Dell EMC Dell EMC Avamar for SharePoint VSS

User Guide

19.2

June 2021
Rev. 02

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 the Avamar Plug-in for SharePoint VSS, and how to back up and restore data on a Microsoft SharePoint server in stand-alone and cluster environments.

Audience

This document is primarily intended for:

- System administrators, who are responsible for installing software and maintaining servers and clients on a network.
- SharePoint administrators, who are responsible for backing up and maintaining SharePoint servers.

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

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

Revision history

The following table presents the revision history of this document.

Table 1. Revision history

Revision	Date	Description
02	June, 2021	Added a note in the "Avamar configurations for SharePoint farms" section.
01	November 15, 2019	First release of this document for Avamar 19.2.

Related documentation

The following publications provide additional information:

- *E-LAB Navigator* at https://elabnavigator.emc.com/eln/modernHomeDataProtection
- *Avamar Administration Guide*
- *Avamar Backup Clients User Guide*
- *Avamar Operational Best Practices Guide*
- *Avamar Product Security Guide*
- *Avamar Release Notes*

Typographical conventions

Table 2. 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:

- Architecture
- Backup
- Restore
- Granular level recovery
- Disaster recovery

Architecture

Architecture describes how Avamar works with various versions of SharePoint in stand-alone and distributed farms.

You can use Avamar backup and restore data from supported versions of the SharePoint Server. See the *E-LAB Navigator* at https://elabnavigator.emc.com/eln/modernHomeDataProtection for information about supported versions of SharePoint Server.

SharePoint topology

SharePoint servers are organized as farms. The topology of the farm determines which Avamar components are installed on each server.

In a stand-alone farm, all SharePoint roles and components reside on one server. In a distributed farm, these components and roles are spread across multiple servers. Avamar SharePoint backup and recovery capabilities scale to all farm sizes. The following figure shows the topologies of small, medium, and large distributed farms and the Avamar components installed on each server by SharePoint server roles.

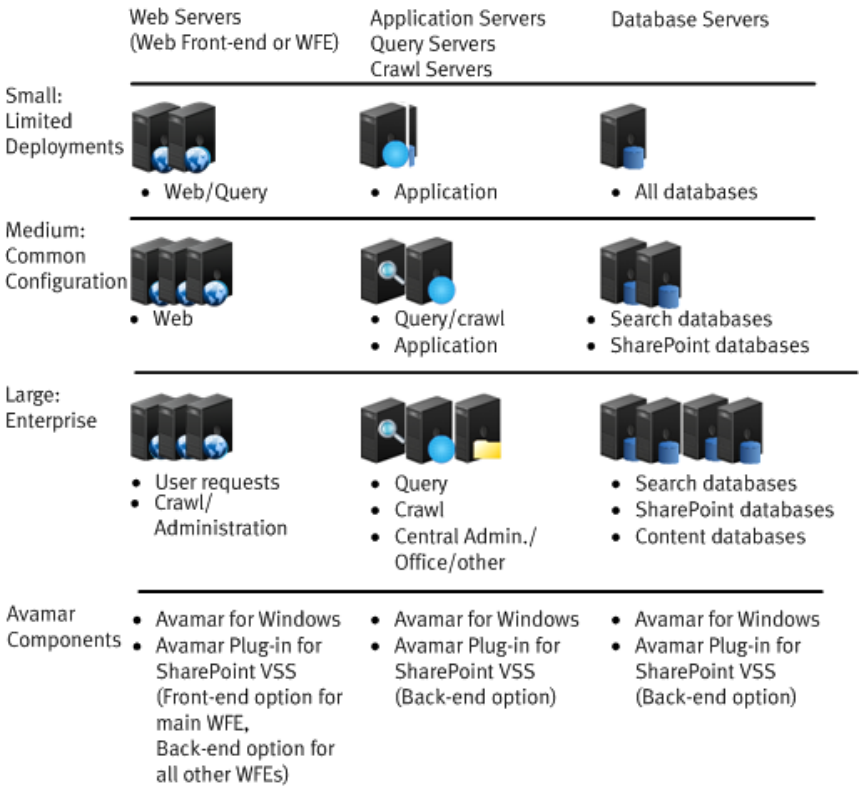

Figure 1. SharePoint topologies for small, medium, and large farms

SharePoint server roles

Each server in a SharePoint farm can assume one or more roles. Roles are not assigned directly to a server. A server assumes a specific role, depending on the components that are installed and the services it runs.

The following table describes the different types of SharePoint server roles.

Table 3. SharePoint server roles

Server type	Role
Web server	Hosts all web pages, web parts, and web services required by the server farm. Also called a Web front-end (WFE).
Application server	Hosts the service applications running in the farm, such as Visio services, Forms service, Excel calculations services, and more.
Query server	Responsible for querying the index, finding the matching content, and returning content back to the Web servers for presentation to users.
Crawl or index server	Crawls the content sources, writes the results to the database, and then propagates the database to the query servers. The crawl server uses a crawl database in a Microsoft SQL Server to store the URLs of all sources crawled.
Database server	An SQL Server that stores most of the data that is associated with a SharePoint implementation, including configuration settings, administration information, service applications data, and user content.

SQL Server in SharePoint

Microsoft SQL Server provides storage for all content, data, and configuration information in a SharePoint environment.

The following table lists the SQL Server databases in a SharePoint environment.

Table 4. Microsoft SQL Server databases in a SharePoint environment

Database	Functions
Configuration	Stores all configuration information for the farm, including topology information and content database information.
Content	Stores: ● Windows SharePoint Services (WSS) site details ● Structure details ● User content ● Files ● Security information
Search	Stores: ● Search data ● History log ● Search log ● Calculation tables for crawl statistics ● Links tables ● Statistical tables
Custom	Separate databases that store third-party application data.
Search indexes	Stores search indexes on the file system.

How Avamar works in a SharePoint environment

Avamar provides complete protection for a SharePoint farm using several plug-ins: Avamar Client for Windows, Avamar Plug-in for SharePoint VSS, and Avamar Plug-in for SharePoint GLR.

- Avamar Client for Windows protects the operating system, system state, and Windows Server.
- Avamar Plug-in for SharePoint VSS protects the SharePoint farm structure and content.
- Avamar Plug-in for SharePoint GLR provides granular level recovery when used with ItemPoint for Microsoft SharePoint.

NOTE: You can also use the Avamar Plug-in for SQL Server to independently back up the SQL Server databases in the farm. Avamar Plug-in for SQL Server (optional) on page 14 describes the limitations and disadvantages of this approach.

Avamar provides protection for all scales of SharePoint deployment, from stand-alone farms that contain all SharePoint roles on a single server, to small, medium, or large enterprise distributed farms.

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.

Avamar clients and plug-ins

All servers in a SharePoint farm require both the Avamar Client for Windows and Avamar Plug-in for SharePoint VSS.

The configuration on each server varies, depending on the SharePoint farm role and whether you are setting up the farm for granular level recovery. You can optionally use the Avamar Plug-in for SQL Server to back up only the SQL databases, and the Avamar Plug-in for the following features:

- SharePoint GLR with Itempoint for Microsoft SharePoint
- Granular level recovery of SharePoint items

Avamar Client for Windows

Install the Avamar Client for Windows on every server in the SharePoint environment.

The SharePoint VSS plug-in requires the Windows client. You can use the Windows client to back up operating system and SharePoint binary files, which are required for disaster recovery.

Avamar Plug-in for SharePoint VSS

The Avamar Plug-in for SharePoint VSS provides Volume Shadow Copy Service (VSS) backup of SharePoint at the SharePoint farm level, and recovery at the farm level. This level is at the discovered components level, or at the web application level.

The plug-in uses the SharePoint Foundation VSS Writer (SPF-VSS Writer), to determine what content and information from the SharePoint farm to back up. Microsoft describes the features and capabilities of the SPF-VSS Writer in the MSDN article "SharePoint Foundation VSS Writer."

The VSS-based backup is the foundation for scheduled full backups, which are used to perform disaster recovery or recovery of entire databases, components, or applications.

The Avamar Plug-in for SharePoint VSS can back up and restore a SharePoint farm, or WSS 3.0 components including:

- Website collections
- Content databases
- Web applications
- Content publishing web services
- Search Windows service, including databases and indexes

Some listed components cannot be selected for backup or restore but are automatically included by Avamar, which is based on their dependency on other components that you select.

The Avamar Plug-in for SharePoint VSS includes in backups and restores, any third-party databases built on a SharePoint foundation registered within the configuration database.

Install the Avamar Plug-in for SharePoint VSS on all machines in the farm. During installation, select whether the server is a front-end or back-end server:

- Front-end server — A front-end server is the main WFE server in a distributed farm or the sole SharePoint server in a stand-alone farm. The Avamar Plug-in for SharePoint VSS coordinates the farm backups through the WFE server. If there is no SharePoint data on a WFE server, then the SharePoint VSS writer skips that WFE server during backups. However, you still must install the Avamar Plug-in for SharePoint VSS on the WFE server.
- Back-end server — Back-end servers are all other servers in the SharePoint farm. On a sole SharePoint server in a stand-alone farm, do not configure any back-end servers. SQL Server 2012 AlwaysOn nodes are configured as back-end servers, and only the primary node can be used for backup and restore with the Avamar SharePoint plug-in.

Avamar Plug-in for SQL Server (optional)

You can optionally use the Avamar Plug-in for SQL Server to back up SQL Server databases on a SharePoint database server separate from the SharePoint backups. The search database is not included in the backup.

The Avamar Plug-in for SQL Server can back up and restore databases on either the primary replica or a secondary replica in SQL Server AlwaysOn availability groups.

To use the Avamar Plug-in for SQL Server, install the plug-in on the SharePoint farm database servers with SQL Server. You can perform full, differential, and incremental backups of the databases, and restore individual databases. The *Avamar for SQL Server User Guide* provides details on installing the Avamar Plug-in for SQL Server and performing backups and restores.

NOTE: A backup with the Avamar Plug-in for SQL Server does not include the search index file. Synchronize the backup with the search index file in the search database backup, and restore the backups together.

Microsoft does not recommend using any separate SQL backup tool for SharePoint data protection.

Benefits of using a separate SQL Server backup tool

The benefits of using a separate SQL Server backup tool include:

- You can reuse existing SQL Server disaster recovery strategies.
- You can configure full and differential backups with added verification.
- The backup tool provides a complete data backup.
- Backups with the tool can be faster than Office SharePoint Server backups.

Disadvantages of using a separate SQL Server backup tool

The disadvantages of using a separate SQL Server backup tool include:

- The backup tool does not replace the need for a full backup with the Avamar Plug-in for SharePoint VSS.
- You cannot use the backup tool for a full farm restore.
- Microsoft does not formally support the backup tool.
- The backup tool does not include front-end web server custom solutions.
- The backup tool can back up the configuration database and Central Administration content database, but does not support restore. The Avamar Plug-in for SharePoint VSS supports restoring of the configuration and Central administration content database as part of a full farm restore.
- The backup tool does not back up Internet Information Services (IIS) settings set outside of Office SharePoint Server, including host headers, dedicated IP addresses, and Secure Sockets Layer (SSL) certificates.
- When using search, you must re-crawl after restoring content because SQL Server does not back up indexes.
- Backups of the search database that is made with the backup tool cannot be synchronized with the search database.
- You must manually attach the databases to the web applications after a recovery.

In an environment with Avamar, the following disadvantages also apply:

- You cannot use backups with the SQL Server plug-in for granular level recovery or SharePoint disaster recovery. You must have the full backup that is provided by the SharePoint VSS plug-in.
- Backups with the SQL Server plug-in require extra storage and resources because the databases are included in backups for both the SQL Server and SharePoint VSS plug-in.
- You cannot use SQL Server plug-in backups for restore of the configuration database and Central Administration content database.
- You cannot include the SQL Server databases that are used by SharePoint in an existing backup schedule for other SQL Server databases outside of SharePoint.

Avamar Plug-in for SharePoint GLR (optional)

You can optionally use the Avamar Plug-in for SharePoint GLR for granular level recovery of SharePoint items when used with ItemPoint for Microsoft SharePoint.

The Avamar Plug-in for SharePoint GLR can display SharePoint content and database backups in the Avamar Virtual Drive, which allows browsing and selecting items for recovery with ItemPoint for Microsoft SharePoint Avamar. ItemPoint is installed as part of the Plug-in for SharePoint VSS installation package. The ItemPoint Agent for Content Transfer Service must be installed on the SharePoint server.

Installing ItemPoint for Microsoft Sharepoint on page 37 provides more detailed information about the requirement, components, and settings of the software.

If you intend to perform granular level recovery, install the Avamar Plug-in for SharePoint GLR and ItemPoint for Microsoft SharePoint software on the SharePoint Administrator console computer. The console computer is the computer to which you initially restore data before you browse and select data for granular level recovery.

Avamar configurations for SharePoint farms

You must install the Avamar Client for Windows and the Avamar Plug-in for SharePoint VSS on all servers in the SharePoint farm. The installation process depends on the roles of each server, the scale of the farm, and whether you plan to perform granular level recovery.

NOTE: Distributed farms can contain multiple web front end (WFE) servers. WFE servers provide access to SharePoint content on the other SharePoint farm servers, but the WFE servers do not always contain SharePoint content of their own. When you run a backup of a SharePoint farm, Avamar skips WFE servers that do not contain SharePoint data. As part of a SharePoint farm backup plan, back up all SharePoint servers with the Avamar Client for Windows. This step protects the server file system, noncritical volumes, and System State. The Avamar Client for Windows backups are required for disaster recovery of each Windows server.

NOTE: Avamar does not support SharePoint configurations, in which a single IP address resolves to multiple hostnames or multiple DNS. For example, SharePoint Alternate Access Mapping (SP AAM), SharePoint configured to SQL DNS alias, and so on.

Stand-alone SharePoint farm

In a stand-alone SharePoint farm, one server handles all SharePoint roles, including the WFE, Search data, and all SharePoint databases.

The following figure illustrates the relationship of the Avamar server, Avamar Administrator console or the AUI, and the Avamar software installed on the SharePoint stand-alone server.

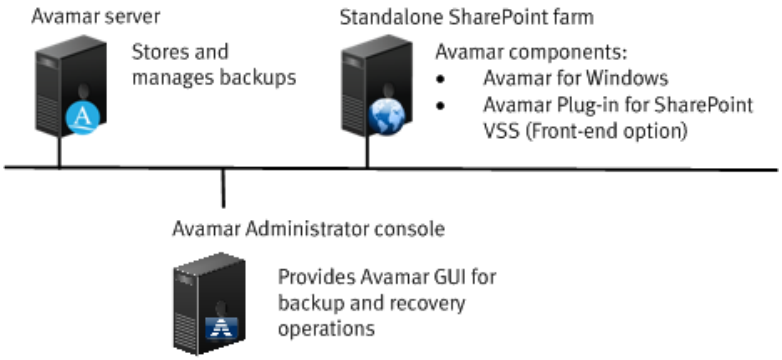

Figure 2. Architecture of a stand-alone farm with Avamar

Stand-alone SharePoint farm with optional granular level recovery

In a stand-alone SharePoint farm, one server handles all SharePoint roles, including the WFE, Search data, and all SharePoint databases. For GLR, additional GLR and ItemPoint for Microsoft SharePoint components should be installed.

The following figure illustrates the additional installation requirements for GLR support.

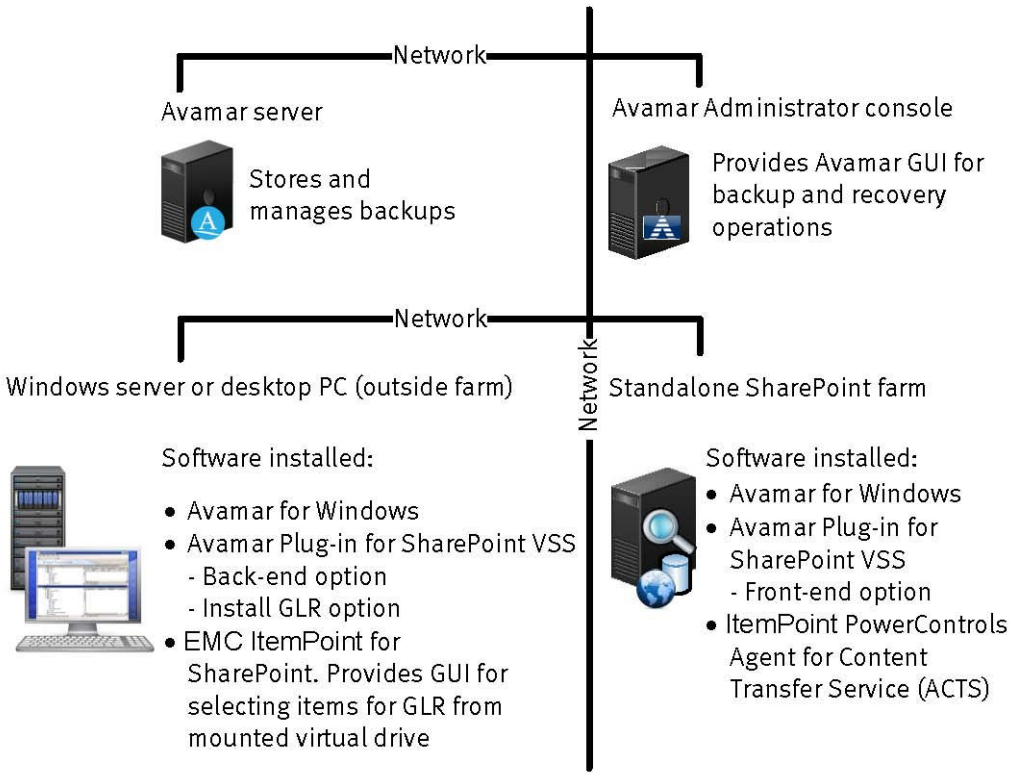

Figure 3. Architecture of a stand-alone farm with Avamar and optional GLR

Distributed SharePoint farm

In a distributed SharePoint farm, the SharePoint roles reside on multiple servers.

The following figure illustrates the Avamar software that is installed on multiple SharePoint servers in a distributed farm.

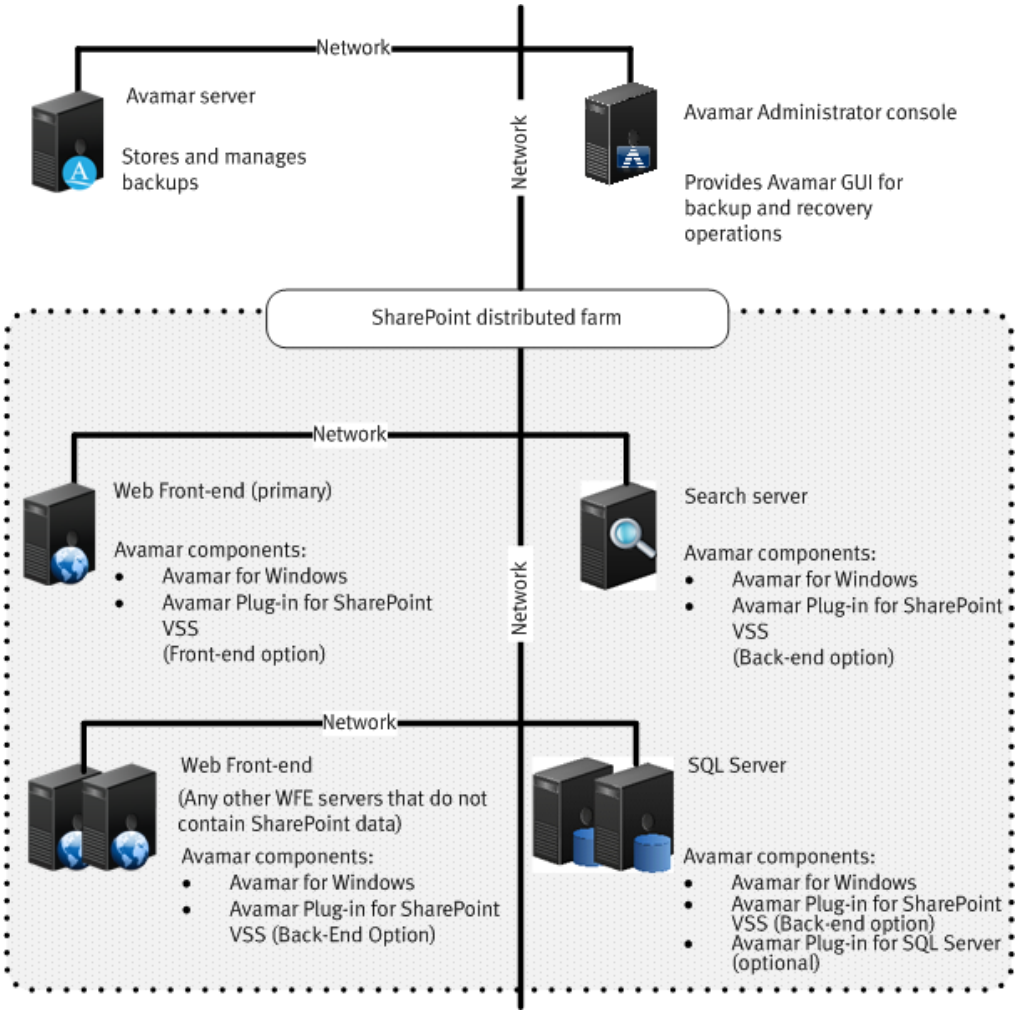

Figure 4. Architecture of a distributed farm with Avamar

Distributed SharePoint farm with optional granular level recovery

For GLR, additional GLR and ItemPoint for Microsoft SharePoint must be installed.

The following figure illustrates the additional computers and software that is required to support granular level recovery in a distributed farm.

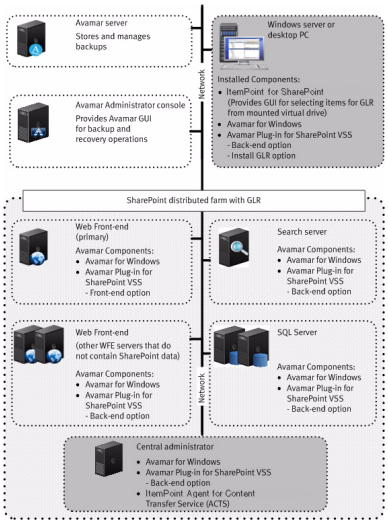

Figure 5. Architecture of a distributed farm with Avamar and optional GLR

Data Domain system support

You can store backups with the Avamar Plug-in for SharePoint VSS or the Avamar Plug-in for SQL Server on either the Avamar server or on a Data Domain system. Avamar stores backups on the Avamar server by default.

To store backups on a Data Domain system, use the AUI to configure the Data Domain system for use. Then select the Data Domain system during an on-demand backup or when configuring the dataset for a scheduled backup. The *Avamar Administration Guide* provides details on how to configure the Data Domain system in the AUI. The individual backup procedures in this guide provide the steps for selecting the Data Domain system to use.

NOTE: The Data Domain system must have Data Domain Operating System (DDOS) 5.3 or later to support Remote BLOB Storage.

Backup

A SharePoint farm backup strategy must include the backup of the entire farm and the backup of the operating system.

The SharePoint VSS plug-in discovers the topology of the entire farm. This step enables you to perform a unified or federated backup and recovery through the main WFE server.

Backup workflow for stand-alone farms

In a stand-alone farm, the SharePoint server is also the WFE server.

The backup workflow is shown in the following figure.

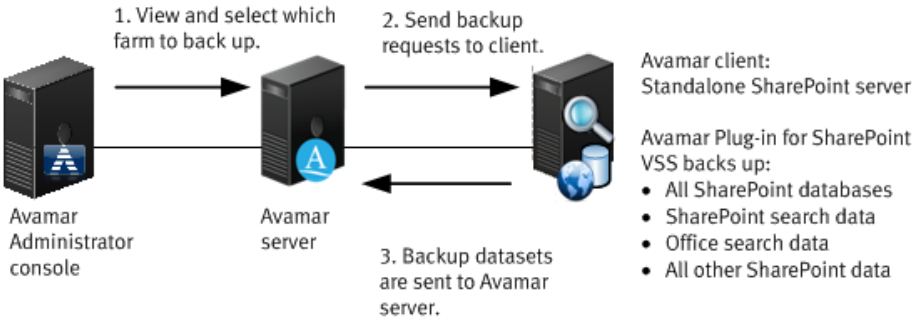

Figure 6. Backup workflow for stand-alone farms

Backup workflow for distributed farms

In a distributed farm, the WFE server can reside on one computer, or several computers.

The SharePoint administrator designates one computer as the main WFE server.

Use the main WFE server for backups and recoveries, as illustrated in the following figure.

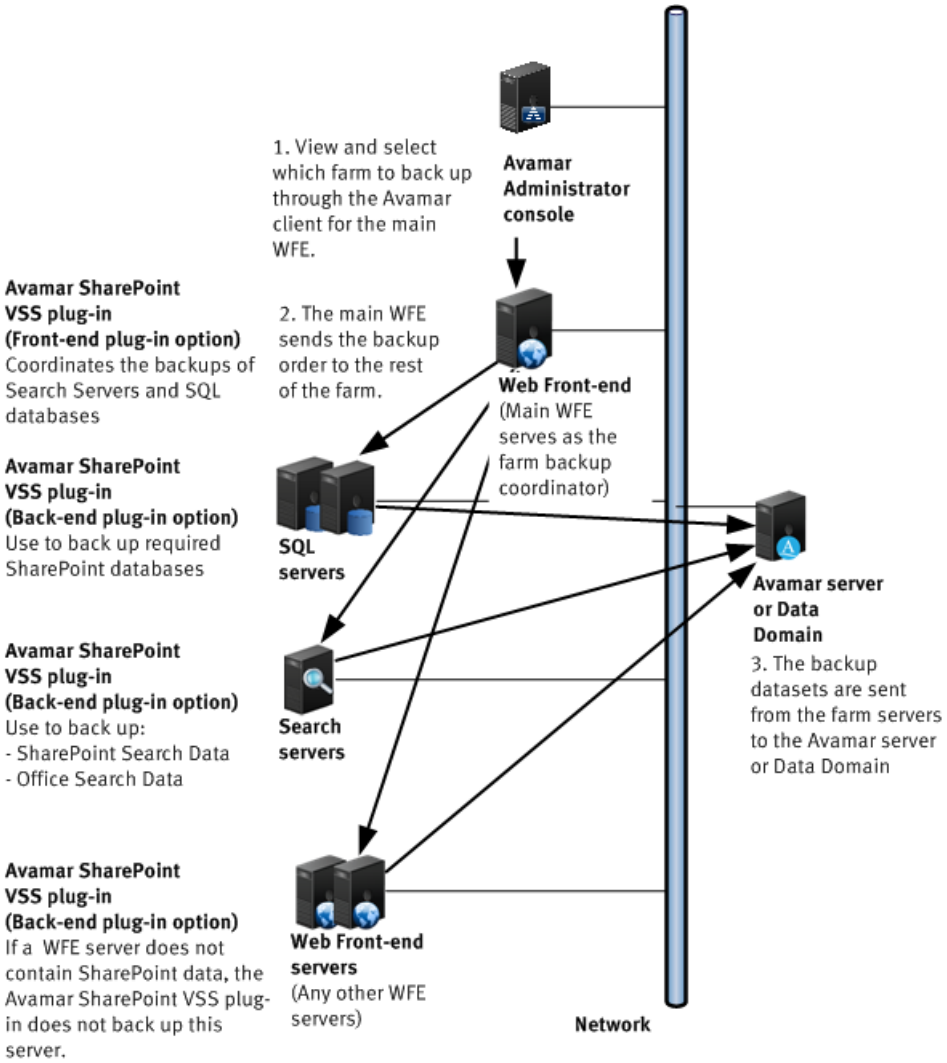

Figure 7. Backup workflow for distributed farms

Backup of SharePoint databases in an AlwaysOn availability group

The Avamar Plug-in for SharePoint VSS supports backup of SharePoint databases in a SQL Server AlwaysOn availability group.

You must install the Avamar Client for Windows and the Avamar Plug-in for SharePoint VSS on each node in the cluster. Install the SharePoint VSS plug-in with the **Back-end plug-in** option. To configure the AlwaysOn availability group, run the Cluster Configuration Tool on the primary replica.

When you back up SharePoint data with the SharePoint VSS plug-in, the backup of the databases in the availability group runs on the primary replica.

Operating system backups

Prepare for disaster recovery by using the Avamar Client for Windows to back up each Windows server in the farm, including System State, critical volumes, and Active Directory.

In a farm with more than one WFE, use the Avamar Client for Windows to protect IIS on each WFE.

The *Avamar for Windows Server User Guide* provides details on performing backups and restores with Avamar Client for Windows.

Multi-streaming

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

You can use as many as 10 streams for backups and four streams for restores. Each stream requires a separate processor. By taking advantage of multi-processors and multi-core processors, you can improve performance when storing backups on an Avamar server or on a Data Domain system.

Configure multi-streaming for group backups by volume or by database. When volumes have varying database sizes, it takes longer for the streams to release the volumes with bigger sizes. For example, consider an environment with 500 GB on volume `G:\`, 100 GB on volume `H:\`, and 100 GB on volume `Z:\`. To balance multi-stream backup performance, configure multi-streaming by volumes when all volumes are similar in overall size, or configure multi-streaming by database when all databases are similar in size.

NOTE: Do not use multi-streaming for the first full backup of a SharePoint farm. The first full backup ingests all data for the first time, and then scans it for deduplication. Because the process is resource intensive, multi-streaming can adversely impact performance. After the first full backup is complete, subsequent backups can take advantage of multi-streaming because those backups include only new data and incremental changes that have not been deduplicated.

Multi-streaming places demands on computer hardware and resources beyond the base requirements for the Avamar Plug-in for SharePoint VSS. Multi-streaming requirements on page 28 provides details.

Restore

When you perform backups with the Avamar Plug-in for SharePoint VSS, you can restore the entire SharePoint farm or individual components to the original location or a different location. You can also perform granular level recovery.

Restore to the original location

You can restore an entire SharePoint farm, or one or more components, directly to the original location.

After backing up a SharePoint farm using the Avamar Plug-in for SharePoint VSS, you can restore the entire farm, or one or more of its components, directly to the original location.

The following figure illustrates the restore of a stand-alone SharePoint farm.

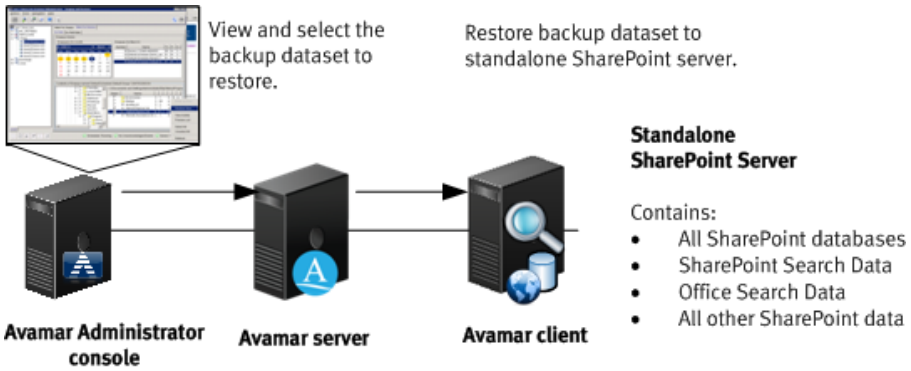

Figure 8. Restore workflow for stand-alone farms

The following figure illustrates a federated restore of a distributed SharePoint farm.

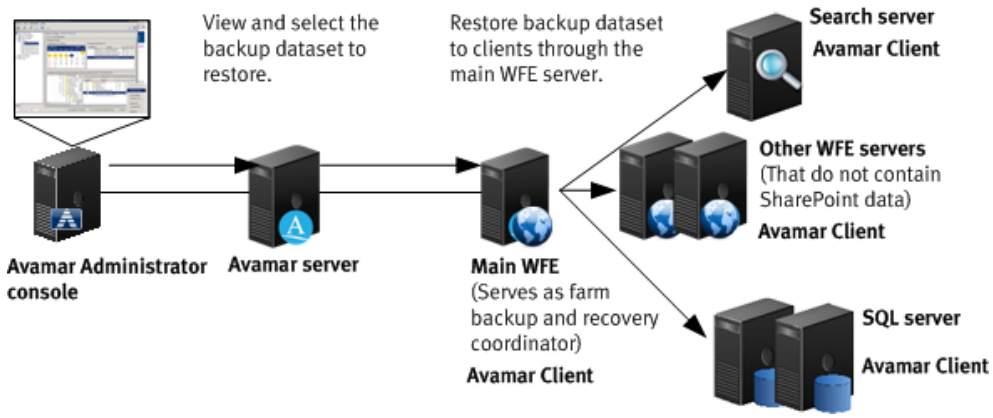

Figure 9. Restore workflow for distributed farms

Restore to a different location

You can restore an entire SharePoint farm, or one or more components, to a different server, or a different directory on the original server.

Restoring to a different location enables you to use the Avamar Plug-in for SharePoint VSS to restore content without overwriting existing content in the production SharePoint server databases.

You can restore an entire SharePoint farm, or one or more of its components, to another server, or to a different directory on the same server, as shown in the following figure.

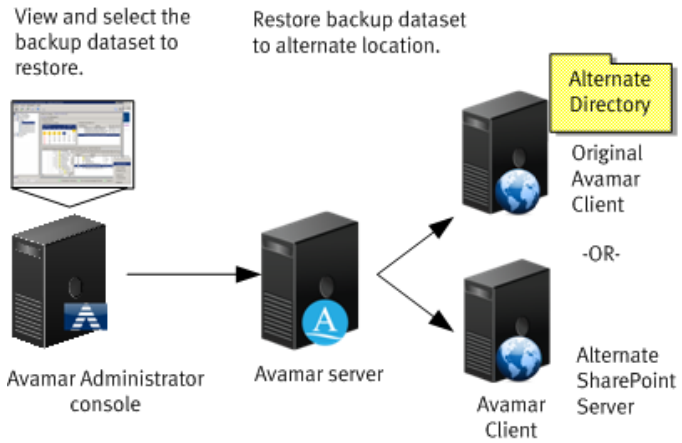

Figure 10. Workflow for restore to a different location

Restore of SharePoint databases in an AlwaysOn availability group

You can use the Avamar Plug-in for SharePoint VSS to restore SharePoint databases in a SQL Server AlwaysOn availability group.

Before the restore, ensure that the environment meets the following requirements:

- The Avamar Client for Windows is installed on each node in the cluster.
- The Avamar Plug-in for SharePoint VSS is installed with the **Back-end plug-in** option on each cluster node with an availability group replica.
- The AlwaysOn availability group is configured in Avamar with the Cluster Configuration Tool.

When you perform the restore with the Avamar Plug-in for SharePoint VSS, the restore process automatically removes all SharePoint databases from the availability group. After the restore completes, the SharePoint VSS plug-in rejoins the databases to the availability group on the primary replica only.

The databases on the secondary replicas remain in an unsynchronized state. You must manually join the databases to the availability group on each secondary replica by using SQL Server Management Studio, Transact-SQL, or PowerShell. The SQL Server documentation on the Microsoft TechNet website provides instructions.

Year 2038

The Avamar subsystem supports backup retention until February 2106. However, for older releases, the Avamar subsystem does not start after January 2038 due to the signed 32-bit integer time format of UNIX and Linux operating systems, and therefore cannot restore backup data after this date.

Newer Avamar releases offer support for longer retention periods:

- For Avamar 19.1 and later, the Avamar server subsystem uses an unsigned 32-bit integer and continues to start until 2106.
- For Avamar 19.1 and earlier, the Avamar client and plug-ins subsystem uses a signed 32-bit integer and retains data until 2038.
- For Avamar 19.2 and later, the Avamar client and plug-ins subsystem uses an unsigned 32-bit integer and retains data until 2106.
- Backup retention after 2038 is successful when all Avamar subsystems use unsigned 32-bit integers.

Therefore, with both Avamar 19.2 and later, and an Avamar 19.2 or later client, backup retention succeeds after 2038.

Avamar 19.2 and later clients also support restoring backups where the retention time is after 2038, and where the local (server and client) time is after 2038. Earlier client releases do not support this.

For backups of Windows or Linux clients, do not assign a retention period for a date after February 7, 2106.

Granular level recovery

Granular level recovery (GLR) enables you to browse to and recover individual SharePoint items to avoid the additional time, network bandwidth, and disk space requirements of restoring an entire farm or database.

When you perform GLR, use the Avamar Plug-in for SharePoint GLR to mount a backup to the Avamar Virtual Drive. Then use Itempoint for SharePoint to locate and select the items to restore. ItemPoint sends the restore request to the Avamar server, and then the Avamar server restores the data to the specified location.

The Avamar Virtual Drive is created specifically for GLR and is temporary. The Avamar Plug-in for SharePoint GLR unmounts the drive after a time limit that you specify, when you stop the GLR service, or when the computer restarts.

Sharing the virtual drive is not supported. When you perform GLR and mount the Avamar Virtual Drive, do not mount the drive to a public share, or share the folder publicly. The virtual drive may appear in the file system, but you can only access it from the computer that controls the mount point. You cannot map to the virtual drive from other machines.

The following figure illustrates the granular level recovery process.

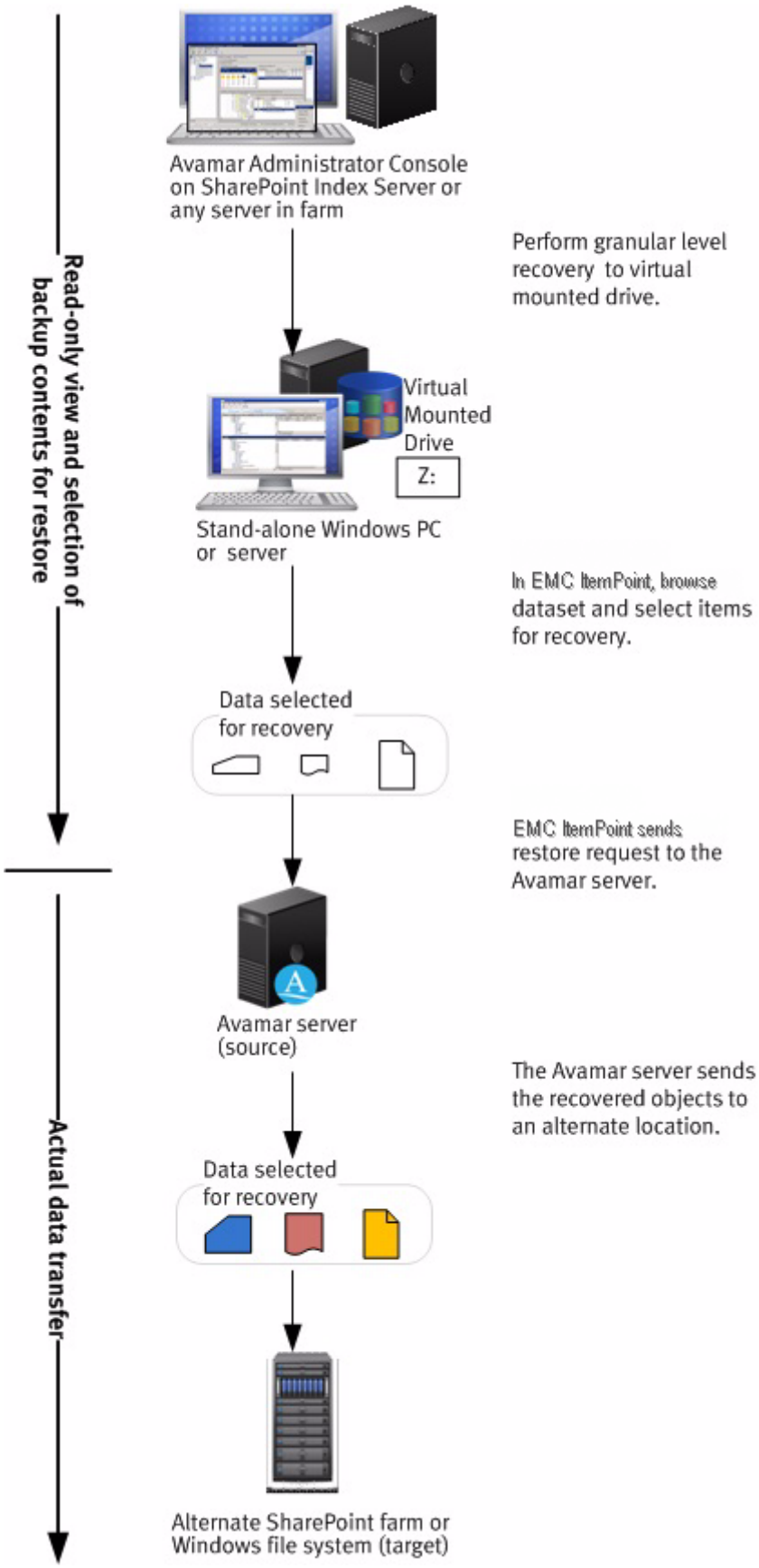

Figure 11. Granular level recovery workflow

Disaster recovery

Disaster recovery is required when a catastrophic physical or software event damages a SharePoint farm.

A SharePoint disaster recovery requires the following tasks:

- Rebuild servers
- Reinstall SharePoint
- Configure each server for its farm role
- Restore the SharePoint data, configuration, or databases on each server

The recommendations in the following topics are intended to enhance a good disaster recovery plan.

NOTE: SharePoint disaster recovery requires extensive knowledge of SharePoint installation and configuration.

SharePoint updates

Keep up-to-date with SharePoint technology, and the software versions, the service packs, and the update levels installed on the SharePoint farms. SharePoint backup and recovery require adherence to specific sequences and synchronization.

Comprehensive backup plan

Ensure that you have the necessary backups, and the information that is needed to perform a complete disaster recovery of a SharePoint environment. Develop a comprehensive backup strategy to protect each component in the environment and the entire farm structure. A disaster plan can include:

- Plans for alternate physical sites, and equipment for rebuilding the servers, farms, or sites
- Identification of key people, with the required skills and knowledge, and sufficient permissions to complete all recovery tasks
- Documentation of physical hardware requirements, network configurations, and software versions
- A location to protect all installation media that are required for reinstalling the operating systems and applications

Standard full operating system and SharePoint farm backups

The Avamar Client for Windows and Avamar Plug-in for SharePoint VSS play an integral part in disaster recovery. The client and plug-in provide backups of:

- Operating system
- System State
- System volumes
- Applications

Preparing for disaster recovery on page 57 describes how to use Avamar software as part of a comprehensive backup strategy.

2

Installation

Topics:

- Preparing to install the Avamar Plug-in for SharePoint VSS
- Installing the Avamar client software
- Changing the SharePoint mode
- Installing ItemPoint for Microsoft Sharepoint
- Upgrading the Avamar Plug-in for SharePoint VSS
- Uninstalling the Avamar client software

Preparing to install the Avamar Plug-in for SharePoint VSS

Preparation includes reviewing system and environment requirements, and downloading, installing, and registering the file system client.

Review the system requirements for the Avamar Plug-in for SharePoint VSS, and ensure that the environment meets the requirements before you install the plug-in. You also must download the Avamar file system client and Avamar Plug-in for SharePoint VSS installation package from the Avamar server, install the file system client, and register the client with the Avamar server.

System requirements

The environment must meet client compatibility requirements before you install Avamar client software.

See the *E-lab Navigator* at https://elabnavigator.emc.com/eln/modernHomeDataProtection for client compatibility requirements and supported operating systems and application versions.

The Avamar file system client and the plug-ins that you install on the host must have the same version number.

NOTE: Unless specified otherwise, the use of the term Windows in this document refers to all supported versions of Microsoft Windows, and SharePoint in this document refers to all supported versions of Microsoft SharePoint.

Hardware requirements

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

Table 5. Hardware requirements

Requirement	Minimum
Memory (RAM)	2 GB
File systems	NTFS
Network interface	10BaseT minimum; 100BaseT or higher recommended, configured with latest drivers for the operating system.

Unsupported configurations

Avamar does not support the following configurations in a SharePoint environment.

Windows Small Business Server

The Avamar software does not support backup and recovery of Windows Small Business Server.

Microsoft Exchange and Microsoft SharePoint Server installations on the same computer

The Avamar software does not support Microsoft Exchange Server and Microsoft SharePoint Server that is installed on the same computer. Microsoft does not support this configuration and Microsoft best practices advise to install these roles on separate computers.

Hardware providers

All Avamar VSS-based backup operations use the Microsoft Software Shadow Copy provider, also known as the Microsoft system provider. Hardware providers are not supported.

Search Service Application requirements

When Search Service Applications in the farm are hosted on separate physical servers, each Search Service Application must include an index component from every other Search Service Application in the farm. Otherwise, backups fail to complete. This issue is a known SharePoint VSS Writer limitation. Search Services are supported by the SharePoint plug-in with SharePoint 2013 and above.

Granular level recovery requirements

The Avamar Plug-in for SharePoint GLR places additional demands on computer hardware and resources beyond the requirements of the Avamar Plug-in for SharePoint VSS.

Memory

The Avamar Plug-in for SharePoint GLR may require additional memory (RAM). The amount of additional memory that is required depends on the current system performance with the existing memory:

- When performance is slow during normal operations of the Avamar Plug-in for SharePoint VSS, add significantly more memory to support SharePoint granular level recovery operations.
- When performance is adequate during normal operations of the Avamar Plug-in for SharePoint VSS, SharePoint granular level recovery operations may not require additional memory.
- Third-party recovery tools may require additional memory. Consult the documentation for the tool for specific memory requirements.

Database size

The Avamar software supports databases up to the maximum size allowed by SharePoint.

ItemPoint for SharePoint

ItemPoint for Microsoft SharePoint is required to browse and restore individual items from the data that the Avamar Plug-in for SharePoint GLR mounts to the Avamar Virtual Drive.

Installing ItemPoint for Microsoft Sharepoint on page 37 provides more detailed information about requirements, components, and settings of the software.

Mapped network drive

Granular level recovery requires the creation of an Avamar Virtual Drive, which appears as a local drive in folder windows, such as Windows Explorer. During granular level recovery, do not select a drive letter for the Avamar Virtual Drive that is also assigned to a mapped network drive. When the Avamar Virtual Drive is assigned the same drive letter as a mapped network drive, the Avamar Virtual Drive is hidden in folder windows.

To prevent thisissue, use an unused drive letter when you specify the drive letter for the Avamar Virtual Drive. If the `Z:\` drive is already mapped to a network drive, do not use the default value of slash (/) because this step causes the Avamar Virtual Drive to map to the `Z:\` drive.

If you notice the drive mapping issue, disconnect the conflicting network mapping during the granular level recovery sessions.

Multi-streaming requirements

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

Multi-streaming hardware and software recommendations

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

Table 6. Multi-streaming hardware and software recommendations

Hardware and software	Recommendations
CPU	At least one processor core per stream
Memory (RAM)	48 GB or more
Hard disks	• 1 disk drive for operating system/SharePoint common files • Separate disk drive or RAID drive group for each large SharePoint content database • 7200 RPM or faster disk drives
Network adapter	1 GB
Operating system	Windows Server 2012 R2 or later (SharePoint requirement)
SharePoint database	Microsoft SQL Server 2008 R2 SP3 or later (SharePoint requirement)

Multi-streaming SharePoint configuration requirements

When you configure multi-streaming for a backup, you can group by database or by volume.

NOTE: Regardless of whether you group by database or by volume, do not use multi-streaming for the first full backup of a SharePoint farm.

Multi-streaming requirements when grouping by database

When you group by database, adhere to the following guidelines to optimize the SharePoint configuration for multi-streaming:

- Split large databases so that all databases are relatively close in size. For example, if you have a 200 GB database, move some site collections to new databases, and create four 50 GB databases instead.
- Distribute larger databases to separate disks. For example, if there are six 50 GB databases on the same disk drive, then redistribute each database to a separate disk drive.

Multi-streaming requirements when grouping by volume

When you group by volume, adhere to the following guidelines to optimize the SharePoint configuration for multi-streaming:

- Ensure that each volume is on its own disk drive spindle.
- Balance the total database size on each volume to be as equal as possible. In the following example the total database sizes on each drive are similar in size and balanced:

- Drive 1 is 110 GB and holds Application and Administrative databases.
- Drive 2 is 105 GB and holds Content_Database_01.
- Drive 3 is 115 GB and holds Content_Database_02a.
- Drive 4 is 108 GB and holds Content_Database_02b.

Multi-streaming Avamar configuration requirements

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

For example:

- If you back up two databases with each database on its own disk, you can specify a maximum of two streams.
- If you back up two databases with each database and its logs on two disks (totaling four disks), you can specify a maximum of four streams.

Database requirements

There are additional requirements and recommendations for backing up the SQL Server databases when using the Avamar Plug-in for SharePoint VSS or Avamar Plug-in for SQL Server.

The Microsoft SharePoint documentation provides a list of SQL Server versions that SharePoint supports. The Avamar Plug-in for SharePoint VSS supports all SQL Server versions that SharePoint supports.

Full farm recovery and disaster recovery require a full backup from the Avamar Plug-in for SharePoint VSS. You cannot use a backup from the Avamar Plug-in for SQL Server. Avamar Plug-in for SQL Server (optional) on page 14 provides more information about the advantages and disadvantages of using the Avamar Plug-in for SQL Server for SharePoint database backups.

You can use the Avamar Plug-in for SQL Server to back up all databases in the environment except the search database. The Avamar Plug-in for SQL Server backup does not include the search index file, which must be synchronized with the search database backup so that they can both be restored together. The Avamar Plug-in for SharePoint VSS only performs full backups of SharePoint content databases. A full backup does not manage SQL log file truncation. To work around this limitation, set the SQL databases to Simple Recovery Model so that log truncation is not necessary.

SQL Server AlwaysOn availability group requirements

To back up and restore SharePoint databases on the primary replica in a SQL Server AlwaysOn availability group, Windows PowerShell version 3.0 is required on the database server.

Version 3.0 is included in Windows Server 2012 and Windows Server 2012 R2.

Required account privileges

Avamar Plug-in for SharePoint VSS requires specific administrator rights, and the Avamar Backup Agent Service must run as LocalSystem.

Avamar Plug-in for SharePoint VSS agent service account privilege requirements

The Avamar Plug-in for SharePoint VSS agent service and the SharePoint administrator must run with the same domain account.

The domain-level administrator rights are required to perform a backup or federated farm restore (a full farm restore of a distributed farm). The SharePoint administrator account for installation and configuration of the SharePoint farm is typically a member of the Administrators group on each server, and can be used for the federated restore.

When connecting SharePoint with SQL, it is considered best practice to use Windows authentication for SQL. Windows authentication uses domain user accounts. During an Avamar SharePoint backup with Windows authentication, Avamar connects to the SQL Server by using the Windows system service account (`NT AUTHORITY\SYSTEM`), which has privileges in the SQL Server. The account must have the **sysadmin** server-level role added, as described in the following steps, otherwise the Avamar SharePoint backup fails.

1. In **SQL Server Management Studio**, expand the **Security** node, and then expand the **Logins** node to display the instance in the Object Explorer.

2. Right-click the user to whom you want to assign the **sysadmin** server role and select **Properties**. The **Login Properties** dialog box appears.

   NOTE: For Windows authentication, select the `NT AUTHORITY\SYSTEM` user account.

3. Select **Server Roles** from the list in the left pane.
4. In the right pane, select the checkbox next to the **sysadmin** server role, and then click **OK**.

To use an administrator account other than the one used to install SharePoint:

- Add the SharePoint administrator account to the domain administrators group.
- Assign the "Log on as a service" right to the SharePoint administrator account on each server that runs any of the SharePoint services.

  Specify this setting in **Local Computer Policy** > **Computer Configuration** > **Windows Settings** > **Security Settings** > **Local Policies** > **User Rights Assignment** > **Log on as a service**.

SharePoint 2013 and above administrator account requirements

Backup and restore of a SharePoint 2013 and above require that the specified farm administrator account has Shell Admin Privileges. Use the `Add-SPShellAdmin` PowerShell command to provide these credentials. Consult Microsoft documentation for information about using PowerShell commands.

Avamar Backup Agent service requirements

The Avamar Backup Agent service must be running as LocalSystem on all machines.

VSS snapshot volume requirements

The Microsoft VSS framework limits the number of volumes in a VSS snapshot, and number of shadow copies in a volume.

Microsoft VSS framework allows up to 64 volumes in a VSS snapshot. When creating a dataset, do not include more than 64 volumes. If the number of volumes in a snapshot exceeds 64, 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.`

Services and writers

The Avamar Plug-in for SharePoint VSS relies on several services and writers to complete backup and recovery operations.

When the SharePoint farm works on the normal operations, all services and writers are running. However, if a required writer or service is not running, backup or recovery operations may fail. The writer or service may have stopped because a server is offline, failed, or is undergoing maintenance operations.

The Avamar Plug-in for SharePoint VSS requires the services and writers that are shown in the following table. In a federated environment, each of these options may be on a different computer.

Table 7. Required services and writers

Microsoft application	Service or writer name
SharePoint 2019	• OSearch16 VSS Writer (OSearch16) There is no separate installer for the OSearch16 writer. This service or writer should be running at time of backup and restore. No user actions are required in normal scenarios. To check the status about this writer use vssadmin list writer command. • SharePoint Services Writer (SPWriterV4)
SharePoint 2016	• OSearch16 VSS Writer (OSearch16)

Table 7. Required services and writers (continued)

Microsoft application	Service or writer name
	There is no separate installer for the OSearch16 writer. This service or writer should be running at time of backup and restore. No user actions are required in normal scenarios. To check the status about this writer use vssadmin list writer command. • SharePoint Services Writer (SPWriterV4)
SharePoint 2013	• OSearch15 VSS Writer (OSearch15) There is no separate installer for the OSearch15 writer. This writer should be running at time of backup and restore. No user actions are required in normal scenarios. To check the status about the writer use vssadmin list writer command. • SharePoint Services Writer (SPWriterV4)
SQL Server	• SQL Server (MSSQLSERVER) • SQL Server VSS Writer (SQLWriter)

Downloading the software

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

Steps

1. Log in to the server where the plug-in is installed as an administrator.
2. Open a web browser and type the following URL:
   `https://Avamar_server/dtlt/home.html`
   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`
   where *version* is the Avamar client version.
6. Save the installation package to a temporary folder.
7. Click the Avamar Plug-in for SharePoint VSS package:
   `AvamarMossVSS-windows-x86_64-version.exe`
   where *version* is the Avamar plug-in version.
8. Save the installation package to a temporary folder.
9. Click the **Avamar Config Checker** installation package:
   `Avamar_ConfigChecker_win_x64.zip` (64-bit)
10. Save the 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.

About this task

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 SharePoint. The Config Checker supports only English language operating systems.

Steps

1. Unzip the Config Checker installation package, and run the setup program to install the software.
2. Open the Config Checker by opening the Start screen and selecting **Avamar Config Checker**.
3. Click **Next.**
   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, and 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: Save the test results before exiting the wizard. The wizard 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 wizard.
11. Review the HTML result file, and correct all the checks that appear under **Failure.**
12. Rerun the Config Checker to ensure that all the checks are successful.

    You can also run the Avamar Config Checker after you install Avamar software on the client computer.

    The *Avamar Config Checker for Microsoft Windows Technical Note*, available on Online Support, provides troubleshooting information and details about the results that appear for each application.

Installing the Avamar client software

You can install the Avamar client software on a stand-alone SharePoint farm or on a distributed SharePoint farm.

Installation road map

The installation and configuration of Avamar software in a SharePoint environment depends on the type of farm, and whether the ItemPoint for SharePoint is installed.

Steps

1. Install the Avamar Client for Windows on every server in the SharePoint farm.
2. Install the Avamar Plug-in for SharePoint VSS on every server in the SharePoint farm.

   If you intend to perform granular level recovery, install the Avamar Plug-in for SharePoint VSS on the SharePoint Administrator Console, and select the option to install the GLR using ItemPoint for SharePoint.

   NOTE: You must install the Avamar Client for Windows and Avamar Plug-in for SharePoint VSS on each computer that is the target of a restore.

3. Register the SharePoint server as a client with the Avamar server.
4. (Optional) Install the Avamar Plug-in for SQL Server on the database servers to back up SQL Server databases in the SharePoint farm.
   Installation instructions are provided in the *Avamar for SQL Server User Guide*.
5. If the database servers are in a cluster, use the Cluster Configuration Tool to configure the Avamar cluster client.
6. If you intend to perform granular level recovery, install the ItemPoint for SharePoint on the Administrator Console.

Next steps

In some stand-alone installations, the SQL Server VSS Writer service might be in a disabled or stopped state after you install the Avamar Plug-in for SQL Server. Without this service running, backups and recoveries can fail. Before you perform a backup, check `Services.msc` to verify that the SQL Server VSS Writer service is enabled and set to automatic.

Installing the Avamar Client for Windows

The Avamar Client for Windows includes the Avamar agent and the Avamar Plug-in for Windows File System. The Avamar agent is required for backups and restores with application plug-ins. You can use the Windows File System plug-in to back up operating system and application binary files, which are required for disaster recovery.

About this task

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.

Steps

1. Log in to the SharePoint server as an administrator.
2. Go to the temporary folder that contains the Avamar installation files that you downloaded.
3. Start the installer:
   - 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 welcome page appears.
4. Click **Next**.
   The **End-User License Agreement** page appears.
5. Review the license agreement.
6. Select the checkbox to accept the terms in the license agreement, and click **Next.**
   The **Custom Setup** page appears.
7. Ensure that **Avamar Client User Interface** is selected for installation.
8. (Optional) To specify a folder for the Avamar client installation, click **Browse** and select a location.
9. Click **Next** on the **Custom Setup** page.
   The **Ready to Install Avamar for Windows** page appears.
10. Click **Install.**
11. When the installation completes, click **Finish.**
12. Review the license agreement.
13. Select the checkbox to accept the terms in the license agreement, and click **Next**.
    The **Custom Setup** page appears.
14. Ensure that **Avamar Client User Interface** is selected for installation.
15. (Optional) To specify a folder for the Avamar client installation, click **Browse** and select a location.
16. Click **Next** on the **Custom Setup** page.
    The **Ready to Install Avamar for Windows** page appears.
17. Click **Install**.

Installing the Avamar Plug-in for SharePoint VSS

About this task

A setup wizard leads you through the steps to install the plug-in. If UAC is enabled on the client computer, then you must start the setup wizard by using administrator privileges. Otherwise, the software does not install correctly. The Microsoft documentation provides methods to bypass UAC and additional information.

The plug-in automatically installs in the same folder as the Avamar Client for Windows.

Steps

1. Log in to the client computer with the SharePoint administrator domain account.

This account is used for the Avamar Plug-in for SharePoint VSS agent service and must be the same domain account as the SharePoint administrator account.

2. Go to the temporary folder that contains the Avamar installation files that you downloaded.
   - If UAC is disabled, double-click the 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 AvamarMossVSS-windows-x86_64-*version*.exe

     where *version* is the Avamar plug-in version.

   The Select components to install page appears.
3. (Optional) For granular level recovery, and only when installing on the Administrator Console, you have the following option:
   a. Select **GLR using ItemPoint for SharePoint - powered by Kroll OnTrack**.
      This step installs ItemPoint. A Windows security dialog box might appear during installation, indicating a possible security risk because of an unsigned driver or device. The exact message can vary, depending on the Windows version. If this message appears, click **Install** or **Install this driver software anyway**.
      NOTE: GLR using Itempoint for Sharepoint is selected by default in Avamar 18.1. You can unselect the option if you do not wish to install GLR using Itempoint for Sharepoint.
   b. When the ItemPoint install complete window appears, select **OK**.
      Avamar VSS setup wizard welcome page appears.
   c. Click **Next**.
   d. Click **Next** again.
4. When the **Select the type of installation page** appears, select the type of SharePoint server on which you are installing the plug-in:
   - When the server is the main WFE server in a distributed farm, or the sole SharePoint server in a stand-alone farm, select **Front-end plug-in**. Select this option for only one WFE in the farm.
   - When the server is an application server, database server, or another WFE, select **Back-end plug-in**.
5. Click **Finish**.

Microsoft SharePoint VSS Writer error

During the installation of the Avamar Plug-in for SharePoint VSS, an error message may appear to notify you that the Microsoft SharePoint VSS Writer failed to register.

This error can occur when a computer has been unregistered from the farm before the installation. After you install the Avamar Plug-in for SharePoint VSS, use the Microsoft `Stsadm` tool to fix this error. The tool is located on the drive where SharePoint is installed.

The default location for the tool depends on the SharePoint version:

- SharePoint 2013

  `%COMMONPROGRAMFILES%\microsoft shared\web server extensions\15\bin`

- SharePoint 2016

  `%COMMONPROGRAMFILES%\microsoft shared\web server extensions\16\bin`

- SharePoint 2019

  `%COMMONPROGRAMFILES%\microsoft shared\web server extensions\16\bin`

To use the tool, log in as an administrator on the local computer, and type the following command at the command prompt:

stsadm.exe -o registerwsswriter

Microsoft TechNet provides details on using this tool in “Stsadm command-line tool (Office SharePoint Server).”

Registering the client

Steps

1. Log in to the SharePoint server.
2. Right-click the Avamar client system tray icon and Select **Manage** > **Activate Client**.

The **Activate Client Setup** dialog box appears.

3. In the **Administrator Server Address** box, type the DNS name of the Avamar server.
4. In the **Administrator Server Port** box, specify the port on the Avamar server for client/server communication.
5. In the **Client Domain** box, type the name of the Avamar domain for the client.

   The default location is `clients`. Do not use a slash (/) as the first character when you type a subdomain. If you use a slash, an error occurs and you cannot register the client.
6. Click **Activate**.
   A confirmation message appears.
7. Click **OK**.

Configuring the cluster client for the SharePoint VSS plug-in

The Avamar cluster client enables you to back up and restore SharePoint data on shared storage in a cluster, regardless of which node is managing the data at the time of the backup or restore.

About this task

The Cluster Configuration Tool walks you through the steps to configure the Avamar cluster client for the Avamar Plug-in for SharePoint VSS.

Steps

1. Log in to the host of the SQL Instance Shared Volume as a domain administrator.

   The account must also be a member of the local Administrators group on each cluster node.
2. Start the Cluster Configuration Tool by opening the **Start** screen and selecting **Cluster Configuration Tool**.
   The welcome page appears.
3. Click **Next.**
   The **Plug-Ins** page appears.
4. Select **SharePoint**, and click **Next.**
   The **Cluster Nodes** page appears with a list of nodes and their status.
5. Ensure that the environment meets the following requirements:
   - The status for each SharePoint node is Up.
   - The installation status of the Windows client software for each node is **Installed**.
   - The Avamar Plug-in for SharePoint VSS installation status on each SQL Server node is **Installed**.
6. Click **Next.**
   The **Operations** page appears.
7. Select **Configure a new cluster 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 prerequisite is not met, 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 **Attach to Service** page appears.
10. Select the cluster service for the plug-in, and then click **Next.**
    The **SharePoint Settings** page appears.
11. 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 cluster client in the **Client domain for cluster** box.

       The default domain is “clients.” Consult the Avamar system administrator for the appropriate domain or subdomain to use.

       Do not use a slash (/) as the first character when you type a subdomain. If you use a slash, an error occurs and you cannot register the client.
    c. Type the data port for 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 shared network directory or volume stores the cluster client configuration and log files. All nodes in the cluster must have write permission for this directory or volume.

NOTE: Select a volume that the cluster owns instead of a remote pathname on the network.

12. Click **Next.**
    The **Summary** page appears.
13. 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.
14. Click **Close.**

Configuring the cluster client for an AlwaysOn availability group

To use the Avamar Plug-in for SharePoint VSS to back up and restore databases in AlwaysOn availability groups, you must configure the Avamar cluster client on the cluster node with the primary replica.

About this task

The Avamar Cluster Configuration Tool walks you through the steps to configure the cluster client.

Steps

1. Log in to the cluster node with the primary replica as a domain administrator. The account must also be a member of the local Administrators group on each cluster node.
2. Start the Cluster Configuration Tool by opening the **Start** screen and selecting **Cluster Configuration Tool**.
   The welcome page appears.
3. Click **Next.**
   The **Plug-Ins** page appears.
4. Select **SharePoint AlwaysOn**, and click **Next.**
   The **Cluster Nodes** page appears with a list of nodes and their status.
5. Ensure that the environment meets the following requirements:
   - The status for each cluster node is Up.
   - The installation status of the Windows client software for each node is Installed.
   - The Avamar Plug-in for SharePoint VSS installation status on each SQL Server node is Installed.
6. Click **Next.**
   The **Operations** page appears.
7. Select **Configure a new cluster 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 prerequisite is not met, 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 **SQL AlwaysOn Settings** page appears.
10. In the **Select service for cluster client**, select the availability group name, and then click **Next.**
    The **SharePoint Settings** page appears.
11. 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 cluster client in the **Client domain for cluster** box.

       The default domain is “clients.” Consult the Avamar system administrator for the appropriate domain or subdomain to use.

       Do not use a slash (`/`) as the first character when you type a subdomain. If you use a slash, an error occurs and you cannot register the client.

    c. Type the data port for Avamar client/server communication in the **Port number** box.

       NOTE: Port 28001 is the default port that the Avamar client uses to communicate with the Avamar server.

    d. Type the path to the `\var` directory for the cluster client in the **Cluster client's var directory** box, or click **Browse** to select a location.

The `\var` directory stores the cluster client configuration and log files. If you select a location on the node with the primary replica, ensure that the folder is shared with other nodes.

12. Click **Next.**
    The **Summary** page appears.
13. Review the configuration settings, and then click **Configure.**
    The **Progress** page provides the status of the configuration. When the configuration is complete, the **Results** page appears.
14. Click **Close.**

Changing the SharePoint mode

After you install the Avamar Plug-in for SharePoint VSS, you can change the mode of a SharePoint computer from front-end to back-end or back-end to front-end. You might need to change the mode if you change which server is the main WFE or you specified the wrong mode for a server during installation.

Steps

1. On the server for which you want to change the installation type, open the Windows Control Panel.
2. Click **Programs and Features**.
3. Select the **Avamar Plug-in for SharePoint VSS**, and then click **Change**.
   The setup wizard appears.
4. Click **Next**.
   The **Change, repair, or remove installation** page appears.
5. Click **Change**.
6. Select **Front-end** plug-in or **Back-end** plug-in, and click **Next**.
7. Complete the remaining steps in the wizard.

Installing ItemPoint for Microsoft Sharepoint

The Avamar Plug-in for SharePoint GLR enables you to recover a backup to the Avamar Virtual Drive using ItemPoint for Microsoft SharePoint.

ItemPoint for Microsoft SharePoint enables you to browse the Avamar Virtual Drive to select items and restore them to any of the following target computers:

- A server in the farm where the backup was performed.
- A server outside of the farm where the backup was performed.
- A server that does not host SharePoint or SQL services.

NOTE: The Avamar Client for Windows, the Avamar Plug-in for SharePoint VSS, and Avamar Plug-in for SharePoint GLR must be installed on the target computer.

ItemPoint for Microsoft SharePoint installation requirements

The computer on which you install ItemPoint for Microsoft SharePoint must meet the following requirements:

- Windows Server 2012 R2 or later (required by the Avamar Plug-in for SharePoint GLR)
- Compatible with Hyper-V or VMware environments
- Intel Pentium compatible processor, 64-bit (required by theAvamar Plug-in for SharePoint GLR)
- 1,024 MB of RAM
- Microsoft .NET Framework 3.5

The ItemPoint for Microsoft SharePoint computer must have twice the amount of space as the data that you restore. The space is temporary space for the file data and all associated metadata fields.

For the most up-to-date requirements and instructions for installing ItemPoint for Microsoft SharePoint software, see the ItemPoint software documentation on https://support.EMC.com.

ItemPoint for Microsoft SharePoint components

Before you perform GLR, install ItemPoint for Microsoft SharePoint and the ItemPoint for Microsoft SharePoint Agent for Content Transfer Services (ACTS) on servers.

The following table describes installation requirements depending on the type of SharePoint farm.

Table 8. ItemPoint for Microsoft SharePoint component installation by farm type

On this type of farm	Perform these installations
Stand-alone farm	• Install the ItemPoint for Microsoft SharePoint software on a server outside of the stand-alone farm. • Install ItemPoint_SetupACTS on the stand-alone server. Stand-alone SharePoint farm with optional granular level recovery on page 16 illustrates a stand-alone SharePoint farm with the ItemPoint installed.
Distributed farm	• Install the ItemPoint for Microsoft SharePoint software on a server outside of distributed farm. • Install ItemPoint_SetupACTS on the SharePoint server, typically on a central administration computer Distributed SharePoint farm with optional granular level recovery on page 18 illustrates a small distributed farm with the ItemPoint installed.

The ACTS installation process verifies that the installation is occurring on the correct computer.

ItemPoint installation settings

Specify the correct port, firewall exceptions, path, and configuration file name for ItemPoint before you perform GLR.

The following settings are required:

- The default port is 49175. You can change the port if the default port is already in use.
- An exception within the firewall is allowed, no matter which port you choose.
- The install path is `C:\Program Files\avs\bin\ItemPoint\ItemPoint_Version_SetupACTS`.
- The configuration file name is `EMCIPSP.exe.config`.
- The location for the temporary path is `<appSettings> <add key="TempPath" value="C:\Windows\Temp\PC"` .

Upgrading the Avamar Plug-in for SharePoint VSS

To upgrade the Avamar Plug-in for SharePoint VSS, run the installation wizard for the version you are upgrading to. You do not need to uninstall earlier versions of the plug-in before you install a new version.

Restore from backups created with previous versions of Avamar

We recommend performing a new backup immediately after upgrading an Avamar server or an Avamar client. In some cases, restoring backups that are created with previous versions of Avamar may fail.

Performing a new backup immediately after upgrading an Avamar server or an Avamar client provides a new baseline backup and reduces incompatibility issues that may occur from significant version changes between the backup software and restore software.

Restore of SharePoint 2013 backups created with Avamar 6.1 may fail

You can perform full restores of most SharePoint 2013 backups that are created with Avamar 6.1. However, sometimes a restore fails. Avamar 6.1 does not support backup and restore of Search Service Applications (SSA). Avamar 7.1 supports

backup and restore of SSA but cannot restore SSA from an Avamar 6.1 backup. Restore fails with the warning `Failed to open SSA meta datafile '….\ssa_topology.xml' for reading.`, the error `Failed to parse Search Service Applications metadata file.`, and `Vss exception code 0x19930520 has been thrown by PostRestore()`….

If this error occurs, follow the steps in Restoring the SharePoint farm from the Avamar backup on page 59.

Uninstalling the Avamar client software

The following topics explain how to uninstall Avamar client and plug-in software from a SharePoint client.

Uninstall road map

About this task

To uninstall Avamar client and plug-in software from a SharePoint client on either a stand-alone server or in a cluster:

Steps

1. (Cluster only) Uninstall the Avamar Cluster Client.
2. Uninstall the Avamar Plug-in for SharePoint VSS by using **Programs and Features**.
3. Uninstall the Avamar Client for Windows by using **Programs and Features**.
4. (Cluster only) Repeat step 2 and step 3 on each node.

Next steps

If the ItemPoint software was installed for GLR support, it must be uninstalled separately from the Avamar software.

Uninstalling the cluster client for an AlwaysOn availability group

About this task

To uninstall the Avamar cluster client from an AlwaysOn availability group with SharePoint databases, run the Cluster Configuration Tool on the primary replica, and select the removal option.

Steps

1. Log in to the cluster node with the primary replica as a domain administrator.

   The account must also be a member of the local Administrators group on each cluster node.

2. Start the Cluster Configuration Tool by opening the **Start** screen and selecting **Cluster Configuration Tool**
   The welcome page appears.
3. Click **Next**.
   The **Plug-Ins** page appears.
4. Select **SharePoint AlwaysOn** and click **Next**.
   The **Cluster Nodes** page appears with a list of nodes and their status.
5. Ensure that the status of each node is **Up**, and click **Next**.
   The **Operations** page appears.
6. Select the option to remove the cluster client from all nodes, and then click **Next**.
   The **Prerequisites** page appears. A check mark next to a prerequisite indicates that the prerequisite has been met.
7. Ensure that the environment meets all prerequisites on the page, and then click **Next**.
   The **Uninstall Settings** page appears.
8. Select the cluster role or service that contains the cluster client from the **Cluster role/service for cluster client** list, and then click **Next**.
   The **Summary** page appears.
9. Review the settings, and then click **Uninstall**.
   The **Progress** page provides the status of the uninstall. When the uninstall is complete, the **Results** page appears.
10. Click **Close**.

3

Backup

Topics:

- Performing on-demand backups
- Scheduling backups
- Monitoring backups
- Cancel backups
- Enforcement of backups to Data Domain

Performing on-demand backups

An on-demand backup is a user-initiated backup of an entire SharePoint farm, including the web front-end (WFE) server and all back-end servers. You can perform an on-demand backup for the first backup of the SharePoint farm immediately after you install the Avamar client software. You should also perform an on-demand backup before system maintenance, software installations, or software upgrades. If the SharePoint databases are in an AlwaysOn availability group, then the backup occurs on the primary replica.

Prerequisites

Ensure that the "Log on as a service" right is assigned to the SharePoint administrator account on each server that runs any of the SharePoint services.

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 SharePoint server.
   A list of Avamar clients is displayed in the pane under the domains list. The clients tree shows only the clients in the same domain as the account used to log in. To view all clients, log in to the root domain.
3. In the list of clients, select the computer that is running the SharePoint server.
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 **Plugin** pane, perform the following steps:
   a. Select the SharePoint VSS plug-in for the platform.
   b. Complete the Farm Administrator Credentials:
      i. In the **Username** field, type the username for an account that has administrator rights on all SharePoint clients in the farm.

         Use the format *domain\username* for credentials in a domain, or *computer\username* for credentials on a computer. If you do not specify correct credentials, you will not be able to browse.

      ii. In the **Password** field, type the password for the account that has SharePoint administrator rights.
      iii. Click **SUBMIT**.
   c. Browse to and select one or more farms that you want to back up.

      NOTE: Do not select individual components of the farm. You must back up the entire farm, or the backup fails.

   d. Click **NEXT**.

   The **Basic Configuration** window is displayed.
6. In the **Basic Configuration** window, perform the following steps:
   a. 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**.

b. In 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.

c. In 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.

d. Click **NEXT**.

The **More Options** window is displayed.

7. (Optional) To view advanced configuration options, click **Show Advanced Options**.

Backup options provides more information about the advanced backup options.

8. In the **More Options** pane, perform the following steps:

a. (Advanced option) To write maximum information to log files, select **Enable debugging message**. Selecting this option creates very large log files.

b. Complete the SharePoint farm administrator credentials:

i. In the **Username** field, type the username for an account that has administrator rights on all SharePoint clients in the farm.

Use the format *domain\username* for credentials in a domain, or *computer\username* for credentials on a computer. If you do not specify correct credentials, you cannot browse.

ii. In the **Password** field, type the password for the account that has SharePoint administrator rights.

c. To store backups on a Data Domain system instead of the Avamar server, perform the following steps:

i. Select **Store backup on Data Domain** system.

ii. In the Data Domain field, select the Data Domain system from the list.

d. In the **Encryption method to Data Domain system** list, select the encryption method for data transfer between the client and the Data Domain system during the backup.

9. To use multi-streaming:

a. Select the **Enable multi-streaming** check box.

b. In the **Maximum number of streams** field, select the maximum number of streams to use for the 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 with each database and its logs on two disks (totaling four disks), specify a maximum of four streams.

c. In the **Group by** field, select **Database**, or **Volume**.

NOTE: When grouping by volume, performance degrades when the number of streams does not match the number of volumes.

10. To manually enter additional plug-in options as free text, perform the following steps:

a. Toggle the **Show Free Form** field to **ON**.

b. Click **+**.

c. In the **Key** field, type the plug-in option name.

d. In the **Value** field, type a value.

e. To remove an option from the list, click **Delete**.

NOTE: The Avamar software does not validate the option information that you type in the **Key** and **Value** fields.

11. Click **FINISH**.

The following status message is displayed:

```
Backup initiated.
```

12. To view status details for the backup, select **Actions** > **View Activity**.

Scheduling backups

Scheduled backups run automatically to ensure that backups occur on an ongoing basis. You can schedule backups to run daily, weekly, or monthly. The scheduled backup can include multiple clients or a single server.

About this task

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

Perform the following steps within the **Policy** wizard. The *Avamar Administration Guide* provides more information about groups, group policy, 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 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 (_), and space. Do not use Unicode characters or the following special characters: ` ~ ! @ # $ % ^ & * ( ) = + [ ] { } | \ / ; : ' " < > , ?
5. From the **Plugins** list, select the **Windows SharePoint VSS** plug-in.
6. Click the **Options** tab, and perform the following steps:
   a. To view advanced options, select the **Show Advanced Options** check box.
   b. Complete the Farm Administrator Credentials.
      i. In the **Username** field, type the SharePoint administrator username.

         Use the format *domain\username* for credentials in a domain, or *computer\username* for credentials on a computer. If you do not specify correct credentials, you will not be able to browse.

      ii. In the **Password** field, type the SharePoint administrator user password.
   c. To store backups on a Data Domain system instead of the Avamar server, perform the following steps:
      i. Select **Store backup on Data Domain** system.
      ii. In the Data Domain field, select the Data Domain system from the list.
   d. In the **Encryption method to Data Domain system** list, select the encryption method for data transfer between the client and the Data Domain system during the backup.
   e. Set the plug-in options. Backup options provides details on each option.
   f. To use multi-streaming:
      i. Select the **Enable multi-streaming** check box.

ii. In **Maximum number of streams**, select the maximum number of streams to use for the 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 with each database and its logs on two disks (totaling four disks), specify a maximum of four streams.

iii. In **Group by**, select **Database**, or **Volume**.

NOTE: When grouping by volume, performance degrades when the number of streams does not match the number of volumes.

7. Click the **Source Data** tab and then select the data to include in the dataset:
   - To include all SharePoint VSS server data on a client, select **All SharePoint VSS Data**.
   - To specify instances or databases on a client, perform the following steps:
     a. Select **Select Files and/or Folders**.
     b. In the **File/Folder Path** field, type the file path.
     c. Click **ADD**.
8. Click **SUBMIT**.

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:

  - Completed
  - 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

Restore

Topics:

- Tasks required to restore specific components
- Finding a backup
- Restoring to the original location
- Restoring to a different location
- Monitor restores
- Cancel restores

Tasks required to restore specific components

When you restore certain individual SharePoint components, additional steps are required to prepare the environment before the restore. The following topics explain how to prepare to restore a deleted web application or search database.

Restore of a deleted web application

The tasks to restore a deleted web application depend on whether to restore the web application data, the data and the web application configuration, or the entire web application and other components.

NOTE: To correctly restore a search component, the search index flat files and associated search databases must be restored together.

If you are restoring only selected web applications or other components, then shut down the web applications or components during the restore.

The following table describes the tasks that are required to restore a deleted web application.

Table 9. Tasks required when restoring a deleted web application

Web application and other SharePoint component status	Restore tasks
The web application with attributes still exists, and you want to restore only the web application data.	Restore the deleted web application database using the steps in Restoring a content database to its original location. You do not need to stop SharePoint or any services.
The web application has been deleted, but the IIS website and content database still exist.	Perform the steps in Restoring a deleted web application to an existing IIS website and content database .
The web application, the IIS website, and the content database were all deleted.	Perform the steps in Restoring the SharePoint farm from the Avamar backup.

Restoring a deleted web application to an existing IIS website and content database

Prerequisites

Re-create the deleted web application and attach it to the content database.

Steps

1. Open the SharePoint **Central Administration** page.
2. On the **Applications Management** tab, manually re-create the deleted web application.

Ensure that all configuration attributes match the original web application environment. You can only restore data to an environment that matches the environment in which the backup was performed.

3. Attach the re-created web application to the content database.
4. Restore the deleted web application using the steps in Restoring a content database to its original location on page 49.

Restore of a deleted search database

The tasks to restore a deleted search database depend on whether to restore the database, the database and the Search Web application, or the database and other components.

If you are restoring only selected web applications or other components, then shut down the web applications or components during the restore.

The following table describes the processes to restore a deleted search database.

Table 10. Tasks required when restoring a deleted search database

Search database and other SharePoint component status	Restore tasks
The Search web application with attributes still exists, and you want to restore only the search database.	Restore the deleted Search Web application database using the steps in Restoring a content database to its original location. You do not need to stop SharePoint or any services.
The Search Web application has been deleted, but the IIS website and search database still exist.	Perform the steps in Restoring a deleted web application to an existing IIS website and content database.
The Search Web application, the IIS website, and the search database were all deleted.	Perform the steps in Restoring the SharePoint farm from the Avamar backup.

Restoring a deleted Search Web application to an existing IIS website and content database

Prerequisites

Re-create the deleted Search Web application and attach it to the content database.

Steps

1. Open the SharePoint **Central Administration** page.
2. On the **Applications Management** tab, create the **Search Service** in **Manage Search Services**.

   Ensure that all configuration attributes match the original search database environment. You can only restore data to an environment that matches the environment in which the backup was performed.

3. On the **Applications Management** tab, verify that the **Office SharePoint Server Search** service is running in **Manage Search Services**.
4. Restore the deleted search database using the steps in Restoring a content database to its original location on page 49.

Restoring databases in an AlwaysOn availability group

When you restore SharePoint databases in an AlwaysOn availability group with the Avamar Plug-in for SharePoint VSS, the restore process automatically removes all SharePoint databases from the availability group. After the restore completes, the SharePoint VSS plug-in rejoins the databases to the availability group on only the primary replica.

The databases on the secondary replicas remain in an unsynchronized state. You must manually join the databases to the availability group on each secondary replica by using SQL Server Management Studio, Transact-SQL, or PowerShell. The SQL Server documentation on the Microsoft TechNet website provides instructions.

Finding a backup

The first step to restore data is to find the backup with the data that you want to restore. You can find Avamar client backups by searching either for a specific date or for specific content.

Locate backups by date when one or more of the following situations apply:

- You save all data for the client in a single backup set.
- The exact pathname or name of the data to restore is unknown.
- The backup that you want to restore is before a specific date or event. For example, you know the approximate date when data was lost or corrupted. You can search for a backup before that date.
- The specific types of backups are known. For example, you run scheduled disaster recovery backups every Wednesday and Saturday night, and you run full volume backups daily. When you must rebuild a server, select the disaster recovery backup with the date closest to the event that caused the loss of data.

Locate backups by the content of the backup when one or more of the following situations apply:

- You back up data on the client in separate backup sets.
- You want to view multiple versions of the same file so that you can decide the version to restore.
- The date of the backup or the content of a backup is unknown, but you know the name of the data to restore.
- You must restore a SharePoint database that is no longer in the SharePoint farm, but you know the farm path to the SQL server, computer name, or database to recover.

Restoring to the original location

When you perform backups of a SharePoint farm using the Avamar Plug-in for SharePoint VSS, you can restore the entire farm or the content database to the original location.

About this task

NOTE: The following restore options available in the Avamar Plug-in for SharePoint VSS are supported only through the AUI web front-end client:

- In the **Destination Client** pane of the Restore wizard, select **Restore to a different client**
- In the**Destination Location** pane of the Restore wizard, select **Restore everything to its original location**

The restore operation restores data to the original location on the SQL server. These restore options are not supported when a SharePoint back-end client is selected.

Restoring an entire farm to its original location

Use a backup that is created with Avamar Plug-in for SharePoint VSS to restore all of the SharePoint servers and data to the original location.

Prerequisites

Ensure that the “Log on as a service” right is assigned to the SharePoint administrator account on each server that runs any of the SharePoint services.

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 SharePoint 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 SharePoint 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, select the farm that you want to restore.

      The **Backup Content** pane displays a list of databases within the backup.

   b. In the right pane, 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 to the original location**.
   b. Click **NEXT**.

   The **More Options** pane is displayed.

9. In the **More Options** pane, perform the following steps:
   a. (Optional) To view advanced configuration options, click **Show Advanced Options**.
   b. In the **Encryption method to Data Domain system** list, select the encryption method for data transfer between the client and the Data Domain system during the backup.
   c. (Advanced option) To write maximum information to log files, select **Enable debugging message**. Selecting this option creates very large log files.
   d. Complete the SharePoint farm administrator credentials section:

      Specify an account for the restore that has administrator rights on all SharePoint clients in the farm.

      i. In the **User name** field, type the username for an account for the restore that has administrator rights on all SharePoint clients in the farm.

         Use the format *domain\username* for credentials in a domain, or *computer\username* for credentials on a computer. If you do not specify correct credentials, you will not be able to browse.

      ii. In the **Password** field, type the password for the account that has SharePoint administrator rights.

   e. To store backups on a Data Domain system instead of the Avamar server, perform the following steps:
      i. Select **Store backup on Data Domain** system.
      ii. In the Data Domain field, select the Data Domain system from the list.

   f. In the **Encryption method to Data Domain system** list, select the encryption method for data transfer between the client and the Data Domain system during the backup.

10. To use multi-streaming:
    a. Select the **Enable multi-streaming** check box.
    b. In **Maximum number of streams**, select the maximum number of streams to use for the 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 with each database and its logs on two disks (totaling four disks), specify a maximum of four streams.

    c. In **Group by**, select **Database**, or **Volume**.

       NOTE: When grouping by volume, performance degrades when the number of streams does not match the number of volumes.

11. To manually enter additional plug-in options as free text, perform the following steps:
    a. Toggle the **Show Free Form** field to **ON**.
    b. Click **+**.

c. In the **Key** field, type the plug-in option name.
d. In the **Value** field, type a value.
e. To remove an option from the list, click **Delete**.

NOTE: The Avamar software does not validate the option information that you type in the **Key** and **Value** fields.

Restore options for the Avamar Plug-in for SharePoint VSS provides a list of the restore options

12. Click **OK**.
13. Click **NEXT**.
    The **Summary** pane is displayed.
14. Review the provided information, and then click **FINISH**.

Next steps

- Restart IIS.
- If the restore included databases in an AlwaysOn availability group, the databases on the secondary replicas remain in an unsynchronized state. Manually join the databases to the availability group on each secondary replica by using SQL Server Management Studio, Transact-SQL, or PowerShell. The SQL Server documentation on the Microsoft TechNet website provides instructions.

Restoring a content database to its original location

Use a backup created with Avamar Plug-in for SharePoint VSS to restore a SharePoint content database to its original location.

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 SharePoint Server farm.
   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 SharePoint Server farm host.
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, select the SharePoint instance folder or databases that you want to restore.
      The **Backup Content** pane displays a list of databases within the backup.
   b. In the right pane, select the content database 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 to the original location**.
   b. Click **NEXT**.

The **More Options** pane is displayed.

9. In the **More Options** pane, perform the following steps:
   a. (Optional) To view advanced configuration options, click **Show Advanced Options**.
   b. In the **Encryption method to Data Domain system** list, select the encryption method for data transfer between the client and the Data Domain system during the backup.
   c. (Advanced option) To write maximum information to log files, select **Enable debugging message**. Selecting this option creates very large log files.
   d. Complete the SharePoint farm administrator credentials section:

      Specify an account for the restore that has administrator rights on all SharePoint clients in the farm.

      i. In the **User name** field, type the username for an account for the restore that has administrator rights on all SharePoint clients in the farm.

         Use the format *domain\username* for credentials in a domain, or *computer\username* for credentials on a computer. If you do not specify correct credentials, you cannot browse.

      ii. In the **Password** field, type the password for the account that has SharePoint administrator rights.
   e. To store backups on a Data Domain system instead of the Avamar server, perform the following steps:
      i. Select **Store backup on Data Domain** system.
      ii. In the Data Domain field, select the Data Domain system from the list.
   f. In the **Encryption method to Data Domain system** list, select the encryption method for data transfer between the client and the Data Domain system during the backup.
10. To use multi-streaming:
   a. Select the **Enable multi-streaming** check box.
   b. In **Maximum number of streams**, select the maximum number of streams to use for the 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 with each database and its logs on two disks (totaling four disks), specify a maximum of four streams.
   c. In **Group by**, select **Database**, or **Volume**.

      NOTE: When grouping by volume, performance degrades when the number of streams does not match the number of volumes.

11. To manually enter additional plug-in options as free text, perform the following steps:
   a. Toggle the **Show Free Form** field to **ON**.
   b. Click **+**.
   c. In the **Key** field, type the plug-in option name.
   d. In the **Value** field, type a value.
   e. To remove an option from the list, click **Delete**.

   NOTE: The Avamar software does not validate the option information that you type in the **Key** and **Value** fields.

   Restore options for the Avamar Plug-in for SharePoint VSS provides a list of the restore options

12. Click **OK**.
13. Click **NEXT**.

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

Next steps

If the content database is in an AlwaysOn availability group, the database on the secondary replicas remains in an unsynchronized state. Manually join the database to the availability group on each secondary replica by using SQL Server Management Studio, Transact-SQL, or PowerShell. The SQL Server documentation on the Microsoft TechNet website provides instructions.

Restoring to a different location

Use a backup that is created with Avamar Plug-in for SharePoint VSS to restore an entire farm or just a content database to a new location. Restoring to a different location enables you to restore content without directly overwriting existing content in the production SharePoint server databases.

Prerequisites

- Ensure that the "Log on as a service" right is assigned to the SharePoint administrator account on each server that runs any of the SharePoint services.
- Install the Avamar Client for Windows and Avamar Plug-in for SharePoint VSS on the destination servers, and register.

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 SharePoint Server farm.

   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 SharePoint Server farm host.
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 a different client**.
   b. In the domain tree, select the domain for the client.
   c. From the list of clients, select the target 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, select the SharePoint farm that you want to restore.

      The **Backup Content** pane displays a list of databases within the backup.

   b. In the right pane, select the data that you want to restore

   Table 11. Steps to restore data

Data to restore	Selection steps
Entire farm	Select the farm that you want to restore.
Content database	i. Select the node for the farm. ii. Select the SQL Server farm host to display either the SQL instance folder or databases. iii. Select the content database 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 a different location**.

b. In the **Restore Location** field, type the file path of the target location where you want to restore the data.

   For example: E:/dbrestore_dir/

c. Click **NEXT**.

   The **More Options** pane is displayed.

9. In the **More Options** pane, perform the following steps:
   a. (Optional) To view advanced configuration options, click **Show Advanced Options**.
   b. (Advanced option) To write maximum information to log files, select **Enable debugging message**. Selecting this option creates very large log files.
   c. In the **Encryption method to Data Domain system** list, select the encryption method for data transfer between the client and the Data Domain system during the backup.
   d. Complete the SharePoint farm administrator credentials section:

      Specify an account for the restore that has administrator rights on all SharePoint clients in the farm.

      i. In the **User name** field, type the username for an account for the restore that has administrator rights on all SharePoint clients in the farm.

         Use the format *domain\username* for credentials in a domain, or *computer\username* for credentials on a computer. If you do not specify correct credentials, you cannot browse.

      ii. In the **Password** field, type the password for the account that has SharePoint administrator rights.
   e. To store backups on a Data Domain system instead of the Avamar server, perform the following steps:
      i. Select **Store backup on Data Domain** system.
      ii. In the Data Domain field, select the Data Domain system from the list.
   f. In the **Encryption method to Data Domain system** list, select the encryption method for data transfer between the client and the Data Domain system during the backup.
10. To use multi-streaming:
   a. Select the **Enable multi-streaming** check box.
   b. In **Maximum number of streams**, select the maximum number of streams to use for the 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 with each database and its logs on two disks (totaling four disks), specify a maximum of four streams.
   c. In **Group by**, select **Database**, or **Volume**.

      NOTE: When grouping by volume, performance degrades when the number of streams does not match the number of volumes.

11. To manually enter additional plug-in options as free text, perform the following steps:
   a. Toggle the **Show Free Form** field to **ON**.
   b. Click **+**.
   c. In the **Key** field, type the plug-in option name.
   d. In the **Value** field, type a value.
   e. To remove an option from the list, click **Delete**.

   NOTE: The Avamar software does not validate the option information that you type in the **Key** and **Value** fields.

   Restore options for the Avamar Plug-in for SharePoint VSS provides a list of the restore options

12. Click **OK**.
13. Click **NEXT**.

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

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:

  - Completed
  - 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:

- Performing granular level recovery
- Mounting a backup to the Avamar Virtual Drive
- Restoring items from the Avamar Virtual Drive

Performing granular level recovery

Granular level recovery (GLR) enables you to browse and recover individual SharePoint items to avoid the additional time, network bandwidth, and disk space requirements of restoring an entire farm or database.

Steps

1. Use the Avamar Plug-in for SharePoint GLR to mount a backup to the Avamar Virtual Drive. Restoring the Avamar backup and mounting the Avamar Virtual Drive provides instructions.
2. Use ItemPoint for Microsoft SharePoint to locate and select the items to restore. Restoring items from the Avamar Virtual Drive.
   ItemPoint sends the restore request to the Avamar server, and then the Avamar server restores the data to the specified location.

Mounting a backup to the Avamar Virtual Drive

Use the Avamar Plug-in for SharePoint GLR to mount a backup the Avamar Virtual Drive for granular level recovery.

Prerequisites

- Ensure that the “Log on as a service” right is assigned to the SharePoint Administrator account on each server that runs any of the SharePoint services.
- Ensure that the Avamar Client for Windows and the Avamar Plug-in for SharePoint VSS are installed on the target computer.

About this task

NOTE: The Avamar AUI is only supported in stand-alone Windows and Linux environments only.

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 SharePoint Server farm.

   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 SharePoint Server farm host.
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, perform the following steps:
   a. Select **Restore to a different client**.
   b. In the domain tree, select the domain for the client.
   c. From the list of clients, select the target 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. In the left pane, select the SharePoint farm that you want to restore.

      The **Backup Content** pane displays a list of databases within the backup.

   c. In the right pane, select the data that you want to restore

      Table 12. Steps to restore data

Data to restore	Selection steps
Entire farm	Select the farm that you want to restore.
Content database	i. Select the node for the farm. ii. Select the SQL Server farm host to display either the SQL instance folder or databases. iii. Select the content database to restore.

   d. Click **NEXT**.

   The **More Options** pane is displayed.

8. In the **More Options** pane, perform the following steps:
   a. (Optional) To view advanced configuration options, click **Show Advanced Options**.
   b. In the **Drive letter or mount path** field, specify the drive to mount the Avamar virtual drive to for browsing:
      - Type a forward (`/`) or backward (`\`) slash to let the Avamar software detect and select an available drive.

        The system starts with the letter Z and works its way backward until an available drive is located. If you specify a drive letter, ensure that the drive letter is not already in use on the target server.

      - Type a valid pathname to a folder, such as `F:\folder_name`.

      If another user or user session has mapped a network drive within a user session on the client computer, the Avamar software cannot detect those drive mappings when assigning a drive letter for the Avamar Virtual Drive. If you regularly use network drive mapping, specify a drive letter that you know is not in use instead of specifying a forward or backward slash.
   c. In **Amount of time to leave AvFS mounted**, select the amount of time to leave the Avamar Virtual Drive mounted.

      The drive disconnects when the specified time has passed, even if the drive is in use. Select a length of time that enables you to complete the granular level recovery.

9. Click **FINISH**.

   The following status message appears: `Retrieving content of backup to client` in the **Backup** pane and then the backups are displayed in the **Backup** pane.

   NOTE: It might take a long time to mount the Avamar virtual drive in the destination client.

Restoring items from the Avamar Virtual Drive

After you mount the backup to the Avamar Virtual Drive, use ItemPoint for SharePoint to recover specific items to the SharePoint farm.

Prerequisites

Ensure that the ItemPoint for Microsoft SharePoint Agent For Content Transfer service (ACTS) is running.

Steps

1. On the target computer where the Avamar Virtual Drive is mounted, open the recovery program by clicking **Start** > **All Programs** > **ItemPoint** > **ItemPoint for Microsoft SharePoint Server** .
   The ItemPoint for Microsoft SharePoint Server software appears, and displays the **Data Wizard** to gather information about the source and target locations.
2. When prompted, provide the following information:
   - The full local path to the Avamar Virtual Drive, such as `Z:\`.
   - The site collection URL in **SharePoint Server Site URL**.
   - The default value of 49175 in **Agent for Content Transfer Service Port Number**.
   - The credentials that are required to access the site collection URL in **Authentication Information**. The ItemPoint administrator must have full access control permissions.
3. Click **Finish**.
   ItemPoint connects to the source and the target. The **ItemPoint** window appears as a split directory window.
4. Browse the source directory tree and select the items to restore.
5. Initiate the restore by using one of the following methods:
   - Drag and drop from the source to the target.
   - Right-click to copy items in the source tree, and then right-click to paste the items to the destination.

   The **Copy Progress** window displays the details of the file transfer. When the copy is complete, you can print or save a file copy of the completion report.

6

Disaster Recovery

Topics:

- Preparing for disaster recovery
- Performing disaster recovery

Preparing for disaster recovery

Avamar enables you to back up all of the data, settings, and roles in a SharePoint farm to prepare for disaster recovery. This chapter describes the overall process for using the tools. However, you may need to modify the steps for an environment.

About this task

Common reasons to perform disaster recovery of a SharePoint farm include:

- To move an entire farm from a physical environment to a virtual environment.
- To move the farm to new or upgraded hardware.
- To replace an entire farm that is destroyed by a disaster such as a fire, flood, earthquake.

If the farm is intact and you are replacing or restoring a machine, Bare Metal Recovery (BMR) enables you to restore a server offline without having to rebuild from the operating system on a bare machine.

Steps

1. Create a formal plan that includes the following information:
   - Machine names
   - IP addresses
   - Network settings
   - Backup server locations
   - Mirror site server names and settings
   - Hardware and configuration
2. Ensure that you have onsite and offsite copies of the installation disks for the following items:
   - Operating system
   - SharePoint software
   - SQL Server software
   - Any updates for the software
   - Hardware drivers, including NICs.
3. Review Microsoft disaster recovery and backup guidelines for SharePoint.
4. Review disaster recovery and BMR information in the *Avamar for Windows Server User Guide*. All disaster recoveries for any member of the SharePoint farm must start with a BMR of the operating system with the Avamar Client for Windows.
5. Use the Avamar Plug-in for SharePoint VSS plug-in to perform regular backups of the entire SharePoint farm.

   The backups include the main WFE server and all back-end servers, such as application servers, other WFE servers, the search server, and database servers.

   NOTE: The SharePoint VSS plug-in backs up only SharePoint farm databases. Other databases on the same server, such as SQL Server system databases, are not included in backups with the SharePoint VSS plug-in.

6. On the main WFE server and each back-end server, use the Windows File System plug-in to perform file system backups and the Windows VSS plug-in to perform BMR backups as described in the *Avamar for Windows Server User Guide*.
7. Use the Avamar Plug-in for SQL Server to perform regular backups of databases that are not included in SharePoint VSS plug-in backups, such as SQL Server system databases. The *Avamar for SQL Server User Guide* provides details.
8. (Optional) Practice disaster recovery of the farm to a virtual environment.

If the SharePoint farm is too large for the amount of extra storage that is required for the test environment, practice with a small farm or stand-alone farm. Starting small also enables you to test proof of concept if you are considering migrating from a physical to a virtual environment.

Performing disaster recovery

Steps

1. Rebuild the SharePoint environment.
2. Reinstall the Avamar software in the SharePoint environment.
3. Restore the SharePoint farm from the Avamar backups.
4. Bring the restored SharePoint servers back online or into production.

Rebuilding the SharePoint environment

Rebuild the SharePoint environment as part of disaster recovery by rebuilding the SharePoint servers that comprise the farm.

Steps

1. Rebuild the database servers:
   a. Perform BMR to recover the operating system, System State, and critical volumes. BMR does not recover noncritical volumes.

      If the SQL Server software is not installed to the critical volume (typically `C:\`), databases may not be restored. Ensure that the Windows File System plug-in has backed up all SQL Server system databases.
   b. Re-create the original volume hierarchy where SQL Server files and databases are installed.
   c. Reinstall the Avamar software on the new machine if any of the following apply:
      - Avamar was installed on a non-critical volume
      - The BMR backup was performed with an older version of Avamar than you are currently using
      - The BMR backup was performed with an older version of Windows than you are currently using

      To reinstall the Avamar software, complete the steps in Reinstalling the Avamar software on page 58 to install the Avamar Client for Windows and the Avamar Plug-in for SharePoint VSS.
   d. If the SQL System databases were installed on a non-critical volume, you must use the Windows File System plug-in to restore SQL Server installation directories, and system databases to their original volumes. Use the option to overwrite all existing files.
   e. Complete the steps in Restoring the SharePoint farm from the Avamar backup on page 59.
2. Ensure that all SQL Servers with SharePoint databases are up and running.
3. Rebuild the SharePoint application and WFE servers:
   a. Perform BMR to recover the operating system, System State, and critical volumes. BMR does not recover noncritical volumes.

      If SharePoint or index files are not installed on the critical `C:\` volume, the files are not restored. Ensure that the Windows File System plug-in has backed up all SharePoint directories that are not installed on the critical `C:\` volume.
   b. Complete the steps in Reinstalling the Avamar software on page 58 to install theAvamar Client for Windows and the Avamar Plug-in for SharePoint VSS.
   c. Restore the file system and volumes with the Windows File System plug-in.
   d. Restore SharePoint installation and index files that are on the critical and noncritical volumes.
   e. Complete the steps in Restoring the SharePoint farm from the Avamar backup on page 59.

Reinstalling the Avamar software

Reinstall the Avamar software in the SharePoint environment after you rebuild the farm.

Steps

1. Install the Avamar Client for Windows on every server in the SharePoint farm.
2. Install the Avamar Plug-in for SharePoint VSS on every server in the SharePoint farm.

If you intend to perform granular level recovery from the SharePoint Administrator Console, then select the option to install the Avamar Plug-in for SharePoint GLR as well as the Avamar Plug-in for SharePoint VSS on the SharePoint Administrator Console.

NOTE: Performing granular level recovery from any other machine prevents you from having to reboot the SharePoint Administrator Console after installation.

3. If you perform granular level recovery, then install ItemPoint software on the Administrator Console or another computer you plan to use for GLR.
4. If you use the Avamar Plug-in for SQL Server to back up SQL Server databases in the environment, then install the plug-in on the database servers.
5. Check `Services.msc` to verify that the SQL Server VSS Writer service is enabled and set to automatic. In some stand-alone installations, the SQL Server VSS Writer service might be in a disabled or stopped state after you install the Avamar Plug-in for SharePoint VSS. Without this service running, backups and recoveries can fail.
6. Deactivate the Avamar clients on each server in the SharePoint farm by clearing the **Activate it** checkbox on the **Client Properties** dialog box, and then invite the clients. The *Avamar Administration Guide* provides details.

Restoring the SharePoint farm from the Avamar backup

Steps

1. Ensure that the following services are running:
   - Volume Shadow Copy
   - SharePoint VSS Writer
   - SharePoint Timer
2. Use the Avamar Plug-in for SharePoint VSS to restore the entire farm from a backup.

   The restore process automatically stops the following services:

   - SharePoint Administration
   - SharePoint Search
   - SharePoint Search Services
   - SharePoint Timer
   - SharePoint Server Search (If SharePoint Server is installed)

Bringing restored servers back online

Bring the SharePoint servers back online after you restore the farm.

Steps

1. Reconfigure IIS settings to accommodate any changes made between the time of the backup and the disaster. Otherwise, IIS settings should not need to be changed.
2. (Optional) Reconfigure alternate access mappings.
3. (Optional) On all WFE servers, redeploy solutions and reactivate features.

A

Plug-in Options

Topics:

- How to set plug-in options
- Backup options
- 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.

Backup options

Backup plug-in options enable you to control backup functionality that is specific to the Avamar Plug-in for SharePoint VSS. You can specify plug-in options for on-demand and scheduled backups.

Table 13. Backup options for the SharePoint VSS plug-in

Option	Description
Store backup on Data Domain	Specifies 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	Specifies the maximum number of streams to use for the backup. The default is 2, and the maximum value is 10. Each stream requires a separate processor.
Advanced options	
Enable debugging messages	Writes maximum information to log files. This option creates large log files.
Group by	For multi-streaming, this option specifies whether to group the backups by **Database** or by **Volume**.
Command line flags	
`--clusternode=` *hostname_of_SQL_Node1(IP_of_SQL_Node1)* `--clusternode=`	Statically defines the network addresses of the back-end SQL nodes.

Table 13. Backup options for the SharePoint VSS plug-in (continued)

Option	Description
hostname_of_SQL_Noden(*IP_of_SQL_Noden*)	
`--debugvss`	Enables VSS debug messages within avvsslib. This option must be used with the `--debug` flag.
`exclude_non_critical_disks`	Excludes noncritical dynamic disks from backup. According to Microsoft best practices, if any dynamic disk is critical, then the entire dynamic disk pack should be treated as critical and included in the backup. Set this flag to `true` to exclude noncritical dynamic disks from the backup. If you use this option, it may be necessary to use `-exclude_non_critical_disks` during the offline disaster recovery. You can specify this option in the **Backup Command Line Options** dialog box, in a scheduled backup dataset definition, or in the `avvss.cmd` file.
`--vss-ignore-missing-windows-files`	When set to `true`, allows the backup to ignore any missing VSS writer files. The backup fails if VSS writers contain files that do not exist on the computer. You can specify this option in the **Backup Command Line Options** dialog box, in a scheduled backup dataset definition, or in the `avvss.cmd` file.

Restore options

Restore plug-in options enable you to control restore functionality specific to performing a standard restore by using the Avamar Plug-in for SharePoint VSS or a granular level recovery by using the Avamar Plug-in for SharePoint GLR.

Restore options for the Avamar Plug-in for SharePoint VSS

The following options are available when you perform a restore using the Avamar Plug-in for SharePoint VSS.

Table 14. Restore options for the SharePoint VSS plug-in

Option	Description
Farm administrator credentials	
Username	Username for an account for the restore that has administrator rights on all SharePoint clients in the farm.
Password	Password for the account that has SharePoint administrator rights.
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 backup 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.

Table 14. Restore options for the SharePoint VSS plug-in (continued)

Option	Description
	• Select **Volume** to create one stream for each volume.
Command line flags	
`target=`*name*	Specifies the restore target. Required for directed restores.
`farm-password=`*password*	Specifies the farm administrator password. Required for restores.
`farm-username=`*domain\username*	Specifies the farm administrator domain and username. Required for restores.

Restore options for the Avamar Plug-in for SharePoint GLR

The following options are available when you perform granular level recovery by using the Avamar Plug-in for SharePoint GLR.

Table 15. Options for the Avamar Plug-in for SharePoint GLR

Option	Description
Amount of time to leave AvFS mounted	Select when to automatically dismount the temporary file system from the SharePoint server that you are using for GLR: • **Dismount after restore completes** • **Dismount after 1 hour of inactivity** • **Dismount after 2 hours of inactivity** The drive dismounts even if the drive is in use. Select a length of time that enables you to perform the granular level recovery.

B

Command Line Interface

Topics:

- Overview of the SharePoint VSS plug-in CLI
- Command reference
- Specifying command line options
- CLI examples

Overview of the SharePoint VSS plug-in CLI

The Avamar Plug-in for SharePoint VSS enables you to use a command line interface (CLI) with the `avmossvss` command instead of Avamar Administrator or the AUI to back up and restore SharePoint data.

When you use the CLI command to perform a backup or restore, specify the command options for the SharePoint 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 Data Domain system.

The `avmossvss` binary is available in the Avamar client installation directory, which is typically `C:\Program Files\avs\bin`.

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 `avmossvss` command enables you to browse the SharePoint VSS plug-in data to backup or restore, perform the backup, or perform the restore.

Synopsis

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

Operations

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

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

NOTE: Granular level recovery through the CLI is not presently supported. Directed restore can only be performed to the computer the command is being run on.

Table 16. Operations for the `avmossvss` command

Operation	Description
`browse`	Returns a list of information about the farm available for backup. The command results appear as standard output in the command window. The following information is displayed: • Farm name

Table 16. Operations for the avmossvss command (continued)

Operation	Description
	• Date • Size • Type
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.
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.

To check whether an operation was successful, echo the error level:

```
echo %ERRORLEVEL%
```

For example, if the echo returns a value of 0, it indicates success. Any other value indicates a failure.

Options

The options that you specify with the avmossvss 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 avmossvss command are general options that are available for multiple operations.

The following option is available for the avmossvss command.

Table 17. Common avmossvss option

Option	Description
--version	Displays the version number of the Avamar Plug-in for SharePoint VSS.

Account options

Account options for the avmossvss command enable you to specify credentials to connect to the Avamar server for backups and restores.

The following account options are available for the avmossvss command.

Table 18. Account options for the avmossvss command

Option	Description
--account=*destination* --path=*destination* --acnt=*destination*	Specifies the Avamar server account path.
--id=*user@domain,hostname*	Specifies the client user name for authentication where:

Table 18. Account options for the avmossvss command (continued)

Option	Description
	• *user* is the username of the registered client. • *domain* is the Avamar domain. • *hostname* is the hostname of the Avamar Plug-in for SharePoint VSS host.
`--password=`*password* `--ap=`*password* `--pswd=`*password*	Specifies the password for `--id`.
`--server=`*IP_address* `--hfsaddr=`*IP_address*	Specifies the Avamar server IP address.

Logging options

Logging options enable you to create a log file for `avmossvss` operations and specify options.

The following logging options are available for the `avmossvss` command.

Table 19. Logging options for the avmossvss command

Option	Description
`--informationals`	Sets the information level for status messages.
`--logfile`	Creates log files in the Avamar `var` directory. On Windows, the directory path is `C:\Program Files\avs\var`.
`--logfile=`*file* `--log`	Specifies the full path and file name of the `avmossvss` plug-in log file. **NOTE:** 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 at the command prompt.
`--noinformationals`	Disables informational messages.
`--nostdout`	Disables output to standard output (stdout).
`--nowarnings`	Disables warning messages.
`--quiet`	Disables both warnings and status messages.

`--verbose`
`--verbose=`*n*
`--v`
	Enables all status and warning messages.
	Use `--verbose` to specify a verbosity level, where *n* is a number from 1 through 6, with 6 being the highest level of verbosity.

Browse options

Browse options for the `avmossvss` command enable you to specify credentials for an account that is authorized to browse available backups.

Table 20. Browse option for the avmossvss command

Option	Description
`--farm-username=`*domain/username*	Specifies the farm administrator username.

Table 20. Browse option for the avmossvss command (continued)

Option	Description
	When the farm administrator's username and password are specified, the actual components and names are displayed. If the credentials are not specified, long numerical GUIDs are displayed.
`--farm-password=`*password*	Specifies the farm administrator password. When the farm administrator's username and password are specified, the actual components and names are displayed. If the credentials are not specified, long numerical GUIDs are displayed.
`--initialbrowse-timeout=`*seconds*	Seconds waiting for an initial browse response before the timeout pop-up appears and command execution terminates. The default value is 60.

Backup options

Backup options for the `avmossvss` 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 `avmossvss` command options are available for the backup operation.

Table 21. Backup options for the avmossvss command

Option	Description
`--clusternode=` *hostname_of_SQL_Node1(IP_of_SQL_Node1)* `--clusternode=` *hostname_of_SQL_Noden(IP_of_SQL_Noden)*	Statically defines the network addresses of the back-end SQL nodes.
`--expires=`*{days | timestamp}*	Specifies the backup expiration date as a number of *days* from the day of the backup or an absolute *timestamp*. Specify *timestamp* by using 24-hour local time zone values conforming to the following syntax: *yyyy-mm-dd hh:mm:ss* You can specify partial date strings. For example, 2014-06 is equivalent to 2014-06-01 00:00:00.
`--path=`*Avamar_domain/SharePoint_WFE_server*	Specifies the Avamar (MCS) domain name, and the SharePoint WFE name.
`--retention-type=`*type*	Specifies one of the following retention types: • `none` • `daily` • `weekly` • `monthly`
`--send-adhoc-request`	Notifies the server that a CLI backup will occur. The backup operation appears in the Avamar activity log. This flag is not required for CLI operations, and is not enabled by default.

Restore options

Restore options for the `avmossvss` 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 `avmossvss` command options are available for the restore operation.

Table 22. Restore options for the `avmossvss` command

Option	Description
`--farm-username=`*domain/username*	Specifies the farm administrator username.
`--farm-password=`*password*	Specifies the farm administrator password.
`--initialbrowse-timeout=`*seconds*	Specifies the number of seconds to wait for a browse response before timing out. The default value is 60 seconds. This value can be increased in slow environments to avoid browse timeouts.
`--overwrite-existing`	Allows overwriting of the existing farm components during restore.
`--target=`*path*	Specifies the target directory path. Required for directed restores.
`--send-adhoc-request`	Notifies the server that a CLI restore will occur. The restore operation appears in the Avamar activity log. This flag is not required for CLI operations, and the flag is not enabled by default.

Help options

The `--help` option displays a list of available operations available for the `avmossvss` command. You can view all help output available for `avmossvss`, or only the help for a specific operation.

The following command displays all help for the `avmossvss` command:

`avmossvss --helpx`

To view only the options for a specific operation, use the `--helpx` and `--operation=`*operation* options together.

The following example provides a list of options for the `backup` operation:

`avmossvss --helpx --operation=backup`

Password encoding

To encrypt a password:

`avtar --encodepassword=`*`password`*

where *password* is the password for the Avamar server.

The system output displays an encrypted password, such as:

`d3a6d7959e46d1b40b4e61b9a4eb7045eb3ec08a86f382c0cb1384e15e1b34ecf1be2510be1795df`

You can use the encrypted password on the command line instead of the regular password to avoid including the password as plain text in a script that automates backups.

Specifying command line options

About this task

The following methods are available for specifying options for the `avmossvss` command:

- Type the individual options at the command prompt.

- List the options in the `avmossvss.cmd` file, which is located in the `C:\Program Files\avs\var` 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 at the command prompt using the `--flagfile=`*path* option, where *path* is the full path and file name of the option file.
- Pass options to the CLI as environment variables. For example, if you set `Instance1=NamedInstance1` in the environment variables, then you can browse the instance by typing the following command:

  `avmossvss --operation=browse %Instance1%`

CLI examples

Review the `avmossvss` command examples for details on how to use options to control browse, backup, and restore behavior.

Example avtar commands

Use the `avtar --backups` command to view a list of available backups and their label numbers for a SharePoint client. For example:

`avtar --id=`*`MCS_username`*` --ap=`*`MCS_user_password`*` --path=`*`/Keith/149ca.dc148.example.com`*` --backups`

Example browse commands

These command examples illustrate how to use options to browse different types of data in client backups with the `avmossvss` command.

The following command specifies the farm name and displays the components and names in the farm as long GUID numbers.

`avmossvss --operation=browse` *farm_name*

The following command specifies the farm administrator credentials with the `--farm-username` and `--farm-password` options to display the SharePoint components and names instead of the GUID numbers.

`avmossvss --operation=browse --farm-username=`*`username`*` --farm-password=`*`farm`*

Example backup commands

For a backup, the MCS user credentials must be supplied by using the --id, --ap, --server, and --path options. When backing up distributed farms (not stand-alone), specify the SharePoint farm credentials using the --farm-username and --farm-password options. The server should not be specified when running the command on the Avamar server that is associated with the client. The ad-hoc functionality is also required for both backup and browse operations.

Performing a full farm backup

About this task

The following command example performs a full backup of a SharePoint farm.

`avmossvss --operation=backup --id=`*MCS_USERNAME*

`--ap=MCS_USER_PASSWORD --server=`*MCS_ADDRESS*

`--farm-username=` *SHAREPOINT_ADMINISTRATOR*

`--farm-password=`*SHAREPOINT_ADMINISTRATOR_PASSWORD*

`--path=`*AVAMAR_DOMAIN_NAME/SHAREPOINT_SERVER_NAME*

--send-adhoc-request

Backing up to a Data Domain system

About this task

The following command specifies to back up to a DDR server by adding the --ddr and -ddr-index=1 options.

NOTE: The number in the -ddr-index=1 option represents the number of addedDDRs. If there is only one DDR attached to the Avamar server, the index value is always 1.

avmossvss --operation=backup --id=*MCS_USERNAME* **-ap=***MCS_USER_PASSWORD*

--server=*MCS_ADDRESS* **--farm--username=***SHAREPOINT_ADMINISTRATOR*

--farm-password=SHAREPOINT_ADMINISTRATOR_PASSWORD

--path=*AVAMAR_DOMAIN_NAME/SHAREPOINT_SERVER_NAME*

--send-adhoc-request --ddr=true --ddr-index=1

Example restore commands

To restore a SharePoint farm with the `avmossvss` command, specify the following options:

- Use the `--id` and `--ap` options to supply the MCS user credentials.
- Use the `--server` option to specify the Avamar server.
- Use the `--path` to specify the SharePoint server.
- Specify the SharePoint farm credentials using the `--farm-username` and `--farm-password` options.
- The `--send-adhoc-request` option is also required for both backup and browse operations.

Restoring a SharePoint database

About this task

The following example command restores the `Sales_EMEA` database:

```
avmossvss --operation=restore Farm/154QC/sql/Sales_EMEA
--id=MCS_username --ap=MCS_user_password
--server=MCS_IP_address
--path=/CorpMoss/149ca.dc148.example.com
--target=C:\Restore
```

When you perform a restore with the `avmossvss` command, note the following:

- You do not need to specify the file name extension when you specify the database to restore. For example, **avmossvss --operation=restore Farm/154QC/sql/Sales_EMEA** restores `Sales_EMEA.mdf` and `Sales_EME.ldf`.
- To restore a database in a SQL Server cluster, include the instance name in the path: `Farm/MACHINE/INSTANCE/DATABASE`.
- Path names are case-sensitive. If the specified case does not match, the backup is not located and restore fails.

Restoring a SharePoint database

About this task

The following example command restores a SharePoint farm:

```
avmossvss --operation=restore --id=MCS_username
--ap=MCS_user_password --server=MCS_IP_address
--path=farm_path/account
--farm-username=SharePoint_administrator
--farm-password=SharePoint_administrator_password
--send-adhoc-request --target=path
```

C

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 Sharepoint and SharepointAlwayson plugins.

Synopsis

```
av_cluster_config_console - -plugin= {Sharepoint|SharepointAlwayson} - -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 SharepointAlwayson.

Table 23. SharepointAlwayson Plugin

Plugin	Description
Sharepoint	Configures the SQL failover cluster environment for Avamar Sharepoint backups. The list of supported operations for the Sharepoint plugin includes the following: • Configure — To configure a new cluster client on all SQL fail over back-end nodes of Sharepoint. • Remove — To remove the existing cluster client on all SQL fail over back-end nodes of Sharepoint. • View — To view all existing cluster client configuration of a SQL fail over back-end nodes of Sharepoint.

Table 23. SharepointAlwayson Plugin (continued)

Plugin	Description
	To get the list of supported operations for this plugin, use the following command: `av_cluster_config_console --help --plugin="Sharepoint"`
SharepointAlwayson	Configures the back-end SQL Alwayson environment for Avamar Sharepoint backups. The list of supported operations for the SharepointAlwayson plugin includes the following: ● Configure — To configure a new cluster client on all SQL alwayson back-end nodes of Sharepoint. ● Remove — To remove the existing cluster client on all SQL alwayson back-end nodes of Sharepoint. ● View — To view all existing cluster client configuration of a SQL alwayson back-end nodes of Sharepoint. To get the list of supported operations for this plugin, use the following command: `av_cluster_config_console --help --plugin="SharepointAlwayson"`

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.
View	View all the existing cluster client on all the nodes for the specified plugin.

Sharepoint plugin configure options

The configure option enables you to control the configure functionality for SQL fail over cluster instance for Avamar backups.

The following table lists all of the mandatory and optional options available for the Sharepoint plugin and configure operation.

To get the list of options available for the Sharepoint plugin and configure operation, type the following command:

`av_cluster_config_console --help --plugin="Sharepoint" --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. Sharepoint 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 tool cannot configure the environment.
clusterservice	Name of the SQL fail over instance cluster resource group name. To get the list of available cluster resource group names use the `view` command.

Table 25. Sharepoint Configure Options (continued)

Option	Description
	`av_cluster_config_console.exe --plugin="Sharepoint" --operation="view"`
[OPTIONAL]sharedvolume	Shared volume for the cluster client. If the fail over instance has a single shared disk then the tool automatically detects the disk and uses it as a shared volume for the configuration. If multiple shared volumes are present, this field is mandatory.
[OPTIONAL]ipversion	IP version that is used on the nodes. If this option is not specified, then IPV4 is used as the default value. IPV4 is supported for the configurations. Only IPV4 is supported for this release.
[OPTIONAL]mcsport	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]bringonline	Whether to bring the Avamar cluster client online and register with Avamar server. Valid values are "TRUE" or "FALSE". The default value is "TRUE".
[OPTIONAL]clientdomain	Specifies the Avamar domain that the cluster client is associated with. The default value is /clients.
[OPTIONAL]vardir	Avamar cluster client `var` directory. This directory should only reside in the fail over instance shared disk. If not provided by default, the directory is created under `SharedVolume:\Program Files\Backup Agents for Cluster Groups\ClusterClient\var`.

Sharepoint plugin remove options

The Sharepoint plugin remove option removes the existing SQL fail over Avamar cluster client configuration.

The following table lists all of the optional and mandatory options for the Sharepoint plugin and the remove operation.

To get the list of options available for the Sharepoint plugin and remove operation, type the following command:

`av_cluster_config_console --help --plugin="Sharepoint" --operation="remove"`

Table 26. Sharepoint remove option

Option	Description
[OPTIONAL]clusterservice	SQL fail over instance cluster resource name. This argument is optional if only a single SQL fail over instance is configured. The tool automatically gets the name of the resource and removes the configuration. If multiple SQL fail over instances are configured, this argument is mandatory. To get the list of existing SQL fail over instance cluster resource names, type the following command: **`av_cluster_config_console.exe --plugin="Sharepoint" --operation="view"`**

SharepointAlwayson plugin configure options

The configure option for the SharepointAlwayson plugin enables you to configure SQLAlwayson groups for Avamar backups.

The following table lists the available optional and mandatory options for the SharepointAlwayson plugin and configure operation.

To get the list of options available for the SharepointAlwayson plugin and configure operation, type the following command:

```
av_cluster_config_console.exe --plugin="SharepointAlwayson" --operation="configure" --help
```

Table 27. SharepointAlwayson configure options

Option	Description
mcsaddr	Avamar server address. You can provide either the FQDN name of the server or the IP address.
vardir	Avamar cluster var directory. It can be a shared path or a local path.
aongrpname	Name of the alwayson group to be configured. To get the list of alwayson groups available, use the `view` command. `av_cluster_config_console.exe --plugin="SharepointAlwayson" --operation="view"`
[OPTIONAL]ipversion	IP version that is being used on the nodes. If this option is not specified, then IPV4 is used as the default value. IPV4 is supported for the configurations.
[OPTIONAL]mcsport	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]bringonline	Whether to bring the Avamar cluster client online and register 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.
[OPTIONAL]sysdir	Avamar cluster sys directory. This is an optional parameter. If this option is not specified, then sysdir is created under the parent directory of vardir.

SharepointAlwayson plugin remove options

The remove option for the SharepointAlwayson plugin enables you to remove existing SQL alwayson groups that are configured in the Avamar cluster client environment.

The following table lists the available optional and mandatory options for the SharepointAlwayson plugin and remove operation.

To get the list of options available for the SharepointAlwayson plugin and remove operation, type the following command:

```
av_cluster_config_console.exe --plugin="SharepointAlwayson" --operation="remove" --help
```

Table 28. SharepointAlwayson remove options

Option	Description
[OPTIONAL]aongrpname	Name of the SQL Alwayson group to be removed. This is optional if only a single SQL Alwayson group is configured in the environment. This option is mandatory if multiple SQL Alwayson groups are configured. `av_cluster_config_console.exe --plugin="SharepointAlwayson" --operation="view"`

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.

View list of supported plugins and operations

The following command returns a list of supported plugins and lists the commands and their usage.

```
av_cluster_config_console.exe --help
```

View list of supported operations for the Sharepoint plugin

The following command returns the list of supported operations for the Sharepoint plugin.

```
av_cluster_config_console.exe --help --plugin="Sharepoint"
```

View list of available options for configure operation for Sharepoint plugin

The following command returns the list of available options for the configure operation for the Sharepoint plugin.

```
av_cluster_config_console.exe --help --plugin="Sharepoint" --operation="configure
```

View list of available options for remove operation for Sharepoint plugin

The following command returns the list of available options for the remove operation for the Sharepoint plugin.

```
av_cluster_config_console.exe --help --plugin="Sharepoint" --operation="remove"
```

Configure new cluster client on all back-end SQL fail over instances nodes of Sharepoint for Avamar

The following command configures the new cluster client on all nodes for a SQL fail over instance back-end nodes of Sharepoint.

```
av_cluster_config_console.exe --plugin=Sharepoint --operation=configure --
mcsaddr="10.31.196.222" --sysdir="C:\avsys\etc" --clusterservice="SQL Server
(FINSTANCE2)" --sharedvolume="H"
```

Remove existing cluster client on all back-end SQL fail over instance nodes of Sharepoint for Avamar

The following command removes the existing cluster client on all nodes for a SQL fail over instance nodes of Sharepoint.

```
av_cluster_config_console.exe --plugin=Sharepoint --operation=remove --
clusterservice="SQL Server (FINSTANCE2)"
```

View the existing cluster client information for the Sharepoint fail over configuration

The following command displays the existing cluster client configuration for all the available SQL fail over instances of Sharepoint.

```
av_cluster_config_console.exe --plugin=Sharepoint --operation=view
```

View list of supported operations for SharepointAlwayson plugin

The following command returns the list of supported operations for the SharepointAlwayson plugin.

```
av_cluster_config_console.exe --help --plugin=" SharepointAlwayson "
```

View list of available options for the configure operation for SharepointAlwayson plugin

The following command returns the list of available options for the configure operation for the Sharepoint plugin.

```
av_cluster_config_console.exe --help --plugin=" SharepointAlwayson " --
operation="configure"
```

View list of available options for the remove operation for SharepointAlwayson plugin

The following command returns the list of available options for the remove operation for the Sharepoint plugin.

```
av_cluster_config_console.exe --help --plugin=" SharepointAlwayson " --operation="remove"
```

Configure new cluster client on all back-end always on group nodes of Sharepoint for Avamar

The following command configures the new cluster client on all back-end SQLAlwayson group nodes of Sharepoint. The tool does not try to bring the resources online because **bringonline** is false. Hence, you have to manually start the created resources and the cluster client will be registered under "/AgGroups" domain in Avmar server.

```
av_cluster_config_console.exe --plugin=sharepointalwayson --operation=configure --
mcsaddr="10.31.197.22" --vardir="\\node1\sharevar" --aongrpname="Grp1" --clientdomain="/
AgGroups" --bringonline="false"
```

Remove the existing cluster client on all nodes for an SharepointAlwayson fail over instance for Avamar

The following command removes the existing cluster client on all nodes for an existing SharepointAlwayson group.

```
av_cluster_config_console.exe --plugin=SharepointAlwayson --operation=remove
```

View the existing cluster client information for the Sharepoint Alwayson configuration

The following command displays the existing cluster client configuration for all the available Sharepoint Alwayson groups.

```
av_cluster_config_console.exe --plugin=SharepointAlwayson --operation=view
```

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Troubleshooting

Topics:

- Log files
- SharePoint command line interfaces
- Configuration problems and solutions
- Backup problems and solutions
- Restore problems and solutions

Log files

Both Avamar and Windows log files can be useful for troubleshooting any problems that occur.

The Windows Application Event Log is a Windows log file for monitoring Windows-related activities.

Avamar log files capture Avamar, GLR, and service events. The files are located in the `var` directory, typically `C:\Program Files\avs\var`.

To generate Avamar log files, add a command file with the flags in the `var` directory, typically `C:\Program Files\avs\var` before you perform an operation. In the command file, add debugging flags.

The following table describes each Avamar log file, the associated command file, and debugging flags.

Table 29. Avamar log files

Log file	Description	Command file	Debugging flags
`av_cluster_config_wizard.log`	Cluster Configuration Wizard log for SQL clusters	`av_cluster_config_wizard.cmd`	`--debug`
`avagent.log`	Avamar agent log	`avagent.cmd`	`--debug`
`avmossglr.log`	GLR log that contains trace and debugging information for GLR creation, mount, browse, and restore.	`avmossglr.cmd`	`--debug`
`avmossglrsvc.log`	GLR service log that contains trace and debugging information for GLR creation, mount, browse, and restore.	`avmossglrsvc.cmd`	`--debug`

`avmossvss.log`	SharePoint VSS plug-in log	`avmoss.cmd`	`--debug`
			`--debugvss`
			`--logfile="c:\somefile.txt"`
			`--subprocesstimeoutsecs=300`
			`--subworkorder-timeout=5`
			`--remotebrowse-timeout=300`
			`--writerid={Writer_GUID}`

Table 29. Avamar log files (continued)

Log file	Description	Command file	Debugging flags
`axionfs.log`	Contains trace and debug information for AvFS file system calls.	`Axionfs.cmd`	`--x19=65536`, used with `--debug` to trace AvFS I/O calls `--x19=262144` , used with `--debug` to trace AvFS I/O calls `--x19=327680`, used with `--debug` to trace AvFS I/O and directory enumeration calls

SharePoint command line interfaces

Command line interfaces are available for some SharePoint features and operations. These tools and features may be useful for troubleshooting SharePoint interactions with Avamar. MSDN, TechNet, and SharePoint online help provide extensive documentation for these tools.

The references that are listed in the following table are suggested starting points and are subject to change by Microsoft.

Table 30. Microsoft SharePoint command line tools

SharePoint tool	Description	Keywords for Microsoft TechNet search
`stsadm`	SharePoint command line tool available in SharePoint 2013, 2016, and 2019	Stsadm command line tool
Windows PowerShell	Command line tool available in SharePoint 2013 and later	Windows PowerShell for SharePoint

Configuration problems and solutions

The following section describes a common configuration problem and its solution.

Issues after upgrade to Windows SharePoint Services 3.0 SP2

When you upgrade from Windows SharePoint Services 3.0 or 3.0 SP1 to 3.0 SP2 on a system with the Avamar Plug-in for SharePoint VSS, the SharePoint topology does not display correctly in Avamar Administrator. This issue may prevent you from backing up a SharePoint farm.

Microsoft knowledgebase article 913384 on the Microsoft website provides detailed instructions for resolving these issues, which might include the following actions:

- Removing .NET frameworks later than 2.0
- Applying the patch that is discussed in the article before reapplying updated framework software

Cluster Shared Volumes not supported

The Avamar Plug-in for SharePoint VSS does not support SQL Cluster Shared Volumes (CSV).

Backup problems and solutions

The following topics describe common backup problems and solutions.

Backup of multiple Search Service Applications fails

SharePoint supports configurations that have multiple Search Service Applications, with some components hosted on separate web front ends.

However, backup of a farm with this configuration may cause an error of not running the following writers:

- OSearch16(SharePoint 2019)
- OSearch16 (SharePoint 2016)
- OSearch15 (SharePoint 2013)

When this error occurs, follow the Microsoft guidelines for search topology and configuration that is described in the following Microsoft TechNet articles:

- Change the default search topology:
  - SharePoint Server 2013 - http://technet.microsoft.com/en-us/library/jj862356.aspx
  - SharePoint Server 2013 - https://technet.microsoft.com/en-us/library/gg502597(v=office.16).aspx
- Create and configure a Search service application:
  - SharePoint Server 2019 - https://technet.microsoft.com/en-us/library/gg502597(v=office.16).aspx
  - SharePoint Server 2016 - https://technet.microsoft.com/en-us/library/gg502597(v=office.16).aspx
  - SharePoint Server 2013 - http://technet.microsoft.com/en-us/library/gg502597.aspx

Backup limitations

The following limitations apply when using the Avamar Plug-in for SharePoint VSS to back up a SharePoint environment:

- Backups and restores of individual websites, lists, or list items must be a part of the backup or restore of the parent Content Database.
- The configuration database or the Central Administration content database of a SharePoint farm can only be backed up as part of the backup or restore of the entire farm.

  These databases are special databases that must be backed up or restored with everything (all content databases). A backup of these components provides a snapshot that can be useful for troubleshooting. For instance, the backup can be used with SQL Server tools to compare the present state of the components.

- The Avamar Plug-in for SharePoint VSS cannot be used to back up a SharePoint farm to tape.
- The Avamar Plug-in for SharePoint VSS cannot be used to back up an IIS metabase.
- The Avamar Plug-in for SharePoint VSS cannot be used to back up Registry keys or files on front-end servers.

  This content includes files that are located outside any content database, such as certain master pages, .ascx files, web.config files, and other configuration files. However, this content can be backed up with the Avamar Client for Windows, which includes them in a full Windows Server backup, or with the WSS development kit.

Avamar Plug-in for SharePoint GLR is for recovery only

The installed Avamar Plug-in for SharePoint GLR appears in the list of plug-ins when you browse for backups. The Avamar Plug-in for SharePoint GLR cannot be selected because this option is for recovery only, and uses backups that are created with the Windows SharePoint VSS plug-in to enable granular level recovery.

Backup can fail when farm servers have multiple NICs or IP addresses

A backup can fail when WFE servers or back-end servers have multiple NICs, multiple IP addresses, or both. Network load balancing can cause the back-end client to see the WFE server's secondary IP address instead of the primary IP address. In this case, Avamar might report an error similar to the following:

```
Client refused browse request. 10007 Unable to connect to the back-end client
'<MACHINENAME>', error code: 2 Please ensure that the Back-end backup agent is running.
```

To resolve this issue, use the Windows command line to add an avagent.cmd file and persistent routes to both clients:

1. Add an avagent.cmd file with **`--netbind=<`***IP address of primary NIC interface>* on both clients.
2. On both clients, use the Windows command line to add persistent routes that use only the primary NIC for outgoing traffic that is routed to the Avamar system.

Backups fail when files are available through symbolic links or directory junctions

Backups with the SharePoint VSS plug-in fail if the path to SharePoint files includes symbolic links (symlinks) or directory junctions. Do not store SharePoint configuration or database files where you have access through a symlink or directory junction.

SharePoint VSS backup fails due to Data Domain token authentication issue

When backing up for SharePoint Farm environment where the back-end SQL nodes are in Always-On or Cluster configuration and the Data Domain is enabled with token authentication, the following error may occur:

`DDR result code: 5075, desc: the user has insufficient access rights`

To resolve this issue, include the `clusternode` option in the `avmossvss.cmd` file:

1. Create a file named `avmossvss.cmd` under the SharePoint Node (WFE) directory `C:\Program Files\avs\var`.
2. Using a text editor, include the following lines in the file:

```
--clusternode=hostname_of_SQL_Node1(IP_of_SQL_Node1)
--clusternode=hostname_of_SQL_Node2(IP_of_SQL_Node2)
```

3. Save and close the file.

Restore problems and solutions

You can use the appropriate troubleshooting guidelines to resolve restore issues.

Problem when selecting only SharePoint Content Index Catalog database for restore

Restore fails in SharePoint 2013 and later when you select only one SharePoint Content Index Catalog database for restore and you use all default restore options.

To work around this issue, select additional databases for restore when selecting the Content Index Catalog database.

Restore of SQL databases from multiple SQL cluster groups instances on the same physical computer

Restore fails when you try to restore a SharePoint farm with a SQL Server failover cluster back-end, and more than one cluster group is actively running on a single physical machine. Only one cluster group instance is successfully restored, regardless of whether databases in the other instances are restored. Web navigation or requests for content in those databases result in `File Not Found` or `Forbidden` errors.

To resolve the issues, configure the cluster with no more than one cluster group actively running one single physical machine at a time.

Restore over locked files incorrectly appears to be successful

When you try to perform a redirected restore over locked files, such as restoring over database files, the restore shows that it has completed successfully. However, the files are not restored.

Directed recovery to flat files with an IPv4 backend fail

Redirected restores to flat files with an IPv4 backend fail with a "Writer- file map is empty! No data to parse!" error. NOTE: IPv4 backend or alias configured for browse/backup/Full Farm DR restores work correctly. Suggested workaround: Use SQL aliases in which the IP addresses point to real hostnames.

Directed recovery of Sharepoint components

Directed recovery is only supported for SQL databases that have been configured on the Sharepoint application. Directed recovery for other components is not supported.

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ItemPoint for Microsoft SharePoint Server Notes

Topics:

- Supported environments for ItemPoint for Microsoft SharePoint Server
- Installing ItemPoint Agent for Content Transfer Service
- Limitations for ItemPoint for Microsoft SharePoint Server

Supported environments for ItemPoint for Microsoft SharePoint Server

The following table lists the supported environments for ItemPoint for Microsoft SharePoint Server:

Table 31. ItemPoint for Microsoft SharePoint Server components

Component	Requirement
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 for Microsoft SharePoint Server can only be run by users with administrative privileges and in administrative mode.
Microsoft Office SharePoint Server/Microsoft SQL Server	Source Data: ItemPoint for Microsoft SharePoint Server can open: ● Microsoft Office SharePoint Server 2013 up to SP1 data stored on: ○ Microsoft SQL Server 2008 R2 up to SP2 ○ Microsoft SQL Server 2012 up to SP1 ○ Microsoft SQL Server 2014 ● Microsoft Office SharePoint Server 2016 data that is stored on: ○ Microsoft SQL Server 2014 ○ Microsoft SQL Server 2016 ○ Microsoft SQL Server 2017 ● Microsoft Office SharePoint Server 2019 data that is stored on: ○ Microsoft SQL Server 2016 ○ Microsoft SQL Server 2017

Table 31. ItemPoint for Microsoft SharePoint Server components (continued)

Component	Requirement
	Target Servers: ItemPoint for Microsoft SharePoint Server can connect to the following target servers: ● Microsoft Office SharePoint Server 2013 through SP1 ● Microsoft Office SharePoint Server 2016 ● Microsoft Office SharePoint Server 2019 Remote Blob Stores (RBSs): ● FILESTREAM Provider ● Metalogix StoragePoint Provider (v4.2 1320 or higher) ● StorSimple SharePoint Database Optimizer
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 To fully operate ItemPoint for Microsoft SharePoint Server, you must ensure that the source files are on storage. Otherwise, tries to open a source database produces an error message.

Installing ItemPoint Agent for Content Transfer Service

To restore content using ItemPoint for Microsoft SharePoint Server, you must first install the ItemPoint Agent for Content Transfer Service (ACTS) on each Microsoft SharePoint Server you intend to use as a target.

Prerequisites

To install ItemPoint Agent for Content Transfer Service (ACTS), use the following features:

- Administrative privileges
- SharePoint Farm Administrator credentials

Steps

1. Log on to the Microsoft SharePoint server using Administrative privileges.
2. Run the ItemPoint Agent for Content Transfer Service installation wizard, `SetupACTS.exe`.
3. Once you reach the **Logon Information** page, enter the **User Name** and **Password** for the SharePoint Farm Administrator User who runs ACTS. The User Name should be in the format DOMAIN\Username.
4. Once you reach the Agent for Content Service Setting page, enter the following:
   - In the **Port Number** field, use the default value or enter a different available port number.

     NOTE: To ensure correct operation of ACTS and any ItemPoint for Microsoft SharePoint Server clients, firewall solutions must be configured to allow communication on the TCP port that ACTS is configured to use.

     NOTE: The Temporary File Location path is used during the copy process. To perform this task, ensure that there is sufficient space to the amount of data being restored in a single operation.

   For further information about operating the ACTS, refer to the ItemPoint for Microsoft SharePoint Server User Guide.

Limitations for ItemPoint for Microsoft SharePoint Server

ItemPoint for Microsoft SharePoint Server can copy Microsoft Office SharePoint Server 2013 (2013 Experience) data to a Microsoft Office SharePoint Server 2013 with the 2013 Experience only. Items and Folders only are supported when copying SharePoint 2013 (2010 Experience) data to SharePoint 2013 system with the 2013 Experience. Copying lists, sites, and site collections are not supported.

ItemPoint for Microsoft SharePoint Server can copy Microsoft Office SharePoint Server 2016 data to a Microsoft Office SharePoint Server 2016 only.

When copying a Microsoft SharePoint 2013 Site with a 2010 Experience to a Microsoft SharePoint 2013 Site with a 2013 Experience, the resulting Site on the target Server displays errors. Upgrading the 2010 Experience Site on the Source to a 2013 Experience before attempting the copy to the 2013 Experience target avoids the errors. Copying from a Microsoft SharePoint 2013 Site with a 2010 Experience source to a Microsoft SharePoint 2013 Site with a 2010 Experience target, and then upgrading the target to a Microsoft SharePoint 2013 Experience also avoids the errors.

After restoring content from a source location, it is recommended that you use the Copy Progress dialog box to verify the links, security settings, and Web Parts on the target server.

The following Microsoft SharePoint 2013 site collection templates are not supported:

- eDiscovery Case Site Template
- Developer Site Template
- Project Site Template
- Community Site Template
- Community Portal Template
- Product Catalog Template

The following Microsoft SharePoint 2016 site collection templates are not supported:

- eDiscovery Portal Site Template
- In Place Hold Policy Center
- Point Publishing Hub
- Point Publishing Topic
- Microsoft Project Site

When copying a Microsoft SharePoint 2013 site collection with the Enterprise Search Center, Enterprise Wiki, Business Intelligence Center, or Publishing Portal site collection templates to a new site collection, the site displays an error in the web page after the copy is completed.

When copying a Microsoft SharePoint 2013 site or site collection with the Project Functionality feature, the feature is not enabled on the target.

When copying a Microsoft SharePoint 2013 site or site collection with the Site Notebook feature, the feature is not enabled on the target.

When copying a Microsoft SharePoint 2013 blog site to the target, the posts list may switch from like ratings to star ratings.

When copying a Microsoft SharePoint 2013 site or site collection with the BICenterSampleData hidden feature, the feature is not enabled on the target.

When copying a Microsoft SharePoint site or site collection with the GBWProvision hidden feature, the feature is not enabled on the target.

When copying a site collection with the community feature that is enabled as the SharePoint farm account, an extra System Account user may appear in the Community Members list. To resolve this issue, edit the list and remove the extra entry.

When copying a site or site collection, any inactive users become active users in the target.

When copying Tasks with multiple versions, the Predecessors property that is displayed in the version history may be incorrect.

When copying an Image list, picture thumbnails are not displayed.

When the Record Center feature is on, thumbnails for some copied items may not be displayed.

The Attachment icon is not displayed for the default view when copying a project tasks item or list.

Fast site collection creation is not supported. Sites masters are hidden in the tree view.

Fields from list templates must exist on both the source and target to be copied.