TECHNICAL NOTE

Performing SharePoint Granular Recovery with EMC® Avamar®
for SharePoint VSS and Ontrack PowerControls Technical Notes
EMC® Avamar®
v6.0

Technical Note

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This technical note describes how to perform granular recovery of Microsoft SharePoint
items by using EMC Avamar release 6.0 for SharePoint VSS and the third-party software
Ontrack PowerControls. Topics include:

EMC²

Revision History

Table 1 on page 4 lists the revision history of this document.

Table 1 Revision History

Revision	Date	Description of added or changed sections
A02	December 15, 2011	Updated Table 6 on page 23- Updated the insructions for how to receive an evaluation key or order Ontrack PowerControls.
A01	September 29, 2011	First release of this document.

Introduction

With the combination of the Avamar plug-in for SharePoint VSS Granular Level Recovery (GLR) feature and the separate purchase of third-party software such as Ontrack PowerControls, you can restore content at the site to item or file level from an Avamar backup of the SharePoint farm. This granular level restore allows you to significantly reduce time and hardware resources by only moving selected items, without restoring entire databases, and without directly overwriting existing content on a production SharePoint server. This functionality is compatible with SharePoint 2007 SP2, SharePoint 2010, and SharePoint 2010 SP1.

Before you perform GLR, you should familiarize yourself with the requirements, installation, and features of the specific components that are required in addition to the Avamar for Windows client and the Avamar plug-in for SharePoint VSS.

Related information

The following resources provide additional information about the Avamar plug-in for SharePoint VSS and Ontrack PowerControls.

EMC documentation

The following guides provide additional information about the Avamar products described in this paper:

Avamar 6.0 for Windows Server Guide describes how to install, configure, and use the Windows client, which is required for the SharePoint VSS client.

Avamar 6.0 for SharePoint VSS Guide describes how to install, configure, administer, and use the Avamar client for SharePoint VSS. This guide also provides additional information about farms, types of backup and recovery, and installation.

Avamar 6.0 Release Notes provides information about new features and functions as well as known issues. These release notes are updated on an ongoing basis to address known issues. These release notes might also be updated with information specific to known issues with SharePoint VSS or using SharePoint GLR with Ontrack Power Controls.

Kroll documentation

For Ontrack PowerControls, visit the Kroll website: http://www.krollontrack.com.

In this paper

The following table lists the sections in this guide that will help you prepare for using GLR:

Table 2 Granular level recovery information in this paper

Section	Description
"Granular level recovery benefits" on page 6	Includes: • Overview of the end-to-end process using the Avamar plug-in for Windows SharePoint GLR and Ontrack PowerControls together • Illustrates the GLR process; diagram includes information flow and recovery roles of the machines
"Architecture" on page 8	Describes the SharePoint farm topology and integration with the Avamar grid, including: • SharePoint farm server roles • Standalone SharePoint farms • Distributed SharePoint farms • Avamar and Ontrack PowerControl components
"Avamar installation" on page 13	Provides: • Hardware requirements including memory, database size, third-party recovery tool, and Avamar Virtual Drive requirements • Software requirements • Avamar Windows Client installation procedure • Avamar for SharePoint VSS plug-in with GLR option installation procedure
"Ontrack PowerControls installation" on page 21	Describes Ontrack PowerControl licensing, purchasing, and installation tasks.
"Backup" on page 24	Describes: • Backup data flow in standalone and distributed farms • Full backup procedures
"Understanding the GLR Process" on page 29	Describes: • Restoring the backup using the Avamar plug-in for Windows SharePoint GLR and mounting the Avamar Virtual Drive for GLR. • Browsing and selecting the actual items for recovery from the Avamar Virtual Drive using Ontrack PowerControls, a separately purchased third-party recovery tool.
"Troubleshooting" on page 39	Describes problems that might occur and suggests solutions.

Granular level recovery benefits

Individual databases in real-world use can easily range from hundreds of gigabytes to several terabytes. A standard recovery allows you to recover databases or entire farms but does not allow you to select and granularly restore files, objects, or items. Recovering entire farms and databases to restore individual SharePoint items can require significant time and resources:

◆ Time, network, and processors, to copy the backup set to the recovery location.

◆ Disk space to stage and/or store the recovered data.

◆ Hardware resources to open the restored databases and then locate the items to restore.

Additionally, if the data is restored to the original farm or a folder on the original server, this process can affect SharePoint performance.
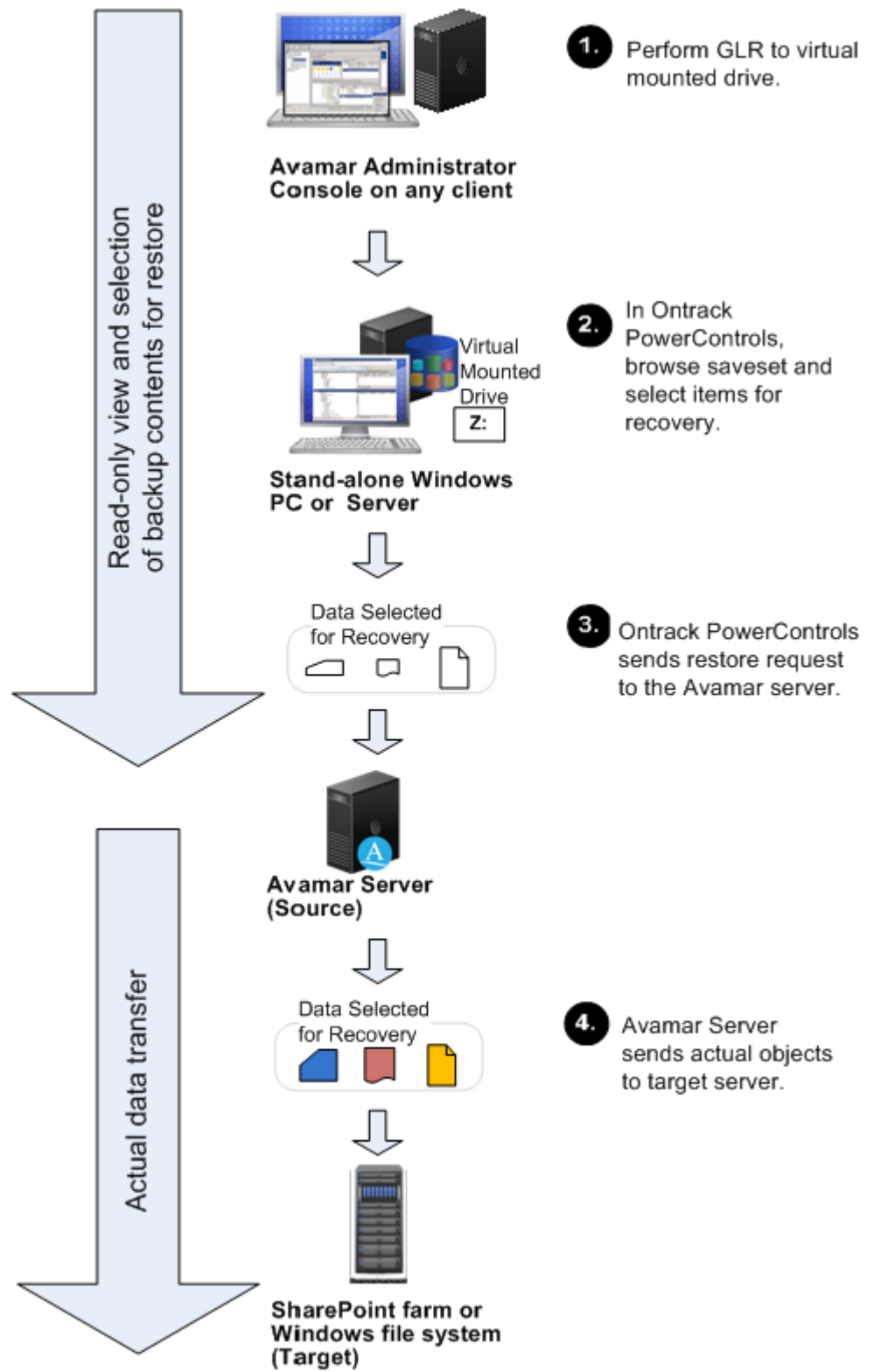
Avamar Granular Level Recovery (GLR), used with an optional, separately purchased third-party recovery tool like Ontrack PowerControls, can significantly reduce the time, resources, and space needed to recover individual items, files, or folders. With the Windows SharePoint GLR feature, the backup dataset is mounted to a virtual drive. The virtual drive allows you to browse the contents of the backup without physically moving any files, folders, or databases. It only takes Avamar a very short time (typically less than a minute) to "recover" the contents to the mounted virtual drive.

Note: Ontrack PowerControls is available for resale through the EMC Select program. It can be ordered from within the EMC ordering system. The Avamar ordering flow on Direct Express and Channel Express provides the option of selecting Ontrack PowerControls. For details on the software, go to the Ontrack landing page on the EMC online support website at http:// Powerlink.EMC.com and select **Home › Products › EMC Select › Kroll Ontrack**.

With these tools, Avamar only has to copy and move the items you want to restore, not entire databases or farms:

1. In Avamar Administrator:

   a. Locate the backup that contains the items you want to restore.

   b. Perform the restore to create a virtual drive.

2. Open Ontrack PowerControls. The recovery wizard prompts you for the location of the mounted virtual drive. In Ontrack PowerControls, locate and select the items you want to restore.

3. Ontrack PowerControls sends your request to the Avamar Server to restore only the items you selected. Up to this point, you have only been viewing a virtual mounted drive - no databases, items, files, or objects have been moved.

4. The Avamar Server receives the restore request and restores the selected items to the alternate location (farm or server). It is at this step in the process that actual files are copied and transferred. Since the dataset actually retrieved is limited to the items you want, and not a complete database or farm, the impact on resources - memory, network, processor, disk space, and SharePoint performance - is considerably reduced.

The following figure illustrates the GLR process.

Read-only view and selection of backup contents for restore

Actual data transfer

Avamar Administrator Console on any client

1. Perform GLR to virtual mounted drive.

Stand-alone Windows PC or Server

Virtual Mounted Drive Z:

2. In Ontrack PowerControls, browse saveset and select items for recovery.

Data Selected for Recovery

3. Ontrack PowerControls sends restore request to the Avamar server.

Avamar Server (Source)

Data Selected for Recovery

4. Avamar Server sends actual objects to target server.

SharePoint farm or Windows file system (Target)

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Architecture

To properly set up and use GLR, it is important to understand the relationship between Microsoft SharePoint farms, Avamar components, and Ontrack PowerControls components. The following topics describe and illustrate these relationships.

Microsoft SharePoint topology

SharePoint servers are organized as *farms.* 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 scales to all farm sizes. The following figure shows the topologies of small, medium, and large distributed farms and the Avamar components installed on each machine by SharePoint server roles.
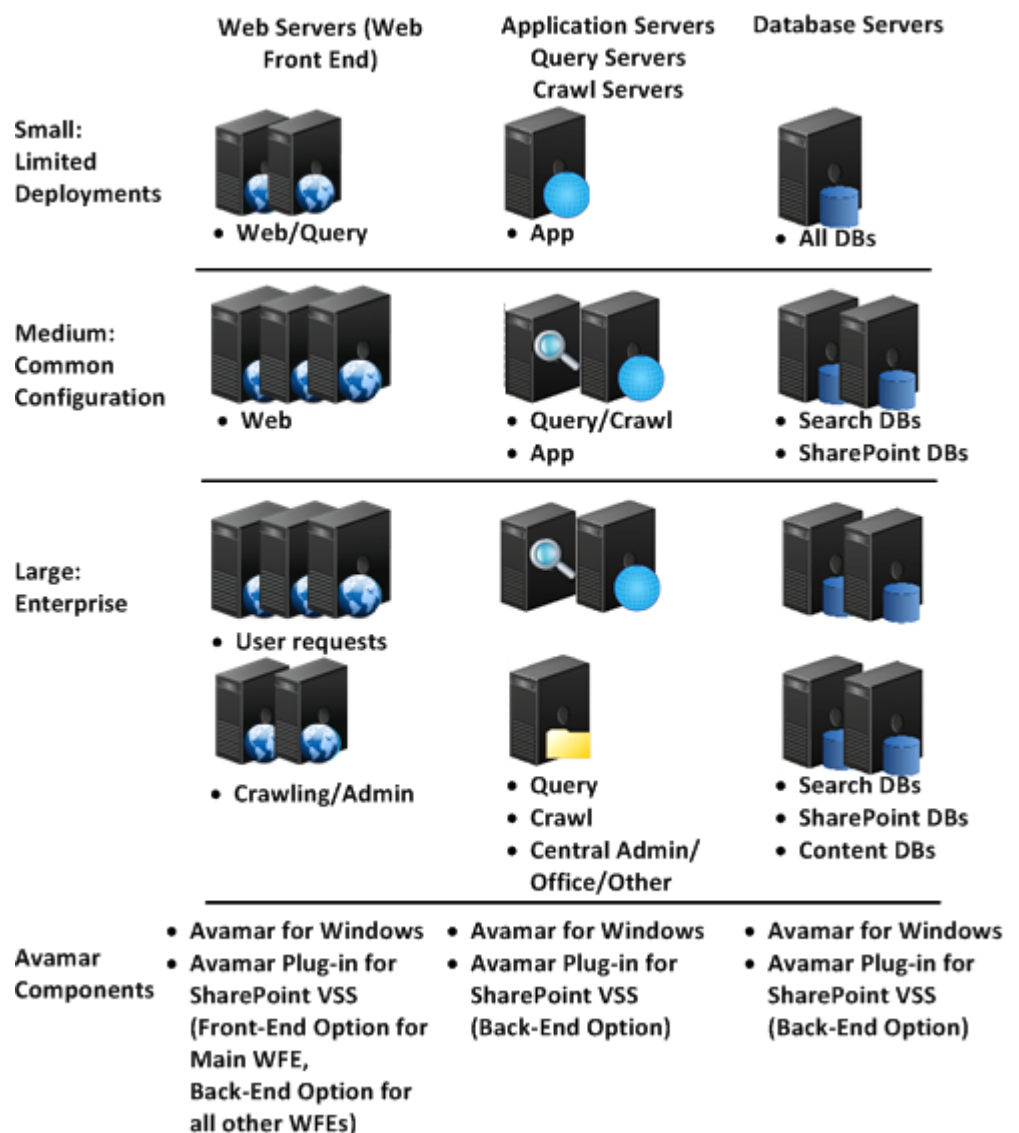
SharePoint server roles

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 installed, the services it runs, and its location within a farm.

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

Table 3 SharePoint server roles

Server type	Role
Web server	Also called a Web Front-End (WFE) server, the web server hosts all web pages, web parts, and web services used when the server farm receives a request for processing from the end user.
Application server	The application server hosts the service applications running in the farm, such as Visio services, Forms service, Excel calculations services, and more.
Query server	The query server is responsible for querying the index, finding the matching content, and fetching content back to the Web servers for presentation to users.
Crawl or index server	The crawl or index server crawls the content sources and propagates the results to the query servers. The crawl server uses a crawl database in SQL Server to store the URLs of all sources crawled.
Database server	The database server is a SQL Server that stores most of the data associated with a SharePoint 2010 implementation, including configuration settings, administration information, service applications data, and user content.

Avamar GLR in a SharePoint environment

Avamar provides complete protection for a SharePoint farm using the Avamar for Windows client, Avamar plug-in for SharePoint VSS, and Avamar plug-in for Windows SharePoint GLR (requires third-party recovery tools such as Ontrack Power Controls, purchased separately).

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

Avamar and Ontrack PowerControls both support GLR using SharePoint Remote BLOB Storage (RBS) with the SQL FileStream RBS Provider. Third-party RBS providers are not supported.

Avamar Administrator

Avamar Administrator is a graphical management console software application that is used to remotely administer an Avamar system from a supported Windows or client computer. Login to the Avamar Administrator program provides access to a specific Avamar server. Backups and restores are configured and run through Avamar Administrator. *EMC Avamar Administration Guide* provides complete instructions for installing and using Avamar Administrator.

Avamar clients and plug-ins

Though all servers in a SharePoint farm require both the Avamar for Windows client and Avamar plug-in for SharePoint VSS, the configuration on each server varies depending on the SharePoint farm role and whether the farm will be set up for granular level recovery.

Avamar for Windows client

You must install the Avamar for Windows client on every server in the SharePoint environment. The Windows client is required for the SharePoint VSS plug-in to run. In addition, 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 a Volume Shadow Copy Service (VSS) backup of SharePoint at the SharePoint farm level, and recovery at the farm level, discovered components, or Database application level.

The plug-in uses the VSS writer provided by SharePoint 2010 and SharePoint 2007, the SharePoint Foundation VSS Writer (SPF-VSS Writer), to determine what content and information from the SharePoint farm to back up. The features and capabilities of the SPF-VSS Writer are described by Microsoft on MSDN in "SharePoint Foundation VSS Writer," http://msdn.microsoft.com/en-us/library/cc264326.aspx.

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

The plug-in can back up and restore an entire SharePoint farm, or content components in Windows SharePoint Services (WSS) 3.0, 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 based on their dependency on other components that you select.

In addition, the plug-in can back up and restore the additional functionality provided by Microsoft Office SharePoint Server 2007 SP2, SharePoint 2010, and SharePoint 2010 SP1, including Shared Service Providers.

The Avamar plug-in for SharePoint VSS also includes any third-party databases that are built on top of SharePoint foundation and have been registered properly within the configuration database. If a third-party database is registered properly, it is included by SharePoint in the SharePoint VSS Writer, and it is picked up when the Avamar plug-in for SharePoint VSS backs up the SharePoint VSS Writer.

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

◆ **Front-end server—** In a distributed farm, a front-end server is the main Web Front-End (WFE) server. In a standalone farm, a front-end server is the sole SharePoint server. The Avamar plug-in for SharePoint VSS coordinates the farm backups through the WFE.

◆ **Back-end server—** Back-end servers are all other servers in the SharePoint farm. On a sole SharePoint server in a standalone farm, you do not configure any back-end servers.

If there is no SharePoint data on a WFE server, then the SharePoint VSS writer skips that machine during backups.

Ontrack PowerControls topology

Ontrack PowerControls allows you to browse, select, and launch the restore of individual items from the Avamar Virtual Drive created by the Avamar restore.

To perform an item-level or granular recovery by using Ontrack PowerControls, you must install two software components:

◆ Ontrack PowerControls Agent for Content Transfer Service (ACTS), which you install in the Index Server or any server in the SharePoint farm

◆ Ontrack PowerControls for SharePoint, which you install on a stand-alone Windows Server or client computer

Ontrack PowerControls is available for resale through the EMC Select program. It can be ordered from within the EMC ordering system. The Avamar ordering flow on Direct Express and Channel Express provides the option of selecting PowerControls. For details on the software, go to the Ontrack landing page on the EMC online support website at http://Powerlink.EMC.com and select **Home › Products › EMC Select › Kroll Ontrack**.

## Avamar configurations for SharePoint farms

All servers in the SharePoint farm must have the Avamar for Windows client and Avamar plug-in for SharePoint VSS installed, but how these Avamar components are installed depends on the roles of each server, the scale of the farm, and whether GLR capabilities are planned.

> **NOTICE**

Distributed farms may contain multiple WFE servers. WFE servers provide access to SharePoint content on the other SharePoint farm servers, but WFEs do not always contain SharePoint content. When you run a backup of a SharePoint farm, Avamar skips any WFE servers that do not contain SharePoint data. As part of your SharePoint farm backup plan, you should still be backing up all SharePoint servers with the Avamar for Windows client to protect the server filesystem, non-critical volumes, and system state. The Avamar for Windows client backups are required for disaster recovery of each Windows Server.

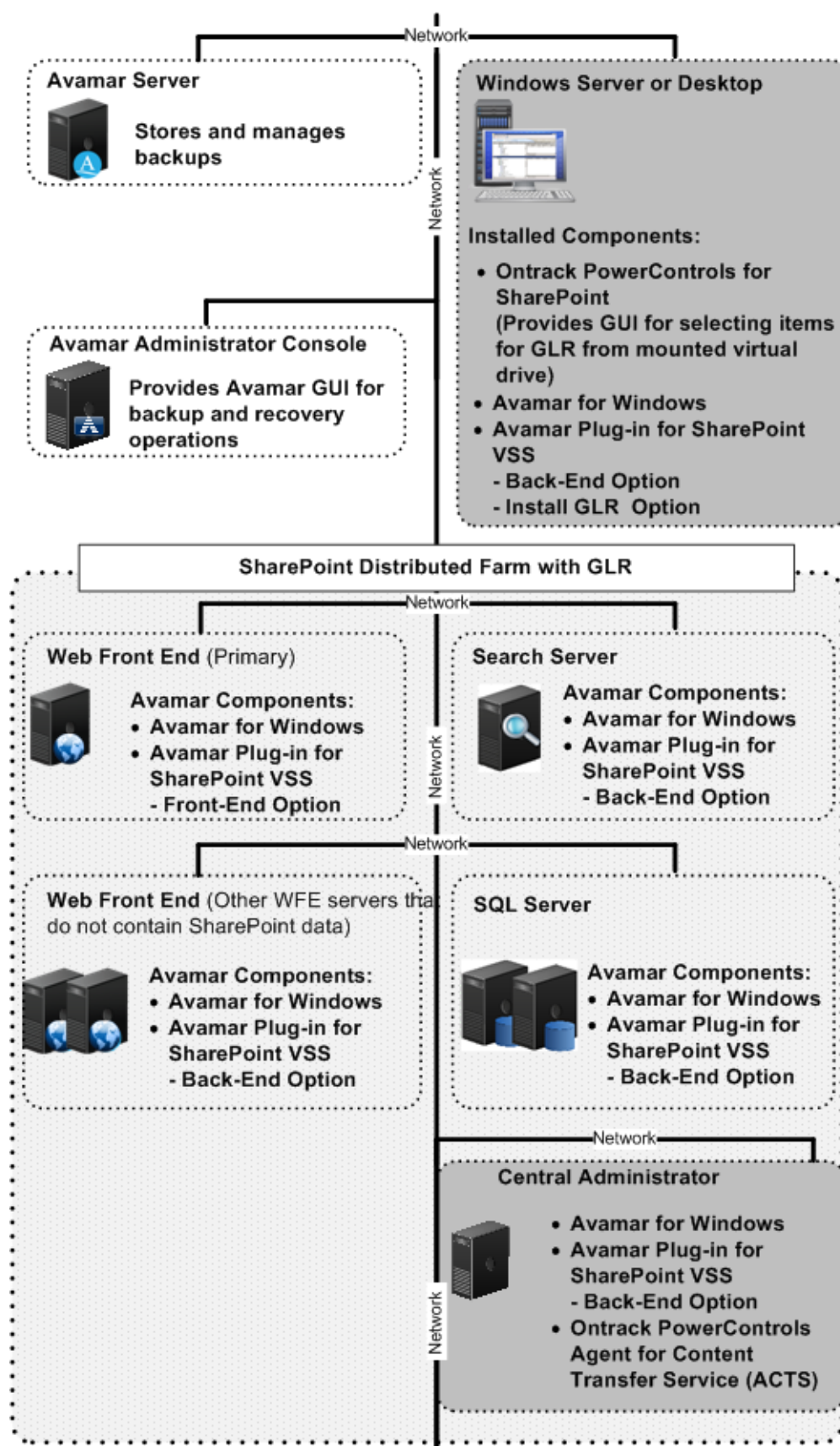## Standalone SharePoint farm with GLR

In a standalone SharePoint farm, all of the SharePoint roles (the WFE, Search data, and all SharePoint databases) reside on one server. The following figure illustrates the relationship of the Avamar Server, Avamar Administrator Console, Avamar installation on the SharePoint standalone server, and additional installation requirements for GLR support.
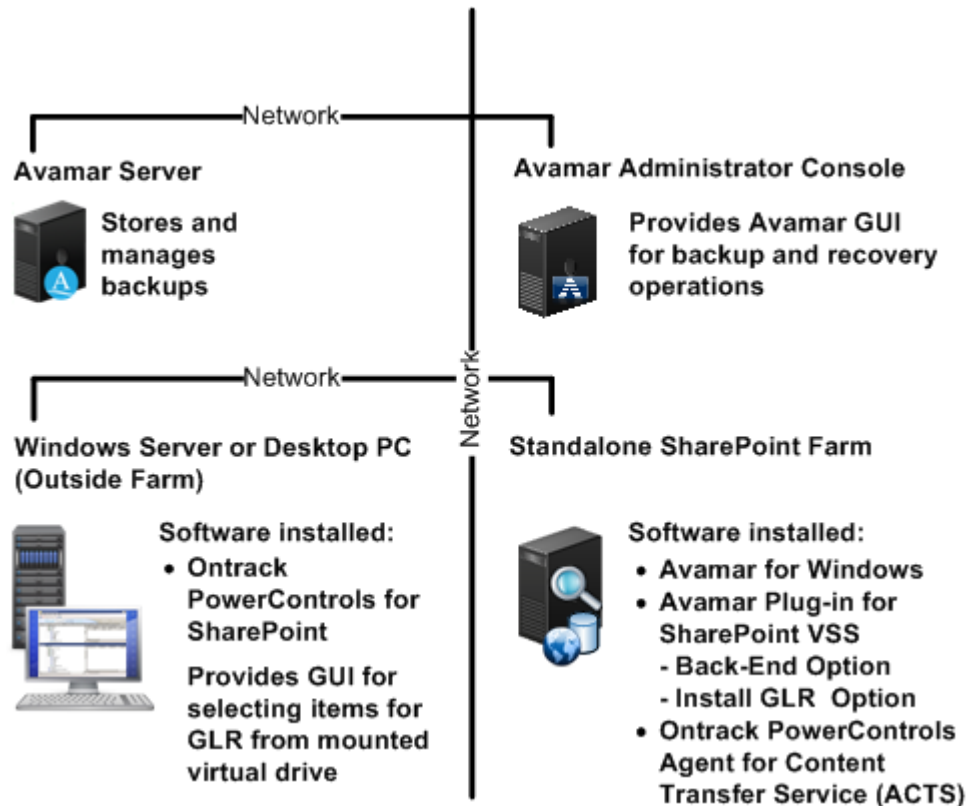
Distributed SharePoint farm with GLR

In a distributed SharePoint farm, SharePoint roles are spread across multiple servers. SharePoint farms can be scaled from a few machines for each role, to huge farms with many servers for each role and hundreds of gigabytes of data, to many database servers with many terabytes of data. The following figure illustrates the relationship of the Avamar Server, Avamar Administrator Console, Avamar installation on a distributed SharePoint farm, and additional installation requirements for GLR support.

Avamar installation

Avamar Server
Stores and manages backups

Windows Server or Desktop

Installed Components:

- **Ontrack PowerControls for SharePoint**
  (Provides GUI for selecting items for GLR from mounted virtual drive)
- **Avamar for Windows**
- **Avamar Plug-in for SharePoint VSS**
  - Back-End Option
  - Install GLR Option

Avamar Administrator Console
Provides Avamar GUI for backup and recovery operations

SharePoint Distributed Farm with GLR

Web Front End (Primary)

Avamar Components:
- Avamar for Windows
- Avamar Plug-in for SharePoint VSS
  - Front-End Option

Search Server

Avamar Components:
- Avamar for Windows
- Avamar Plug-in for SharePoint VSS
  - Back-End Option

Web Front End (Other WFE servers that do not contain SharePoint data)

Avamar Components:
- Avamar for Windows
- Avamar Plug-in for SharePoint VSS
  - Back-End Option

SQL Server

Avamar Components:
- Avamar for Windows
- Avamar Plug-in for SharePoint VSS
  - Back-End Option

Central Administrator

- Avamar for Windows
- Avamar Plug-in for SharePoint VSS
  - Back-End Option
- Ontrack PowerControls Agent for Content Transfer Service (ACTS)

Installation of Avamar to enable SharePoint GLR differs from regular Avamar installation in several ways. For GLR, in addition to the regular Avamar plug-in for SharePoint VSS installation:

◆ You must select the GLR option when you install the Avamar plug-in for SharePoint VSS installation on one machine. This machine can be the Index server or any other server on the farm.

◆ You can install Ontrack PowerControls Agent for Content Transfer Service (ACTS) on the same machine on which you installed the SharePoint VSS plug-in with the GLR option.

◆ You can install Ontrack PowerControls for SharePoint on another server or desktop outside of the SharePoint farm, ideally on a machine that can be rebooted.

Avamar GLR and Ontrack PowerControls requirements

There are specific software and hardware requirements for the Avamar for SharePoint VSS plug-in (including the GLR option), and Ontrack PowerControls.

The following topics list the system requirements for Avamar in a SharePoint environment:

In addition, there are separate requirments and tasks for Ontrack PowerControl licensing, purchasing, and installation:

Supported configurations

The following table lists SharePoint environments and the Avamar client or plug-in version required to back up or restore the system.

Table 4 Required Avamar client or plug-in for SharePoint environments

SharePoint version	Operating system	Avamar client or plug-in
SharePoint 2010 SP1	• Microsoft Windows Server 2008 • Microsoft Windows Server 2008 R2	Avamar 6.0 plug-in for SharePoint VSS
SharePoint 2010	• Microsoft Windows Server 2008 • Microsoft Windows Server 2008 R2	Avamar 6.0 plug-in for SharePoint VSS
SharePoint 2007 SP2	• Microsoft Windows Server 2008 • Microsoft Windows Server 2008 R2	Avamar 6.0 plug-in for SharePoint VSS
	• Windows Server 2003 (32-bit or 64-bit) • Windows Server 2008 (32-bit)	Avamar 5.0 client for SharePoint
SharePoint 2003	Any supported operating system	Avamar 4.1 client for SharePoint

The *EMC Avamar Microsoft SharePoint Client 5.0 User Guide* and the *EMC Avamar Microsoft SharePoint Client 4.1 Installation Guide and Reference Manual* provide information on version 5.0 and 4.1, respectively, of the Avamar client for SharePoint. Both documents are available on the EMC online support website at http://Powerlink.EMC.com.

The *EMC Avamar Compatibility and Interoperability Matrix*, which is also available on the EMC online support website, provides the most up-to-date and accurate listing of supported SharePoint versions and operating systems.

Hardware requirements

The *EMC Avamar Microsoft SharePoint Client 6.0 User Guide* lists the general hardware requirements for Avamar. The following table lists the GLR-specific hardware requirements for the Avamar plug-in for SharePoint VSS.

Table 5 Hardware requirements

Requirement	Minimum
Memory (RAM)	2 GB
File systems	NTFS **Note:** You must convert FAT 16 and FAT 32 systems to NTFS.
Hard drive space	Refer to the *EMC Avamar Microsoft SharePoint Client 6.0 User Guide* to find the general hardware requirements for Avamar.
Network interface	10BaseT minimum; 100BaseT or higher recommended, configured with latest drivers for the platform.

Windows SharePoint GLR plug-in requirements

The Windows SharePoint GLR plug-in places additional demands on computer hardware and resources beyond the base requirements for the Avamar plug-in for SharePoint VSS. The following topics describe the requirements for the Avamar plug-in for Windows SharePoint GLR.

Memory

The Windows SharePoint GLR plug-in may require additional memory (RAM). The amount of additional or total memory required depends on current system performance with existing memory:

◆ If resources are already strained and performance is slow with regular operations of the Avamar plug-in for SharePoint VSS, then add significantly more memory to support Windows SharePoint GLR operations.

◆ If performance is currently adequate with regular operations of the Avamar plug-in for SharePoint VSS, then additional memory may not be required to support Windows SharePoint GLR operations.

◆ Third-party recovery tools may require additional memory. Consult the documentation for the tool for specific memory requirements.

Database size

SharePoint 2010 SP1 supports Content Databases up to 4 TB, and Avamar supports databases up to the maximums allowed by SharePoint. However, the maximum database sizes recommended by Microsoft for rapid backup and recovery are 200 GB for SharePoint 2010 and 100 GB for SharePoint 2007. The following Microsoft TechNet articles provide more information about sizing databases for best performance:

◆ "Capacity Management for SharePoint Server 2010"
http://technet.microsoft.com/en-us/sharepoint/ff601870.aspx

◆ "Database maintenance (Office SharePoint Server 2007)"
http://technet.microsoft.com/en-us/library/cc825329(office.12).aspx

Required account privileges

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

In addition, to perform a federated farm restore, which is a full farm restore of a distributed farm, you must have domain-level administrator access. Typically, the Administrator account you used when installing and configuring the SharePoint farm is a member of the Administrators group on each server. If so, the Administrator account can usually be used as a valid account for the federated restore. If you use a different administrator account other than the one you used to install and configure SharePoint, you must do both of the following:

◆ 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. This setting is specified in Local Computer Policy › Computer Configuration › Windows Setting › Security Setting › Local Policies › User Rights Assignment › Log on as a service.

Installation road map

The steps to install and configure the Avamar software for SharePoint with GLR support depends on the type of farm.

To install the necessary Avamar software to back up and restore a SharePoint environment:

1. Install and configure Microsoft SharePoint for *stand-alone server* or *distributed server farm* deployment, following the respective Microsoft guidelines for the selected deployment type.

2. Install the Avamar for Windows client on every server in the SharePoint farm, as discussed in "Installing the Avamar for Windows client" on page 17.

3. Install the Avamar plug-in for SharePoint VSS on every server in the SharePoint farm, as discussed in "Installing the Avamar plug-in for SharePoint VSS" on page 18.

   If you intend to perform GLR, then select the option to install the Windows SharePoint GLR plug-in in addition to the SharePoint VSS plug-in on the Administrator Console, which is the computer to which you initially restore data before you browse and select the data for GLR. Any clients you install GLR on will require a machine reboot.

   | NOTICE |

   When you restore, the Avamar for Windows client and Avamar plug-in for SharePoint VSS must be installed on the target, or destination, servers. If you are restoring to the same location/server, the client and plug-in will already be installed; this enabled you perform the backups you are restoring from. If you are restoring to a different location, make sure the client and plug-in are installed on those servers.

4. If you intend to perform GLR, then install the third-party recovery tool, such as Ontrack PowerControls, on the Administrator Console.

Ontrack PowerControls is a third-party tool that must be purchased separately and is not included in the Avamar SharePoint VSS client installation package. Ontrack PowerControls is available for resale through the EMC Select program. It can be ordered from within the EMC ordering system. The Avamar ordering flow on Direct Express and Channel Express provides the option of selecting PowerControls. For details on the software, go to the Ontrack landing page on the EMC online support website at http:// Powerlink.EMC.com and select **Home** › **Products** › **EMC Select** › **Kroll Ontrack**.

Installing the Avamar for Windows client

To install the Avamar for Windows client:

1. Log in to the client computer with an account that has Administrator privileges.

2. Open a web browser and go to the following URL:

   `http://AVAMARSERVER`

   where AVAMARSERVER is the network hostname (as defined in DNS) or IP address of the Avamar system.

   You are automatically redirected to the Avamar secure web server.

   Depending on the browser security settings, a security alert dialog box might appear.

3. If a security alert dialog box appears, click **Yes** or **OK** to allow redirection to the Avamar secure web server.

   The Secure Log On page appears.

4. Page down and then click the **Documents and Downloads** hyperlink.

   The Documents and Downloads page appears.

5. Click the **Windows for x86 (64 bit)** operating system hyperlink.

   A directory listing appears.

6. Select the **AvamarClient-windows-x86_64-VERSION.msi** install package, where VERSION is the client version that you are installing.

   The browser prompts you to either run the file or save it to the local computer.

7. Start the installer, using one of the following sets of steps, depending on whether the User Account Control (UAC) feature is enabled on the computer:

   • If UAC is disabled, open the file in place on the server, or download the file to a temporary directory on the computer, and then open the file.

   • If UAC is enabled, perform the following steps:

      a. In Windows, right-click the Command Prompt icon and select **Run as administrator**.

b. In the command prompt window, change the working directory to the location of the installation package.

```
cd INSTALL_PATH
```

where INSTALL_PATH is the full path of the temporary directory that contains the installation package.

c. On a single line, type the following command to launch the installer:

```
msiexec /i AvamarClient-windows-x86_64-VERSION.msi
```

where VERSION is the version number of the available install package.

UAC is designed to provide additional operating system security by preventing software from being installed with administrator privileges, unless an administrator authorizes the elevated privileges.

The installation wizard appears.

8. Follow the instructions to proceed through the wizard.

9. Click **Finish**.

Installing the Avamar plug-in for SharePoint VSS

To install the Avamar plug-in for SharePoint VSS:

1. Log in to the client computer using the same domain account that you use for the SharePoint administrator.

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

2. Open a web browser and go to the following URL:

```
http://AVAMARSERVER
```

where AVAMARSERVER is the network hostname (as defined in DNS) or IP address of the Avamar system.

You are automatically redirected to the Avamar secure web server.

Depending on the browser security settings, a security alert dialog box might appear.

3. If a security alert dialog box appears, click **Yes** or **OK** to allow redirection to the Avamar secure web server.

    The Secure Log On page appears.

4. Page down and then click the **Documents and Downloads** hyperlink.

    The Documents and Downloads page appears.

5. Click the **Windows for x86 (64 bit)** operating system hyperlink.

    A directory listing appears.

6. Select the **AvamarMossVSS-x86_x64-VERSION.msi** install package, where VERSION is the version number of the package.

    The browser prompts you to either run the file or save it to the local computer.

7. Start the installer, using one of the following sets of steps, depending on whether the User Account Control (UAC) feature is enabled on the computer:

- If UAC is disabled, open the file in place on the server, or download the file to a temporary directory on the computer, and then open the file.

- If UAC is enabled, perform the following steps:

    a. In Windows, right-click the Command Prompt icon and select **Run as administrator.**

    b. In the command prompt window, change the working directory to the location of the installation package.

       `cd INSTALL_PATH`

       where INSTALL_PATH is the full path of the temporary directory that contains the installation package.

    c. On a single line, type the following command to launch the installer:

       `msiexec /i AvamarMossVSS-x86_x64-VERSION.msi`

       where VERSION is the version number of the available install package.

   UAC is designed to provide additional operating system security by preventing software from being installed with administrator privileges, unless an administrator authorizes the elevated privileges.

   The **EMC Avamar Plug-in for SharePoint VSS Setup Wizard** appears.

8. Follow the instructions in the wizard.

> **NOTICE**

A Windows Security dialog box may appear during installation indicating a possible security risk because of an unsigned driver or device. The exact message may vary depending on the version of Windows you are installing this on. The message may or may not identify the software publisher EldoS Corporation. If this message appears, click **Install** or **Install this driver software anyway.**

9. If you intend to perform GLR and the server on which you are running the installation is the Administrator Console, then select the Windows SharePoint GLR plug-in when the wizard displays this option, as shown in the following figure:
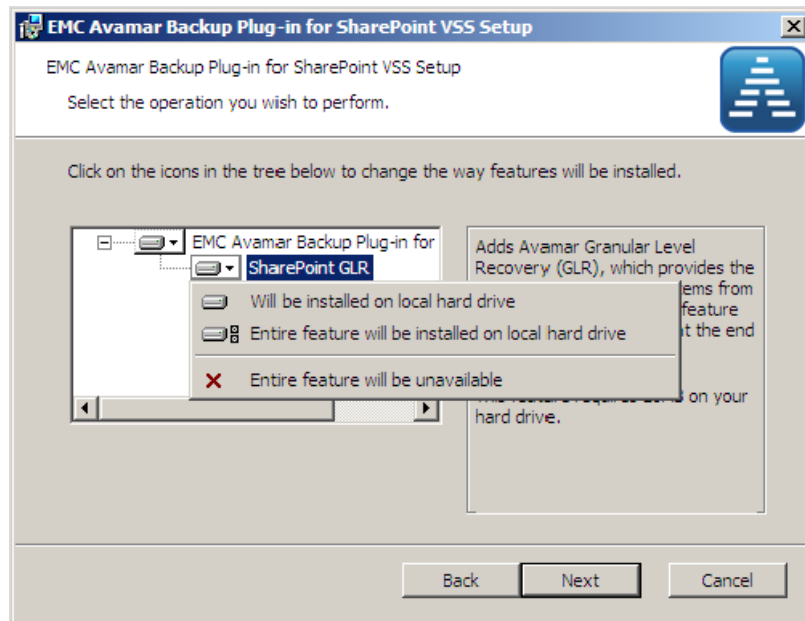
NOTICE

For full SharePoint GLR functionality, in addition to installing the Windows SharePoint GLR plug-in, you must purchase and install a third-party GLR tool such as Ontrack PowerControls. "Ontrack PowerControls installation" on page 21 provides more information about ordering the software and which machines in the Avamar and SharePoint farm environments it must be installed on.

10. When the **Select the type of installation** page appears, select the type of SharePoint server on which you are installing the plug-in:

- If the server is the main WFE server in a distributed farm or the sole SharePoint server in a standalone farm, select **Front-end plug-in**.

  NOTICE

  If there is more than one web front-end server, select the front-end plug-in option for only one WFE server.

- If the server is an application server, database server, or another WFE, select **Back-end plug-in**.

The following figure shows the front-end and back-end installation types.
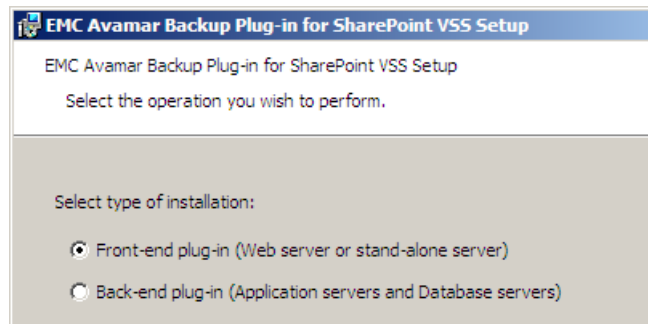
11. Click **Finish**.

Ontrack PowerControls installation

A third-party recovery tool, such as Ontrack PowerControls, is required to browse and restore individual items from the data restored to the Administrator Console or Destination Server using the Avamar plug-in for SharePoint VSS.

Ontrack PowerControls must be purchased separately and is not included in the Avamar SharePoint VSS client installation package.

Ontrack PowerControls is available for resale through the EMC Select program. It can be ordered from within the EMC ordering system. The Avamar ordering flow on Direct Express and Channel Express provides the option of selecting PowerControls. For details on the software, go to the Ontrack landing page on the EMC online support website at http://Powerlink.EMC.com, and select **Home** › **Products** › **EMC Select** › **Kroll Ontrack**.

The *EMC Avamar Compatibility and Interoperability Matrix,* also available on the EMC online support website, provides the most up-to-date and accurate listing of supported third-party recovery tools.

Ontrack PowerControls software requirements

The setup requirements for Ontrack PowerControls are as follows:

◆ Windows Server 2003 or later

◆ Any setup that is compatible with Hyper-V or VMware environments

◆ Intel Pentium compatible processor

◆ 1024 MB RAM minimum

◆ Microsoft .NET Framework 3.5

For the most up-to-date requirements and instructions for installing Ontrack PowerControls software:

◆ Visit the Kroll website at www.krollontrack.com

◆ Call 800-866-7176

◆ Email Techsupport@krollontrack.com

Ontrack PowerControls components

When performing an item-level or granular recovery by using Ontrack PowerControls, you must install two pieces of software:

◆ Ontrack PowerControls Agent for Content Transfer Service (ACTS), which you install in the SharePoint farm on the Index Server or any other server in the SharePoint farm

◆ Ontrack PowerControls for SharePoint, which you install on a stand-alone Windows Server or client machine

Note: Ontrack PowerControls does not yet support SharePoint Server 2010 SP1. Support is expected by December 2011.

Install the Avamar plug-in for Windows SharePoint GLR on the Administrator Console, which is the computer to which you initially restore data before you browse and select the data for GLR. You should also install PowerControls on the Administrator Console computer.

For a distributed SharePoint farm:

◆ Install the PowerControls software on a server outside of the distributed farm.

◆ Install ACTS on the SharePoint server, typically on a central administration machine.

For a standalone SharePoint farm:

◆ Install the PowerControls software on a server outside of the standalone farm.

◆ Install ACTS on the standalone server that hosts the SharePoint farm.

ACTS runs a check during the install to ensure it is being installed on the correct machine.

To perform a granular recovery using Ontrack PowerControls, ensure that:

◆ The default port is 49175. You can change the port if the default port is found to be in use.

◆ An exception within the firewall is allowed, no matter which port you choose.

◆ The machine running Ontrack PowerControls has twice the amount of space of the data that is being restored. This is temporary space and is not used continuously. This space covers the actual file data and all associated metadata fields.

◆ The install path is C:\Program Files (x86)\Kroll Ontrack\Ontrack PowerControls Agent for Content Transfer Service.

◆ The configuration file name is PC.SharePoint.Service.exe.config.

◆ The location for temporary path is ‹appSettings› ‹add key="TempPath" value="C:\Windows\Temp\PC" /›.

The Ontrack documentation on the Ontrack website provides information about installing and using Ontrack PowerControls.

Receive an evaluation key, order, or get help for Ontrack PowerControls

Table 6 on page 23 describes the information you need to receive an evaluation key, order, or get help for Ontrack PowerControls. Ontrack PowerControls does not yet support SharePoint 2010 SP1, although support is expected by December 2011.

Table 6 Receive an evaluation key, order, or get help for Ontrack PowerControls

	Details
To receive a free 30-day trial for Ontrack PowerControls	To receive an evaluation key for Ontrack PowerControls: 1. Log into Direct or Channel Express. 2. Select **EMC All Solutions - US.** 3. Click **EMC Avamar Datastore Solutions**. 4. Click **Avamar Software Only** and then click **Continue**. 5. At the bottom of the Avamar SW Only page, select the checkbox next to **SharePoint Granular Level Recovery (with Kroll PowerControls).** 6. Select the checkbox next to **90PCSPTRIAL SELECT PCSP 30 DAY TRIAL LICENSE.** 7. Click **Save & Exit**.
To order Ontrack PowerControls	Ontrack PowerControls is listed in Direct Express and Channel Express, and in the ordering path for Avamar. To order Ontrack PowerControls: 1. Log into Direct or Channel Express. 2. Select **EMC All Solutions - US.** 3. Click **EMC Avamar Datastore Solutions**. 4. Click **Avamar Software Only** and then click **Continue.** 5. Select the checkbox next to the desired part numbers: • 90PCE61SLS: PowerControls SharePoint database license. The SharePoint product is licensed by the number of content databases that require granular recoveries. • 90PCWE61MFE: One year of SharePoint maintenance and support. • 90PCWE61DMFE3: Three years of SharePoint maintenance and support. The number of licenses should be at a one-to-one ratio with respect to the number of content databases. Ontrack PowerControls may be installed on any number of computers, as long as the total number of content databases managed does not exceed the total number licensed. 6. Click **Save & Exit**. After processing the order, EMC sends an email notification to Kroll Ontrack. Kroll Ontrack fulfills the deliverable to the end customer. Maintenance support allows access to Kroll Ontrack Technical Support as well as upgrades to the product as they become available.
Contact Kroll Ontrack for technical support	For customers and EMC to contact Kroll Ontrack for technical support: • Call 800-866-7176. • Email Techsupport@krollontrack.com.

Backup

To perform GLR, you must have previously backed up the entire SharePoint farm with a full farm backup. This backup is performed by the SharePoint VSS plug-in; the SharePoint GLR plug-in is only used for restore. The SharePoint VSS plug-in discovers the topology of the entire farm, which enables you to perform a unified or federated backup and recovery through a single machine in the farm, the main WFE server. In a standalone SharePoint farm, one server performs all roles, including WFE. In a distributed farm, one or more server serves as a WFE, but one WFE is designated as the main WFE.

Backup workflow for standalone farms

The following figure illustrates the backup workflow for a standalone farm, where the single SharePoint server is the WFE.
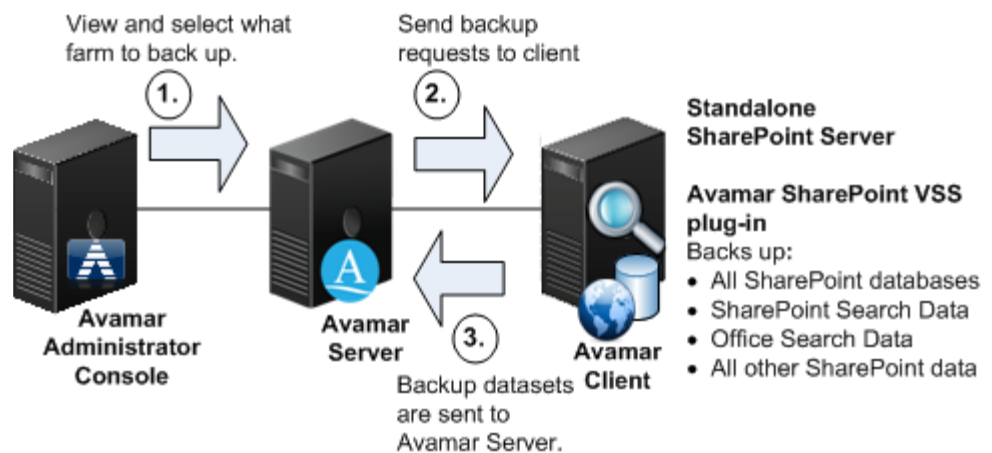
Backup workflow in a distributed farm

In a distributed farm, one or more machines can serve as a WFE. Use the main WFE for backups and recoveries, as illustrated in the following figure.
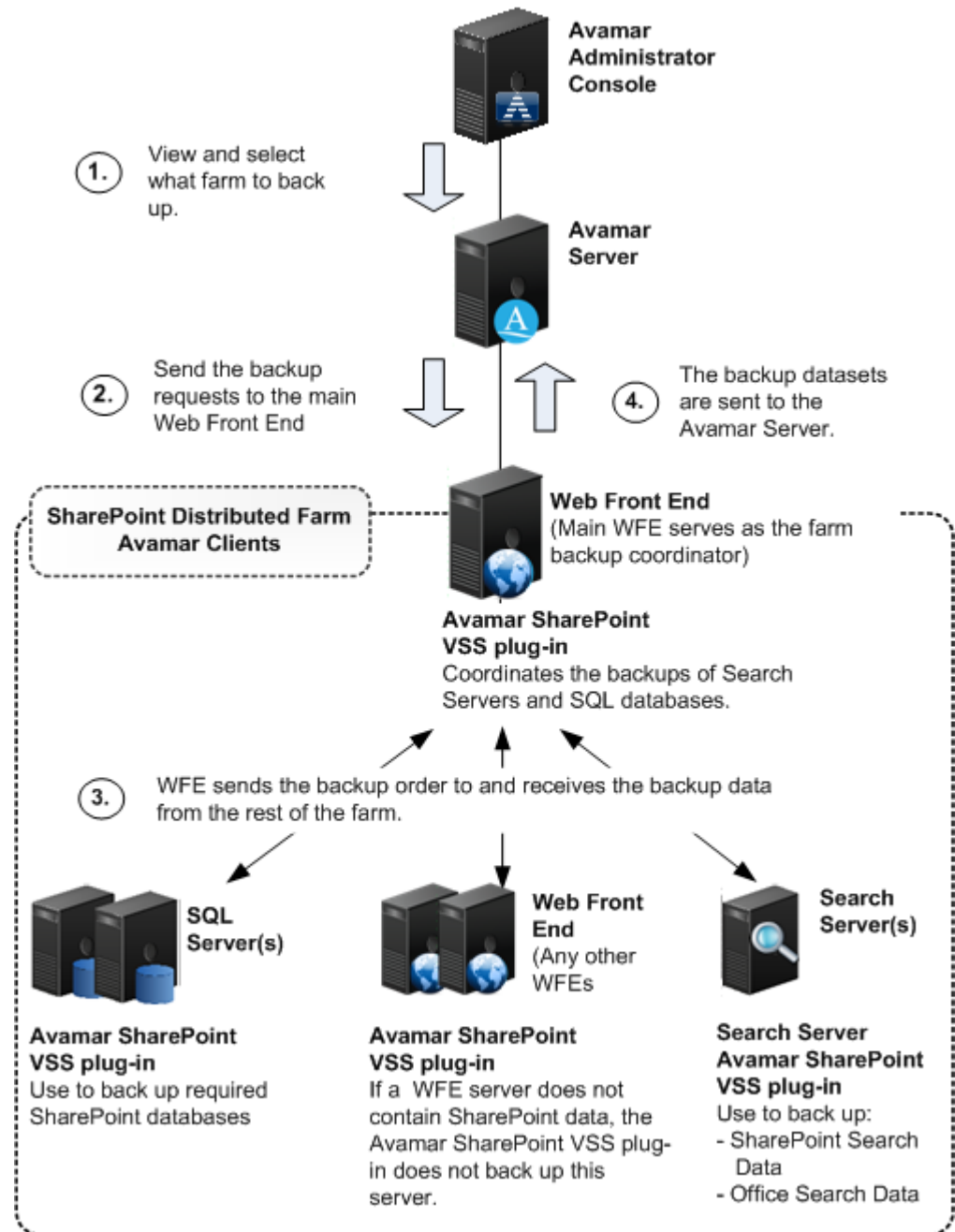
Backing up an entire SharePoint farm

To perform an on-demand backup of an entire SharePoint farm:

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

   The Backup and Restore window appears.

2. In the clients tree, select the SharePoint server.

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

3. Click the **Select for Backup** tab.

   A list of plug-ins installed on the selected client appears in the left pane of the **Select for Backup** tab.

4. Expand the Windows SharePoint VSS plug-in node in the tree on the **Select for Backup** tab.

5. Select the checkbox next to the farm to back up, as shown in the following figure.
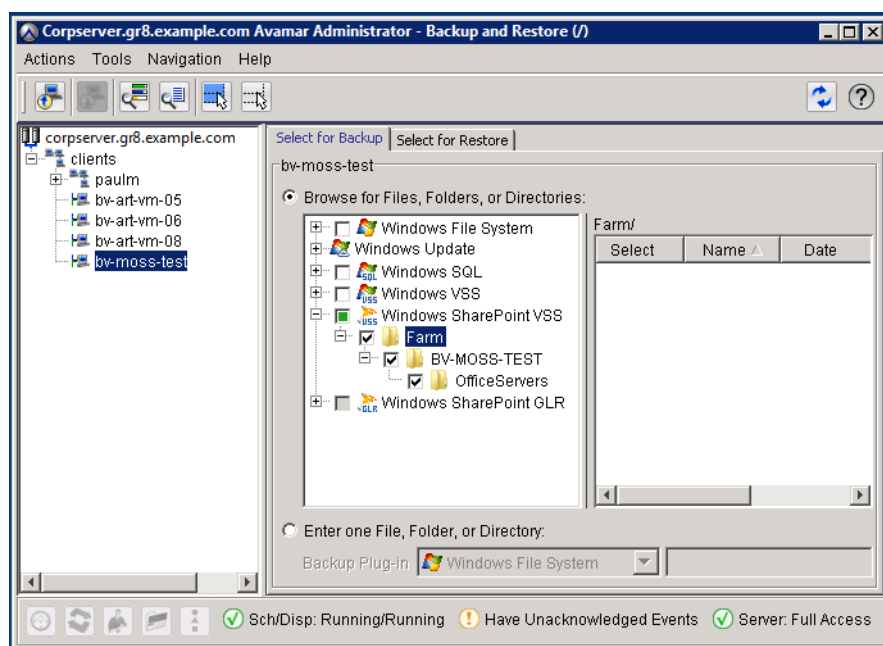
> **NOTICE**
>
> When you select a farm, all of the components in the farm are automatically selected. If you change the selections for individual components, then the backup fails with an error that only full backups are supported. You can only back up an entire farm with the Avamar plug-in for SharePoint VSS.

6. Select **Actions › Back Up Now.**

    The On Demand Backup Options dialog box appears.
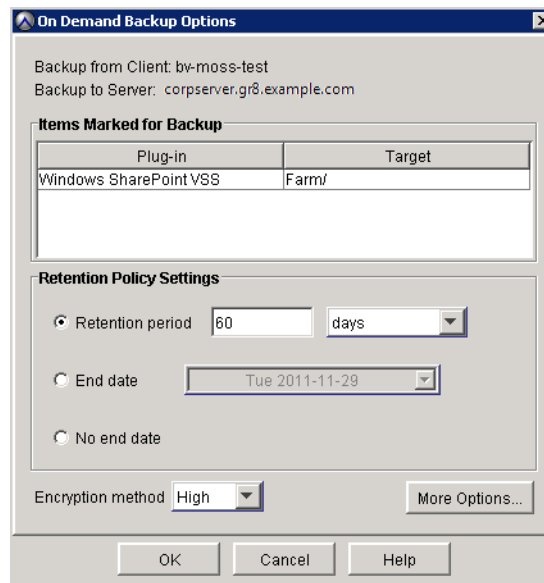
7. Select the backup retention setting:

    -   To automatically delete this backup from the Avamar server after a specific amount of time, select **Retention period** and then 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**.

8. Select the encryption method to use for client/server data transfer during this backup.

    The exact encryption technology and bit strength used for a client/server connection depends on a number of factors, including the client platform and Avamar server version. The *EMC Avamar Product Security Guide* provides additional information.

9. Click **More Options**.

    The Backup Command Line Options dialog box appears, as shown in the following figure.
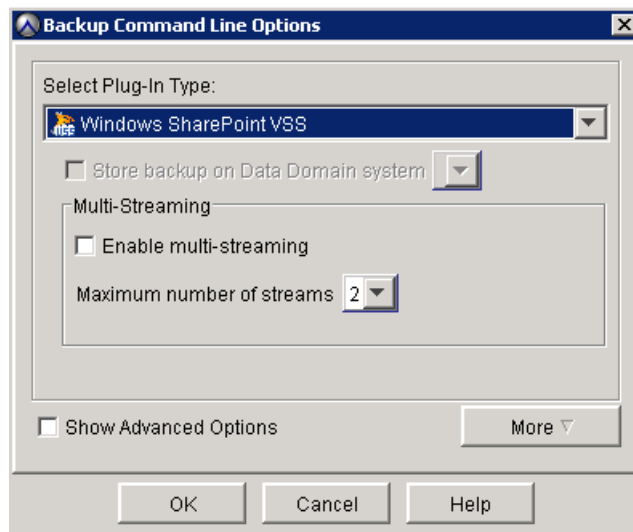
10. Set the plug-in options:

    a. To store the backups for this dataset on a Data Domain system instead of the Avamar server, select **Store backup on Data Domain system** and select the Data Domain system from the list.

    b. Leave the **Enable multi-streaming** checkbox clear. To perform a backup with multi-streaming, select the checkbox to enable it and set the maximum number of backup streams in the drop down.

        The Maximum number of backup streams list also pertains to multi-streaming.

    c. To specify advanced backup options, select the **Show Advanced Options** checkbox. Otherwise, proceed to .

        Additional options appear in red on the **Backup Command Line Options** dialog box, as shown in the following figure.
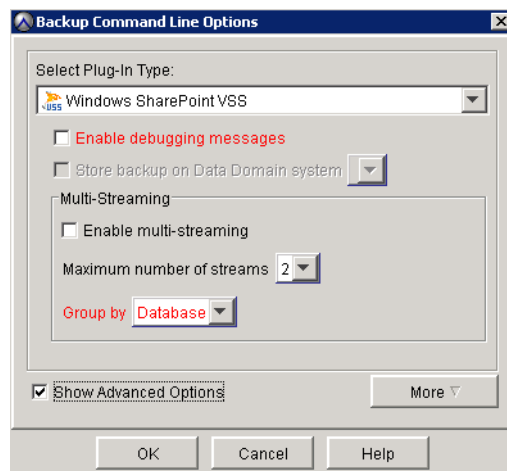
d. To write maximum information to log files, select **Enable debugging messages**. If selected, very large log files are created.

e. Skip the **Group by** list, which pertains to multi-streaming.

11. Click **OK** on the **Backup Command Line Options** dialog box.

12. Click **OK** on the **On Demand Backup Options** dialog box.

The following status message appears: Backup initiated.

13. Click **OK**.

Understanding the GLR Process

Avamar provides daily full backups that can be quickly recovered, eliminating the hassle of restoring full backups to reach the desired recovery point.

Note: Though the information provided in this document refers to SharePoint Server 2010 granular recovery, the backup and recovery procedures for SharePoint Server 2007 and SharePoint Server 2010 are the same, and differences between SharePoint Server 2007 and 2010, if any, will be noted.

GLR may appear to be similar to the steps to restore to an alternate location, as described in the *Avamar 6.0 SharePoint for VSS Plug-in Guide*, except that for GLR:

- The restore is performed using the Avamar plug-in for Windows SharePoint GLR—not the Avamar plug-in for SharePoint VSS.

- At the end of the restore, in the Avamar GLR operation, the backup set is mounted to a *virtual* drive, which is very quick and uses very little memory or storage resources. A conventional restore requires physically moving or copying the data to another drive or location, which can take a long time with large databases and use considerable processor, memory, and storage resources.

- In GLR, an optional third-party tool, such as Ontrack PowerControls, is used to browse and select the individual folders, files, or items you want to restore. Only the items selected for restore are physically copied to the SharePoint farm or other destination you have chosen.

There are two major tasks in the GLR process:

1. Locate, restore, and mount the backup you want to retrieve data from, following the steps in "Restoring the Avamar backup and mounting the virtual drive" on page 30. Granular level recovery is performed through the Avamar Administrator console.

   The backup is surfaced to the Avamar Virtual Drive, which is temporarily mounted for the purposes of GLR.

2. Use the third-party recovery tool to browse, select, and restore the data from the Avamar Virtual Drive to the SharePoint farm, as described in "Performing granular recovery by using Ontrack PowerControls" on page 33.

Apart from the SQL machine on which the backup is performed, an additional machine is required to perform a SQL directed recovery by using Avamar. This additional machine can be a SQL Server, a Web Front-End, or a file server. Directed recovery by using Avamar can be performed to a machine that is:

◆ Part of the farm where the backup was performed.

◆ Not part of the farm where the backup was performed.

◆ Not hosting SharePoint or SQL services.

Restoring the Avamar backup and mounting the virtual drive

To surface the backup using the Avamar plug-in for Windows SharePoint GLR and mount the Avamar Virtual Drive for GLR:

1. Ensure that the Avamar for Windows client and the Avamar plug-in for SharePoint VSS are installed on the computer to which you are mounting the virtual drive.

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

   The Backup and Restore window appears.

3. Find the backup to restore. The Avamar 6.0 Plug-in for SharePoint VSS provides more information about finding a backup by date.

   The backup to restore from is selected in the **Backups** table.
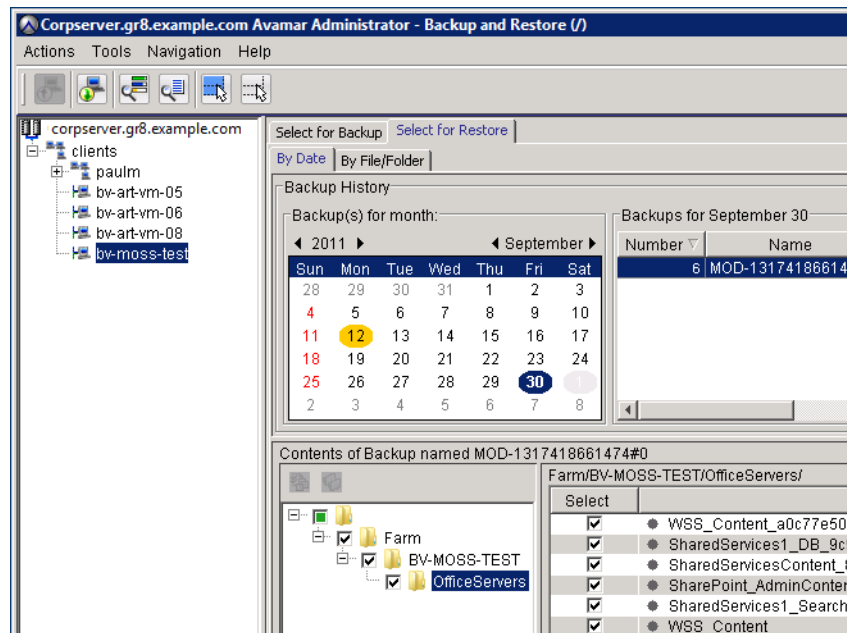
4. In the bottom left pane, select the checkbox next to the farm with the data to restore using GLR.

5. Select **Actions** › **Restore Now**.

    The Restore Options dialog box appears. The Restore Destination Client box displays the client that you previously selected for recovery.
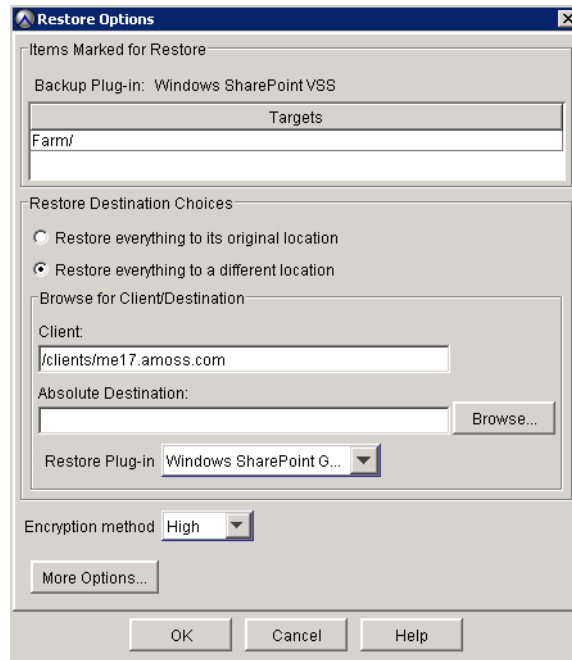
6. From the **Restore Plug-In** list, select **Windows SharePoint GLR.**

7. From the **Encryption method** list, select the encryption method to use for client/server data transfer during this backup.

    The exact encryption technology and bit strength used for a client/server connection depends on a number of factors, including the client platform and Avamar server version. The *EMC Avamar Product Security Guide* provides additional information.

8. Select **Restore everything to a different location**.

9. In the **Items Marked for Restore** box, click **Edit Destination** to specify the target drive for the restore.

The Edit Destination dialog box appears.
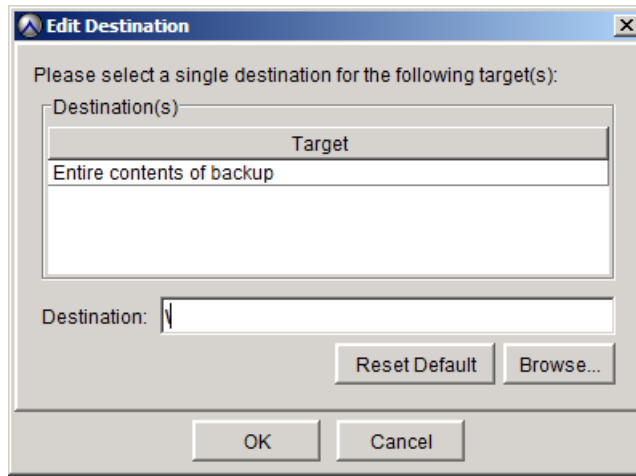
10. Type a forward (/) or backward (\)slash.

The system automatically chooses an available drive letter on the client system. If you specify a drive letter, ensure that the drive letter is not already in use on the target server.

> **NOTICE**
>
> If another user or user session has mapped a network drive within a user session on the client machine, Avamar cannot detect those drive mappings when assigning a drive letter for the Avamar Virtual Drive. If you regularly use network drive mapping, then specify a drive letter that you know is not in use instead of specifying a forward or backward slash.

11. Click **More Options.**

The Restore Command Line Options dialog box appears with Windows SharePoint GLR plug-in options.
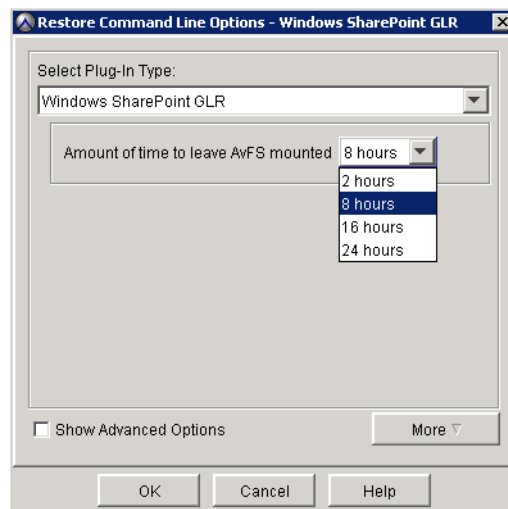
12. From the **Amount of time to leave AvFS mounted** list, select the amount of time to leave the Avamar Virtual Drive mounted before a timeout occurs.

   The drive is disconnected after the timeout, even if the drive is in use. Select a length of time that allows you to perform the GLR.

13. Click **OK.**

   The following status message appears: Restore initiated.

14. Click **OK.**

The surfaced backup content can now be used as a source for recovery by Ontrack PowerControls (or possibly other third-party recovery software).

Performing granular recovery by using Ontrack PowerControls

Note: When performing an item-level or granular recovery by using the Ontrack PowerControls software, ensure that the OntrackPowerControlsAgentForContentTransfer service is running.

In this procedure, **sqlsrv1vmsp10.nmmperf.com** is used as an example of a server where Ontrack PowerControls is installed. To perform a granular recovery of a SharePoint site, a list, or list items by using the Ontrack PowerControls software:

1. On the server where you have installed Ontrack PowerControls, (**sqlsrv1vmsp10.nmmperf.com** for example), open the Ontrack PowerControls software by clicking **Start › Ontrack PowerControls for SharePoint**.

   The welcome page of the Ontrack PowerControls Data Wizard appears, as shown in .
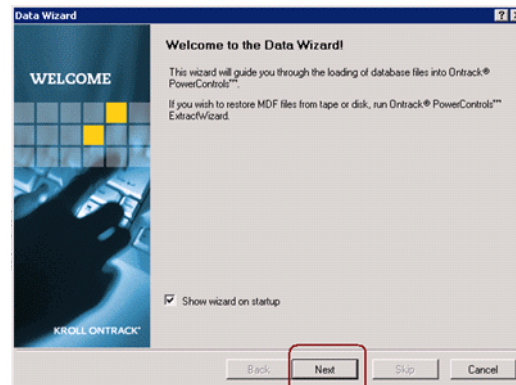
Figure 1 Ontrack PowerControls Data Wizard Welcome page

2. Click **Next**.

   The **Source Path Selection** page appears, as shown in Figure 2 on page 34.
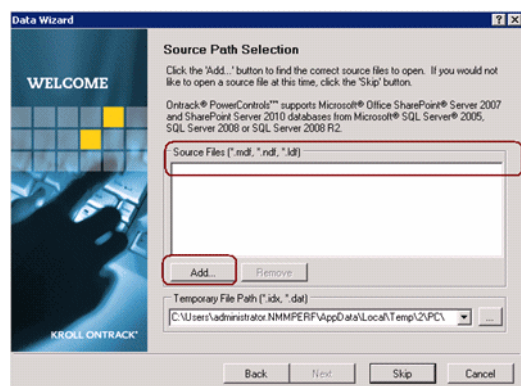
Figure 2 Source Path Selection page

3. Click **Add** and select the .mdf, .ndf, and .ldf databases, which were recovered by directed recovery by using Avamar.

   Note: The content databases that are used for granular recovery should be in offline or dismounted state.

4. Click **Next**.

   The **Target Server Selection** page appears, as shown in Figure 3 on page 34.
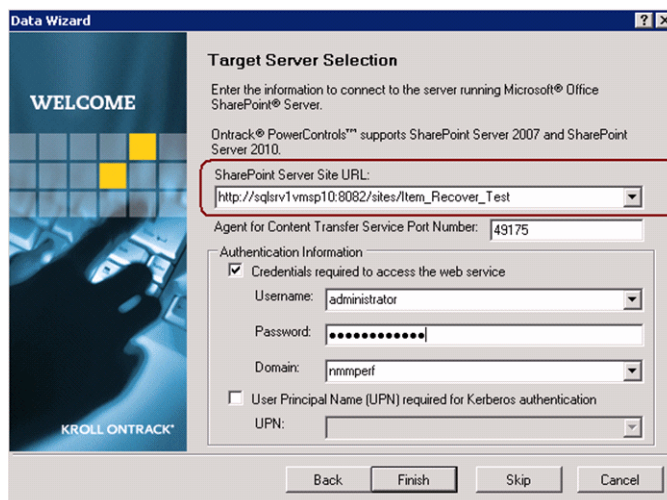
Figure 3 Target Server Selection window

5. In the **Target Server Selection** page, specify the following information:

   • **SharePoint Server Site URL** — Provide the site collection URL.

   This connects the Ontrack PowerControls software to the content database, which is in online state or mounted state and defines the target path or the destination location for item-level recovery. In SharePoint, the site collection and its content, which includes the subsite, the SharePoint list, and list items, are stored in the

content database. After the connection to the content database is made, the hierarchy list of site collection, sites, lists, and list items that are stored in the content database are visible.

- **Agent for Content Transfer Service Port Number** — You can use the default value, which is 49175.

- **Authentication Information** — Provide the credentials required to access the site collection URL. The Ontrack PowerControls administrator must have full access control permissions.

    In the example setup, as shown in Figure 3 on page 34, the site collection URL is http://sqlsrv1vmsp10:8082/sites/Item_Recover_Test.

6. Click **Finish**.

    The Ontrack PowerControls software connects to the source and target machines, as shown in Figure 4 on page 35.
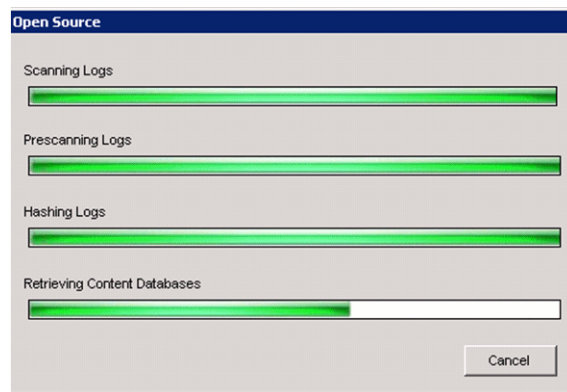
Figure 4 Ontrack PowerControls connection to source and target machines

    Ontrack PowerControls displays the extracted source database, as shown in Figure 5 on page 35.
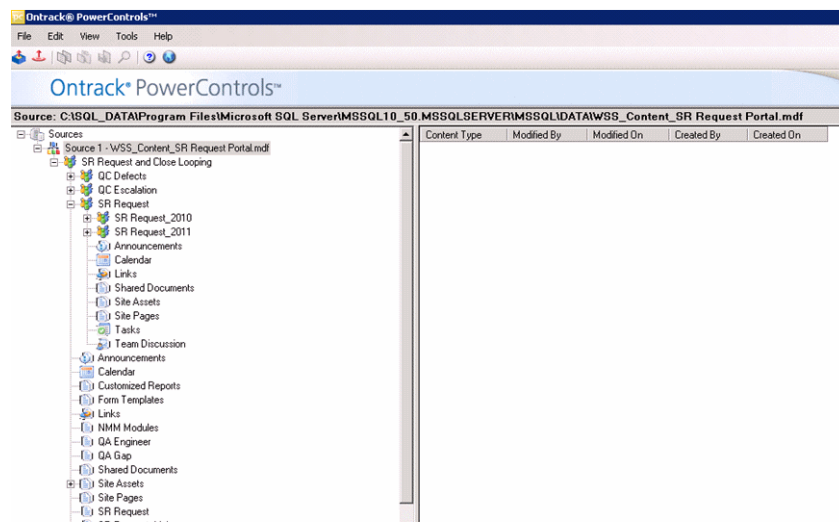
Figure 5 The source extracted by Ontrack PowerControls

Ontrack PowerControls displays the extracted target farm, as shown in Figure 6 on page 36.
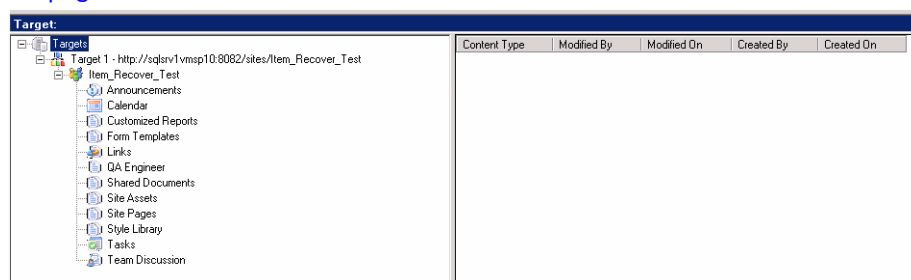
Figure 6 Target farm shown by Ontrack PowerControls

7. In the source, select the SharePoint site, lists, or list items to be recovered, right-click, and select **Copy** from the menu.

    For example, in Figure 7 on page 36, the **QA Engineer** list is selected.
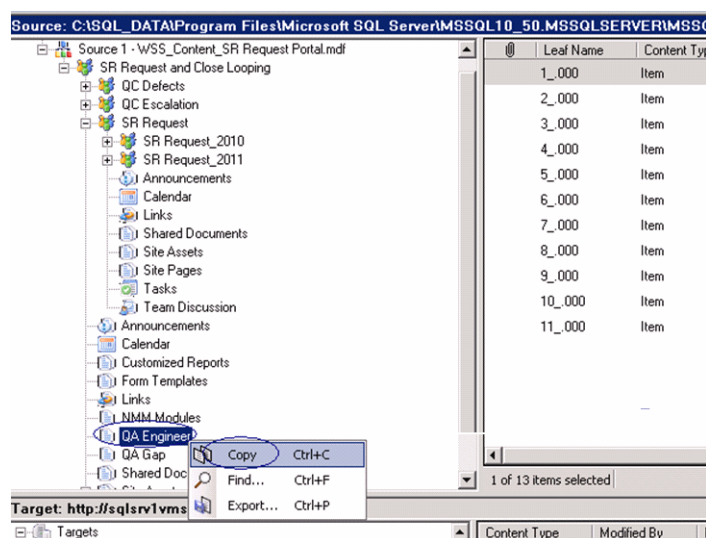
Figure 7 Source database with item QA Engineer selected

8. In the target, select the recovery destination for the SharePoint site, lists, or list items to be recovered, right-click, and select **Paste** from the menu.

    Items that are copied and pasted within Ontrack PowerControls can be pasted into the destination at the same level they were copied from in the source. Ontrack PowerControls manages the types that the user interacts with and requires that the source and destination types match.

In the example setup, site collection **Item_Recover_Test** is selected as the destination recovery location, shown in Figure 8 on page 37.
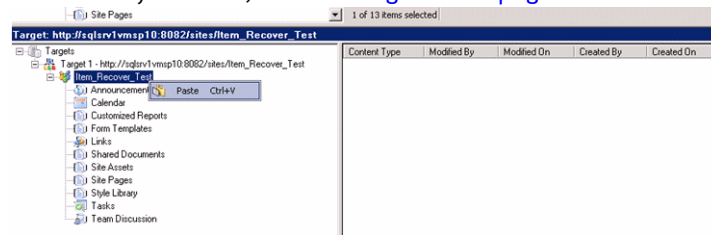
Figure 8 Destination for recovery on target

The **Copy Progress** window, as shown in Figure 9 on page 37, displays the details.
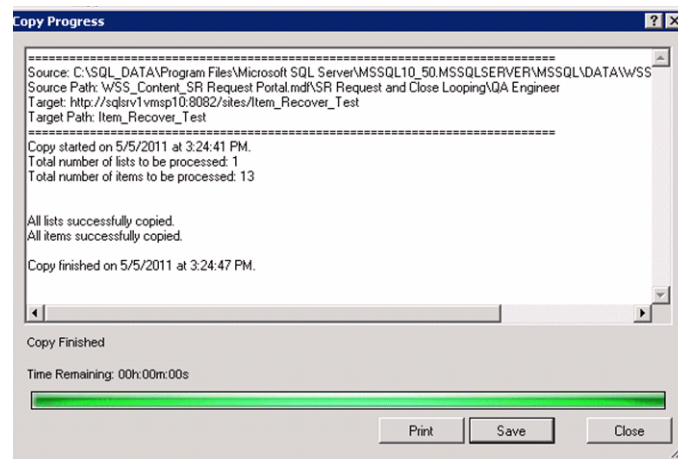
Figure 9 Copy Progress window

9. (Optional) Click **Save** to save the completion report. The details from the completion report are similar to the following:

==

Source: C:\SQL_DATA\Program Files\Microsoft SQL Server\MSSQL10_50.MSSQLSERVER\MSSQL\DATA\WSS_Content_SR Request Portal.mdf

Source Path: WSS_Content_SR Request Portal.mdf\SR Request and Close Looping\QA Engineer

Target: http://sqlsrv1vmsp10:8082/sites/Item_Recover_Test

Target Path: Item_Recover_Test

==

Copy started on 5/5/2011 at 3:24:41 PM.

Total number of lists to be processed: 1

Total number of items to be processed: 13

All lists successfully copied.

All items successfully copied.

Copy finished on 5/5/2011 at 3:24:47 PM.

In the target, the **QA Engineer** list and its items are successfully recovered from source site collection to the target site collection, as shown in Figure 10 on page 38.
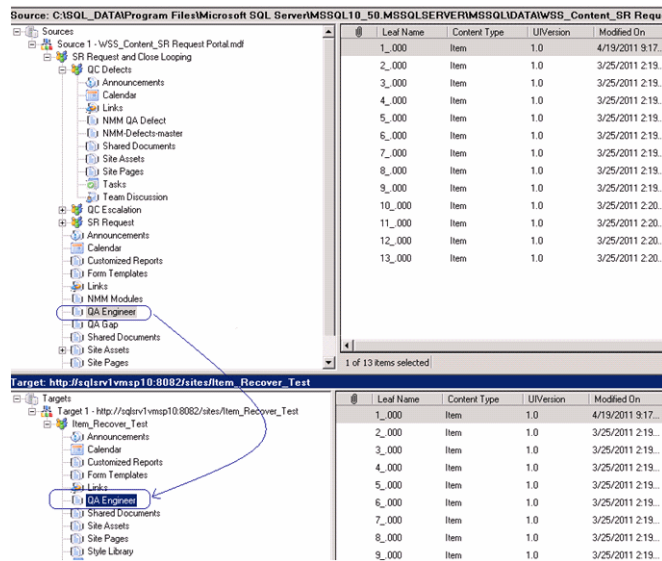
Figure 10 Item QA Engineer recovered at the selected destination

In Ontrack PowerControls, you can connect to more than one source and target (by selecting **File › Open Source** or **Open Target,** as shown in Figure 11 on page 38) and perform granular recovery.
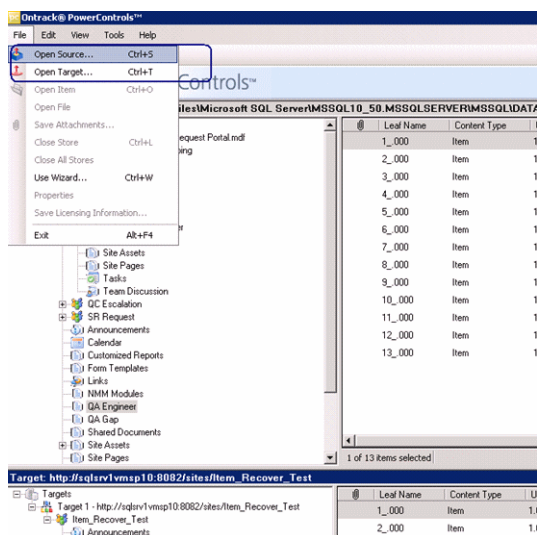
Figure 11 Ontrack PowerControls connecting to multiple sources and targets

Troubleshooting

Review the information in this section to resolve some of the issues that you may encounter while performing the procedures in this document:

Fixing Microsoft SharePoint VSS Writer installation errors

Sometimes, during installation of the Avamar plug-in for SharePoint VSS, an error message may appear stating that the Microsoft SharePoint VSS Writer failed to register. This may occur when a machine has been unregistered from the farm prior to installation and was not re-registered. If this occurs, you can fix it after completing the installation wizard.

You can use the Microsoft Stsadm tool to fix this. This tool is located on the drive where SharePoint is installed. The Stsadm tool is typically installed in the following location:

◆ For SharePoint 2007, %COMMONPROGRAMFILES%\microsoft shared\web server extensions\12\bin

◆ For SharePoint 2010, %COMMONPROGRAMFILES%\microsoft share\web server extensions\14\bin

To use this tool, you must be an administrator on the local computer.

Run the command by typing the following text on a command line:

```
stsadm.exe –o registerwsswriter
```

Microsoft TechNet provides documentation on using this tool in "Stsadm command-line tool (Office SharePoint Server)"
http://technet.microsoft.com/en-us/library/cc261956.aspx.

Detecting a mapped network drive

GLR requires the creation of an Avamar Virtual Drive, which appears as a local drive in folder windows, such as Windows Explorer. If another user or user session has mapped a network drive within a user session on a client machine, Avamar cannot detect those drive mappings when assigning a drive letter for the Avamar Virtual Drive. If you select a drive letter that is already mapped during SharePoint GLR recovery, then the folder view of the drives shows the mapped network drive. The drive letter assignment for the Avamar Virtual Drive is not visible.

To prevent this from occurring, use a drive letter that you know is not in use when you specify the drive letter for the Avamar Virtual Drive during the recovery. Do not use the default value of slash (/), which causes the Avamar Virtual Drive to map to the Z:\ drive.

If you notice the drive mapping issue after you create the Avamar Virtual Drive, then disconnect the conflicting network mapping in the sessions where it is not appearing. The Avamar Virtual Drive then appears.

Axionfs/DDR is too slow and can timeout when using Ontrack PowerControls

Ontrack PowerControls may timeout when connecting to Data Domain surfaced GLR databases with transaction logs that are larger than 2GB. If you encounter this problem, a recommended workaround is to reduce your transaction logs to under 2GB. This issue is currently under investigation and might be fixed in a future release.