of `12.34.56.78`. The command stores the backup on the first Data Domain system that you added to the Avamar configuration.

```
avexvss --operation=backup --server=12.34.56.78 --id=AvamarAdmin
--ap=password --account=/clients/Exchange1 --brtype=full
--ddr=true --ddr-index=1 "Exchange Information Store"
```

Example restore commands

These command examples illustrate how to use options to perform different types of restores with the `avexvss` command.

When you perform a restore, run the command on the target server for the restored data.

All restore commands require the following options:

- `--operation=restore`
- `--server=`*Avamar_server*
- `--id=`*Avamar_user*
- `--ap=`*password*

- `--account=domain/client`
- `--labelnum=n`

Specify also the data to restore in quotation marks (" ").

The following topics provide example restore commands with the additional options that each scenario requires.

Restoring to a stand-alone server

To restore a backup to a stand-alone server, run the CLI on the server. Use the `--labelnum` option to specify the label number of the backup to restore, and the `--allowoverwrite=true` option unless you want to enable overwrite for the database in the Exchange Management Console instead. The restore process automatically mounts the restored databases after the restore unless you specify the `--attachdb=false` option.

Restoring the entire Exchange Information Store

To restore the entire Exchange Information Store, specify `"Exchange Information Store"` and the `--allowoverwrite=true` option to enable overwrite of all databases. Unless you specify the `--attachdb=false` option, the restore process automatically mounts the restored databases after the restore.

The following command restores the entire Exchange Information Store from a backup with a label number of `684` to a stand-alone server named `Exchange1` in the `clients` domain on the Avamar server with an IP address of `12.34.56.78`:

```
avexvss --operation=restore --server=12.34.56.78 --id=AvamarAdmin
--ap=password --account=/clients/Exchange1 --labelnum=684
--allowoverwrite=true "Exchange Information Store"
```

Restoring a specific database

To restore a specific database, specify the database name in quotation marks (" ") in the format `"Exchange Information Store/name"`, where *name* is the name of the database.

The following command restores the `DB1` database from a backup with a label number of `684` to a stand-alone server named `Exchange1` in the `clients` domain on the Avamar server with an IP address of `12.34.56.78`:

```
avexvss --operation=restore --server=12.34.56.78 --id=AvamarAdmin
--ap=password --account=/clients/Exchange1 --labelnum=684
--allowoverwrite=true "Exchange Information Store/DB1"
```

NOTE: The move log file path option, is also supported by using: **`--movelogspath="C:\<folder-location>" --nologreplay`**

Restoring multiple databases

To restore multiple databases, specify each database name in quotation marks (" ") in the format `"Exchange Information Store/name"`, where *name* is the name of the database.

The following command restores the `DB1` and `DB2` databases from a backup with a label number of `684` to a stand-alone server named `Exchange1` in the `clients` domain on the Avamar server with an IP address of `12.34.56.78`:

```
avexvss --operation=restore --server=12.34.56.78 --id=AvamarAdmin
--ap=password --account=clients/Exchange1 --labelnum=684
--allowoverwrite=true "Exchange Information Store/DB1"
"Exchange Information Store/DB2"
```

Restoring to a DAG

The command options when you restore to a DAG depend on whether you are restoring from a federated backup or a backup of a specific server in the DAG.

Restoring to a DAG from a federated backup

To restore from a federated backup in a DAG environment, run the CLI on any server in the DAG and use the options in the following table.

Table 21. Command line options when restoring to a DAG from a federated backup

Option	Description
`--account`	Specifies the Exchange DAG client that you configured with the Avamar Cluster Configuration Tool.
`--federated`	Performs a federated restore.
`--backup_exchangeuser` `--backup_exchangepassword`	Specify the AvamarBackupUser account and password.
`--allowoverwrite=true`	Enables the restored databases to overwrite the active database copies.
`--autosuspend`	Automatically suspends replication to the passive database copies before the restore.

The restore process automatically mounts the restored databases after the restore unless you specify the `--attachdb=false` option.

The following command restores the `DB1` database from a federated backup with a label number of `684` by using the Exchange DAG client that is named `ExchDAG1` in the `clients` domain on the Avamar server with an IP address of `12.34.56.78`.

```
avexvss --operation=restore --server=12.34.56.78 --id=AvamarAdmin
--ap=password --account=/clients/ExchDAG1 --federated
--labelnum=684 --backup_exchangeuser=Domain1\AvamarBackupUser
--backup_exchangepassword=password --allowoverwrite=true
"Exchange Information Store/DB1"
```

Manually resume replication after the restore.

Restoring to a DAG from a backup of a specific server

To restore to a DAG from a backup of a specific server, use the `--account` option to specify the DAG server that you used for the backup, the `--allowoverwrite=true` option to enable the restored databases to overwrite the active database copies, and the `--autosuspend` option to automatically suspend replication to the passive database copies before the restore.

You may also want to specify the `--attachdb=true` command to automatically mount the restored databases after the restore.

The following command restores the `DB1` database from a backup with a label number of `684` from the `Exchange1` server in the `clients` domain on the Avamar server with an IP address of `12.34.56.78`:

```
avexvss --operation=restore --server=12.34.56.78 --id=AvamarAdmin
--ap=password --account=/clients/Exchange1 --labelnum=684
--allowoverwrite=true --autosuspend
"Exchange Information Store/DB1"
```

Manually resume replication after the restore.

NOTE: The move log file path option, is also supported by using: **`--movelogspath="C:\<folder-location>" --nologreplay`**

Restoring to a file

To restore a database from a backup to a file, run the command on the target server for the restored files. Use the `--account` options to specify the Exchange client that you used for the backup. Then use the `--target` option to specify the file system location for the restored files.

The following command restores the `DB1` database from a backup with a label number of `684` from the `Exchange1` client in the `clients` domain. The domain is on the Avamar server with an IP address of `12.34.56.78` to the `C:\RestoredFiles` folder:

```
avexvss --operation=restore --server=12.34.56.78 --id=AvamarAdmin
--ap=password --account=/clients/Exchange1 --labelnum=684
--target=C:\RestoredFiles "Exchange Information Store/DB1"
```

Restoring to an RDB

To restore a database to an RDB, run the command on the target server for the RDB. Use the `--account` option to specify the Exchange client that you used for the backup, and use the `--rsgrestore` option to restore the database to an RDB.

You may also want to specify the options in the following table.

Table 22. Optional command line options for restoring to an RDB

Option	Description
`--rsgname`	Specifies the name for the RDB.
`--deleteexistingrsgrdb`	Overwrites an RDB with the same name as the restored RDB. If you specify this option, do not specify the `--logpath` or `--dbpath` options. The restore process ignores the values that you specify for the `--logpath` or `--dbpath` options, and restores the files to the Exchange server DataPath, which is the default location for new databases.
`--dbpath` `--logpath`	Specify a path for the database and log files for the RDB.
`--backup_exchangeuser` `--backup_exchangepassword`	Specify the AvamarBackupUser account and password.

The restore process automatically mounts the RDB after the restore unless you specify the `--attachdb=false` option.

Unmount or delete any existing RDBs on the target server before the restore.

The following command restores the `DB1` database from a backup with a label number of `684` from the `Exchange1` client in the `clients` domain on the Avamar server with an IP address of `12.34.56.78` to an RDB named `RDB8`:

```
avexvss --operation=restore --server=12.34.56.78 --id=AvamarAdmin
--ap=password --account=/clients/Exchange1 --labelnum=684 --
backup_exchangeuser=Domain1\AvamarBackupUser
--backup_exchangepassword=password --rsgrestore --rsgname=RDB8 "Exchange Information Store/
DB1"
```

Password encoding

You can use the `avtar` command to encode passwords that you type on the command line or store in script files. Then you can use the encoded string with the `--password`, `--ap`, or `--pswd` option.

Steps

1. Type the following command on the command line on the Exchange VSS client:

   avtar --encodepassword=*password*

where *password* is the password to encode.

An encoded string is returned on the command line.

2. Use the encoded string on the `avexvss` command line as the password with the `--password`, `--ap`, or `--pswd` option.

D

Cluster Configuration Tool CLI

Topics:

- Cluster Configuration Tool CLI Overview
- Plugins
- Operations
- Cluster Configuration Tool CLI examples

Cluster Configuration Tool CLI Overview

The Cluster Configuration Tool CLI enables you to use a command line interface (CLI) with the `av_cluster_config_console` command instead of Windows Cluster Configuration Wizard to configure the cluster environment for Avamar backups.

When you use the CLI to configure the cluster, you specify the command options for `av_cluster_config_console` binary at command prompt. The tool reads the input arguments and configures the cluster.

The `av_cluster_config_console` binary is available in the `C:\Program files\avs\bin` folder, where `C:\Program files\avs\bin` is the Avamar client installation folder.

To use the CLI, open a command prompt, change the directory to the `bin` folder, and then type the command.

Command reference

The `av_cluster_config_console` command enables you to configure the cluster, remove the existing configuration and view the existing configuration for the ExchangeDAG plugin.

Synopsis

```
av_cluster_config_console - -plugin= {ExchangeDAG} - -operation= {configure | remove |
view} [Options]
```

Plugins

The plugin that you specify with the `av_cluster_config_console` command controls the plugin used during the configuration.

Use the plugin specified in the following table to configure ExchangeDAG.

Table 23. ExchangeDAG Plugin

Plugin	Description
ExchangeDAG	Configures the Exchange DAG cluster environment for Avamar backups. The list of supported operations for the Exchange plugin includes the following: ● Configure —To configure a new cluster client on all nodes of an Exchange IPBased DAG. ● Remove — To remove the existing cluster client from all DAG nodes or proxy node in ExchangeDAG. ● View — To view all existing cluster client configuration including proxy node in an ExchangeDAG. ● ConfigureProxy —To configure a new proxy node or change the proxy node.

Table 23. ExchangeDAG Plugin

Plugin	Description
	To get the list of supported operations for this plugin, use the following command: `av_cluster_config_console --help --plugin="ExchangeDAG"`

Operations

The operation and options that you specify with the `av_cluster_config_console` command controls the task that the tool performs.

Provide one of the operations in the following table along with the listed options.

Table 24. Operations for the `av_cluster_config_console` command

Operation	Description
Configure	Configures the new cluster client on all the nodes for the specified plugin.
Remove	Removes the existing cluster client on all the nodes for the specified plugin, or removes the existing proxy node configurations.
View	View all the existing cluster client on all the nodes for the specified plugin including the proxy node.
ConfigureProxy	To configure new proxy node, or to change the proxy node configuration.

Exchange plugin configure options

The configure option enables you to control the configure functionality for Exchange DAG for Avamar.

The following table lists all of the mandatory and optional options available for the ExchangeDAG plugin and configure operation.

To get the list of options available for the ExchangeDAG plugin and configure operation, type the following command:

`av_cluster_config_console --help --plugin=" ExchangeDAG " --operation="configure"`

All the options that are prefixed with [Optional] are optional for the specified plugin and operation. The options without the [Optional] prefix are mandatory for the specified plugin and operation.

Table 25. Exchange configure options

Option	Description
mcsaddr	Avamar server address. You can provide either the FQDN name of the server or the IP address. If the server details are wrong, then the tool cannot configure the environment.
dagclientip	Unused IP address for the DAG client.
usesystemuser	Determines whether to use Avamar backup user or system user to configure. This option is mandatory. Valid values are TRUE or FALSE.
sysdir	Avamar cluster client sys directory. Only a shared folder is accepted as cluster sys directory.
vardir	Avamar cluster client var directory. Only a shared folder is accepted as cluster var directory.

Table 25. Exchange configure options (continued)

Option	Description
[Optional] avbackupuser	The user name of the Avamar backup user. This argument is mandatory, if the `"-usesystemuser"` argument is false.
[Optional] avusrpasswd	The password for the Avamar backup user. This argument is mandatory if the `"-usesystemuser"` argument is false.
[Optional] ipversion	The IP version being used on the nodes. If this option is not specified, IPV4 is used as the default value. **NOTE:** Only IPV4 is supported.
[Optional] ipsubnetmask	The DAG client IP subnet mask. If this option is not specified, the tool automatically extracts it from the environment.
[Optional] mcsport	The Avamar port number. This is the port that is used to communicate with the Avamar server. If this option is not specified, then 28001 is used as the default port number.
[Optional] dagclient	The name of the DAG client that must be registered in the Avamar server. If this option is not specified, then `"Av-<dagname>"` is used as the default value.
[Optional] daggroup	The group name of the DAG client. If this option is not specified, then `"EMC Avamar backup cluster client for <dagname>"` is used as the default value.
[Optional] networkname	The name of the network. This argument is mandatory, if multiple networks are present.
[Optional] bringonline	Determines whether to bring Avamar cluster client online and register it with the Avamar server. Valid values are TRUE or FALSE. If this option is not specified, then TRUE is used as the default value.
[Optional] clientdomain	Specifies the Avamar domain that the cluster client is associated with. If this option is not specified, then `"/clients"` is used as the default value.

ExchangeDAG plugin remove options

The ExchangeDAG plugin remove option removes the existing ExchangeDAG Avamar cluster client configuration.

The following table lists all of the optional and mandatory options for the ExchangeDAG plugin and the remove operation.

To get the list of options available for the ExchangeDAG plugin and the remove operation, type the following command:

```
av_cluster_config_console --help --plugin=" ExchangeDAG " --operation="remove"
```

Table 26. ExchangeDAG remove option

Option	Description
[Optional] dagclient	This argument is optional, if you want to remove the existing proxy node configuration. To remove the existing cluster client configuration in an IPBased DAG, this option is mandatory. To get the name of the dagclient, type the following command: `av_cluster_config_console.exe --plugin="ExchangeDAG" --operation="view"`

ExchangeDAG plugin configure proxy options

The configure proxy option enables you to create or change the proxy node configuration for ExchangeDAG Avamar cluster environment.

The following table lists all of the mandatory and optional options available for the ExchangeDAG plugin and configure proxy operation.

To get the list of options available for the ExchangeDAG plugin and the configure proxy operation, type the following command:

`av_cluster_config_console --help --plugin=" ExchangeDAG " --operation="configureproxy"`

All the options that are prefixed with [Optional] are optional for the specified plugin and operation. The options without the [Optional] prefix are mandatory for the specified plugin and operation.

Table 27. Exchange configure proxy options

Option	Description
proxynode	The name of the node that you want to configure as the proxy node. If there is already a proxy node existing, the existing proxy node is removed from the configuration and this node is configured as the new proxy node.
[Optional] ipversion	The IP version that is used on the nodes. If this option is not specified, IPv4 is used as the default value. **NOTE:** Only IPv4 is supported.

Cluster Configuration Tool CLI examples

Review the `av_cluster_config_console` command examples for details on how to configure, remove, and view operations for different plugins.

Get list of supported plugins and operations

The following command returns a list of supported plugins along with the list of commands and their usage.

```
av_cluster_config_console.exe --help
```

Get list of supported operations for ExchangeDAG plugin

The following command returns the list of supported operations for the ExchangeDAG plugin.

```
av_cluster_config_console.exe --help --plugin=" exchangedag "
```

Get list of available options for configure operation for ExchangeDAG plugin

The following command returns the list of available options for the configure operation for the ExchangeDAG plugin.

```
av_cluster_config_console.exe --help --plugin=" exchangedag " --operation="configure"
```

Get list of available options for remove operation for ExchangeDAG plugin

Following command returns the list of available options for remove operation for the ExchangeDAG

plugin

```
av_cluster_config_console.exe --help --plugin="  exchangedag " --operation="remove"
```

Configure new cluster client on all nodes for a ExchangeDAG for Avamar

The following command configures the new cluster client on all the nodes for ExchangeDAG.

```
av_cluster_config_console.exe --plugin=exchangedag --operation=configure --
mcsaddr="10.31.196.203" --vardir="\\ANGP1\sharevar\var" --sysdir="\\ANGP1\sharevar\sys"
--dagclientip="10.31.196.139" --usesystemuser=true --clientdomain="/dag"
```

Remove existing cluster client on all nodes for ExchangeDAG for Avamar

The following command removes the existing cluster client on all the nodes for ExchangeDAG.

```
av_cluster_config_console.exe --plugin= “ exchangedag” --operation=remove --
dagclient=”av-dag”
```

View the existing cluster client information for the ExchangeDAG

The following command displays the existing cluster client configuration for ExchangeDAG.

```
av_cluster_config_console.exe --plugin= “exchangedag” --operation=view
```

Remove the existing proxy node configuration for the ExchangeDAG

The following command removes the existing proxy node configuration.

```
av_cluster_config_console.exe --plugin="exchangedag" --operation="remove"
```

Remove the existing cluster client configuration for the ExchangeDAG

The following command removes the existing cluster client configuration.

```
av_cluster_config_console.exe --plugin="exchangedag" --operation="remove"--
dagclient=”av-dag”
```

Configure or change the proxy node configuration for the ExchangeDAG

The following command configures the new node as the proxy node, or removes the existing proxy node and configures the specified node as the proxy node.

```
av_cluster_config_console.exe --plugin="exchangedag" --operation=configureproxy --
proxynode="Node1"
```

E

ItemPoint for Microsoft Exchange Server Notes

Topics:

- Supported environments for ItemPoint for Microsoft Exchange Server
- User Credential and Permission Requirements for ItemPoint for Microsoft Exchange Server
- Mailbox Creation Wizard for ItemPoint for Microsoft Exchange Server
- Limitations for ItemPoint for Microsoft Exchange Server

Supported environments for ItemPoint for Microsoft Exchange Server

The following table lists the supported environments for ItemPoint for Microsoft Exchange Server:

Table 28. ItemPoint for Microsoft Exchange Server components

Component	Requirement
Browser	Microsoft Internet Explorer 8.0 or later
Operating Systems	The following operating systems are supported: ● Windows Server 2008 R2 ● Windows Server 2012 ● Windows Server 2012 R2 ● Windows Server 2016 ● Windows Server 2019 ● Windows 7 ● Windows 8 **NOTE:** 32-bit and 64-bit versions, virtual, and physical, of the listed operating systems are supported. ItemPoint can only be run by users with administrative privileges and in administrative mode.
Source Microsoft Exchange Database (offline)	The following versions of Microsoft Exchange Server are supported as offline database sources: ● Microsoft Exchange Server 2007 through SP3 ● Microsoft Exchange Server 2010 through SP3 ● Microsoft Exchange Server 2013 through SP1 ● Microsoft Exchange Server 2016 ● Microsoft Exchange Server 2019
Target (live) Microsoft Exchange Server	The following versions of Microsoft Exchange Server are supported as live targets: ● Microsoft Exchange Server 2007 through SP3 ● Microsoft Exchange Server 2010 through SP3 ● Microsoft Exchange Server 2013 through SP1 ● Microsoft Exchange Server 2016 ● Microsoft Exchange Server 2019

Table 28. ItemPoint for Microsoft Exchange Server components (continued)

Component	Requirement
Microsoft Office (Microsoft Outlook)	The following versions of Microsoft Outlook (32-bit versions only) are supported: ● Microsoft Outlook 2010 ● Microsoft Outlook 2013
Virtual Environments	Virtual operation of tape devices may have restrictions that are imposed by virtual operating systems.
Additional Software	Microsoft .NET Framework: ● 3.5 SP1 ● 4.0 In order for ItemPoint for Microsoft Exchange Server to operate fully, you must ensure that the source files are on storage. If not, attempts to open a source database produce an error message.

User Credential and Permission Requirements for ItemPoint for Microsoft Exchange Server

Credential requirements (username and password) vary between tasks when using ItemPoint for Microsoft Exchange Server. Users may also require permission and rights to perform the following:

- Connect to target Microsoft Exchange servers
- Create users/mailboxes
- Use multi-tenancy information when opening a source or target

Users may be prompted for credentials during tasks which are based on an organization's policies; for example, when:

- Connecting to a single mailbox target (not assigned to the ItemPoint for Microsoft Exchange Server user)
- Connecting to target public folders

The following table provides a guideline for credential and permission requirements:

Table 29. Credential and permission requirements

Activity / Use Case	Microsoft Exchange Role[1]	Credentials / Authentication[2]	Permissions / Authorization
Connect to User Mailbox	NA	User Credentials	Full Access Permissions
Connect to Other(s) Mailbox	NA	User Credentials	Full Access Permissions
Connect to All Mailboxes	NA	User Credentials	Full Access Permissions
Connect to All Mailboxes w/o Multi-Tenancy[3]	NA	User Credentials	Full Access Permissions
Connect to All Mailboxes w/ Multi-Tenancy	Organizational Management	User Credentials (Access limited to Address Book Policy)	Full Access Permissions
Create Mailbox[4]	Organizational Management	NA	NA

[1] Microsoft Exchange Roles are not required for search and copy.

[2] ItemPoint for Microsoft Exchange Server requires Local Administrator permissions for installation. Connecting to Mailboxes requires recipient level access.

[3] For more information, see "Multi-Tenancy Support" in the ItemPoint User Guide.

[4] For more information, see "Creating New Mailboxes" in the ItemPoint User Guide.

Mailbox Creation Wizard for ItemPoint for Microsoft Exchange Server

To use Mailbox Creation Wizard on your computer, you must have the Microsoft Exchange Server management tools for the version of Microsoft Exchange Server that you are creating mailboxes on. Ensure that the Microsoft Exchange Server management tools and Microsoft Exchange Server version, service pack, and roll up level are matched.

For supported operating system and prerequisite requirements for the Microsoft Exchange Management Tools, please refer to the Microsoft Exchange Management Tools documentation for the specific version.

Limitations for ItemPoint for Microsoft Exchange Server

If you have ever copied or moved a message using Microsoft Office Outlook, and later restored that same item with ItemPoint, the message may be duplicated. This action occurs because the message ID numbers differ between ItemPoint and the Microsoft Exchange Server.

New mailboxes on the Microsoft Exchange Server do not become visible within ItemPoint. This feature becomes visible when someone has logged on to the mailboxes with Microsoft Office Outlook, or at least one message is delivered (or copied) to the mailbox. Until one of these two events occurs, there is no physical mailbox, only directory information.

ItemPoint does not check messages or attachments for viruses when restoring them from the database. If your server antivirus program has current signature files, it should identify and protect against infected messages when the restored messages are on the live server.

Due to the database nature of the PST file and the MAPI subsystem, PSTs opened as source are modified.

Mailbox Creation Wizard is not supported on Windows Server 2012 R2 as Microsoft Exchange Server 2013 or earlier Management Tools is not supported on Windows Sever 2012 R2.

The Message Table and Attachment Table Views do not support Microsoft Exchange Server 2010 or later EDB sources as Microsoft stopped supporting single instance storage with Microsoft Exchange Server 2010.

The following ItemPoint features are not supported with Microsoft Exchange Server 2016 and 2019:

- Mailbox Creation Wizard
- Content Analysis Store
- Message views
- Reports
- Exporting organizational forms

Glossary

A

activation
The process of passing the client ID (CID) back to the client, where it is stored in an encrypted file on the client file system.

See also client activation

active database copy
The copy of an Exchange database that is currently serving user requests in a high availability environment, such as a *Database Availability Group (DAG)* or a *cluster*. See also *passive database copy*.

active directory
A directory service for network administration and security in Microsoft Windows domain networks.

administrator
Person who normally installs, configures, and maintains software on network computers, and who adds users and defines user privileges.

archive mailbox
A type of mailbox on an Exchange server that contains archived data for a user.

avagent
The name of the *client agent* process.

Avamar Administrator
A graphical management console software application that is used to remotely administer an Avamar system from a supported Windows or Linux client computer.

AvamarBackupUser account
An Exchange administrator account that provides Avamar services access to and privileges on Active Directory and Exchange servers.

Avamar client
A computer or workstation that runs Avamar software and accesses the Avamar server over a network connection. Avamar client software comprises a *client agent* and one or more *plug-ins*.

Avamar server
The server component of the Avamar client/server system. Avamar server is a fault-tolerant, high-availability system that efficiently stores the backups from all protected clients. It also provides essential processes and services required for data restores, client access, and remote system administration. Avamar server runs as a distributed application across multiple networked storage nodes.

avexvss
The application executable and command line interface for the Avamar Plug-in for Exchange VSS. You can use *avexvss* to perform on-demand backups and restores of Microsoft Exchange Server data.

avtar
The Avamar process that performs backups and restores.

B

backup
A point-in-time copy of client data that can be restored as individual files, selected data, or as an entire backup.

backup policy
In the AUI, a backup policy specifies a dataset, schedule, and retention settings that are applied to a client or a group of clients. A backup policy must contain at least one Avamar client. If the backup policy contains two or more clients, the clients must belong to the same Avamar domain. You can override backup policy settings at the client level.

bare metal recovery (BMR)
The process of restoring data from a backup to recover a computer system from “bare metal,” or without previously installed software or operating system.

browse
The process of viewing data that is available for backup on a client computer or restore from the Avamar server.

C

checkpoint file
A file that contains information about successful operations for an Exchange database when the operations are committed to the database.

circular logging
A Microsoft Exchange feature that overwrites transaction log files after the data in the log files is committed to a database. Circular logging enables you to save disk space by reducing the number of log files, but you can recover data only up until the last full backup.

client activation
The process of passing the client ID (CID) back to the client, where it is stored in an encrypted file on the client file system.

See also activation

client agent
A platform-specific software process that runs on the client and communicates with the Management Console Server (MCS) and with any plug-ins installed on that client.

client registration
The process of establishing an identity with the Avamar server. When Avamar recognizes the client, it assigns a unique client ID (CID), which it passes back to the client during *client activation*.

See also registration

cluster
Two or more independent network servers, usually with exact copies of the same software and data, that operate and appear to clients as if they are a single unit. A cluster configuration enables work to be shifted from one server to another, providing high availability, which allows application services to continue despite most hardware or software failures.

Cluster Configuration Tool
Avamar configuration wizard to configure the cluster client.

consistency check
A Microsoft Exchange process through the *eseutil* utility that verifies the integrity of a database.

D

database
A collection of data arranged for ease and speed of update, search, and retrieval by computer software.

Database Availability Group (DAG)
A group of as many as 16 mailbox servers that host a set of databases and provide automatic database-level recovery from failures that affect individual servers or databases. Databases on a DAG server can be either active or passive, but each server can host only a single copy of each database. Beginnng with Exchange Server 2013 Service Pack 1, a DAG can be either IP based or IP less.

Data Domain system
Disk-based deduplication appliances and gateways that provide data protection and disaster recovery (DR) in the enterprise environment.

dataset
A policy that defines a set of files, directories, and file systems for each supported platform that are included or excluded in backups across a group of clients. A dataset is a persistent and reusable Avamar policy that can be named and attached to multiple groups.

disaster recovery
Recovery from any disruptive situation, such as hardware failure or software corruption, in which ordinary data recovery procedures are not sufficient to restore a system and its data to normal day-to-day operations. A disaster recovery can be a *bare metal recovery*.

DNS
Domain Name Server. A dynamic and distributed directory service for assigning domain names to specific IP addresses.

domain
A feature in Avamar Administrator that is used to organize large numbers of clients into named areas of control and management.

E

Exchange DAG client
A virtual client that enables you to perform federated backups of the databases in a DAG.

Exchange Information Store
A collection of the database files, transaction log files, and checkpoint files for an Exchange server or DAG.

Exchange Management Shell
A command line interface, built on Windows PowerShell technology, for performing administrative tasks in Microsoft Exchange Server.

F

federated backup
A backup in a DAG environment that can include a copy of each database in the DAG from any server in the DAG. You perform federated backups with the Exchange DAG client.

file system
Software interface used to save, retrieve, and manage files on storage media by providing directory structures, data transfer methods, and file association.

full backup
A type of backup that includes the entire database, including all objects, system tables, and data, as well as the transaction log.

G

granular level recovery (GLR)
The ability to restore individual mailboxes, mail folders, or messages from a database backup.

group
A level of organization in Avamar Administrator for one or more Avamar clients. All clients in an Avamar group use the same group policies, which include the *dataset*, *schedule*, and *retention policy*.

group policy
In Avamar Administration, a group policy is defined as a *dataset*, *schedule*, and *retention policy* for all clients in an Avamar group.

I

incremental backup
A type of backup that includes only the transaction log. Also called a *transaction log backup*.

L

LAN
Local Area Network.

M

Management Console Server (MCS)
The component that provides centralized administration (scheduling, monitoring, and management) for the Avamar server. The MCS also runs the server-side processes used by *Avamar Administrator*.

metadata
Data about the backup, including information about the original database files, the backup types, the date and time of the backup, and other information necessary for restore.

multi-streaming
The process of backing up or restoring data using multiple parallel data streams. Multi-streaming enables you to improve backup and restore performance in most environments.

N

normal backup
See "full backup."

P

passive database copy
The copy of a database that is not currently serving user requests in a high availability environment such as the *Database Availability Group (DAG)* or *cluster*. The copy is updated with changes from the active database copy through replication. The passive database copy becomes an active database copy if a failure occurs on the original active database copy.

plug-in
Avamar client software that recognizes a particular kind of data resident on that client.

plug-in options
Options that you specify during backup or restore to control backup or restore functionality.

policy
A set of rules for client backups that can be named and applied to multiple groups. Groups have dataset, schedule, and retention policies.

preferred server order list (PSOL)
A prioritized list of servers in a DAG that the Exchange DAG client uses for federated backups.

Proxy for DAG
A node that represents a DAG environment. This node can be configured as proxy in IP less DAG or IP-based DAG.

proxy server
A separate Exchange mailbox server that you use as a target server for GLR.

public folder
A database or mailbox, depending on the Exchange Server version, that contains shared content for users on an Exchange server.

R

recovery database (RDB)
A special kind of mailbox database that enables you to mount a restored mailbox database and extract data from the restored database as part of a recovery operation.

registration
See "client registration."

replication
The process of copying changes on the active database copy to one or more passive database copies so that the copies remain synchronized.

restore
An operation that retrieves one or more file systems, directories, files, or data objects from a backup and writes the data to a designated location.

retention
The time setting to automatically delete backups on an Avamar server. Retention can be set to permanent for backups that should not be deleted from an Avamar server. Retention is a persistent and reusable Avamar policy that can be named and attached to multiple groups.

S

schedule
The ability to control the frequency and the start and end time each day for backups of clients in a group. A schedule is a persistent and reusable Avamar policy that can be named and attached to multiple groups.

stand-alone environment
An Exchange environment with a single stand-alone server. All mailbox databases, log files, and checkpoint files reside on the server.

T

transaction log
A log file that contains a history of database transactions.

V

virtual drive
A temporary drive on the target server for GLR. A database restores from a backup to an RDB on the virtual drive, and you browse the data in the RDB for GLR.

virtual machine (VM)
A computer that is a software implementation of a computer. Virtual machines are used to run different operating systems at the same time on one physical computer. Each operating system runs in its own isolated execution environment.

Volume Shadow Copy Service (VSS)
A technology in Microsoft Windows that enables manual or automatic backup copies or snapshots of data, even if there is a lock on the data, on a specific volume at a specific point in time over regular intervals. VSS is implemented as a Windows service called the Volume Shadow Copy service.

VSS provider
A software or hardware-based process that links the VSS service to the storage hardware and creates a snapshot for backup on the storage hardware. Avamar supports only software providers.

VSS requestor
A backup application that uses the VSS API to request the services of VSS to create and manage shadow copy volumes. The Avamar Plug-in for Windows VSS is a VSS requestor.

VSS writer
A process that provides metadata about application data for backup, and specific methods for correctly handling components and applications during backup and restore. A VSS writer also identifies the type of application or service in the backup, such as System Boot or System Services. A VSS writer does not play a role in backing up the file system.