Veritas Storage Foundation™ Quick Recovery Solutions Guide for Microsoft Office SharePoint Server 2007

Windows Server 2008 (x64),
Windows Server 2008 R2 (x64)

Symantec.

6.0.1Veritas Storage Foundation Quick Recovery Solutions Guide for Microsoft Office SharePoint Server 2007

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Chapter 5   Vxsnap utility command line reference for Office SharePoint Server 2007

Quick Recovery overview for Office SharePoint Server 2007

This chapter covers the following topics:

- About Quick Recovery snapshot solutions
- About snapshot-assisted backups
- Advantages of Quick Recovery snapshots
- Quick Recovery process
- Implementing Quick Recovery snapshots for SharePoint components
- About the components used in Quick Recovery

About Quick Recovery snapshot solutions

Veritas Storage Foundation for Windows (SFW) provides the capability to create a point-in-time image of all properly configured volumes associated with a SharePoint 2007 farm or component. This image, called a snapshot set, is a complete copy of the SharePoint component at the specific point in time the snapshots are taken. Snapshots of the component or the SharePoint farm are coordinated across multiple SharePoint farm servers.

SFW uses Veritas FlashSnap™ technology along with the Microsoft Volume Shadow Copy Service (VSS) framework to quiesce the component and ensure a persistent snapshot of the production data.

Quick recovery is the term for creating and maintaining the SFW snapshot sets that are stored on the host where the snapshot was taken and are used to quickly recover databases in the event of corruption or an accidental or malicious

update. The quick recovery solution provides fast recovery from logical errors and eliminates the time-consuming process of restoring data from tape. Databases can be recovered to the point in time when the snapshot was taken.

You can create multiple snapshot sets for each SharePoint component and set up schedules for creating and refreshing the snapshot sets. The snapshot sets can be maintained on-host as a Quick Recovery solution.

SFW snapshots use a split-mirror snapshot method. The snapshot is a separate persistent volume that contains an exact duplicate of all the data on the original volume at the time the snapshot is taken. This type of persistent physical snapshot is also known as a Clone (HP) or a BCV (EMC).

Because a snapshot set contains a split-mirror snapshot copy of each of the volumes in the component, the snapshot set requires the same amount of space as the original volumes.

Note: SFW does not support Microsoft Copy on Write (COW) snapshots.

About snapshot-assisted backups

Since a snapshot set created using SFW is an exact copy of the production data, it can be used with a backup application in place of the production volumes to produce regular backups to tape or other media. A snapshot set can be used for backup either on-host or moved to a secondary server.

A snapshot-assisted backup provides the following advantages:

■   Reduces backup I/O load on the production volumes in an on-host environment, allowing backup to be completed with less impact to the users

■   Eliminates backup I/O load on the production server in an off-host environment

Advantages of Quick Recovery snapshots

A Quick Recovery solution serves as a first line of defense to recover components that have been subject to accidental or malicious updates. Quick Recovery is designed to augment your traditional backup methodology. Maintaining a snapshot set requires just the few seconds it takes to detach a split-mirror snapshot from its original volume. On-host snapshot recovery is faster than restoring a full backup from tape or other media; on-host snapshot recovery reduces downtime and helps meet service-level agreements for application availability.

In addition to the primary benefit of recovery from logical errors, snapshot sets can be moved over a SAN to another server and used for other purposes including:

■ Application tuning and testing—data can be updated and modified in a realistic environment without impacting users.

■ Business reporting and decision analysis—up-to-date data is available with minimal impact on the production environment.

Quick Recovery process

The Quick Recovery process can be broken down into the following phases:

■ Creating an initial snapshot set
This has two stages:

  ■ Preparing the mirror for the snapshot set
  This stage takes a while and should be scheduled for a time of low activity.

  ■ Creating the initial snapshot set by splitting the mirror so that it is no longer synchronized with the original volume and becomes a point-in-time copy

■ Periodically refreshing (resynchronizing) the split-mirror snapshot with the original volume, and then splitting the mirror again, as needed or according to a pre-set schedule
This stage is automated by setting up snapshot schedules using the Sharepoint Snapshot Scheduler wizard.

■ Using a snapshot set to recover a corrupted Sharepoint component

Implementing Quick Recovery snapshots for SharePoint components

Veritas Storage Foundation for Windows provides more than one method of implementing Quick Recovery snapshots for SharePoint components.

■ Sharepoint Snapshot Scheduler

■ Sharepoint Snapshot and Snapback wizards and the vxsnap utility

Table 1-1 summarizes the methods and when you would use them.

Table 1-1   Methods of implementing Quick Recovery snapshots

Tasks	Method	For more information
■ Add a new snapshot set schedule for one database	From the VEA: Sharepoint Snapshot Scheduler Wizard	"About the Sharepoint Snapshot Scheduler Wizard" on page 12
■ Create a one-time snapshot as needed	From the VEA: SharePoint Snapshot Wizard and Snapback Wizard You can also use the Vxsnap utility from the CLI.	"About the Sharepoint Snapshot and Snapback wizards and the vxsnap utility" on page 13

The following are the SharePoint components that SFW supports for Quick Recovery snapshots.

■ Office SharePoint Server Search service (Osearch Index and Osearch Database)

■ SharedService Database (SSP DB)

■ Web Application (Content DB)

■ SharePoint Config (Config DB)

■ AdminContent

Note: SFW does not support SharePoint WSS 3.0 indexes for Quick Recovery snapshots.

About the Sharepoint Snapshot Scheduler Wizard

You can use the Sharepoint Snapshot Scheduler Wizard to add a snapshot schedule for an entire farm, one or more SharePoint components such as a

Search Service or the Shared Services Provider, or a single database. With the wizard, you can schedule multiple SharePoint components at a time.

The Sharepoint Snapshot Scheduler Wizard does not include preparing the snapshot volume. You need to use the Prepare command before running the Sharepoint Snapshot Scheduler Wizard to schedule a new snapshot set for SharePoint.

As an example, you may configure a daily snapshot for Quick Recovery use and also add a weekly snapshot on a different disk for backup use.

About the Sharepoint Snapshot and Snapback wizards and the vxsnap utility

If you need to create a one-time snapshot set, you can do so either from the command line, using the vxsnap command line utility, or from the VEA console using the Sharepoint Snapshot and Snapback wizards.

You must prepare the mirror for the snapshot manually, using the Prepare command (or vxsnap utility). In addition, these methods do not include the capability of scheduling periodic refreshing of the snapshot set. Instead you would need to manually reattach the mirror, allowing it to resynchronize, and then create a snapshot set again from the resynchronized mirror.

Therefore, these methods are best suited for a one-time special-purpose snapshot. If you need to keep the snapshot set up to date, you should instead set up a snapshot schedule using the Sharepoint Snapshot Scheduler Wizard.

See "Scheduling a new snapshot set" on page 37.

For more information about the vxsnap command line utility, see "Vxsnap keywords" on page 56.

Note: On Windows Server 2008, all CLI commands must run in the command window in the "run as administrator" mode.

Table 1-2 shows the vxsnap commands that perform the same actions as the VSS wizards.

Table 1-2 Actions of VSS wizard and vxsnap command

Action	VSS wizard	vxsnap command
Creates a snapshot set consisting of snapshots of all the volumes in the specified SharePoint component.	Sharepoint Snapshot	`create`

Table 1-2	Actions of VSS wizard and vxsnap command (Continued)	
Action	**VSS wizard**	**vxsnap command**
Reattaches and resynchronizes a snapshot set to the production database volumes.	VSS Snapback	`reattach`

About the components used in Quick Recovery

SFW Quick Recovery snapshots use Veritas FlashSnap and FastResync technology along with the Microsoft Volume Shadow Copy Service framework to provide Quick Recovery for SharePoint.

FlashSnap and FastResync

Veritas FlashSnap provides the ability to create and maintain the on-host point in time copies of volumes that are integral to the snapshot solutions. Both the original and snapshot volume may consist of multiple physical devices, as in the case of RAID 0+1 (Mirrored Striped) volumes. FlashSnap cannot be used with software RAID-5 volumes.

FastResync is a FlashSnap feature that optimizes the resynchronization of a snapshot volume and its original volume. FlashSnap uses FastResync technology to track the changed blocks in an original volume after a snapshot is detached. A Disk Change Object (DCO) volume is automatically created to store a record of these changes. When the snapshot volume is resynchronized with the original volume, only the changed data blocks are written to the snapshot volume. This greatly reduces the time and performance impact of resynchronization which means that a snapshot set can be refreshed with minimal impact to production.

Integration with Microsoft Volume Shadow Copy Service

SFW integrates with the Windows Volume Shadow Copy Service (VSS) as both a VSS Requestor and a VSS Provider. This integration is provided by FlashSnap.

The Volume Shadow Copy Service (VSS) process allows the SharePoint components to be frozen before the snapshot operation occurs and then thawed immediately after it. This quiescing allows for Microsoft supported and guaranteed persistent snapshots of your data.

FlashSnap integrates with VSS to create a snapshot set containing a set of selected SharePoint volumes without taking the databases offline.

VSS framework

There are four components to the VSS framework: Requestor, Writer, Provider, and the Volume Shadow Copy Service itself.

Table 1-3   VSS framework components

Component	Action
Volume Shadow Copy Service	Talks to and coordinates the Requestor, Provider, and Writer.
Requestor	As a Requestor, the vxsnap component of FlashSnap notifies the VSS coordinator to initiate the VSS request to prepare SharePoint for quiescing and later requests that the snap shot process begin.
Writer	As Writers, VSS-enabled applications such as SharePoint respond to requests to prepare and participate in the generation of snapshots, provide success/failure status, and provide information about the application including what is to be backed up and restored, and restore strategy. SFW uses the SharePoint and SQL writers for snapshots of SharePoint components.
Provider	As a Provider, FlashSnap creates the persistent snapshot.

VSS process

FlashSnap integrates with Volume Shadow Copy Service to take a snapshot.

The following steps occur during the snapshot process:

■   User requests a SharePoint snapshot operation using the VEA GUI, CLI or scheduled snapshot operation.
    For example, in the case of a snapshot backup, the SFW SharePoint application notifies the SharePoint VSS Writer on the front end Web Server to prepare for a shadow copy of the selected Office SharePoint Server 2007 components.

■   The SharePoint VSS Writer instructs Office SharePoint Server 2007 to prohibit administrative actions against the selected components, checks volume dependencies, and suspends all write operations to the affected SharePoint indexes, database and transaction log files. At this point, only read-only access is available to these components.

■   The SFW SharePoint application communicates with local and remote SFW servers to create shadow copies of the related database and index files included in the snapshot request. SharePoint uses the SQL writer for SQL

databases and the Office SharePoint Server Search (osearch) writer, if the search service for a Shared Services provider is included.

■ The SFW SharePoint application signals that the backup succeeded. Office SharePoint Server 2007 records the time of the last backup for the database.

■ When all snapshot operations have completed, the SFW SharePoint application informs the SharePoint VSS Writer, which in turn allows SharePoint Server 2007 to resume ordinary operations.

Preparing to implement Quick Recovery for Office SharePoint Server 2007

This chapter covers the following topics:

- Tasks for preparing to implement Quick Recovery for SharePoint
- Reviewing the prerequisites
- Configuring SharePoint Server storage with Veritas Storage Foundation for Windows
- Starting VSS Writers
- Configuring the Veritas Scheduler Service

Tasks for preparing to implement Quick Recovery for SharePoint

Table 2-1 outlines the high-level objectives and the tasks to complete each objective for preparing to implement SharePoint Quick Recovery.

Table 2-1   Tasks for preparing to implement SharePoint Quick Recovery

Objective	Tasks
"Reviewing the prerequisites" on page 18	■ Verifying hardware and software prerequisites and storage configuration best practices

Table 2-1   Tasks for preparing to implement SharePoint Quick Recovery

Objective	Tasks
"Configuring SharePoint Server storage with Veritas Storage Foundation for Windows" on page 21	■ Creating a dynamic disk group ■ Creating dynamic volumes ■ Moving SharePoint components to SFW dynamic volumes
"Starting VSS Writers" on page 27	■ Starting the VSS writers required for SharePoint snapshots
"Configuring the Veritas Scheduler Service" on page 28	■ Configuring the Veritas Scheduler Service login

Reviewing the prerequisites

A Veritas Storage Foundation for Windows (SFW) quick recovery solution can be implemented on either a single server farm or a multi-server farm. Quick recovery snapshots of the SharePoint components are supported for both Veritas Cluster Server (VCS) and Microsoft clusters.

Supported software

Quick Recovery snapshotsfor SharePoint 2007 are supported on the following software:

■ Veritas Storage Foundation 6.0 for Windows (SFW) with the FlashSnap option
or
Veritas Storage Foundation HA 6.0 for Windows (SFW HA) with the FlashSnap option
Refer to the *Veritas Storage Foundation and High Availability Solutions Installation and Upgrade Guide* for installation and configuration information.

■ On Windows Server 2008 R2, Quick Recovery snapshots for SharePoint 2007 with SFW or SFW HA 6.0 require the hotfix in Microsoft KB2253693:
http://support.microsoft.com/kb/2253693

■ Any of the following SharePoint 2007 Servers and their operating systems:

Table 2-2   Supported SharePoint Server 2007 versions

SharePoint	Windows Servers
Microsoft SharePoint Server 2007 SP1 and later 64-bit Standard Edition or Enterprise Edition	■ Windows Server 2008 x64 ■ Windows Server 2008 R2 x64 See note above regarding required hotfix for Windows Server 2008 R2. For details on operating systems supported by SFW and SFW HA, refer to the *Veritas Storage Foundation and High Availability Solutions Installation and Upgrade Guide*.

Refer to the *Veritas Storage Foundation and High Availability Solutions Quick Recovery Solutions Guide for Microsoft SQL 2005, 2008, and 2008 R2* for additional information on Quick Recovery snapshots for SQL Server.

Storage requirements and best practices

Review the following best practices and requirements for snapshot storage:

■ The hardware for Quick Recovery should include sufficient storage to be able to create dynamic volumes on separate disks or LUNs for the following purposes:

    ■ Databases

    ■ Transaction logs

    ■ Split-mirror snapshots of the SharePoint components

■ For the split-mirror snapshots, make sure to select disks or LUNs that are not used for production data.

■ You can create a snapshot of more than one volume on the same disk or LUN as long as there is sufficient space available.

Configuration requirements and best practices

Review the following configuration requirements and best practices:

■ The system and boot volumes must reside on a separate disk (Harddisk0) from the dynamic volumes used for the SharePoint components and split-mirror snapshots.

■ Disk groups must be of a Storage Foundation for Windows 5.1 or later version. Upgrade any disk groups created using an earlier version of Volume Manager for Windows before creating Quick Recovery snapshots.

■ Database and transaction logs must be stored on disks within a single dynamic disk group.

■ Database and transaction logs should be on separate disks so that disk failure does not affect any of these filegroups.

■ User-defined database and transaction logs may not be stored in the same volume as the SharePoint program files or system data files.

■ Locate snapshot volumes on separate disks from any database and log volumes so that the snapshot process does not interfere with database operations.

■ When creating SharePoint components, ensure that the names of the components are unique. Performing operations on components with names that are not unique may cause unpredictable results.

■ Locate the snapshot volumes for each component on separate disks from snapshots of other components. This is recommended so that the process of

creating the snapshot of one component does not interfere with any operations on another component.

Warning: The snapshot XML files must be stored separately from the volumes that are included in snapshots, otherwise a restore will fail.

■   Locate the DCO volumes for snapshot operations on disks separate from the snapshot mirrors. This is recommended for better I/O performance.

■   Transaction logs should always be configured in a redundant layout. The preferred software layout is RAID 0+1 (mirrored striped) volumes as this provides better read and write performance than RAID 1 (mirrored) alone. The transaction log will generate the most I/O and thus should use the highest performance disks available.

■   The preferred layout for the database is hardware RAID 5, software RAID 1 (mirrored) with logging enabled or software RAID 0+1 (mirrored striped).

Note: FlashSnap is not supported for software RAID 5 volumes.

Configuring SharePoint Server storage with Veritas Storage Foundation for Windows

To use the SFW Quick Recovery snapshot functionality with SharePoint components, you must store the components on Veritas Storage Foundation for Windows (SFW) dynamic volumes. Configuring your SharePoint Server storage with SFW includes the following tasks:

■   Creating one or more dynamic disk groups

■   Creating volumes for the databases and transaction logs

■   Moving SharePoint components to the new SFW volumes

The following is a typical SharePoint configuration and components.
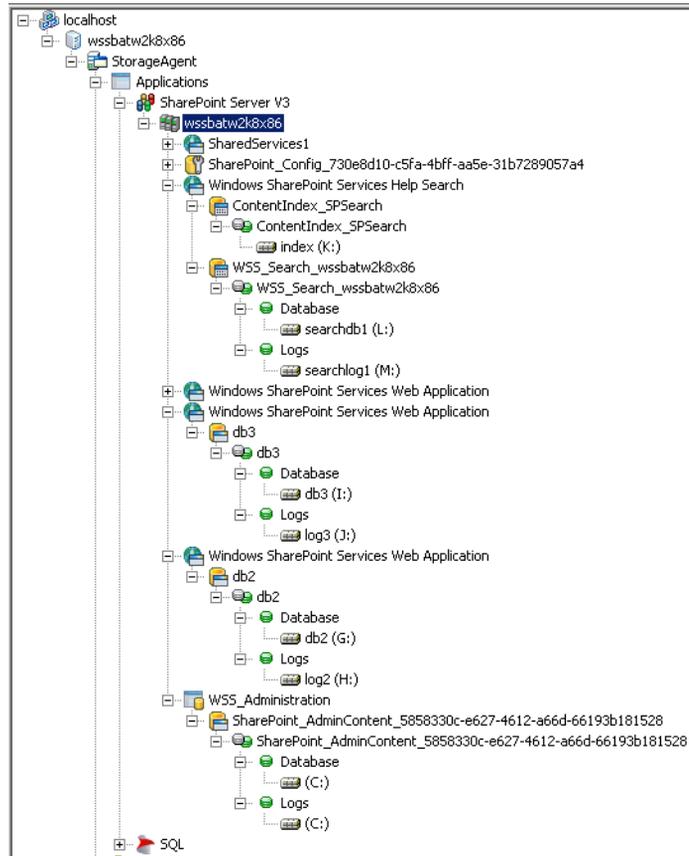
If your SharePoint Server environment is already configured with SFW, skip this section.

Creating dynamic disk groups

Create one or more dynamic disk groups.

Note: Disk groups must be of a Storage Foundation for Windows 5.1 or later version. You must upgrade any disk groups created using an earlier version of Volume Manager for Windows before implementing SFW snapshot solutions. Quick Recovery snapshots are supported only on volumes belonging to an SFW dynamic disk group. They are not supported on volumes belonging to a Microsoft Disk Management Disk Group.

Note: If User Access Control (UAC) is enabled on Windows Server 2008 systems, then you cannot log on to VEA GUI with an account that is not a member of the Administrators group, such as a guest user. This happens because such user does not have the "Write" permission for the "Veritas" folder in the installation directory (typically, `C:\Program Files\Veritas`). As a workaround, an OS administrator user can set "Write" permission for the guest user using the Security tab of the "Veritas" folder's properties.

To create a dynamic disk group from the VEA console

1   Click **Start > Programs > Symantec > Veritas Storage Foundation>Veritas Enterprise Administrator** and if prompted to select a profile, select a profile (or Default).

2   Click **Connect to a Host or Domain** and in the Connect dialog box, specify the host name and click **Connect.**
    For the local system you can specify **localhost**.

3   If prompted to do so, specify the user name, password, and domain for the system.

4   In the tree expand the system name and expand the storage agent.

5   Right-click **Disk Groups**, and click **New Dynamic Disk Group**.

6   On the **Welcome** screen of the New Dynamic Disk Group Wizard, click **Next**.

7   For an off-host or cluster environment, choose from the following:
    ■   For a cluster environment, check the **Create cluster group** check box.
    ■   For an off-host environment, check the **Add private group protection** check box.

8   Select the appropriate disks in the Available disks list and click the **Add** button to move them to the Selected disks list.

9   Click **Next**.

10 Click **Next** to upgrade the selected disks.

11 Click **Finish** to create the new disk group.

Creating dynamic volumes

Create volumes for the database and transaction log.

To create a dynamic volume from the VEA console

1 Start the VEA and connect to the appropriate host.

2 In the tree, expand the system name, expand the storage agent, and then expand **Disk Groups**.

3 In the Welcome panel of the New Volume Wizard, click **Next**.

4 Select the disks for the volume:

   ■ Specify automatic or manual disk selection. Symantec recommends using the **Manually select disks** option.

   ■ Select the appropriate disks in the Available disks list, and click the **Add** button to move them to the Selected disks list.

   ■ You may also check Disable Track Alignment to disable track alignment for the volume. Disabling Track Alignment means that the volume does not store blocks of data in alignment with the boundaries of the physical track of the disk.

   ■ Click **Next**.

5 Specify the parameters of the volume:

   ■ Enter the size.

   ■ Select the layout.

   ■ Select the appropriate mirror options.

   ■ Click **Next**.

6 Create an NTFS file system:

   ■ Accept the default **Format this volume**.

   ■ Click **NTFS**.

   ■ Select an allocation size.

   ■ Accept the default file system label, which is the same as the volume name you entered previously or enter a file system label.

   ■ If desired, select **Perform a quick format**.

   ■ Click **Next**.

7 Review the volume specifications, then click **Finish** to create the new volume.

Moving SharePoint components to SFW volumes

When SharePoint is installed on a system, all the SharePoint components are installed in the default location. To take a snapshot of any of the components with SFW for quick recovery, these components need to reside on SFW dynamic volumes. The SharePoint farm needs to be stopped before moving any of the components.

Note: The entire SharePoint farm does not need to be stopped to move just one content database. In this situation, you need to remove the content database from SharePoint, move the database to an SFW dynamic volume, and then add the content back into SharePoint. (The operation of removing the database from SharePoint does not delete the database, instead it simply removes the link between SharePoint and the database.)

Refer to your Microsoft SharePoint Server documentation for information about creating a new database and setting the database and log paths.

The following procedures cover how to stop the SharePoint farm, move the components, move the Office SharePoint Server Index location, and restart the farm.

To stop the SharePoint farm

1   On the server that is running the Central Administration Web site, access the Services snap-in and stop the following services:

   ■   Microsoft Single Sign-On service

   ■   Office Document Conversions Launcher service

   ■   Office Document Conversions Load Balancer service

   ■   Office SharePoint Server Search service

   ■   Windows SharePoint Services Administration service

   ■   Windows SharePoint Services Search service

   ■   Windows SharePoint Services Timer service

   ■   Windows SharePoint Services Tracing service

   ■   Windows SharePoint Services VSS Writer service

2   On the server that is running the Central Administration Web site, enter the following command in a command window:

   `iisreset /stop`.

3   Repeat these steps on each server in the SharePoint Farm.

> **Note:** These steps stop the SharePoint service and the operation of the SharePoint application.

To move the SharePoint components

1   On the server that has SQL installed, open a command window.

2   Open the SQL command console.
    ```
    sqlcmd -S .\OFFICESERVERS
    ```

3   Display all database names and locations.
    - `1> select name, filename from sysdatabases`
    - `2> go`

4   Detach the databases that you want to move.
    For example, select the WSS_Content database.
    - `1> exec sp_detach_db @dbname='WSS_Content'`
    - `2> go`

5   Open Windows Explorer, locate the selected database files, and move them to SFW dynamic volumes.

6   Attach the databases that you moved to an SFW dynamic volume.
    For example, select the WSS_Content database files on volume E: and F:.
    - ```
      1> exec sp_attach_db @dbname='WSS_Content',
         @filename1='e:\wss_content.mdf',
         @filename2='f:\wss_content_log.ldf'
      ```
    - `2> go`

7   Verify that the database is up and running.
    - `1> select name from sysdatabases`
    - `2> go`

To move the Shared Services Provider's Office SharePoint Server Search Service Index

◆   Each Shared Services Provider (SSP) also has a Office SharePoint Server Index location for its Office SharePoint Server Search Service. By default, this location is in a directory labeled with a GUID underneath "C:\Program Files\Microsoft Office Servers\12.0\Data\Applications". To move this index location without resetting the index you must use the `stsadm -o editssp` command. The example below moves the index files for the SSP called SharedServices1 from their current location to the N:\osearch directory. Note that you don't need to specify the current location of the index files when executing the move.

```
stsadm -o editssp -title SharedServices1
-indexlocation N:\OSearch
```

To restart the SharePoint Farm

1 On the server that is running the Central Administration Web site, access the Services snap-in and start the following services:

   ■ Microsoft Single Sign-On service

   ■ Office Document Conversions Launcher service (optional)

   ■ Office Document Conversions Load Balancer service (optional)

   ■ Office SharePoint Server Search service

   ■ Windows SharePoint Services Administration service

   ■ Windows SharePoint Services Search service

   ■ Windows SharePoint Services Timer service

   ■ Windows SharePoint Services Tracing service

   ■ Windows SharePoint Services VSS Writer service (optional)

   a At the command prompt, type iisreset /start.

   b Repeat steps a and b on each server in the farm.

2 On the server that is running the Central Administration Web site, enter the following command in a command window:

   `iisreset /start.`

3 Repeat these steps on each server in the SharePoint Farm.

Starting VSS Writers

This procedure describes how to start VSS Writers that are required for SharePoint snapshots.

To start VSS Writers

1 Start "SQL Server VSS Writer" from Windows Services.
   Make sure to set the service to start automatically on system start up.

2 Enable the SharePoint VSS Writer by entering the following command in a command window.

   ```
   C:\Program Files\Common Files\Microsoft Shared\web
   server extensions\12\BIN>stsadm.exe -o
   registerwsswriter
   ```

3 Verify that the SQL and SharePoint VSS Writers have started by entering the following command in a command window.

```
C:\Program Files\Common Files\Microsoft Shared\web
server extensions\12\BIN>vssadmin list writers
```
The output from this command displays the status of the VSS Writers on the system.

Sample output from the command is as follows:

```
vssadmin 1.1 - Volume Shadow Copy Service
administrative command-line tool
(C) Copyright 2001 Microsoft Corp.
Writer name: 'SharePoint Services Writer'
   Writer Id: {c2f52614-5e53-4858-a589-38eeb25c6184}
   Writer Instance Id:
{4bfd489b-b48d-4fc7-be7c-c1e858d7146a}
   State: [1] Stable
   Last error: No error
Writer name: 'SqlServerWriter'
   Writer Id: {a65faa63-5ea8-4ebc-9dbd-a0c4db26912a}
   Writer Instance Id:
{3545eff6-197e-40ef-b48f-891cd251f413}
   State: [1] Stable
   Last error: No error
```

Configuring the Veritas Scheduler Service

SFW runs using the Windows system account. This account cannot be used to initiate remote server operations for SharePoint. To request a SharePoint operation on a remote server, SFW must impersonate a domain account that is a SharePoint Farm Administrator, and is also in the local Administrators group on each server where snapshot operations will be performed. SFW uses the Log On account for the Veritas Scheduler Service.

To configure the Veritas Scheduler Service login

1 Access the Windows Services by clicking **Start**>**Administrative Tools**>**Services**.

2 In the Services window, select Veritas Scheduler Service.

3 Right -click Veritas Scheduler Service and select **Properties** in the context menu.

4 On the Log On tab of Properties, click the **This Account** radio button and enter the name and password of the domain account that will be used.

5 On the General tab of Properties, set the startup type to automatic and click **Apply**.

6 Close Properties and restart the Veritas Scheduler Service.

Scheduling or creating a snapshot set for Office SharePoint Server 2007

This chapter covers the following topics:

About scheduling or creating a snapshot set

You can use the VSS Snapshot Scheduler Wizard to add a snapshot schedule for all volumes of a selected component. The scheduler wizard enables you to automate the refreshing of snapshots according to the schedule that you define.

However, the VSS Snapshot Scheduler Wizard does not prepare the snapshot mirrors. You must use the Prepare command to prepare the snapshot mirrors before running the VSS Snapshot Scheduler Wizard for a component.

At times you may want to create a one-time snapshot of a specific volume or volumes. You can do so using either the vxsnap command line utility or from the

Veritas Enterprise Administrator (VEA) console using the VSS Snapshot and Snapback wizards.

If you want to snapshot only a single volume rather than multiple volumes in the component, you can use the VEA Snapshot Volume Wizard rather than the VSS Snapshot Wizard. See the *Storage Foundation for Windows Administrator's Guide.*

Tasks to schedule a new snapshot set

Table 3-1 outlines the high-level objectives and the tasks to complete each objective.

Table 3-1   Tasks for scheduling a new snapshot set

Objective	Tasks
"Completing the configuration requirements for snapshots" on page 33	■ Verifying hardware and software prerequisites
"Preparing the snapshot mirrors" on page 33	■ Creating snapshot mirrors using the VEA Prepare command or the vxsnap utility
"Scheduling a new snapshot set" on page 37	■ Using the VSS Snapshot Scheduler Wizard to create the initial snapshot set and set up the schedule for keeping it refreshed.

Tasks to create a one-time snapshot set

Table 3-2 outlines the high-level objectives and the tasks to complete each objective.

Table 3-2   Tasks for creating a one-time snapshot set

Objective	Tasks
"Completing the configuration requirements for snapshots" on page 33	■ Verifying hardware and software prerequisites
"Preparing the snapshot mirrors" on page 33	■ Creating snapshot mirrors using the VEA Prepare command or the vxsnap utility
"Creating a one-time snapshot set" on page 34	■ Creating the one-time snapshot set using the VEA or the vxsnap utility.

Completing the configuration requirements for snapshots

Make sure that you complete the following configuration requirements before scheduling or taking SharePoint snapshots:

■ Ensure that your system hardware and software meets the requirements.
See "Reviewing the prerequisites" on page 18

■ Set up SharePoint Server for use with Storage Foundation for Windows (SFW).
See "Configuring SharePoint Server storage with Veritas Storage Foundation for Windows" on page 21.

■ Ensure that the SharePoint Server VSS Writer service is started.
See "Starting VSS Writers" on page 27.

■ Ensure that you have configured the Veritas Scheduler Service login.
See "Configuring the Veritas Scheduler Service" on page 28.

■ Ensure that you have disks with enough space to store the snapshot volumes. Each snapshot set requires the same amount of space as the original volumes.

■ The `vxsnap` commands must be invoked on a local system. On Windows Server 2008, all CLI commands must run in the command window in the "run as administrator" mode.

Preparing the snapshot mirrors

To prepare the snapshot mirrors in order to create a snapshot from the VEA or from the vxsnap command line, you can use one of the following methods on one of the SharePoint servers:

■ The Prepare command from the VEA
You repeat the VEA console Prepare operation for each database volume.

■ The `vxsnap prepare` command from the CLI
Use the `vxsnap prepare` command to prepare a mirror for each of the volumes associated with the component.

The snapshot mirrors remain attached to the original volumes and continue to be updated until you use the VSS SharePoint Snapshot Wizard, the `vxsnap create` command, or the VSS Snapshot Scheduler Wizard to create the snapshot set.

For the snapshot volumes, make sure to select disks or LUNs that are not used for production data. You can create more than one snapshot volume on the same

disk as long as there is sufficient space available and as long as the snapshots are of different production volumes.

Also ensure that the SharePoint Server VSS Writer service is started.

To create the snapshot mirrors for components using the VEA console

1   From the VEA console, navigate to the SharePoint server.

2   Expand the system node, the Storage Agent node, and the Applications node.

3   Expand the SharePoint node.

4   Right-click the SharePoint component and click **SharePoint Prepare**.

5   In the wizard, review the Welcome page and click **Next**.

6   Select the component to prepare for the snapshot and click **Next**.

7   Review the components for the prepare operation and click **Next**.

8   Review the specifications for the prepare operation and click **Finish**.

To create the snapshot mirrors using the vxsnap prepare **command**

◆   Type the command, as in the following example:

```
> vxsnap prepare [-b] writer="Sharepoint Services Writer"
    component=wss_content
```

This command creates snapshot mirrors of all volumes contained in the component.

The complete syntax of the vxsnap prepare command is:

```
vxsnap prepare component=ComponentName/writer=WriterName
```

Creating a one-time snapshot set

Creating a one-time snapshot or snapshot set is a two-step process:

■   The first step is to prepare the snapshot mirrors for the database volume or volumes. If you are creating a snapshot set after a snapback to refresh existing snapshot mirrors, you can skip this step.

■   The second step uses either the VSS SharePoint Snapshot Wizard or the vxsnap create command to create the snapshot set by detaching the snapshot mirrors from the original volumes. This step creates separate on-host snapshot volumes as well as a snapshot set XML file to store the application and snapshot volume metadata.
    The VSS SharePoint Snapshot Wizard and vxsnap create command integrate with VSS to quiesce the component and then simultaneously snapshot the volumes in the database. This snapshot is done while the

component is online and without disrupting the component operations. The resulting snapshot set provides a complete picture of the component at the point in time the command is issued.

The VSS SharePoint Snapshot Wizard can be run from either a local system or a remote node. The vxsnap utility must be run from the local system.

To create the snapshot set from the VEA console

1   From the VEA console, navigate to the SharePoint server.

2   Expand the system node, the Storage Agent node, and the Applications node.

3   Expand the **SharePoint** node.

4   Right-click the SharePoint component and click **SharePoint Snapshot**.

5   In the wizard, review the Welcome page and click **Next**.

6   Specify the snapshot set parameters as follows and then click **Next**:

Select Component for snapshot operation	Select the component for the snapshot set
Directory	The wizard creates the snapshot set metadata XML file. The XML metadata file is stored by default in the directory shown on the screen.
	There are two ways to change the default location of the XML file.
	First, edit the directory path in the Directory field for this wizard screen. Second, change the XML file location. Use a text editor to create a text file named redirect.txt. This text file should contain a single text line specifying the full path to the location of the XML file, for example, G:\BackupSets. Save the redirect.txt file in the default directory C:\Program Files\Veritas\Veritas Volume Manager 6.0\VSSXML.
	If SFW/SFWHA is installed on the D drive, then the path will be the same as above, but on the D drive.
Snapshot set	Enter a name for the snapshot set, for example, billing or accept the default name. The wizard generates a default snapshot set name that includes the term "SnapshotSet", component name, date, and time.

Select snapshot type	Select the snapshot type.
	You can specify that snapshots be created as either a Full backup or Copy backup type. Either type can be used to restore a SharePoint component. However, if you want to replay logs as a part of restoring a component, a Full backup needs to have been created earlier. When replaying logs, you can replay from the time of the last Full backup. A Copy backup does not affect this sequence of log replay and therefore is often used as an "out of band" copy for purposes such as testing or data mining.

7   Review the components for the snapshot operation and click **Next**.

8   Review the specifications of the snapshot set and click **Finish**.

To create the snapshot set from the command line

◆   Type the command, as in the following example:

```
> vxsnap -x test.xml create
    writer="ShsrePoint Services Writer"
    component=wss_component1
    component=wss_component2
```

This example creates a snapshot based on the component wss_component1 and wss_component2. The XML file, test.xml, is used to store the VSS metadata that identifies the snapshot. This file is used in the command to reattach the snapshot to resynchronize it and in the command to recover the database using the snapshot.

The complete syntax of the vxsnap create command is:

```
vxsnap -x filename create
    source=Volume
    writer=WriterName [component=ComponentName]...
    [backuptype=FULL|COPY]
```

The *WriterName* and *ComponentName* are required. The component name is the name of the SharePoint component. You can use either a Full backup or Copy backup for restoring from a snapshot (recovery). However, if you want to replay logs as part of restoring a database, a Full backup needs to have been created earlier. When replaying logs, you can replay from the time of the last Full backup. A Copy backup does not affect this sequence of log replay and therefore is often used as an "out of band" copy for purposes such as testing or data mining.

Note: Any text string that contains spaces must be enclosed in quotation marks.

Note: When taking a snapshot of the Office SharePoint Server Search (Osearch) component, Symantec recommends that the database and index of these components be snapshotted at the same time. Restoring only the database or only the index of these components from a snapshot may cause the component's database not to be synchronized. Restoring an Office SharePoint Server Search (Osearch) component from a snapshot that contains both database and index would avoid this issue.

Scheduling a new snapshot set

Before you run the VSS SharePoint Snapshot Scheduler Wizard to schedule a snapshot set for a database, you must prepare a snapshot mirror for each of the volumes in the database.

You can then use the VSS SharePoint Snapshot Scheduler Wizard to schedule the initial snapshot set and to set up the schedule for keeping it refreshed. You can run the wizard on any of the SharePoint servers.

When the scheduled snapshots occur, the snapshot mirrors are detached from the original volumes, creating separate on-host snapshot volumes as well as an XML file to store the SharePoint and snapshot volume metadata. The scheduled process integrates with VSS to quiesce the databases and then simultaneously snapshot the volumes in the database. This snapshot is done while the databases are online and without disrupting the database operations.

To schedule a snapshot for a selected component

1   From the VEA console, navigate to the SharePoint Server.

2   Expand the system node, the Storage Agent node, and the **Applications** node.

3   Expand the **SharePoint** node.

4   Right-click the SharePoint component, and click **Schedule SharePoint Snapshot**.

5   In the Welcome panel, review the information and click **Next**.

6 Specify the snapshot set parameters and click **Next**:

Select component for snapshot operation	Select the component for the snapshot set.
Directory	The wizard creates the snapshot set metadata XML file.The XML file is stored by default in the directory shown on the screen.
	In a clustered server environment, the XML file must be saved on shared storage to be available from all nodes in the cluster.
	There are two ways to change the XML file location.
	First, edit the directory path in the Directory field for this wizard screen. Second, change the XML file location. Use a text editor to create a text file named `redirect.txt`. This text file should contain a single text line specifying the full path to the location of the XML file, for example, `G:\BackupSets`. Save the `redirect.txt` file in the default directory `C:\Program Files\Veritas\Veritas Volume Manager 6.0\VSSXML`.
	If SFW/SFW HA is installed on the D drive, then the path will be the same as above, but on the D drive
Snapshot set	Enter a name for the snapshot set, for example, billing or accept the default name. The wizard generates a default snapshot set name that includes the term "SnapshotSet", component name, date, and time.
Select snapshot type	Select the snapshot type.
	You can specify that snapshots be created as either a Full backup or Copy backup type. Either type can be used to restore a SharePoint component. However, if you want to replay logs as part of restoring a component, a Full backup needs to have been created earlier. When replaying logs, you can replay from the time of the last Full backup. A Copy backup does not affect this sequence of log replay and therefore is often used as an "out of band" copy for purposes such as testing or data mining.

7 Review the components for the snapshot operation and click **Next.**

8 In the Schedule Information panel, on the General Options tab, specify the following:

Name of this schedule	Enter a unique name for the snapshot set schedule.
	This name identifies the snapshot schedule if you later want to view information about the snapshot status. A default name consists of the VSS writer name, the component name and a numbered suffix that increments with each schedule.
Description of this schedule	Optionally, enter a description to help you identify the schedule when you view information about the snapshot status.
Start Time	The time of the day to begin taking snapshots.
End Time	The time of day to end taking snapshots.
	If a snapshot is in progress it is completed but a new one is not started after the end time.
Schedule takes effect on	The date on which the specified schedule takes effect. The default is the current date.
Restart task every	The interval between snapshots, in minutes.
	For example, if the interval is 360 minutes and you schedule a snapshot start time of 12 P.M. and an end time of 7 P.M, the snapshot occurs twice. If no interval is specified the snapshot occurs once.
Every	Enable the **Every** option to have the snapshot schedule continue to occur. Otherwise the schedule applies only for one day.
	Specify the number of days before restarting the snapshot schedule.
	For example, 1 day would mean the schedule takes effect daily, 2 days would mean every other day.
Start On	If you enable the Every option, specify the starting date.
Pre Command	Optionally, specify the full path of a command script to run before the scheduled snapshot occurs.
Post Command	Optionally, specify the full path of a command script to run after the snapshot is complete.

9 To specify run days for the schedule, make selections on the following tabs:

Days of Week	Select one or more days on one or more weeks of the month.
	You can click a button at the top of the column to select the entire column or a button to the left of a row to select the entire row. For example, clicking **First** schedules the snapshots to occur on the first occurrence of all the week days for the month.
Days of Month	Select one or more days of the month. You can also check the **Last Day** checkbox to schedule the snapshot for the last day of each month.
Specific Dates	Select one or more specific dates to include in or to exclude from the schedule.
	Excluding a date takes precedence over days scheduled on the other tabs. For example, if you schedule every Monday on the Days of Week tab, and you exclude Monday October 9 on the Specific Dates tab, the snapshots are not taken on October 9.

If two schedules overlap for the same snapshot set, only one snapshot is taken. For example, if you select every Thursday plus the last day of the month, and the last day of the month occurs on Thursday, only one snapshot is taken on Thursday.

10 Click **Next.**

11 Review the snapshot set and schedule details and click **Finish**.

When scheduling snapshots using the Quick Recovery Configuration Wizard or the VSS Snapshot Scheduler Wizard, you can use the information in the following table to help avoid problems or troubleshoot situations.

Situation	Resolution
Snapshots do not occur on a scheduled date.	The date may have been excluded under "Specific Dates" on the schedule. Excluding a date takes precedence over other days scheduled.
A snapshot is not taken on the date that you create the schedule, although that date is specified as the "Schedule takes effect on date".	The date shown in the Schedule takes effect on field is used as a run day only if no other run days are specified. If you specify other run days, the schedule starts running on the earliest day specified.
	If you want the current date included in a schedule, specify it as an Include date on the Specific Dates tab.

Situation	Resolution
A scheduled snapshot does not occur for an imported template schedule.	If you import a template that uses the current date as the "takes effect on" date, but part of the schedule cannot be implemented for the current date, the effective date is shifted to the following day.
	For example, if the schedule includes two daily snapshots, one in the morning and one at night, and you import the schedule in the afternoon, neither of the snapshots occur on the current date. Both occur the following day.
While running the Quick Recovery Wizard to modify template settings, the existing settings are not displayed.	If a scheduled snapshot operation is occurring on the selected object at the same time that you select the object in the wizard, the wizard is temporarily unable to display the existing settings.
	You can try running the wizard later.
A schedule is unavailable to be edited in the Quick Recovery Wizard.	Expired schedules cannot be edited.
	Instead, delete the expired schedule and add a new one.
You want to use the VSS Scheduler wizard but the Applications node is not shown in the VEA.	You may need to refresh the VEA display to see the node.
Drive letters assignments for snapshot volumes do not occur.	If time elapses between when you use the wizard to assign drive letters and when the snapshot operation occurs, a drive letter you assigned may become unavailable. When this occurs, the snapshot operation is performed, but no drive letters are assigned.
	You can assign or change drive letters or mount paths in Veritas Enterprise Administrator.
A scheduled snapshot fails after you have done a manual snapback (reattach) of one or more of the snapshot volumes in the snapshot set.	When a snapback is done manually for a volume rather than by using the VSS Snapback wizard or allowing the scheduler to handle it, the XML metadata file is not deleted. To take the next scheduled snapshot, the scheduler attempts to reattach all the volumes specified in the XML metadata file and fails because one or more are already reattached. Therefore, the snapshot also fails.
	To ensure that the next scheduled snapshot works correctly, use the VSS Snapback wizard (or the vxsnap utility) to reattach using the XML file.

Situation	Resolution
Two databases are on the same volume. You run the Quick Recovery wizard to schedule the first database. You then run it again to schedule a snapshot for the second database on the same disk. But the mirror preparation for the first database is not yet complete.	You can choose from the following ways to avoid these problems:
	■ Include both databases in the snapshot when running the wizard the first time.
The following problems can occur:	■ Select a different disk for the second snapshot mirror when running the wizard the second time.
■ When running the wizard, the second time, it does not update the available disk space shown for the disk where the first snapshot is scheduled.	■ Wait for the mirror preparation for the first snapshot to finish before running the wizard to schedule the second snapshot.
■ Mirror preparation for the second database fails.	

In addition, when troubleshooting, you may want to review the following logs.

If a schedule fails, check the scheduler service logs in the following folder:

```
C:\Program Files\Veritas\Veritas Volume Manager
6.0\logs\SchedService.log
```

If a snapshot fails, check the VxSnap.log file in the following folder:

```
C:\Program Files\Veritas\Veritas Volume Manager 6.0\logs
```

Quick Recovery Configuration wizard log files are located in the following path:

```
C:\ProgramData\Veritas\winsolutions\log
```

Refreshing a snapshot set manually

Once a snapshot set has been created, it can be refreshed quickly since the time-consuming step of preparing the mirrors is not required.

Normally, if you want to periodically refresh a snapshot set, you set up the snapshot schedule using the VSS Snapshot Scheduler Wizard.

However, if you should need to manually refresh a snapshot set, you can do so. To refresh the snapshot set requires the following tasks:

> **Note:** The VSS Refresh option available in the VEA console from the VSS Writer object refreshes the display of the VSS Writer and components. It does not refresh the snapshot set.

Reattaching the split-mirror snapshots

The VSS SharePoint Snapback wizard reattaches and resynchronizes an existing snapshot set so that it matches the current state of its original SharePoint component.

The following describes how to resynchronize (snapback) a snapshot set.

To reattach the split-mirror snapshots to the original volumes using the GUI

1   Except for the VEA GUI, close all windows, applications, or third-party system management tools that may be accessing the snapshot set.

2   Using the VEA console, navigate to the Storage Agent node in the tree-view and expand the SharePoint nodes under Applications.

3   Right-click the SharePoint Server node and click **SharePoint Snapback**.

4   Review the Welcome page and click **Next**.

5   Select the snapshot set you want to snapback and click **Next**.
    The XML metadata file contains all required information needed to snapback the snapshot set, including the names of the database and transaction logs volumes. Click the appropriate header to sort the list of available files by **File Name** or **CreationTime**. This file is deleted after the snapback operation has completed successfully.

6   Verify that the snapback specifications are correct and click **Finish**.

To reattach the split-mirror snapshots to the original volumes from the command line

1   Close the database application GUI and all Explorer windows, applications, consoles, or third-party system management tools that may be accessing the volumes.

2   Type the command, as in the following example:
    ```
    >vxsnap -x SnapshotSet.xml reattach
    writer="SharePoint Server"
    ```
    This command uses the information in the SnapshotSet.xml file to reattach and resynchronize all the volumes in the snapshot set. This XML file is deleted after the reattach operation has completed successfully. The

snapshot volumes remain synchronized with the original volumes until the `vxsnap create` command is issued.

The complete syntax for the `vxsnap reattach` command is:

```
vxsnap -x Filename [-f] [-b] reattach writer=WriterName
```

Creating the refreshed snapshot set

After you have reattached and resynchronized the snapshot set mirrors with the original volumes, using the VSS Snapback wizard or from the command line, create a new snapshot set of the database using either the VSS Snapshot Wizard or the `vxsnap create` command.

See "Creating a one-time snapshot set" on page 34.

Recovery for Office SharePoint Server 2007

This chapter covers the following topics:

About recovering a SharePoint Server component

You can use the on-host Quick Recovery snapshot set to quickly recover a component after logical corruption.

You can also use a snapshot set to recover a component after production volumes are lost due to hardware failure. This recovery assumes that the failure does not affect the disk or disks where the snapshot set volumes are located.

You can use either the VSS Restore Wizard from the Veritas Enterprise Administrator (VEA) console or the `vxsnap restore` command. Both of these methods integrate with VSS to notify the SharePoint VSS Writer to prepare for the restore before the snapback operation and then to complete post-restore processes afterwards.

After completing the recovery, the snapshot set should be refreshed to ensure that you have the most up to date snapshot of your data.

Note: Refer to the Troubleshooting chapter of the *Veritas Storage Foundation for Windows Administrator's Guide* for troubleshooting information.

Tasks for recovering a SharePoint Server component

Table 4-1 outlines the high-level objectives and the tasks to complete each objective. The particular task required depends on the type of recovery you are using.

Table 4-1   Tasks for recovery using Quick Recovery snapshots

Objective	Tasks
"Prerequisites for recovering a SharePoint Server component" on page 47	■ Verifying the prerequisites for using VSS recovery
"Types of recovery" on page 47	■ Understanding the types of recovery
"Recovering using snapshots without log replay" on page 51	■ Recovering to a specified point in time using the VSS Restore wizard or the vxsnap utility
"Restoring snapshots and manually applying logs" on page 52	■ Recovering to the time of the snapshot set using the VSS Restore wizard or the vxsnap utility
"Post-recovery steps" on page 54	■ Refreshing the snapshot set

Prerequisites for recovering a SharePoint Server component

You can use the VSS Restore Wizard or vxsnap command line utility to recover a component from a snapshot set. Both the snapshot set and the snapshot set XML metadata file must be available.

Types of recovery

Table 4-2 gives an overview of the options you can select for recovery. The options are available from either the VSS Restore Wizard or the vxsnap restore command.

Table 4-2   Recovery options

Selected option	Database state after recovery	Description
Recovery without logs	online	Restore to the time of the snapshot set.
		Database and transaction log volumes are restored from the specified snapshot set database and log volumes. No additional transaction logs are applied.
No Recovery	loading	Restore the snapshot set and then manually apply logs in SQL.
		Restores the database and transaction log volumes from the specified snapshot set and leaves the database in a loading state. To bring the database back to an operational state, you must manually apply your backup transaction logs within SQL Server to the desired point in time.
		Before using this option, you must back up your transaction logs within SQL Server. This log operation requires that at least one Full backup was created earlier.

Table 4-3 shows the type of recovery that is supported for SharePoint components.

Table 4-3   Recovery types supported for SharePoint components

SharePoint component	Recovery without logs	No Recovery	Recovery without original volumes
Osearch Index and Database	Yes	Yes	Yes
Shared Service Database (SSP DB)	Yes	Yes	Yes
Web Application (Content DB)	Yes	Yes	Yes
SharePoint Config (Config DB)	Yes	Yes (available only with CLI command)	Yes (available only with CLI command)
Admin Content	Yes	Yes	Yes

Notes about recovery types

Osearch index and database

- After restoring an Osearch index and database, perform the following:
  - Open the service manager and locate/restart Office SharePoint Server Search.
  - Perform an incremental crawl to keep the index and database up to date.
- After restoring an Osearch index and database with missing original volumes, perform the following:
  - Assign the original drive letters to the volumes (index volume, database volume, and log volume).
  - In SQL, use the "alter database [name] set online" command to bring the database online.
  - Open the service manager and locate/restart Office SharePoint Server Search (Osearch service).
  - Perform an incremental crawl to keep the index and database up to date.

- After restoring an Osearch index and database with the no recovery option, perform the following:
  - Use SQL to restore the additional logs and bring the SQL database online.
  - Open the service manager and locate/restart Office SharePoint Server Search (Osearch service).
  - Perform an incremental crawl to keep the index and database up to date.

SSP Content database or a WSS Content database

- After restoring an SSP Content database or a WSS Content database with missing original volumes, perform the following:
  - Assign the original drive letters to the volumes (database volume and log volume).
  - In SharePoint, remove the content database from SharePoint. (The operation of removing the database from SharePoint does not delete the database, instead it simply removes the link between SharePoint and the database.)
  - In SQL, use the "alter database [name] set online" command to bring the database online.
  - In SharePoint, add the content database back into SharePoint.
- After restoring an SSP Content database or a WSS Content database with the no recovery option, perform the following:
  - In SharePoint, remove the content database from SharePoint. (The operation of removing the database from SharePoint does not delete the database, instead it simply removes the link between SharePoint and the database.)
  - Use SQL to restore the additional logs and bring the SQL database online.
  - In SharePoint, add the content database back into SharePoint.

Config database

- After restoring a Config database with missing original volumes, perform the following:
  - Assign the original drive letters to the volumes (database volume and log volume).
  - In SQL, use the "alter database [name] set online" command to bring the database online.
  - Open the service manager and restart all SharePoint Services.

> **Note:** Only the vxsnap restore -r CLI command can be used to restore a Config database with missing original volumes.

- After restoring a Config database with the no recovery option, perform the following:
    - Use SQL to restore the additional logs and bring the SQL database online.
    - Open the service manager and restart all SharePoint Services.

Admin Content database

- After restoring an Admin Content database with missing original volumes, perform the following:
    - Assign the original drive letters to the volumes (database volume and log volume).
    - In SQL, use the "alter database [name] set online" command to bring the database online.
    - Open the service manager and restart all SharePoint Services.
- After restoring an Admin Content database with the no recovery option, perform the following:
    - Use SQL to restore the additional logs and bring the SQL database online.
    - Using the service manager, start all SharePoint Services.

Shared Service Database (SSP DB)

- After restoring a Shared Service Database (SSP DB) with missing original volumes, perform the following:
    - Assign the original drive letters to the volumes (database volume and log volume).
    - In SQL, use the "alter database [name] set online" command to bring the database online.
    - Open the service manager and restart all SharePoint Services.
- After restoring a Shared Service Database (SSP DB) with the no recovery option, perform the following:
    - Use SQL to restore the additional logs and bring the SQL database online.
    - Open the service manager and stop all SharePoint services.
    - Using the service manager, start all SharePoint Services.

Recovering using snapshots without log replay

The following procedure uses the Recovery option. It restores the component database from the snapshot set volumes to the time of the snapshot set. The component database and transaction log volumes are restored but no additional transaction logs are applied.

To recover a database without log replay using the VEA

1   Close the SQL GUI and all Explorer windows, applications, consoles (except the VEA), or third-party system management tools that may be accessing the volumes. It is also recommended to bring the database offline.

2   From the VEA console on the local SharePoint server, navigate to the system where the SharePoint component volumes are located.

3   Expand the system node, the Storage Agent node, Applications node, and the **SharePoint** node.

4   Right-click the SharePoint Server and click **SharePoint Restore**.

5   Review the Welcome page and click **Next.**

6   Select the snapshot set XML metadata file to be used for this operation and click **Next**.
    The XML metadata file contains all required information needed to restore the snapshot set, including the names of the database and transaction logs volumes. Click the appropriate header to sort the list of available files by **File Name** or **Creation Time**.

7   On the Select Restore Type panel, click **Recovery.**
    If one or more original volumes are missing, you can check the checkbox for a Recovery with missing original volumes.

8   You may receive a message "Some volumes in this component have open handles. Do you want to override these handles and do this restore? Click **Yes** to proceed." Click **No**, close any open handles and retry the command.

9   Verify the restore specifications and click **Finish**.
    The database is restored to the time the snapshot set was created or last refreshed. If you took it offline earlier, bring it back online.

10 The restore operation leaves the snapshot volumes snapped back to the production volumes. To ensure that another split-mirror snapshot set is immediately available, use the VSS Snapshot Wizard to create a new snapshot of all the volumes in the SharePoint component.

To recover without log replay using the `vxsnap restore` **command**

1   Close the SQL Enterprise Manager GUI and all Explorer windows, applications, consoles, or third-party system management tools that may be accessing the volumes. It is also recommended to bring the component database offline.

2   Type the command as in the following example:

    vxsnap -x billing_DB.xml restore RestoreType=RECOVERY Writer="Sharepoint Services Writer" component=wss_component1
    where billing_DB.xml is the name of the metadata file generated by the `vxsnap create` command. The volumes in the snapshot set are restored and the component database is left in an operational state. The component database is restored to the time the snapshot set was created or last refreshed. If you took it offline earlier, bring it back online.

3   The restore operation leaves the snapshot volumes snapped back to the production volumes. To ensure that another split-mirror snapshot set is immediately available, use the `vxsnap create` command to create a new snapshot of all the volumes in the component database.

Restoring snapshots and manually applying logs

The following procedure uses the No Recovery option to restore the component database from the component database and log snapshot volumes. Selecting this option leaves the component database in a loading state. You can then manually apply backed up transaction logs to recover the component database to the desired point in time.

You can use either the VSS Restore Wizard from the VEA or the `vxsnap restore` command.

Warning: Before you begin, use your preferred method to backup the transaction logs within SQL Server. You must use the "overwrite existing media" option to create uniquely-named backup files.

To restore using the No Recovery option in the VEA

1   Ensure that you have backed up the transaction logs within SQL Server using the "overwrite existing media" option to create uniquely-named backup files.

2   Close the SQL GUI and all Explorer windows, applications, consoles (except the VEA console), or third-party system management tools that may be accessing the database volumes. It is also recommended to bring the database offline.

3   From the VEA console, navigate to the system where the database volumes are located.

4   Expand the system node, the Storage Agent node, Applications node, and the SharePoint node.

5   Right-click SharePoint Server and click **SharePoint Restore**.

6   Review the Welcome page and click **Next.**

7   Select the snapshot set XML metadata file to be used for this operation and click **Next**.

     The XML metadata file contains all required information needed to restore the snapshot set, including the names of the database and transaction logs volumes. Click the appropriate header to sort the list of available files by **File Name** or **Creation Time**.

8   On the Select Restore Type panel, click **No Recovery** and select a component.

9   You may receive a message "Some volumes in this component have open handles. Do you want to override these handles and do this restore? Click **Yes** to proceed." Click **No**, close any open handles and retry the command.

10   Verify the restore specifications and click **Finish**.

     The component database and log snapshot volumes are restored and the component database is left in a loading state.

11   Use your preferred method to manually restore the backup transaction logs to the desired point in time and then bring the component database back online.

12   The restore operation leaves the snapshot volumes snapped back to the production volumes. To ensure that another split-mirror snapshot set is immediately available, use the VSS Snapshot Wizard to create a new snapshot of all the volumes in the database.

To restore using the No Recovery option with the vxsnap restore
command

1   Ensure that you have backed up the transaction logs within SQL Server using the "overwrite existing media" option to create uniquely-named backup files.

2   Close the SQL GUI and all Explorer windows, applications, consoles or third-party system management tools that may be accessing the database volumes. It is also recommended to bring the database offline.

3   Type the command as in the following example:

```
> vxsnap -x billing_DB.xml restore RestoreType=NO_RECOVERY
Writer="Sharepoint Services Writer" component=wss_component1
```

where billing_DB.xml is the name of the metadata file generated by the `vxsnap create` command.

The component database and log snapshot volumes are restored and the component database is left in a loading state.

4   Use your preferred method to manually restore the backup transaction logs to the desired point-in-time and bring the database online.

5   The restore operation leaves the snapshot volumes snapped back to the production volumes. To ensure that another split-mirror snapshot set is immediately available, use the `vxsnap create` command to create a new snapshot of all the volumes in the database.

Post-recovery steps

After you have performed any of the recovery methods, create a new snapshot set.

See "Scheduling a new snapshot set" on page 37 or "Creating a one-time snapshot set" on page 34.

Vxsnap utility command line reference for Office SharePoint Server 2007

This chapter covers the following topics:

■   About the Vxsnap utility

■   Vxsnap keywords

About the Vxsnap utility

The command line utilities are available in the Veritas Storage Foundation for Windows installation directory.

The vxsnap utility integrates with Windows Volume Shadow Copy Service (VSS) to create split-mirror snapshots of all the volumes in the specified component.

Note the following requirements:

■   Disk groups must be of a Storage Foundation for Windows 4.0 or later version. You must upgrade any disk groups created using an earlier version of Volume Manager for Windows before using the `vxsnap` utility

■   The CLI commands run only on the server. They will not run on the Veritas Storage Foundation for Windows client.

■   The vxsnap commands must be invoked on a local system.

■   For Windows Server 2008, all CLI commands must run in the command window in the "run as administrator" mode.

Vxsnap keywords

The `vxsnap` utility has the following keywords:

`prepare`	Creates snapshot mirrors of the volumes in the specified component. The snapshot mirrors remain attached to and synchronized with the original volumes.
	Note: Either the `prepare` or `start` keyword may be used in the CLI; however `prepare` is recommended.
`create`	Creates simultaneous snapshots of all volumes in the specified component, providing a point-in-time snapshot set.
`reattach`	Reattaches and resynchronizes an existing snapshot set to the original database volumes.
`restore`	Restores a component from a snapshot set.

You can view an online description of the command syntax by typing the following:

`vxsnap` *`keyword`* `-?`

vxsnap prepare

Creates snapshot mirrors of the volumes in the specified component. The snapshot mirrors remain attached to and synchronized with the original volumes.

Syntax

`vxsnap prepare writer=`*`WriterName`* `component=`*`ComponentName`*

Attributes

The following attributes apply:

`component=`*`ComponentName`*	Name of the database or index. The command prepares mirrors for both the database and log volumes or for the index.

`writer=`*`WriterName`*	Unique ID of the VSS writer, for example, Sharepoint Services Writer or the GUID for the writer. Required if you specify the component.

Note: Any text string that contains spaces must be enclosed in quotation marks.

Example

```
vxprepare writer="Sharepoint Services Writer"
component=wss_component
```

This command will create snapshot mirrors of all the volumes contained in the component.

vxsnap create

Creates snapshot(s) of the specified volume(s) or SharePoint component. Allows volumes to be snapshotted simultaneously.

Separate attributes with forward slashes, not spaces.

Syntax

```
vxsnap -x Filename create
[writer=WriterName] [component=ComponentName]...
[backuptype=FULL|COPY]
```

Attributes

The following attributes apply:

`-x `*`Filename`*	Indicates the name to be assigned to the XML metadata file that will be created with the command. The file name must include the ".xml" extension. To specify a location other than the default location for the file, you must enter the full path for the file (e.g. J:\XML\Image1.xml).

`writer=WriterName`	Unique ID of the VSS writer, for example, Sharepoint Services Writer or the GUID for the writer. Required if you specify the component.
`component=ComponentName`	Name of the component. The command prepares mirrors for both the database and log volumes, or the index, of the SharePoint component.
`backuptype=FULL|COPY`	Specifies the type of backup, either a Full or Copy. If no option is specified then Copy is the default. To back up logs in SharePoint so that you can restore the database using log replay, at least one Full backup must have been created earlier.

Note: Any text string that contains spaces must be enclosed in quotation marks.

Examples

```
vxsnap -x test.xml create
  writer="SharePoint Services Writer"
  component=wss_component1 component=wss_component2
```

This example creates a snapshot based on the component wss_component1 and wss_component2. The XML file, test.xml, is used to store the VSS metadata that identifies the snapshot. This file is used in the command to reattach the snapshot to resynchronize it and in the command to recover the database using the snapshot.

vxsnap reattach

Reattaches and resynchronizes the snapshot volumes in the snapshot set to the original SharePoint component volumes.

Syntax

```
vxsnap -x Filename [-f] [-b] reattach writer=WriterName
```

Attributes

The following attributes apply:

-x *Filename*	The file created by the vxsnap create command. Each snapshot set must have a unique name for the metadata file. **Note:** This file is deleted after the reattach operation has completed successfully.
-f	Forces the reattach. Make sure the volume is not in use by another application before using this command. Use this option with care.
-b	Resynchronizes the volume in the background. A new snapshot cannot be made until the resynchronization is complete.
writer=*WriterName*	Unique ID of the VSS writer, for example, Sharepoint Services Writer or the GUID for the writer.

Note: Make sure that the snapshot volumes are not in use before using this command.

Example

```
vxsnap -x SnapshotSet.xml reattach
writer="SharePoint Server"
```
This command uses the information in the SnapshotSet.xml file to reattach and resynchronize all the volumes in the snapshot set. This xml file is deleted after the reattach operation has completed successfully. The snapshot volumes remain synchronized with the original volumes until the vxsnap create command is issued.

Note: Any text string that contains spaces must be enclosed in quotation marks.

vxsnap restore

Uses the snapshot volumes in a snapshot set created by the vxsnap create command to recover a corrupted or missing SharePoint component.

Exclusive access to the SharePoint component is required for this operation.

Before using this command verify that the source volumes and the snapshot volumes are not in use.

Syntax

```
vxsnap -x Filename [-b] [-f] [-r] [-a] restore
{RestoreType=[RECOVERY|NO_RECOVERY]}
writer=WriterName [component=ComponentName]
```

Attributes

The following attributes apply:

`-x Filename`	The metadata file created by the `vxsnap create` command. Each snapshot set must have a unique name for the metadata file.
`-b`	Resynchronizes the volume in the background. A new snapshot cannot be made until the resynchronization is complete.
`-f`	Forces the operation. Make sure the volume is not in use before using this option.
`-r`	Recover even if original volume is not present. If this option is selected and the original volume is not present, the snapshot volume of the missing volume is changed from a read-only volume to a read-write volume.
	Use this option only with `Recovery noLogs`. After using this option you must explicitly assign the original drive letter/mount path of the missing volume to the snapshot volume in the VEA and then bring the database online.
`-a`	Dismount the databases before the restore operation and then mount the database after the restore operation.

`RestoreType=` `[RECOVERY|NO_RECOVERY]`	Specifies the type of database recovery, either recovery or no recovery:
	With RECOVERY database and transaction log files are restored from the snapshot set. No transaction backup logs are applied. The database is left in an operational state.
	To back up logs so that you can restore the database using log replay, at least one Full backup must have been created earlier.
	`NO_RECOVERY` restores from the specified snapshot set to the time of the snapshot. No logs are applied and the database is left in an loading state so that you can manually replay backup logs to a specific point in time.
`writer=`*`WriterName`*	The name for the SharePoint Services Writer; used to located the default directory to search for the XML metadata file. Specify **"SharePoint Services Writer"**.
`component=`*`ComponentName`*	The name of the component to recover. If the name of the is not specified, then all the components in the snapshot set are restored.

Examples

Following are examples of restore operations:

■ Recovering all components

```
vxsnap -x 1.xml -a restore RestoreType=RECOVERY
Writer="Sharepoint Services Writer"
```

This command uses the information in the 1.xml file to restore all the volumes for all components and bring the components online. The components are restored to the time the snapshot was created.

■ Recovering each component separately

```
vxsnap -x 1.xml -a restore RestoreType=RECOVERY
Writer="Sharepoint Services Writer"
component=wss_component1
vxsnap -x 1.xml -a restore RestoreType=RECOVERY
Writer="Sharepoint Services Writer"
component=wss_component2
```

These commands use the information in the 1.xml file to restore all the volumes for each component and bring each component online. The components are restored to the time the snapshot was created.

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