Veritas™ System Recovery 18 User's Guide

Windows Edition

VERITAS™

Documentation version: 18

Legal Notice

Technical Support

Technical Support maintains support centers globally. Technical Support's primary role is to respond to specific queries about product features and functionality. The Technical Support group also creates content for our online Knowledge Base. The Technical Support group works collaboratively with the other functional areas within the company to answer your questions in a timely fashion.

Our support offerings include the following:

- A range of support options that give you the flexibility to select the right amount of service for any size organization

- Telephone and/or Web-based support that provides rapid response and up-to-the-minute information

- Upgrade assurance that delivers software upgrades

- Global support purchased on a regional business hours or 24 hours a day, 7 days a week basis

- Premium service offerings that include Account Management Services

For information about our support offerings, you can visit our website at the following URL:

www.veritas.com/support

All support services will be delivered in accordance with your support agreement and the then-current enterprise technical support policy.

Contacting Technical Support

Customers with a current support agreement may access Technical Support information at the following URL:

www.veritas.com/support

Before contacting Technical Support, make sure you have satisfied the system requirements that are listed in your product documentation. Also, you should be at the computer on which the problem occurred, in case it is necessary to replicate the problem.

When you contact Technical Support, please have the following information available:

- Product release level

- Hardware information

- Available memory, disk space, and NIC information

- Operating system

- Version and patch level

- Network topology

- Router, gateway, and IP address information

- Problem description:

  - Error messages and log files

  - Troubleshooting that was performed before contacting Technical Support

  - Recent software configuration changes and network changes

Licensing and registration

If your product requires registration or a license key, access our technical support Web page at the following URL:

www.veritas.com/support

Customer service

Customer service information is available at the following URL:

www.veritas.com/support

Customer Service is available to assist with non-technical questions, such as the following types of issues:

- Questions regarding product licensing or serialization

- Product registration updates, such as address or name changes

- General product information (features, language availability, local dealers)

- Latest information about product updates and upgrades

- Information about upgrade assurance and support contracts

- Advice about technical support options

- Nontechnical presales questions

- Issues that are related to CD-ROMs, DVDs, or manuals

Support agreement resources

If you want to contact us regarding an existing support agreement, please contact the support agreement administration team for your region as follows:

Worldwide (except Japan)	CustomerCare@veritas.com
Japan	CustomerCare_Japan@veritas.com

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Introducing Veritas™ System Recovery 18

This chapter includes the following topics:

- About Veritas System Recovery

- The components of Veritas System Recovery

- Accessing Help and Support for Veritas System Recovery

- Sending your feedback regarding Veritas System Recovery 18

- Accessing Veritas QuickAssist (VQA)

- Updating Veritas System Recovery with Veritas Update

About Veritas System Recovery

Veritas System Recovery is the gold standard in Windows® system recovery. It allows businesses to recover from system loss or disasters in minutes, not hours, or days. Veritas System Recovery provides fast, easy-to-use system restoration to help IT administrators meet recovery time objectives. You can even perform full bare metal recovery to dissimilar hardware and virtual environments for servers, desktops, or laptops. It also provides the ability to recover systems in remote, unattended locations using LightsOut Restore.

Veritas System Recovery captures a recovery point of the entire live Windows system. The backup includes the operating system, applications, system settings, files, and other items. The recovery point can be conveniently saved to various media or disk storage devices including SAN, NAS, Direct Attached Storage, RAID, and so forth. When systems fail, you can quickly restore them without the need for manual, lengthy, and error-prone processes.

You can manage Veritas System Recovery remotely using one of the following:

■ Another licensed copy of Veritas System Recovery

■ Veritas System Recovery Monitor

■ Veritas System Recovery Management Solution (distributed separately)
Veritas System Recovery Management Solution is licensed with Veritas System Recovery. You are not required to purchase a separate license for Veritas System Recovery Management Solution.

Veritas System Recovery Management Solution is a centralized management application. It provides IT administrators an at-a-glance view of system recovery jobs across your entire organization. You can centrally deploy, modify, and maintain recovery activities, jobs, and policies for local and remote systems. You can also monitor real-time status and quickly resolve any problems that are identified.

Using the integrated **Granular Restore Option**, you can quickly restore individual Microsoft® Exchange emails, folders, and mailboxes.

The components of Veritas System Recovery

Veritas System Recovery includes two key components: the program itself, and the Veritas System Recovery Disk.

Table 1-1   Key product components

Key component	Description
Veritas System Recovery program (user interface)	The Veritas System Recovery program lets you define, schedule, and run backups of your computer. When you run a backup, recovery points of your computer are created. You can then use the recovery points to recover your entire computer, or individual drives, files, and folders.
	The Veritas System Recovery also lets you do the following:
	■ Manage the size of the recovery point storage (backup destination) so that you can use your computer's valuable disk space for other purposes.
	■ Monitor the backup status of your computer to make sure that your valuable data is backed up on a regular basis.

Table 1-1   Key product components *(continued)*

Key component	Description
Veritas System Recovery Disk	Microsoft no longer allows redistribution of WinPE. Starting from Veritas System Recovery 16, Veritas no longer ships the Veritas System Recovery Disk with the product. A new utility is provided using which you can create a Veritas System Recovery Disk with the latest Windows operating system. The Veritas System Recovery Disk is used to start your computer in the recovery environment. If your computer's operating system fails, use the Veritas System Recovery Disk to recover your *system drive* (the drive where your operating system is installed). See "Defining a drive-based backup" on page 120. See "Backing up files and folders" on page 160. See "Recovering a computer" on page 292.

See "About Veritas System Recovery" on page 15.

Accessing Help and Support for Veritas System Recovery

To learn more about Veritas System Recovery, visit the **Help and Support** page. The **Help and Support** page provides access to the product's Help system and the User's Guide. It also includes access to the Veritas Knowledge Base where you can find troubleshooting information.

To access Help & Support

1   Start Veritas System Recovery.

2   On the **Help** menu, click **Help and Support**.

See "About Veritas System Recovery" on page 15.

Sending your feedback regarding Veritas System Recovery 18

Please take a moment to share your feedback and ideas with Veritas regarding Veritas System Recovery 18.

To send feedback

◆   Do one of the following:

- Click **Share Your Ideas** in the upper-right corner of the Veritas System Recovery 18 window.

- On the **Help** menu, click **Share Your Ideas**.

See "About Veritas System Recovery" on page 15.

Accessing Veritas QuickAssist (VQA)

Veritas QuickAssist (VQA) is a diagnostics tool that collects technical data. VQA is a tool that is loaded on a computer experiencing a problem so that it can be scanned. Scans can be run against the system for common issues as well as installation requirements. VQA enables self-diagnosis attempts, and if this does not resolve the issue, the tool has the ability to collect and upload data for a support case.

To access Veritas QuickAssist (VQA)

1 Start Veritas System Recovery.

2 On the **Help** menu, click **Veritas QuickAssist**.

   The Veritas QuickAssist utility is launched. To view the Help for the utility, click **Help** > **View Help**.

See "About Veritas System Recovery" on page 15.

Updating Veritas System Recovery with Veritas Update

You can receive software updates for your version of the product over an Internet connection. Veritas Update connects to the server and automatically downloads and installs updates for each Veritas product that you own.

If you have multiple Veritas products on your computer, that use the Symantec LiveUpdate server, you need to retain Symantec LiveUpdate. If you are certain that only Veritas System Recovery 18 and later is installed on your computer, you can uninstall Symantec LiveUpdate.

Note: When you upgrade to Veritas System Recovery 18 and later, Veritas Update is used. If Symantec LiveUpdate is already available on your computer, it does not get uninstalled.

Run Veritas Update as soon as you install the product. You should continue to run Veritas Update periodically to obtain program updates.

To update Veritas System Recovery with Veritas Update

1   On the **Help** menu, click **Run Veritas Update**.

2   In the **Run Veritas Update - Welcome** window, the available Service Pack updates for Veritas System Recovery 18 and later are displayed.

3   Click **Check for Updates**.

The **Select the Service Pack** window is displayed.

4   Select the Service Pack that you want to install.

The **Release notes** display information about the Service Pack that you selected.

5   Click **Install Update**.

6   On the **Install the Service Pack** window, click **Update** to proceed with the installation.

Ensure that no jobs are running and then close the Veritas System Recovery console. During the installation the Veritas System Recovery services are stopped.

Note: You cannot uninstall the Service Pack after it is installed.

7   When the installation is complete, restart your computer.

See "Installing Veritas System Recovery" on page 25.

Installing Veritas System Recovery

This chapter includes the following topics:

- System requirements for Veritas System Recovery
- Supported file systems, disk types, disk partition schemes, and removable media
- Feature availability in Veritas System Recovery
- About the trial version of Veritas System Recovery
- Installing Veritas System Recovery
- Uninstalling Veritas System Recovery
- System requirements for Veritas System Recovery Monitor
- Installing Veritas System Recovery Monitor

System requirements for Veritas System Recovery

Before you install Veritas System Recovery, ensure that your computer meets the system requirements. Review the Readme file on the installation DVD for any known issues.

The following table lists the system requirements for Veritas System Recovery to function properly.

Table 2-1   Minimum system requirements

Component	Minimum requirements
Operating system	You can find a list of compatible operating systems, platforms, and applications at the following URL: https://www.veritas.com/support/en_US/search-results.html?keyword=V-306-17*
RAM	The following list indicates the memory requirements for each component of Veritas System Recovery: ■ Veritas System Recovery Agent: 512 MB ■ Veritas System Recovery user interface and Recovery Point Browser: 512 MB ■ Veritas System Recovery Disk: 1.5 GB (dedicated) ■ LightsOut Restore: 1.5 GB
Available hard disk space	The following list indicates the hard disk space requirements for Veritas System Recovery and other items: ■ When you install the entire product: Approximately 2 GB is required for a full install, depending on the language of the product you select. ■ Recovery points: Sufficient hard disk space on a local hard disk or network server for storing recovery points. The size of recovery points depends on the amount of data you have backed up and the type of recovery point that is stored. ■ LightsOut Restore: 2 GB
DVD-ROM drive or USB drive	The drive must be capable of being used as the startup drive from Unified Extensible Firmware Interface (UEFI) and BIOS-based computers.

Table 2-1   Minimum system requirements *(continued)*

Component	Minimum requirements
Software	The following Microsoft .Net Framework versions are required for installing and using Veritas System Recovery:
	■ Microsoft .NET Framework 4.5.2 or later: Required to run and use Veritas System Recovery.
	Note: If the required .NET Framework versions are not already installed, the Veritas System Recovery installation program automatically installs them on your computer.
	■ Microsoft Visual C++ 2008 SP1 Redistributable
	■ Microsoft Visual C++ 2010 x64/x86 Redistributable
	■ Microsoft Visual C++ 2012 Redistributable
	■ Veritas System Recovery installer installs .NET 4.5.2 on the following platforms:
	■ Windows 7 SP1 (x86 and x64) and above
	■ Windows Server 2008 R2 SP1 (x64) and above
	■ Windows Server 2008 SP2 (x86 and x64) and above
	Note: By default, Windows 10/Windows Server 2016 operating systems are installed with .Net Framework 4.6.
	If you want to restore emails using the **Granular Restore Option**, you must have Microsoft Outlook 2007, 2010, or 2013 installed.

Supported file systems, disk types, disk partition schemes, and removable media

Veritas System Recovery supports the following file systems, disk types, disk partition schemes, and removable media:

Table 2-2   File systems, disk types, disk partition schemes, and removable media

Support	Description
Supported file systems	Veritas System Recovery supports the following file systems: ■ FAT16, FAT16X ■ FAT32, FAT32X ■ Resilient File System (ReFS) **Note:** Veritas System Recovery supports full and incremental backups of ReFS volumes. ■ NTFS **Note:** You must decrypt encrypted NTFS drives before you attempt to restore them. You cannot view the files that are in a recovery point for an encrypted NTFS drive. ■ Linux Ext2, Linux Ext3
Supported disk types and disk partition schemes	Veritas System Recovery supports the following disk types and disk partition schemes: ■ Dynamic disks ■ GUID partition table (GPT) ■ Master Boot Record (MBR) ■ Linux swap partitions ■ 4K sector (native) disk volumes: Veritas System Recovery supports backup of 4K sector (native) disk volumes. As the VHDX format supports 4Kn disks, Veritas System Recovery now uses the VHDX format. Since VHDX format is supported on Windows 8/Windows Server 2012 and later, virtual conversion for 4K sector (native) volumes is now supported on Windows 8/Windows 2012 and later. To check the sector size of the disk, run the following command and see the **BytesPerSector** value. ■ For Windows 7/Windows Server 2008 R2: `fsutil fsinfo ntfsinfo <drive letter:>` ■ For Windows 8/Windows Server 2012 and later: `fsutil fsinfo sectorinfo <drive letter>`
Removable media	Veritas System Recovery also lets you save recovery points to most USB devices, 1394 FireWire devices, RDX, REV, Jaz, Zip drives, and magneto-optical devices.

Supported drive types with Bytes per Sector Value and Bytes per Physical Sector Value

The following table lists the drive types, Bytes per Sector value, Bytes per Physical Sector value and whether or not Veritas System Recovery supports them.

Table 2-3　　Drive types and support

Bytes per Sector value	Bytes per Physical Sector value	Drive type	Supported Yes/No
4096	4096	4K native	Yes
512	4096	Advanced Format (also known as 512E)	Yes
512	512	512-byte native	Yes
4096	512	4K emulation	Yes

See "System requirements for Veritas System Recovery" on page 20.

Note: Refer to the following notes:

- Veritas System Recovery 18 and earlier support drives less than 16TB.
- Veritas System Recovery 18.0.1 and later support drives less than 32TB.

Feature availability in Veritas System Recovery

Veritas System Recovery is packaged to meet various markets. Some features might not be available, depending on the product you have purchased. However, all features are documented. You should be aware of which features are included with the version of the product you have purchased. If a feature is not accessible in the product user interface, it is likely not included with your version of the product.

Refer to the Veritas website for information about the features that are included with your version of Veritas System Recovery.

About the trial version of Veritas System Recovery

If you choose to delay installation of the license key, all features in Veritas System Recovery remain enabled during the 60-day trial period.

You cannot use Veritas System Recovery Disk, a component of Veritas System Recovery, during the trial period.

You need a valid license key to use the following key features of Veritas System Recovery Disk:

- **Back Up My Computer** wizard

- **Recover My Computer** wizard, which lets you use Restore Anyware to restore a virtual disk (.vmdk, .vhd, v2i, or vhdx) back to a physical computer that has different hardware.

The trial period ofVeritas System Recovery begins when you do any one of the following in the software:

- Define a drive-based or file and folder backup.

- Recover a computer.

- Copy a drive.

- Consolidate incremental recovery points.

- Run a drive-based backup or file and folder backup.

- Define a scheduled convert to virtual disk job.

- Run a scheduled convert to virtual disk job.

- Define a one time convert to virtual disk job.

- Define a drive-based or file and folder backup.

- Recover a computer.

- Consolidate incremental recovery points.

- Run a drive-based or file and folder backup.

If you use the product in trial mode, it expires after 60 days. However, all features are enabled until the end of the trial period, at which time you must purchase the product or uninstall it. You can purchase a license at any time (even after the trial period expires) without reinstalling the software.

See "Activating Veritas System Recovery after the trial period" on page 30.

Installing Veritas System Recovery

Before you begin, you should review the system requirements for installing Veritas System Recovery.

See "System requirements for Veritas System Recovery" on page 20.

Note: During the installation process, you might be required to restart the computer. You should ensure proper functionality of the computer after it restarts. To do so, log on again using the same user credentials that you used to log on when you installed Veritas System Recovery.

The Veritas System Recovery installation program lets you install Veritas System Recovery Monitor. You can either install Veritas System Recovery Monitor while installing Veritas System Recovery or install it later by running the installation program again.

See "Installing Veritas System Recovery Monitor" on page 32.

To install Veritas System Recovery

1 Log on to your computer using either the Administrator account or an account with administrator privileges.

2 Insert the Veritas System Recovery product DVD into the media drive of the computer.

The installation program should start automatically.

If the installation program does not run, type the following command at a command prompt:

```
<drive>:\browser.exe
```

Replace <drive> with the drive letter of your media drive.

3 On the **DVD browser** panel, click **Installation**, and then click **Install Veritas System Recovery** to start the installation.

4 On the **License Agreement** panel, read the license agreement, and then click **I accept the terms in the license agreement**.

5 Click **Next**.

6 On the **Installation Type** panel, select either **Typical Installation** or **Custom Installation**, and then click **Next**.

A typical installation installs all of the features of Veritas System Recovery. A custom installation allows you to install selected features.

7 If you selected **Custom Installation** in step 6, select the options that you want to install, and then click **Next**.

If you selected **Typical Installation** in step 6, proceed to step 8.

System Recovery Disk Creation Utility	Veritas does not ship the Veritas System Recovery Disk with the product. Instead, Veritas System Recovery provides an option to create a Veritas System Recovery Disk for all computers in your environment. You can use this disk to recover any other computer in your environment.
	The Veritas System Recovery Disk Creation Utility is installed by default on all the computers on which you install Veritas System Recovery 18. You need to create a Veritas System Recovery Disk only on a computer with the latest Windows operating system in the environment as a recovery disk created on an older version of the operating system cannot recover the latest operating system.
Backup and Recovery Service	Installs the primary service that is required to back up or recover your computer.
Recovery Point Browser	Enables you to browse, mount, copy, verify, and restore files and folders using recovery points.
User Interface	Installs the product user interface that is required for interacting with the Veritas System Recovery Service.
Agent Deployment	This option appears when you expand the **User Interface** option.
	Allows the computer on which you have installed Veritas System Recovery to deploy the Veritas System Recovery Agent to other computers. The Veritas System Recovery Agent is required for remote recovery management.

Granular Restore Option	This option appears when you expand the **User Interface** option.
	Lets you open recovery points and restore Microsoft Exchange mailboxes, folders, and individual messages. You can also restore unstructured files and folders.
	The Granular Restore Option now supports Exchange Server 2013. You can take backups and recover the files of Exchange Server 2013.
Veritas Update	Keeps your Veritas software up to date with the latest product updates.

8   On the **Destination Folder** panel, select a folder where you want to install Veritas System Recovery, and then click **Next**.

To troubleshoot a problem in Veritas System Recovery after it is installed, it is recommended that you run the SupportGather.exe utility. This utility gathers the existing log information and also runs the partinfo.exe and SMEdump.exe utilities to gather additional log information. This log information is in clear text. The log file and the .exe utilities are located in the <VSR Installation folder>/Utility folder.

Note: Veritas recommends that only privileged users or an administrator can access the Utility folder. Veritas recommends using AppLocker or Software Restriction Policies (SRP) to allow execution of only signed binaries in Veritas System Recovery. You can enable the SRP or AppLocker options on your Windows operating system.

See http://technet.microsoft.com/en-us/library/hh994614.aspx, to learn more about the SRP and Applocker options.

Note: Veritas recommends that you place binaries and libraries in theVeritas System Recovery installation folder. Only privileged users or an administrator should have the rights to access the installation folder.

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9   If you select the **Typical installation**, in the **Installation Warning** panel, select the **I have read the warning** check box, and then click **Next**.

See "Creation Options" on page 44.

10 On the **Installation Review** panel, review the Veritas System Recovery installation summary, and then click **Install**.

The progress status of the installation process is displayed on the **Progress** panel.

11 After the installation completes, remove the product DVD from the media drive, and then click **Finish** to close the installation wizard.

12 Restart your computer.

If you choose not to restart your computer at this time, you cannot run Veritas System Recovery until after you restart your computer.

See "Activating and setting up Veritas System Recovery after installation" on page 29.

Activating and setting up Veritas System Recovery after installation

After you complete Veritas System Recovery installation and restart your computer, the Veritas System Recovery setup wizard starts automatically. Using the setup wizard you can license or activate your product. You can then run Veritas Update to check for product updates, and then configure your first backup.

Note: If Veritas System Recovery installer installs .NET 4.5.2, the installer prompts you to run Windows update.

To complete the installation of Veritas System Recovery

1 In the **Welcome** panel, click **Next**.

The **Welcome** page might appear the first time that you run Veritas System Recovery.

2 Do one of the following:

- Click **I've already purchased the product and have a license key**.

Note: You can find the license key on the back of your product DVD jacket. Do not lose the license key. You must use it when you install Veritas System Recovery.

- Click **Activate later** to delay the activation of your license. After the trial period ends, the product will no longer work.
See "About the trial version of Veritas System Recovery " on page 24.

■ If Veritas System Recovery is a trial version and you want to purchase a license key, click visit the following website:
http://veritas.force.com/public

■ If you have a Volume Incentive Program (VIP) Activation key, enter it in the appropriate spaces as it appears on your certificate.

3 Click **Next**.

4 Do any of the following:

■ Click **Run Veritas Update** to check for any product updates since the product shipped.

■ Click **Launch Easy Setup** to open the **Easy Setup** window when you complete the install process. (This option is not available in the server versions of Veritas System Recovery.)

5 Click **Finish**.

See "Activating Veritas System Recovery after the trial period" on page 30.

Activating Veritas System Recovery after the trial period

If you do not activate Veritas System Recovery before the trial period ends, the software stops working. However, you can activate the product at any time after the trial period expires.

To activate Veritas System Recovery after the trial period

1 On the **Help** menu, click **Enter License Key**.

2 Click **I've already purchased the product and have a license key**.

Note: You can find the license key on the back of your product DVD jacket.

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3   Enter the license key in the appropriate spaces.

4   Click **Next**, and then click **Finish**.

After Veritas System Recovery is installed, a folder is created with the metadata and the configuration data. The following folder contains the metadata and the configuration data, such as job configuration data, Veritas System Recovery logs, backup job history:

C:\Program Data\Veritas\Veritas System Recovery

Note: Veritas recommends that only privileged users or an administrator have the rights to access this folder. If a non-administrative user is configured to use Veritas System Recovery with the Security Configuration Tool, add the user to this folder's access control list. This is application data and so it needs to be protected to avoid tampering.

See "About the trial version of Veritas System Recovery " on page 24.

Uninstalling Veritas System Recovery

When you upgrade Veritas System Recovery from a previous version of the product, the install program automatically uninstalls the previous versions. If required, you can manually uninstall the product.

Follow your operating system's instructions on how to uninstall software.

See "Activating Veritas System Recovery after the trial period" on page 30.

System requirements for Veritas System Recovery Monitor

Table 2-4   Minimum system requirements for Veritas System Recovery Monitor

Component	Description
Operating system	The following Microsoft Windows 32-bit and 64-bit operating systems are supported: ■ Microsoft Windows Server 2008 or R2 ■ Microsoft Windows 7 (All Editions) ■ Microsoft Windows 8 (Desktop Edition) ■ Microsoft Windows 8.1 ■ Microsoft Windows 8.1 Update ■ Microsoft Windows 10 (Desktop Edition) ■ Microsoft Windows Server 2012 ■ Microsoft Windows Server 2012 R2 ■ Microsoft Windows Server 2012 R2 Update ■ Microsoft Windows Server 2016 See the Veritas System Recovery Software Compatibility List (SCL) for more information.
Available hard disk space	25 MB
Software	Microsoft.NET Framework 4.5.2
Microsoft Windows screen resolution	1024 x 768 pixels (recommended)

See "Installing Veritas System Recovery Monitor" on page 32.

Installing Veritas System Recovery Monitor

Before you begin, you should review the system requirements for installing Veritas System Recovery Monitor.

See "System requirements for Veritas System Recovery Monitor" on page 32.

To install Veritas System Recovery Monitor

1   Log on to your computer using either the Administrator account or an account with administrator privileges.

2   Insert the Veritas System Recovery product DVD into the media drive of the computer.

The installation program should run automatically.

If the installation program does not run, type the following command at a command prompt:

```
<drive>:\browser.exe
```

Replace <drive> with the drive letter of your media drive.

3   On the **DVD browser** panel, under **More Useful Links**, click **Install Veritas System Recovery Monitor**.

4   Follow the on-screen instructions to complete the installation.

After you complete the installation, you must configure the Windows Firewall exceptions before you start Veritas System Recovery Monitor.

Ensuring the recovery of your computer

This chapter includes the following topics:

- Creating a new Veritas System Recovery Disk

- Customizing an existing Veritas System Recovery Disk

- About restoring a computer from a remote location by using LightsOut Restore

- Testing the Veritas System Recovery Disk

Creating a new Veritas System Recovery Disk

As Microsoft no longer allows redistribution of WinPE, Veritas System Recovery 18 does not include a Veritas System Recovery Disk on a DVD media or as an ISO downloadable from the web. Veritas System Recovery 18 provides a new utility that is called **System Recovery Disk Creation Utility** using which you can create a system recovery disk on your computer. As a recovery disk is required to restore images created with Veritas System Recovery 18, it is imperative that you create a recovery disk using this utility. To restore the system volume images that are created using Veritas System Recovery 18, you need to create a Veritas System Recovery Disk using this utility. Veritas recommends that you create a recovery disk using this utility at the earliest. By default this utility is installed with Veritas System Recovery 18. Veritas recommends that you test the recovery disk on the computer on which you want the use it.

The **System Recovery Disk Creation Utility** provides two options to create a Veritas System Recovery Disk based on the disaster recovery needs. Using the **Typical** option, you can create a recovery disk on Windows 7 and later desktop operating systems, and Windows Server 2008 R2 and later server operating systems. Using the **Advanced** option, you can create a recovery disk on Windows

Server 2008 and later server operating system, and Windows 7 and later desktop operating systems. This option requires the download and installation of the Windows Assessment and Deployment Kit (ADK) to create the Veritas System Recovery Disk. The Windows ADK can only be installed on Windows Server 2008 and later server operating systems, and Windows 7 and later desktop operating systems.

Note: The Veritas System Recovery Disk Creation Utility only runs on Windows 7 and later operating systems.

Veritas recommends that the recovery disk is created on the latest operating system available, such as Windows 10 or Windows 2016. The Veritas System Recovery Disk can then be used to recover images of that operating system and all previous operating systems. However, a recovery disk created on an older operating system cannot be used to recovery later operating systems. For example, a Veritas System Recovery Disk created on Windows 2008 cannot be used to recover Windows 2012 images.

The Veritas System Recovery Disk Creation Utility allows creation of a 32-bit or 64-bit recovery disk on a USB thumb drive, as an ISO file, or in the LightsOut Restore format. If the **Advanced** option is used, Veritas recommends using the latest version of the Windows ADK that is available. A recovery disk created with an older version of the Windows ADK can only restore operating system supported by that ADK. For example, a Veritas System Recovery Disk created using Windows ADK for Windows 8.0 (Windows 8/2012 kernel) can be used to recover Windows 8/2012 and earlier operating systems. It cannot be used to recovery later operating systems, such as Windows 8.1/2012 R2 or Windows 10/2016.

A license key is not required to create a Veritas System Recovery Disk. A license key is required if additional drivers need to be added, or if specifying the startup or network options.

To create a Veritas System Recovery Disk, you can launch the **Create Veritas System Recovery Disk Wizard** in the following ways:

- Launch Veritas System Recovery 18, go to the **Tasks** menu and click **Create New Recovery Disk**.

- On the Windows taskbar, click **Start** > **All Programs** > **System Recovery Disk Creator**.

- In the **Veritas System Recovery Disk Status** dialog box, click **Create Now**.

Note: The **Create Now** button is displayed in the **Veritas System Recovery Disk Status** dialog box when you launch Veritas System Recovery 18 and is available only until you create the Veritas System Recovery Disk.

Note: If you are connected to a remote computer, the **Veritas System Recovery Disk Creation Wizard** is not available in Veritas System Recovery 18. You cannot create a Veritas System Recovery Disk.

To create a new Veritas System Recovery Disk

1   On the **Tasks** menu, click **Create New Recovery Disk**.

    The **Veritas System Recovery Disk Creation Wizard** is displayed.

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

    See "Welcome Panel" on page 43.

3 In the **Creation Options** panel, select the disk creation option (**Typical** or **Advanced**) to create the Veritas System Recovery Disk and click **Next**.

Feature Description	Typical	Advanced
Uses Windows ADK for Windows 10	No	Yes
		You require an Internet connection to download Windows ADK.
		See "Download and install Windows Assessment and Deployment Kit (ADK)" on page 50.
Platform support	Creates a 32-bit or a 64-bit recovery disk depending on the operating system installed on your computer.	Creates 32-bit and 64-bit recovery disks on the same computer.
	To create a 32-bit recovery disk, use this option on a 32-bit computer. To create a 64-bit recovery disk, use this option on a 64-bit computer.	
Windows operating systems that can be recovered See "Veritas System Recovery Disk recovery matrix" on page 47.	The computer's operating system on which you create the Veritas System Recovery Disk and all earlier versions. Use this option on the latest operating system to recover all Windows operating systems.	All versions of Windows supported by the product.
Languages available in the recovery environment	The language of your operating system.	One or more of the 11 supported languages selected during Veritas System Recovery Disk creation.

Temporary disk space required on local system	Approximately 500 MB	Approximately 500 MB for each recovery disk that you create. More space is required for each additional language that you select.
		An additional 3.5 to 5 GB disk space is required to install Windows ADK.
PowerShell Cmdlets support in recovery environment (for example, Storage Space Creation Cmdlets)	Not Available	Available
Time required for creation (approximately)	10 minutes	20 minutes
		If you select more than one language, approximately 10 minutes are added for each language.
Can be customized on other operating systems	Yes	Yes
See "Veritas System Recovery Disk customization support matrix" on page 49.		

See "Creation Options" on page 44.

4 In the **Languages** panel, select the languages that should be available in the recovery environment, and then click **Next**.

See "Languages Options" on page 54.

Note: The Languages panel is only available if you select the **Advanced** creation option.

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5 In the **Veritas System Recovery Disk Storage Media/Destination** panel, select the destination to save the recovery disk, and then click **Next**.

Disk label	Lets you specify the name that you want to use for the Veritas System Recovery Disk label.
Select the platform of the recovery disk	This option is only displayed if you select the **Advanced** option to create a Veritas System Recovery Disk.
	Select the 32-bit, 64-bit, or both platforms for which you want to create the Veritas System Recovery Disk.
Select a drive to create a Veritas System Recovery Disk on a USB device	Lets you save your new Veritas System Recovery Disk to a USB device.
	Select the media drive in which you have inserted in the USB device.
	The existing data on the USB device is not formatted during Veritas System Recovery Disk creation. If you have a recovery disk created on the same USB drive, the new recovery disk overwrites the older recovery disk.
	Note: Veritas recommends that only privileged users or an administrator should have the rights to access the USB folder. Veritas also recommends that the recovery media files be managed only by trusted users. This is to ensure that the files are always safe and no one can tamper with them.
	If you attach an unsupported volume to your computer, the **Show Unsupported Devices** link is displayed. When you click the link, the **Unsupported Devices** dialog box with a list of the unsupported volumes and the reason for the unsupported volume is displayed.
	A Veritas System Recovery Disk does not support the super formatted USB disk.
	Note: You cannot create a 64-bit Veritas System Recovery Disk if your computer has a 32-bit operating system.
Save the Veritas System Recovery Disk as an ISO file	Lets you save your new Veritas System Recovery Disk as an ISO file.
	Click **Browse** and specify the path where you want to save the ISO file.
	You can manually burn the saved ISO file to a CD/DVD/Blu-ray.

See "Veritas System Recovery Disk Storage Media/Destination Options" on page 54.

6 In the **Licensed Features** panel, enter the license key of the product and then click **Next**.

Use the license key that is activated on this computer	Enables the cold backup feature in the recovery environment using the product license key that is provided.
	Note: By default, this option is not available when you create a Veritas System Recovery Disk using the Veritas System Recovery Management Solution Mode.
Use the following license key	Enables the cold backup feature in the new Veritas System Recovery Disk by typing a product license key.
Prompt for a license key	Prompts you for a product license key at the time you want to enable features in the Veritas System Recovery Disk.
	Note: By default, this option is selected when you create a Veritas System Recovery Disk using the Veritas System Recovery Management Solution Mode.

See "Licensed Features Options" on page 57.

7 In the **Storage and Network Drivers** panel, review the list of any storage or network drivers to be included, add, or remove storage and network drivers, and then click **Next**.

Storage and network drivers	Lets you review the list of any storage or network drivers to be included.
Add	Lets you add additional drivers. The location that you specify should contain the fully extracted installation package for the driver you add. If you have more than one missing storage or network driver, you can click **Add** for each missing driver.
	See "Adding a Storage or Network Driver" on page 59.
Remove	Deletes the drivers from the driver list that is displayed on the wizard.
Reset	Resets the list to the original list of storage and network drivers that is detected on the computer on which the Veritas System Recovery Disk creation utility is run.

See "Storage and Network Drivers Options" on page 58.

8 In the **Startup Options** panel, select the time zone, display language, keyboard layout language for the Veritas System Recovery Disk, and then click **Next**.

Time zone	Sets the time zone to use for the Veritas System Recovery Disk.
Display language	Sets the default display language for the Veritas System Recovery Disk.
Keyboard layout	Lets you select the default keyboard layout to use when you boot from the Veritas System Recovery Disk.

See "Startup Options" on page 60.

9 In the **Network Options** panel, select the dynamic or static IP, save the Windows firewall settings to the Veritas System Recovery Disk, and then click **Next**.

Automatically start network services	Automatically starts network services when you recover the computer through LightsOut Restore. Select this option if you want to enable network services in a recovery environment.
Dynamic IP	Connects to a network without the need for additional network configuration. You can click this option if you know there is a DHCP server available on the network at the time you restore.
Static IP	Connects to a network with a particular network adapter and specific address settings. You should select this option only if you know there is no DHCP server (or the DHCP server is unavailable) when you want to recover data.
Use Windows firewall settings	Applies the local computer's firewall settings to the recovery environment. For example, if you turn on the firewall for your local computer and then select this option, the firewall settings are applied for the recovery environment too.

See "Network Options" on page 60.

10 In the **Setup LightsOut Restore** panel, select the **Enable LightsOut Restore** check box to enable the LightsOut Restore boot option and boot menu display time, and then click **Next**.

Boot menu label	Indicates the title that appears on the Windows boot menu for LightsOut Restore.
Display boot menu for seconds	Specifies how long you want the boot menu to display. The default is 10 seconds.

See "Setup LightsOut Restore Options" on page 61.

11 In the **Summary** panel, review all of the options that you selected, and then click **Finish**.

The **Progress** panel displays the progress status and the approximate time that is required to create theVeritas System Recovery Disk. The **Result** panel displays a success result if the recovery disk is created successfully or a failed result if the recovery disk is not created successfully.

When a Veritas System Recovery Disk creation fails or is stopped, the recovery disk creation process is stopped. In some cases some files are left mounted in a temporary (folder name, SymSrdTemp) location and the files cannot be deleted. The WimCleaner.exe utility unmounts any such mounted system files and deletes the temporary folder (SymSrdTemp). Veritas System Recovery provides the 32-bit version of the WimCleaner.exe utility.

The utility is at the following location:

`<VSRInstallPath>\Utility\WimCleaner.exe`. You can double-click the exe file to run the utility or use the command prompt to run the utility.

Note: Veritas recommends that you test the recovery disk after it is created. It ensures that you can use the Veritas System Recovery Disk to start your computer and can access the drive that contains your recovery points.

See "Testing the Veritas System Recovery Disk" on page 85.

12 Click **Close** to close the wizard.

Welcome Panel

The **Welcome** panel in the **Veritas System Recovery Disk Creation Wizard** provides information about the types of recovery disks that you can create and the format of the recovery disks.

You can create a 32-bit or a 64-bit Veritas System Recovery Disk, using the **Typical** or **Advanced** creation option. If you select the **Advanced** option, you can create a multilingual Veritas System Recovery Disk. For the multilingual disk, you must download and install the Windows Assessment and Deployment Kit (ADK).

A Veritas System Recovery Disk can be created in the following format:

- USB disk

- ISO file (local or network location)

> **Note:** When you create a recovery disk using the Veritas System Recovery Management Solution Mode, you can only create an ISO file. The **Welcome** panel in the Veritas System Recovery Management Solution Mode also displays the step that you performing when you create a LightsOut Restore package.

Creation Options

In the **Creation Options** panel, on the **Veritas System Recovery Disk Creation Wizard**, use one of the following options to create the Veritas System Recovery Disk:

- **Typical**

  A Veritas System Recovery Disk created using this option is sufficient for your usual recovery needs.

  The option uses the Windows recovery environment available on your computer to create a Veritas System Recovery Disk. Using this option you can create a 32-bit recovery disk on a 32-bit computer or a 64-bit recovery disk on a 64-bit computer. The recovery disk is created in the language of the operating system from which the disk is created, and is one of the 11 languages that Veritas System Recovery 18 supports. Veritas recommends creating a Veritas System Recovery Disk on the latest operating system in your environment, such as Windows 10/2016. The recovery disk can then be used to recover images of Windows 10/2016 operating system and all earlier operating systems.

  The **Typical** option is only available on the operating systems on which the Windows recovery environment is also available. You can refer to the following link to view a list of the operating systems that use the Windows recovery environment.

  http://technet.microsoft.com/en-us/library/ff715587.aspx

  The customization features are also available during the trial period of Veritas System Recovery 18 and after the product license is activated.

  > **Note:** The **Typical** option is not available when you create a new Veritas System Recovery Disk using Veritas System Recovery Management Solution Mode.

- **Advanced**

  If you require to create a multilingual recovery disk or need a PowerShell support in your recovery environment, use the **Advanced** option to create a Veritas System Recovery Disk.

You can also create both 32-bit and 64-bit recovery disks on the same computer. You must have Windows ADK installed on your computer to use the **Advanced** option to create a Veritas System Recovery Disk.

Note: When you create the Veritas System Recovery Disk using Veritas System Recovery Management Solution Mode, the **Advanced** option is selected by default.

The **Typical** and **Advanced** creation options are supported on the following operating systems:

■ Windows 7

■ Windows 8

■ Windows 8.1

■ Windows 10

■ Windows 2008 (Only supported by the **Advanced** option)

■ Windows 2008 R2

■ Windows 2012

■ Windows 2012 R2

■ Windows 2016

Using the following customization features, you can customize a Veritas System Recovery Disk as per your requirements:

■ Select the language.

■ Add or remove network and storage drivers.

■ Specify the default network settings.

■ Specify the default license information.

■ Select the time zone, display language, and keyboard layout.

The following table lists a comparison of the features available for each option.

Table 3-1   Disk Creation Options

Feature Description	Typical	Advanced
Uses Windows ADK for Windows 10	No	Yes You require an Internet connection to download Windows ADK. See "Download and install Windows Assessment and Deployment Kit (ADK)" on page 50.
Platform support	Creates a 32-bit or a 64-bit recovery disk depending on the operating system installed on your computer. To create a 32-bit recovery disk, use this option on a 32-bit computer. To create a 64-bit recovery disk, use this option on a 64-bit computer.	Creates both 32-bit and 64-bit recovery disks on the same computer.
Windows operating systems that can be recovered See "Veritas System Recovery Disk recovery matrix" on page 47.	The computer's operating system on which you create the Veritas System Recovery Disk and all earlier versions. Use this option on the latest operating system to recover all Windows operating systems.	All versions of Windows supported by the product.
Languages available in the recovery environment	The language of your operating system.	One or more of the 11 supported languages selected during Veritas System Recovery Disk creation.
Temporary disk space required on local system	Approximately 500 MB	Approximately 500 MB for each recovery disk that you create. More space is required for each additional language that you select. An additional 3.5 to 5 GB disk space is required to install Windows ADK.

Table 3-1   Disk Creation Options *(continued)*

Feature Description	Typical	Advanced
PowerShell Cmdlets support in recovery environment (for example, Storage Space Creation Cmdlets)	Not Available	Available
Time required for creation (approximately)	10 minutes	20 minutes If you select more than one language, approximately 10 minutes are added for each language.
Can be customized on other operating systems See "Veritas System Recovery Disk customization support matrix" on page 49.	Yes	Yes

Veritas System Recovery Disk recovery matrix

You can recover an operating system using a Veritas System Recovery Disk that is created with the **Typical** or **Advanced** creation options. The following table provides a list of operating systems that can be recovered using the Veritas System Recovery Disk.

Veritas recommends that you create a Veritas System Recovery Disk on Windows 10/2016. If u do not have a Windows 10/2016 operating system, you can create the recovery disk on the most latest operating system that you have in your environment. If u create a Veritas System Recovery Disk on an older operating system, you can only recover the operating system on which you created the recovery disk or older operating system. The host operating system is the operating system on which you create the Veritas System Recovery Disk. Refer to following recoverability matrix.

Table 3-2   Recoverability matrix for Veritas System Recovery Disk created using the **Typical** option

Host operating system	Operating system that can be recovered (Yes/No)				
	Windows 2008 SP2	Windows 7/2008 R2	Windows 8/2012	Windows 8.1/2012 R2	Windows 10/2016
Windows 10/2016	Yes	Yes	Yes	Yes	Yes
Windows 8.1/2012 R2	Yes	Yes	Yes	Yes	No
Windows 8/2012	Yes	Yes	Yes	No	No
Windows 7/2008 R2	Yes	Yes	No	No	No

Veritas recommends that you use Windows ADK for Windows 10 to create a recovery disk using the **Advanced** option.

A recovery disk created using Windows ADK for Windows 8.0 cannot be used to recover the Windows 8.1/2012 R2 and later operating system. Refer to the following recoverability matrix.

Table 3-3   Recoverability matrix for Veritas System Recovery Disk created using Windows ADK

Host operating system	ADK version used	Operating system that can be recovered (Yes/No)				
Windows 2008 SP2, Windows 7/2008 R2, Windows 8/2012, Windows 8.1/2012 R2, Windows 10/2016		Windows 2008 SP2	Windows 7/2008 R2	Windows 8/2012	Windows 8.1/2012 R2	Windows 10/2016
	Windows ADK for Windows 10 (Recommended)	Yes	Yes	Yes	Yes	Yes
	Windows ADK for Windows 8.1 Update	Yes	Yes	Yes	Yes	No
	Windows ADK for Windows 8.0	Yes	Yes	Yes	No	No

Veritas System Recovery Disk customization support matrix

You can customize a Veritas System Recovery Disk created using the **Typical** or **Advanced** creation option on other operating systems to have drivers installed on those computers available in the recovery environment for retargetting. You can also customize, the recovery environment's startup options, network options. The following tables provide a list of operating systems on which you can customize the Veritas System Recovery Disk.

Table 3-4   Customization support matrix for base Veritas System Recovery Disk created using the **Typical** option

Veritas System Recovery Disk created on host operating system	Can be customized on operating system (Yes/No)				
	Windows 2008	Windows 7/2008 R2	Windows 8/2012	Windows 8.1/2012 R2	Windows 10/2016
Windows 10/2016	No	Yes	Yes	Yes	Yes
Windows 8.1/2012 R2	No	Yes	Yes	Yes	No
Windows 8/2012	No	Yes	Yes	No	No
Windows 7/2008 R2	No	Yes	No	No	No

Table 3-5   Customization support matrix for a Veritas System Recovery Disk created using the **Advanced** option

Veritas System Recovery Disk created using Windows ADK	Can be customized on operating system (Yes/No)				
	Windows 2008	Windows 7/2008 R2	Windows 8/2012	Windows 8.1/2012 R2	Windows 10/2016
Windows ADK for Windows 10	Yes	Yes	Yes	Yes	Yes
Windows ADK for Windows 8.1 Update	Yes	Yes	Yes	Yes	No

Table 3-5   Customization support matrix for a Veritas System Recovery Disk created using the **Advanced** option *(continued)*

Veritas System Recovery Disk created using Windows ADK	Can be customized on operating system (Yes/No)				
Windows ADK for Windows 8.0	Yes	Yes	Yes	No	No

Note: A Veritas System Recovery Disk created using Windows ADK for Windows 8.0 can only recover Windows 8 /Windows Server 2012 and earlier operating systems.

Non-availability of the Typical option

Veritas System Recovery

When you use Veritas System Recovery to create a Veritas System Recovery Disk, the **Typical** option is not enabled if the Windows Recovery Environment is not available or disabled on your computer. You can only create a recovery disk using the **Advanced** option.

Veritas System Recovery Management Solution Mode

When you use Veritas System Recovery Management Solution Mode to create a Veritas System Recovery Disk, the **Typical** option is disabled. You can only create a recovery disk using the **Advanced** option. The **Typical** option is disabled for the following reasons:

- Using the **Typical** option, you can only create a 32-bit or 64-bit Veritas System Recovery Disk. To create a LightsOut Restore package, you must create and upload both 32-bit and 64-bit Veritas System Recovery Disk.

- Using the **Typical** option, you cannot create a multilingual recovery disk. To create a LightsOut Restore package, you need to create and upload a multilingual disk.

Download and install Windows Assessment and Deployment Kit (ADK)

Using the Windows Assessment and Deployment Kit (ADK) you can create a Veritas System Recovery Disk using the **Advanced** option or setup Lights Out Restore for

32-bit and 64-bit platforms. You can create the advanced Veritas System Recovery Disk for any of the available languages.

Note: If Windows ADK is not installed, when you click **Next** on the Environment Options page of the Veritas System Recovery Disk Creator wizard, an error message is displayed. You can continue to create the Veritas System Recovery Disk only after you download and install Windows ADK successfully.

The following information describes the version of Windows ADK that you need to select along with steps to download and install the ADK.

Select the version of Windows ADK

Veritas recommends that you create the Veritas System Recovery Disk using the latest version of Windows ADK that is available (Windows ADK for Windows 10). You can perform a seamless recovery of the latest Microsoft operating systems using a Veritas System Recovery Disk.

Windows ADK for Windows 10 can be installed on following operating systems:

- Client OS: Windows 7, Windows 8, and Windows 8.1, Windows 10

- Server OS: Windows Server 2008, Windows Server 2008 R2, Windows Server 2012, Windows Server 2012 R2, and Windows Server 2016

Windows ADK for Windows 8.1 Update can be installed on following operating systems:

- Client OS: Windows 7, Windows 8, and Windows 8.1

- Server OS: Windows Server 2008, Windows Server 2008 R2, Windows Server 2012, and Windows Server 2012 R2

Download and install Windows ADK

1 Download and run the Windows ADK for Windows 10.

> **Note:** Windows ADK is a Microsoft product and if any errors are reported when you download and install the ADK, contact Microsoft support.

The **Specify Location** page is displayed. By default, **Install the Windows Assessment and Deployment Kit - Windows 10 to this computer** is selected.
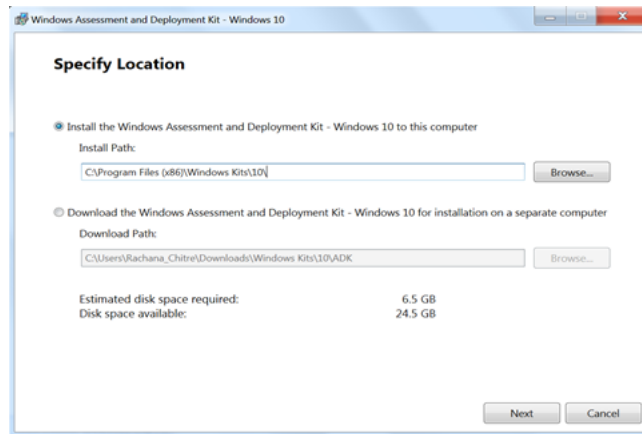
> **Note:** This page also displays the disk space that is required for the ADK kit and the disk space available on your computer.

2 Click **Browse** and select the installation path.

3 Click **Next**.

The **Windows Kits Privacy** page is displayed. By default, **Yes** is selected.

4 Determine if you want to join the program, and then click **Next**.

The **License Agreement** page is displayed.

5   Click **Accept**.

The **Select the features you want to install** page is displayed.
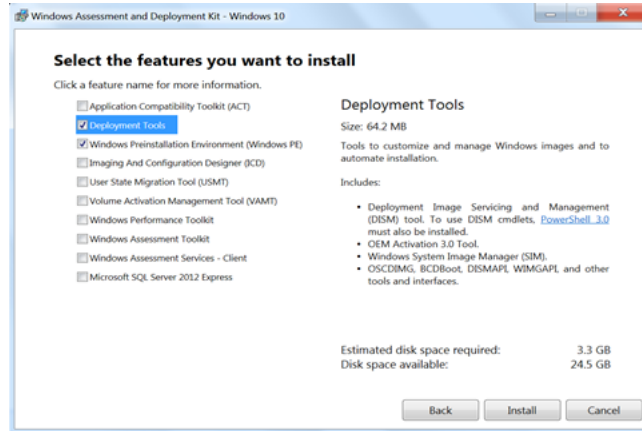
6   Select only the **Deployment Tools** and **Windows Preinstallation Environment (Windows PE)** check boxes.

Note: This page also displays the disk space that is required for the features and the disk space available on your computer.

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7   Click **Install**.

The **Installing features** page is displayed. You can view the installation progress of the features.

When the installation is completed, the **Welcome to the Windows Assessment and Deployment Kit - Windows 10!** page is displayed.

Note: You can select the **Learn more about the Windows Assessment and Deployment Kit** check box to view the Windows ADK documentation.

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8   Click **Close**.

To continue creating the advanced Veritas System Recovery Disk, click **Next** on the **Veritas System Recovery Disk Creation Wizard**.

Languages Options

The **Languages** panel, on the **Veritas System Recovery Disk Creation Wizard** is only available when you select the **Advanced** option to create a Veritas System Recovery Disk.

The default language is selected based on a computer's locale. If Windows ADK for Windows 10 or 8.1 is installed on your computer, you can select any combination of the 11 supported languages. If Windows ADK for Windows 8.0 is installed on your computer, you can select one or more European languages (other than the computer's default language) or one Asian language.

If multiple administrators use the Veritas System Recovery Disk, you can create the recovery disk in multiple languages. If you select multiple languages to create the Veritas System Recovery Disk, more time may be required to create the recovery disk.

Veritas System Recovery Disk Storage Media/Destination Options

In the **Veritas System Recovery Disk Storage Media/Destination**, on the **Veritas System Recovery Disk Creation Wizard**, select the destination to save the Veritas System Recovery Disk on a USB disk or as an ISO file.

The **Veritas System Recovery Disk Storage Media/Destination** panel also displays the disk space available on the selected drive of your computer. For example, C drive. You can select multiple destination media. If you select the ISO option, you can also save the Veritas System Recovery Disk to a network destination. When you specify a network destination, you must enter a valid user name and password to access the network.

For a USB media, both the NTFS and FAT32 file systems are supported. If you need to create a USB Veritas System Recovery Disk that needs to boot on both BIOS and UEFI (firmware) computers, then you must create the recovery disk on a FAT32 USB drive.

Note: You cannot create multiple Veritas System Recovery Disks on the same media.

Veritas System Recovery does not support using a lower version of a Veritas System Recovery Disk to restore a newer version of an operating system. For example, you cannot use a Veritas System Recovery Disk created on Windows 7 to restore a Windows 8 operating system. You cannot restore a Veritas System Recovery Disk created using Windows ADK for Windows 8.0 to restore a Windows 8.1 or Windows 10 operating system.

In the **Create Veritas System Recovery Disk Wizard**, if you select the **Typical** or **Advanced** option, you can create a 32-bit or 64-bit Veritas System Recovery Disk on your computer.

When you select the **Advanced** option, you can create both 32-bit and 64-bit Veritas System Recovery Disk as ISO files on your computer. Both the ISO files are stored in the same folder with different names.

The following table describes the options on the **Veritas System Recovery Disk Storage Media/Destination** panel.

Table 3-6   Veritas System Recovery Disk Storage Media/Destination options

Option	Description
Disk label	Lets you specify the name that you want to use for the Veritas System Recovery Disk label.
Select the platform of the recovery disk	This option is only displayed if you select the **Advanced** option to create a Veritas System Recovery Disk. Select the 32-bit, 64-bit, or both platforms for which you want to create the Veritas System Recovery Disk.

Table 3-6   Veritas System Recovery Disk Storage Media/Destination options
                     (continued)

Option	Description
Select a drive to create a Veritas System Recovery Disk on a USB device	Lets you save your new Veritas System Recovery Disk to a USB device.
	Select the media drive in which you have inserted in the USB device.
	The existing data on the USB device is not formatted during Veritas System Recovery Disk creation. If you have a recovery disk created on the same USB drive, the new recovery disk overwrites the older recovery disk.
	Note: Veritas recommends that only privileged users or an administrator should have the rights to access the USB folder. Veritas also recommends that the recovery media files be managed only by trusted users. This is to ensure that the files are always safe and no one can tamper with them.
	If you attach an unsupported volume to your computer, the **Show Unsupported Devices** link is displayed. When you click the link, the **Unsupported Devices** dialog box with a list of the unsupported volumes and the reason for the unsupported volume is displayed.
	Veritas System Recovery Disk on a USB is not supported for the following disks or drives:
	■ FAT (FAT16) and exFAT formatted drives. ■ Dynamic disk. ■ Hidden volumes (no drive letter is assigned to the USB volume). ■ USB is write-protected. ■ USB is protected using an encryption software (such as, BitLocker, TrueCrypt, SEP) at the disk or the volume level. ■ USB drives that are on extended partitions. ■ USB disk is formatted to GPT layout. ■ U3 USB devices. ■ Native 4K disk greater than 2TB.
	A Veritas System Recovery Disk does not support the super formatted USB disk.
	Note: You cannot create a 64-bit Veritas System Recovery Disk if your computer has a 32-bit operating system.

Table 3-6   Veritas System Recovery Disk Storage Media/Destination options
(continued)

Option	Description
Save the Veritas System Recovery Disk as an ISO file	Lets you save your new Veritas System Recovery Disk as an ISO file.
	Click **Browse** and specify the path where you want to save the ISO file.

Firmware support matrix for Veritas System Recovery Disk created on USB drive (Thumb/HDD)

The maximum size of the USB drive (Thumb/HDD) should be up to 2 terabytes.

Table 3-7   Firmware support matrix

Firmware support	FS Type	Supported cluster size
BIOS bootable USB Veritas System Recovery Disk	FAT32	Up to 8K
	NTFS	4K
Both BIOS + UEFI bootable USB Veritas System Recovery Disk	FAT32	Up to 8K

Licensed Features Options

In the **Licensed Features** panel, on the **Veritas System Recovery Disk Creation Wizard**, the license key that you enter is added to the Veritas System Recovery Disk and is also used to enable the cold backup feature of the recovery disk.

The following table describes the options on the **Licensed Features** panel.

Table 3-8   Licensed Feature options

Options	Description
Use the license key that is activated on this computer	Enables the cold backup feature in the recovery environment using the product license key that is provided.
	Note: By default, this option is not available when you create a Veritas System Recovery Disk using the Veritas System Recovery Management Solution Mode.

Table 3-8   Licensed Feature options *(continued)*

Options	Description
Use the following license key	Enables the cold backup feature in the new Veritas System Recovery Disk by typing a product license key.
Prompt for a license key	Prompts you for a product license key at the time you want to enable features in the Veritas System Recovery Disk. **Note:** By default, this option is selected when you create a Veritas System Recovery Disk using the Veritas System Recovery Management Solution Mode.

Note: During the trial mode when you create a Veritas System Recovery Disk, all customization options are available. After the trial mode is over, you can create a Veritas System Recovery Disk, without customization options (for example, adding drivers, startup options, and so on). Customizing a Veritas System Recovery Disk is a licensed feature.

Storage and Network Drivers Options

The **Storage and Network Drivers** panel, on the **Veritas System Recovery Disk Creation Wizard**, displays the list of storage and network drivers available on your local computer. The drivers are added to the recovery disk and loaded as required when you boot into recovery environment using theVeritas System Recovery Disk. These drivers are also used for dissimilar hardware restore.

When you select the **Typical** option and save the Veritas System Recovery Disk, only 32-bit or 64-bit drivers are displayed. If you select the **Advanced** option and create 32-bit and 64-bit Veritas System Recovery Disks as ISO files, both 32-bit and 64-bit drivers are displayed. Based on the platforms that you have selected, you can add the drivers. The 32-bit drivers are added to the 32-bit Veritas System Recovery Disk and the 64-bit drivers are added to the 64-bit Veritas System Recovery Disk.

Note: All the storage and network drivers that are available on your computer are displayed.

The following table describes the options on the **Storage and Network Drivers** panel.

Table 3-9   Storage and Network Driver options

Option	Description
Storage and network drivers	Lets you review the list of any storage or network drivers to be included.
Add	Lets you add additional drivers. The location that you specify should contain the fully extracted installation package for the driver you add. If you have more than one missing storage or network driver, you can click **Add** for each missing driver. See "Adding a Storage or Network Driver" on page 59.
Remove	Deletes the drivers from the driver list that is displayed on the wizard.
Reset	Resets the list to the original list of storage and network drivers that is detected on the computer on which the Veritas System Recovery Disk creation utility is run.

Adding a Storage or Network Driver

In the **Add Storage and Network Driver** dialog box, on the **Veritas System Recovery Disk Creation Wizard**, click **Browse** and select the .inf file of the driver, which is to be added to theVeritas System Recovery Disk.

You need to provide a suitable driver that is compatible with the version of WinPE that you use to create a Veritas System Recovery Disk. Drivers that are not compatible with the version of WinPE used to create this recovery disk, do not load when you boot into recovery environment using the Veritas System Recovery Disk.

If you create a Veritas System Recovery Disk using the **Typical** option, the version of WinPE is the same as the version of the local operating system. If you create a Veritas System Recovery Disk using Windows ADK for Windows 8.0, 8.1 Update, or Windows10; you need to provide a Windows 8/2012, Windows 8.1/2012 R2, or Windows 10/2016 compatible driver.

If you are customizing an existing Veritas System Recovery Disk, the version of WinPE is mentioned in the SymInfo.xml file at the root of the Veritas System Recovery Disk media. All the drivers that are added using this wizard are available when you boot into the recovery disk and are used for HIR (Restore Anyware). Even if you add a driver that is not compatible with the WinPE version of a recovery disk, it is added to the Veritas System Recovery Disk. This incompatible driver is only used when you boot into the recovery environment.

Startup Options

In the **Startup Options** panel, on the **Veritas System Recovery Disk Creation Wizard**, the options that you select when you create a Veritas System Recovery Disk are applied when you boot into the recovery disk.

The following table describes the options on the **Startup Options** panel.

Table 3-10   Startup Options

Option	Description
Time zone	Sets the time zone to use for the Veritas System Recovery Disk.
Display language	Sets the default display language for the Veritas System Recovery Disk.
Keyboard layout	Lets you select the default keyboard layout to use when you boot from the Veritas System Recovery Disk.

Network Options

In the **Network Options** panel, on the **Veritas System Recovery Disk Creation Wizard**, the selected network options are used when you want to recover images from a network location. To recover images over a network location, you need to access the remote network location. The network options are applicable when you boot into theVeritas System Recovery Disk.

The following table describes the options on the **Network Options** panel.

Table 3-11   Network Options

Option	Description
Automatically start network services	Automatically starts network services when you recover the computer through LightsOut Restore. Select this option if you want to enable network services in a recovery environment.
Dynamic IP	Connects to a network without the need for additional network configuration. You can click this option if you know there is a DHCP server available on the network at the time you restore.
Static IP	Connects to a network with a particular network adapter and specific address settings. You should select this option only if you know there is no DHCP server (or the DHCP server is unavailable) when you want to recover data.

Table 3-11 Network Options *(continued)*

Option	Description
Use Windows firewall settings	Applies the local computer's firewall settings to the recovery environment. For example, if you turn on the firewall for your local computer and then select this option, the firewall settings are applied for the recovery environment too.

Setup LightsOut Restore Options

In the **Setup LightsOut Restore** panel, on the **Veritas System Recovery Disk Creation Wizard**, the LightsOut Restore option creates a copy of your recovery environment on your local computer's hard drive. The LightsOut Restore option lets you boot into a recovery environment same as a Veritas System Recovery Disk stored on an external USB media.

The following table describes the options on the **Setup LightsOut Restore** panel.

Table 3-12 Setup LightsOut Restore options

Option	Description
Boot menu label	Indicates the title that appears on the Windows boot menu for LightsOut Restore.
Display boot menu for seconds	Specifies how long you want the boot menu to display. The default is 10 seconds.

Note: The **LightsOut Restore** panel is not available in the Veritas System Recovery Management Solution Mode. Using the Veritas System Recovery Management Solution Mode, you only create the ISO file and use the file to create the LightsOut Restore package. The package is deployed on the client computers.

Customizing an existing Veritas System Recovery Disk

Veritas recommends that you customize a Veritas System Recovery Disk, even if driver validation succeeds, and your Veritas System Recovery Disk appears to work. You can customize a Veritas System Recovery Disk, which is available on a USB device and DVD (manually burned). A custom Veritas System Recovery Disk contains your computer's current network and storage device drivers. It helps to

ensure that in an emergency you can get to the recovery points that are required to restore your computer.

You can customize a Veritas System Recovery Disk created using Windows Assessment and Deployment Kit (ADK) 8.0 on the Windows 2008 operating systems.

A customized Veritas System Recovery Disk can also be used as a source for creating another custom Veritas System Recovery Disk.

To launch the **Customize Existing Veritas System Recovery Disk Wizard** go to the **Tasks** menu and click **Customize Existing Recovery Disk**.

To customize an existing Veritas System Recovery Disk

1. On the **Tasks** menu, click **Customize Existing Recovery Disk**.

    The **Customize Veritas System Recovery Disk Wizard** is displayed.

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

    See "Welcome Panel" on page 66.

3. In the **Recovery Disk Source** panel, select the source Veritas System Recovery Disk and then click **Next**.

If you know the path to the source Veritas System Recovery Disk	Type the path in the **Veritas System Recovery Disk media location** field.
If you do not know the path to the source Veritas System Recovery Disk	Do the following in the order listed: ■ Click **Browse**. ■ Click **Veritas System Recovery Disk ISO File** to locate the path for the ISO image file, or click **Veritas System Recovery Disk Folder** to locate the path for the disk on other media. ■ On the **Open** dialog box, navigate to the location of the appropriate ISO image file, media drive, or folder. ■ Click **Open**.

See "Recovery Disk Source Options" on page 66.

4 In the **Veritas System Recovery Disk Storage Media/Destination** panel, select the destination to save the recovery disk, and then click **Next**.

Disk label	Lets you specify the name that you want to use for the Veritas System Recovery Disk label.
Select a drive to create a Veritas System Recovery Disk on a USB device	Lets you save your new Veritas System Recovery Disk to a USB device.
	Select the media drive in which you have inserted in the USB device.
	Note: The existing data on the USB device is not formatted during Veritas System Recovery Disk creation. If you have a recovery disk created on the same USB drive, the new recovery disk overwrites the older recovery disk.
	Note: Veritas recommends that only privileged users or an administrator should have the rights to access the USB folder. Veritas also recommends that the recovery media files be managed only by trusted users. This is to ensure that the files are always safe and no one can tamper with them.
	See "How to add new drivers or driver versions to the Veritas System Recovery Disk" on page 71.
	If you attach an unsupported volume to your computer, the **Show Unsupported Devices** link is displayed. When you click the link, the **Unsupported Devices** dialog box with a list of the unsupported volumes and the reason for the unsupported volume is displayed.
Save the Veritas System Recovery Disk as an ISO file	Lets you save your new Veritas System Recovery Disk as an ISO file.
	Click Browse and specify the path where you want to save the ISO file.
	You can manually burn the ISO file to a CD/DVD/Blu-ray.

See "Veritas System Recovery Disk Storage Media/Destination Options" on page 67.

5 In the **Licensed Features** panel, enter the license of the product and then click **Next**.

Use the license key that is activated on this computer	Enables the cold backup feature in the recovery environment using the product license key that is provided.
Use the following license key	Enables the cold backup feature in the new Veritas System Recovery Disk by typing a product license key.
Prompt for a license key	Prompts you for a product license key at the time you want to enable features in the customized Veritas System Recovery Disk.

See "Licensed Features Options" on page 72.

6 In the **Storage and Network Drivers** panel, review the list of any storage or network drivers to be included, add or remove storage and network drivers, and then click **Next**.

Storage and network drivers	Lets you review the list of any storage or network drivers to be included.
Add	Lets you add additional drivers. The location that you specify should contain the fully extracted installation package for the driver you add. If you have more than one missing storage or network driver, you can click **Add** for each missing driver.
	See "Adding a Storage or Network Driver" on page 59.
Remove	Deletes the drivers you do not need.
Reset	Resets the list to the original list of drivers that is detected on the computer.

See "Storage and Network Drivers Options" on page 72.

7   In the **Startup Options** panel, select the time zone, display language, keyboard layout language for theVeritas System Recovery Disk, and then click **Next**.

Time zone	Sets the time zone to use for the Veritas System Recovery Disk.
Display language	Sets the default display language for the Veritas System Recovery Disk.
Keyboard layout	Lets you select the default keyboard layout to use when you boot from the Veritas System Recovery Disk.

See "Startup Options" on page 74.

8   In the **Network Options** panel, select the dynamic or static IP, save the Windows firewall settings to the Veritas System Recovery Disk, and then click **Next**.

Automatically start network services	Select this option if u want to enable network services in a recovery environment. Networking starts automatically when you recover the computer through LightsOut Restore.
Dynamic IP	Connects to a network without the need for additional network configuration. You can click this option if you know there is a DHCP server available on the network at the time you restore.
Static IP	Connects to a network with a particular network adapter and specific address settings. You should click this option if you know there is no DHCP server (or the DHCP server is unavailable) when you recover.
Use Windows firewall settings	Applies the local computer's firewall settings to the recovery environment. For example, if you turn on the firewall for your local computer and then select this option, the firewall is turned on for the recovery environment.

See "Network Options" on page 74.

9 In the **Summary** panel, review all of the options that you selected, and then click **Finish**.

The **Progress** panel displays the progress status and the approximate time that is required to create theVeritas System Recovery Disk. The **Result** panel displays a success result if the recovery disk is created successfully or a failed result if the recovery disk is not created successfully.

Note: Veritas recommends that you test the recovery disk after it is created. It ensures that you can use the Veritas System Recovery Disk to start your computer and can access the drive that contains your recovery points.

See "Testing the Veritas System Recovery Disk" on page 85.

10 Click **Close** to close the wizard.

Welcome Panel

The **Welcome** panel on the **Customize Veritas System Recovery Disk Wizard** provides information about this wizard and the format of the recovery disk that you can create.

You can use this wizard to add the missing storage or network drivers in the Veritas System Recovery Disk. The wizard also identifies and compares the drivers in your current recovery disk with those available on your computer and lets you add the missing drivers. You can also update the startup and network options of the recovery disk.

The Veritas System Recovery Disk can be created in the following formats:

- USB disk
- ISO file (local or network location).

After you review the information, click **Next**.

Recovery Disk Source Options

In the **Recovery Disk Source** panel, on the **Customize Veritas System Recovery Disk Wizard**, do one of the following:

Table 3-13   Recovery Disk Source Options

Option	Description
If you know the path to the source Veritas System Recovery Disk	Type the path in the **Veritas System Recovery Disk media location** field.
If you do not know the path to the source Veritas System Recovery Disk	Do the following in the order listed: ■ Click **Browse**. ■ Click **Veritas System Recovery Disk ISO File** to locate the path for the ISO image file or click **Veritas System Recovery Disk Folder** to locate the path for the disk on other media. ■ On the **Open** dialog box, navigate to the location of the appropriate ISO image file, media drive, or folder. ■ Click **Open**.

Veritas System Recovery Disk Storage Media/Destination Options

In the **Veritas System Recovery Disk Storage Media/Destination** panel, on the **Customize Veritas System Recovery Disk Wizard**, select the destination to save the Veritas System Recovery Disk on a USB disk or as an ISO file.

The **Veritas System Recovery Disk Storage Media/Destination** panel also displays the disk space available on the selected drive of your computer. For example, C drive. You can select multiple destination media. If you select the ISO option, you can also save the Veritas System Recovery Disk to a network destination. When you specify a network destination, you must enter a valid user name and password to access the network.

For a USB media, both the NTFS and FAT32 file systems are supported. If you need to create a USB Veritas System Recovery Disk that needs to boot on both BIOS and UEFI (firmware) computers, then you must create the recovery disk on a FAT32 USB drive.

Note: You cannot create multiple Veritas System Recovery Disks on the same media.

Veritas System Recovery does not support using a lower version of a Veritas System Recovery Disk to restore a newer version of an operating system. For example, you cannot use a Veritas System Recovery Disk created on Windows 7 to restore a Windows 8 operating system. You cannot restore a Veritas System Recovery

Disk created using Windows ADK for Windows 8.0 to restore a Windows 8.1 and Windows 10 operating systems.

The following table describes the options on the **Veritas System Recovery Disk Storage Media/Destination** panel.

Table 3-14   Veritas System Recovery Disk Storage Media/Destination options

Option	Description
Disk label	Lets you specify the name that you want to use for the Veritas System Recovery Disk label.

Table 3-14   Veritas System Recovery Disk Storage Media/Destination options
(continued)

Option	Description
Select a drive to create a Veritas System Recovery Disk on a USB device	

Table 3-14   Veritas System Recovery Disk Storage Media/Destination options *(continued)*

Option	Description
	Lets you save your new Veritas System Recovery Disk to a USB device.
	Select the media drive in which you have inserted in the USB device.
	Note: The existing data on the USB device is not formatted during Veritas System Recovery Disk creation. If you have a recovery disk created on the same USB drive, the new recovery disk overwrites the older recovery disk.
	Note: Veritas recommends that only privileged users or an administrator should have the rights to access the USB folder. Veritas also recommends that the recovery media files be managed only by trusted users. This is to ensure that the files are always safe and no one can tamper with them.
	See "How to add new drivers or driver versions to the Veritas System Recovery Disk" on page 71.
	If you attach an unsupported volume to your computer, the **Show Unsupported Devices** link is displayed. When you click the link, the **Unsupported Devices** dialog box with a list of the unsupported volumes and the reason for the unsupported volume is displayed.
	Veritas System Recovery Disk on a USB is not supported for the following disks or drives:
	■ FAT (FAT16) and exFAT formatted drives. ■ Dynamic disk. ■ Hidden volumes (no drive letter is assigned to the USB volume). ■ USB is write-protected. ■ USB is protected using an encryption software (such as, BitLocker, TrueCrypt, SEP) at the disk or the volume level. ■ USB drives that are on extended partitions. ■ USB disk is formatted to GPT layout. ■ U3 USB devices. ■ Native 4K disk greater than 2TB.
	A Veritas System Recovery Disk does not support the super formatted USB disk.

Table 3-14 Veritas System Recovery Disk Storage Media/Destination options *(continued)*

Option	Description
	Note: You cannot customize a 64-bit Veritas System Recovery Disk if your computer has a 32-bit operating system.
Save the Veritas System Recovery Disk as an ISO file	Lets you save your new Veritas System Recovery Disk as an ISO file.
	Click Browse and specify the path where you want to save the ISO file.

Firmware support matrix for Veritas System Recovery Disk created on USB drive (Thumb/HDD)

The maximum size of the USB drive (Thumb/HDD) should be up to 2 terabytes.

Table 3-15 Firmware support matrix

Firmware support	FS Type	Supported cluster size
BIOS bootable USB Veritas System Recovery Disk	FAT32	Up to 8K
	Both BIOS + UEFI bootable USB Veritas System Recovery Disk	4K
Both BIOS + UEFI bootable USB Veritas System Recovery Disk	FAT32	Up to 8K

How to add new drivers or driver versions to the Veritas System Recovery Disk

Whenever new drivers or driver versions are added to your computers, you must add them to the Veritas System Recovery Disk. If your Veritas System Recovery Disk is on a USB device, you can update it rather than creating a new one.

To update an existing Veritas System Recovery Disk on a USB device, run the **Customize Veritas System Recovery Disk Wizard**. During Veritas System Recovery Disk customization, the existing drivers are retained and only the new drivers are added to the recovery disk.

Note: You can add drivers from multiple computers to a single Veritas System Recovery Disk on a USB device.

See "Customizing an existing Veritas System Recovery Disk" on page 61.

Licensed Features Options

In the **Licensed Features** panel, on the **Customize Veritas System Recovery Disk Wizard**, the license key that you enter here is added to the Veritas System Recovery Disk and is also used to enable the cold backup feature of the recovery disk.

The following table describes the options on the **Licensed Features** panel.

Table 3-16   Licensed Feature options

Option	Description
Use the license key that is activated on this computer	Enables the cold backup feature in the recovery environment using the product license key that is provided.
Use the following license key	Enables the cold backup feature in the new Veritas System Recovery Disk by typing a product license key.
Prompt for a license key	Prompts you for a product license key at the time you want to enable features in the customized Veritas System Recovery Disk.

Note: During the trial mode when you create a Veritas System Recovery Disk, all customization options are available. After the trial mode is over, you can create a Veritas System Recovery Disk, without customization options (for example, adding drivers, startup options, and so on). Customizing a Veritas System Recovery Disk is a licensed feature.

Storage and Network Drivers Options

The **Storage and Network Drivers** panel, on the **Customize Veritas System Recovery Disk Wizard**, displays the list of storage and network drivers available on your local computer. The drivers are added to the recovery disk and loaded as required when you boot into recovery environment using theVeritas System Recovery Disk. These drivers can also be used for dissimilar hardware restore.

If you selected the **Typical** option to create the Veritas System Recovery Disk, only 32-bit or 64-bit drivers are displayed. If you select the **Advanced** option and created 32-bit and 64-bit Veritas System Recovery Disks as ISO files, both 32-bit and 64-bit drivers are displayed. Based on the platforms that you have selected, you can add the drivers. The 32-bit drivers are added to the 32-bit Veritas System Recovery Disk and the 64-bit drivers are added to the 64-bit Veritas System Recovery Disk.

Note: All the storage and network drivers that are available on your system are displayed.

The following table describes the options on the **Storage and Network Drivers** panel.

Table 3-17   Storage and Network Driver options

Option	Description
Storage and network drivers	Lets you review the list of any storage or network drivers to be included.
Add	Lets you add additional drivers. The location that you specify should contain the fully extracted installation package for the driver you add. If you have more than one missing storage or network driver, you can click **Add** for each missing driver. See "Adding a Storage or Network Driver" on page 59.
Remove	Deletes the drivers you do not need.
Reset	Resets the list to the original list of drivers that is detected on the computer.

Adding a Storage or Network Driver

In the **Add Storage and Network Driver** dialog box, on the **Customize Veritas System Recovery Disk Wizard**, click **Browse** and select the .inf file of the driver, which is to be added to theVeritas System Recovery Disk.

You need to provide a suitable driver that is compatible with the version of WinPE that you use to customize a Veritas System Recovery Disk. Drivers that are not compatible with the version of WinPE used to customize this recovery disk do not load when you boot into recovery environment using this Veritas System Recovery Disk.

If you are customizing an existing Veritas System Recovery Disk, the version of WinPE is mentioned in the SymInfo.xml file at the root of the Veritas System

Recovery Disk media. All the drivers added using this wizard are available when you boot into the recovery disk and are used for HIR (Restore Anyware). Even if you add a driver that is not compatible with the WinPE version of a recovery disk, it is added to the Veritas System Recovery Disk. This incompatible driver is only used when you boot into the recovery environment.

Startup Options

In the **Startup Options** panel, on the **Customize Veritas System Recovery Disk Wizard**, the options selected when you create a Veritas System Recovery Disk are applied when you boot into the recovery disk.

The following table describes the options on the **Startup Options** panel.

Table 3-18   Startup Options

Option	Description
Time zone	Sets the time zone to use for the Veritas System Recovery Disk.
Display language	Sets the default display language for the Veritas System Recovery Disk.
Keyboard layout	Lets you select the default keyboard layout to use when you boot from the Veritas System Recovery Disk.

Network Options

In the **Network Options** panel, on the **Customize Veritas System Recovery Disk Wizard**, the selected options are used when you want to recover images from a network location. To recover images over a network location, you need to access the remote network location. The network options are applicable when you boot into theVeritas System Recovery Disk.

The following table describes the options on the **Network Options** panel.

Table 3-19   Network Options

Option	Description
Automatically start network services	Select this option if u want to enable network services in a recovery environment. Networking starts automatically when you recover the computer through LightsOut Restore.

Table 3-19   Network Options *(continued)*

Option	Description
Dynamic IP	Connects to a network without the need for additional network configuration. You can click this option if you know there is a DHCP server available on the network at the time you restore.
Static IP	Connects to a network with a particular network adapter and specific address settings. You should click this option if you know there is no DHCP server (or the DHCP server is unavailable) when you recover.
Use Windows firewall settings	Applies the local computer's firewall settings to the recovery environment. For example, if you turn on the firewall for your local computer and then select this option, the firewall is turned on for the recovery environment.

About restoring a computer from a remote location by using LightsOut Restore

Veritas System Recovery LightsOut Restore lets administrators restore a computer from a remote location. It works regardless of the state of the computer provided that its file system is intact.

For example, suppose you are on vacation in the Bahamas and a computer on your network in Vancouver goes down. You can connect to the computer from your remote location by using your server's remote connection capabilities. You can remotely access a Veritas System Recovery Disk to start the computer in the recovery environment. You can then use the Veritas System Recovery Disk to restore files or an entire system partition.

LightsOut Restore installs a custom version of a Veritas System Recovery Disk directly to the file system on the system partition. It then places a Veritas System Recovery Disk boot option in the **Windows boot** menu. Whenever the boot menu option is selected, the computer boots directly into the Veritas System Recovery Disk. It uses the files that are installed on the system partition.

LightsOut Restore uses the Windows boot menu, and hardware devices such as RILO and DRAC. These features combine to let an administrator remotely control a system during the boot process.

After you configure LightsOut Restore and add the boot menu option, you can use a hardware device to remotely connect to the system. After you connect, you can turn on or reboot the system into theVeritas System Recovery Disk.

Note: If you use Microsoft BitLocker to secure the data on a drive, be aware that LightsOut Restore does not work on BitLocked drives. Therefore, if you "BitLock" your system drive, you cannot recover the drive using LightsOut Restore.

See "Configuring LightsOut Restore" on page 76.

Configuring LightsOut Restore

Before you set up LightsOut Restore, review the following information:

Note: If you use Microsoft's BitLocker Drive Encryption to encrypt the data on a drive, be aware that LightsOut Restore does not work on encrypted drives. You must turn off BitLocker and then decrypt the drive before you can use LightsOut Restore on it.

- Ensure that all of your servers can be managed remotely through a hardware device such as RILO or DRAC.

- Install Veritas System Recovery on the servers that you want to protect, and then define and run backups to create recovery points.

- Run the **Setup LightsOut Restore Wizard** to install a custom Veritas System Recovery Disk directly to the computer's local file system.
  The wizard creates an entry in the **Windows boot** menu that can be used to boot into Veritas System Recovery Disk .

Note: LightsOut Restore works only on the primary operating system. It does not work on multiple-boot computers (for example, a computer that starts multiple operating systems from the same partition). LightsOut Restore is accessible only from the boot menu. If the file system becomes corrupt and you cannot access the boot menu, you must boot the computer from theVeritas System Recovery Disk.

Note: The LightsOut Restore feature requires at least 1 GB of memory to run.

- Use the RILO or the DRAC device to connect to the remote server so you can recover a file or system from a remote location. Then you can turn on the system or restart it.

- Open the boot menu as the remote server starts, and then select the name that you have given to Veritas System Recovery Disk.
  The remote server boots into Veritas System Recovery Disk and the connection through RILO or DRAC is lost.

You must run the **Setup LightsOut Restore Wizard** on the computer that you want to protect. The **Setup LightsOut Restore Wizard** installs a customized version of a Veritas System Recovery Disk to the computer's local file system. The wizard creates an entry in the **Windows boot** menu that you use to boot into the **Setup LightsOut Restore Wizard**.

If you need to edit the configuration settings, you must first uninstall LightsOut Restore from your computer and install it again. To uninstall LightsOut Restore, on the **Tasks** menu, click **Remove LightsOut Restore**.

After the setup is completed, the LightsOut Restore metadata, recovery environment data, and scripts are stored at the following location:

`<system drive>`:SRD.

Where `<system drive>` is replaced with the actual drive letter.

Note: Veritas recommends that only privileged users or an administrator should have the rights to access the folder.

To launch the **LightsOut Restore Wizard** go to the **Tasks** menu and click **Setup LightsOut Restore**.

To configure LightsOut Restore

1   On the **Tasks** menu, click **Set Up LightsOut Restore**.

    The **Setup LightsOut Restore Wizard** is displayed.

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

    See "Welcome Panel" on page 81.

3   In the **Source Location** panel, specify the path or browse to the media drive in which you placed theVeritas System Recovery Disk, then click **Next**.

    See "Source Location Options" on page 81.

If you know the path to the source Veritas System Recovery Disk	Type the path in the **Veritas System Recovery Disk media location** field.

If you do not know the path to the source Veritas System Recovery Disk	Do the following in the order listed: ■ Click **Browse**. ■ Click **Veritas System Recovery Disk ISO File** to locate the path for the ISO image file or click **Veritas System Recovery Disk Folder** to locate the path for the disk on other media. ■ On the **Open** dialog box, navigate to the location of the appropriate ISO image file, media drive, or folder. ■ Click **Open**.

Note: This panel is only displayed if your computer cannot use the local files to identify the source location of the media.

4   In the **Licensed Features** panel, enter the license of the product and then click **Next**.

Use the license key that is activated on this computer	Enables the cold backup feature in the recovery environment using the product license key that is provided.
Use the following license key	Enables the cold backup feature in the new Veritas System Recovery Disk by typing a product license key.
Prompt for a license key	Prompts you for a product license key at the time you want to enable features in the customized Veritas System Recovery Disk.

See "Licensed Features Options" on page 82.

5   In the **Storage and Network Drivers** panel, review the list of any storage or
      network drivers to be included, add or remove storage and network drivers,
      and then click **Next**.

Storage and network drivers	Lets you review the list of any storage or network drivers to be included.
Add	Lets you add additional drivers.
	The location that you specify should contain the fully extracted installation package for the driver you add. If you have more than one missing storage or network driver, you must rerun the **Set Up LightsOut Restore** wizard for each missing driver.
	See "Adding a Storage or Network Driver" on page 59.
Remove	Deletes the drivers you do not need.
Reset	Resets the list to the original list of drivers.

See "Storage and Network Drivers Options" on page 83.

6   In the **Startup Options** panel, select the time zone, display language, keyboard
      layout language for LightsOut Restore, and then click **Next**.

Time zone	Sets the time zone to use inside LightsOut Restore.
Display language	Sets the default display language for LightsOut Restore.
Keyboard layout	Lets you select the default keyboard layout to use when you run LightsOut Restore.

See "Startup Options" on page 84.

7 In the **Network Options** panel, select the dynamic or static IP, save the Windows firewall settings for LightsOut Restore, and then click **Next**.

Automatically start network services	Select this option if u want to enable network services in a recovery environment. Networking starts automatically when you recover the computer through LightsOut Restore.
Dynamic IP	Connects to a network without the need for additional network configuration. This option is also appropriate if you know there is a DHCP server available on the network at the time you restore.
Static IP	Connects to a network with a particular network adapter and specific address settings. You should click this option if you know there is no DHCP server (or the DHCP server may be unavailable) when you recover.
Use Windows firewall settings	Applies the local computer's firewall settings to the recovery environment. For example, if you turn on the firewall for your local computer and then select this option, the firewall is turned on for the recovery environment.

See "Network Options" on page 84.

8   In the **Setup LightsOut Restore** panel, enter the LightsOut Restore boot option label and boot menu display time, and then click **Next**.

Boot menu label	Indicates the title that you want to appear on the **Windows boot** menu for LightsOut Restore.
Time to display boot menu	Specifies (in seconds) how long you want the boot menu to display.
	The default is 10 seconds.

See

9   In the **Summary** panel, review all of the options that you selected, and then click **Finish**.

The **Progress** panel displays the progress status and the approximate time that is required to installing LightsOut Restore on your computer. The **Result** panel in the **LightsOut Restore Wizard** displays a success result if LightsOut Restore is installed successfully on your computer. Veritas recommends that you test the LightsOut Restore recovery environment. To test LightsOut Restore, boot into the LightsOut Restore recovery environment.

Welcome Panel

The **Welcome** panel on the **Setup LightsOut Restore Wizard** provides information about the setting up LightsOut Restore on your computer. The **LightsOut Restore Wizard** installs a customized 32-bit or 64-bit Veritas System Recovery Disk (based on the operating system of your computer) on the system partition of your computer.

After the setup is complete, you can access the customized recovery disk using any remote access method.

When you enable this feature, the following options are available when you start your computer.

- The operating system installed on this computer
- Veritas LightsOut Restore

After you review the information, click **Next**.

Source Location Options

In the **Source Location** panel, on the **Setup LightsOut Restore Wizard**, do one of the following:

Table 3-20   Source Location Options

Option	Description
If you know the path to the source Veritas System Recovery Disk	Type the path in the **Veritas System Recovery Disk media location** field.
If you do not know the path to the source Veritas System Recovery Disk	Do the following in the order listed: ■ Click **Browse**. ■ Click **Veritas System Recovery Disk ISO File** to locate the path for the ISO image file or click **Veritas System Recovery Disk Folder** to locate the path for the disk on other media. ■ On the **Open** dialog box, navigate to the location of the appropriate ISO image file, media drive, or folder. ■ Click **Open**.

Licensed Features Options

In the **Licensed Features** panel, on the **Setup LightsOut Restore Wizard**, the license key that you enter is used to enable the cold backup feature of the recovery disk.

The following table describes the options on the **Licensed Features** panel.

Table 3-21   Licensed Features options

Options	Description
Use the license key that is activated on this computer	Enables the cold backup feature in the recovery environment using the product license key that is provided.
Use the following license key	Enables the cold backup feature in the new Veritas System Recovery Disk by typing a product license key.
Prompt for a license key	Prompts you for a product license key at the time you want to enable features in the customized Veritas System Recovery Disk.

See "Configuring LightsOut Restore" on page 76.

Note: If you want to use the customization features, such as driver injection or adding new drivers, you need a license.

Storage and Network Drivers Options

The **Storage and Network Drivers** panel, on the **Setup LightsOut Restore Wizard** displays the list of storage and network drivers available on your local computer.

If you selected the **Typical** option to create the Veritas System Recovery Disk, only 32-bit or 64-bit drivers are displayed. If you select the **Advanced** option and created 32-bit and 64-bit Veritas System Recovery Disks as ISO files, both 32-bit and 64-bit drivers are displayed. Based on the platforms that you have selected, you can add the drivers. The 32-bit drivers are added to the 32-bit Veritas System Recovery Disk and the 64-bit drivers are added to the 64-bit Veritas System Recovery Disk.

Note: All the storage and network drivers that are available on your computer are displayed.

The following table describes the options on the **Storage and Network Drivers** panel.

Table 3-22   Storage and Network Drivers options

Options	Description
Storage and network drivers	Lets you review the list of any storage or network drivers to be included.
Add	Lets you add additional drivers.
	The location that you specify should contain the fully extracted installation package for the driver you add. If you have more than one missing storage or network driver, you must rerun the **Set Up LightsOut Restore** wizard for each missing driver.
	See "Adding a Storage or Network Driver" on page 59.
Remove	Deletes the drivers you do not need.
Reset	Resets the list to the original list of drivers.

See "Configuring LightsOut Restore" on page 76.

Adding a Storage or Network Driver

In the **Add Storage and Network Driver** dialog box, on the **Setup LightsOut Restore Wizard**, click **Browse** and select the .inf file of the driver, which is to be added to theVeritas System Recovery Disk.

You need to provide a suitable driver that is compatible with the version of WinPE that you use to setup LightsOut Restore on this computer. Drivers that are not

compatible with the version of WinPE and used to set up LightsOut Restore on this computer do not load when you boot into recovery environment from LightsOut Restore.

Startup Options

In the **Startup Options** panel, on the **Setup LightsOut Restore Wizard**, the options that are selected are applied when you boot into your computer using LightsOut Restore.

The following table describes the options on the **Startup Options** panel.

Table 3-23   Startup Options

Options	Description
Time zone	Sets the time zone to use inside LightsOut Restore.
Display language	Sets the default display language for LightsOut Restore.
Keyboard layout	Lets you select the default keyboard layout to use when you run LightsOut Restore.

Network Options

In the **Network Options** panel, on the **Setup LightsOut Restore Wizard**, the selected options are used when you want to recover images from a network location. To recover images over a network location, you need to access the remote network location. The network options are applicable when you boot into your computer using LightsOut Restore.

Table 3-24   Network Options

Option	Description
Automatically start network services	Select this option if u want to enable network services in a recovery environment. Networking starts automatically when you recover the computer through LightsOut Restore.
Dynamic IP	Connects to a network without the need for additional network configuration. This option is also appropriate if you know there is a DHCP server available on the network at the time you restore.

Table 3-24   Network Options *(continued)*

Option	Description
Static IP	Connects to a network with a particular network adapter and specific address settings. You should click this option if you know there is no DHCP server (or the DHCP server may be unavailable) when you recover.
Use Windows firewall settings	Applies the local computer's firewall settings to the recovery environment. For example, if you turn on the firewall for your local computer and then select this option, the firewall is turned on for the recovery environment.

Setup LightsOut Restore Options

In the **Setup LightsOut Restore** panel, on the **Setup LightsOut Restore Wizard**, the LightsOut Restore option creates a copy of your recovery environment on your local computer's hard drive. The LightsOut Restore option lets you boot into a recovery environment same as a Veritas System Recovery Disk stored on an external USB media.

The following table describes the options on the **Options** panel.

Table 3-25   LightsOut Restore options

Option	Description
Boot menu label	Indicates the title that you want to appear on the **Windows boot** menu for LightsOut Restore.
Time to display boot menu	Specifies (in seconds) how long you want the boot menu to display. The default is 10 seconds.

Testing the Veritas System Recovery Disk

Veritas recommends that you create a Veritas System Recovery Disk immediately after the Veritas System Recovery 18 installation is complete and before you start running backup jobs or recovering backed-up images. If Windows fails to start or it does not run normally, you can recover your computer by using theVeritas System Recovery Disk. The drivers that are included on the recovery disk must match the drivers that are required to run your computer's network cards and hard disks.

To ensure that you have the drivers required to recover your computer, you can use the **Run Driver Validation** tool. The tool is available with the first Veritas System Recovery Disk that you create. The **Run Driver Validation** is required to identify the need for the custom Veritas System Recovery Disk and to compare hardware drivers on the recovery disk with the drivers required to run your computer's network cards and hard disks.

You should run the driver validation test any time you make changes to the network interface cards or storage controllers on a computer.

Note: The driver validation tool on the Veritas System Recovery Disk does not support wireless network adapter drivers.

You should test the Veritas System Recovery Disk to ensure that the recovery environment runs properly on your computer.

Testing the Veritas System Recovery Disk lets you identify and solve the following types of problems:

- You cannot start Veritas System Recovery Disk.

    See "Configuring a computer to start from a USB device or DVD" on page 291.

- You do not have the necessary storage drivers to access recovery points on the computer.

- You need information about your system to help you run Veritas System Recovery Disk.

The following table summarizes the steps for testing Veritas System Recovery Disk.

Table 3-26   Testing Veritas System Recovery Disk.

Step	Action	Description
Step 1	Run driver validation tool	Run the driver validation tool to test whether Veritas System Recovery Disk works with the network cards and storage devices on the computer. If any drivers are not included on the recovery disk, the **Driver Validation Results** dialog box appears.
		The driver validation is added to the recovery disk during Veritas System Recovery Disk creation. To run the driver validation tool, insert the recovery disk, and go to the explorer.
		Without access to the correct drivers, a device cannot be used while you run Veritas System Recovery Disk. Therefore, if the recovery points are stored on a network or a local hard drive, you might not have access to them.
		You can find the drivers and copy them to a CD or a floppy disk. You can also create a custom Veritas System Recovery Disk.
		See "Customizing an existing Veritas System Recovery Disk" on page 61.
Step 2	Boot your computer using Veritas System Recovery Disk	Boot your computer using the Veritas System Recovery Disk.
		See "Booting a computer by using the Veritas System Recovery Disk" on page 289.
Step 3	Test the restore	Run a mock restore of a recovery point that is stored either on a network or locally on a computer. Running a mock restore helps you to test if you can restore your backup.

Getting Started

This chapter includes the following topics:

- How to use Veritas System Recovery

- Starting Veritas System Recovery

- Configuring Veritas System Recovery default options

- Setting up default general backup options

- Improving your computer's performance during a backup

- Enabling network throttling

- Setting default options for the Windows notification area

- File types and file extension

- Removing or changing the unique name for an external drive

- Configuring default FTP settings for use with Offsite Copy

- Logging Veritas System Recovery messages

- Enabling email notifications for product (event) messages

- Setting up your first backup using Easy Setup

- Home page

- Status page

- Tasks page

- Tools page

- Advanced page

How to use Veritas System Recovery

Veritas System Recovery helps you in backing up your files, folders, or entire drives. To back up your data, you need to define a backup. A backup specifies what data to back up, when to back it up, and where to put the backed-up data.

Using Veritas System Recovery includes the following key tasks:

- Defining a backup

- Running a backup

- Recovering files, folders, or entire drives

Refer to the following figure to understand the relationship of these tasks.

Figure 4-1   Using Veritas System Recovery
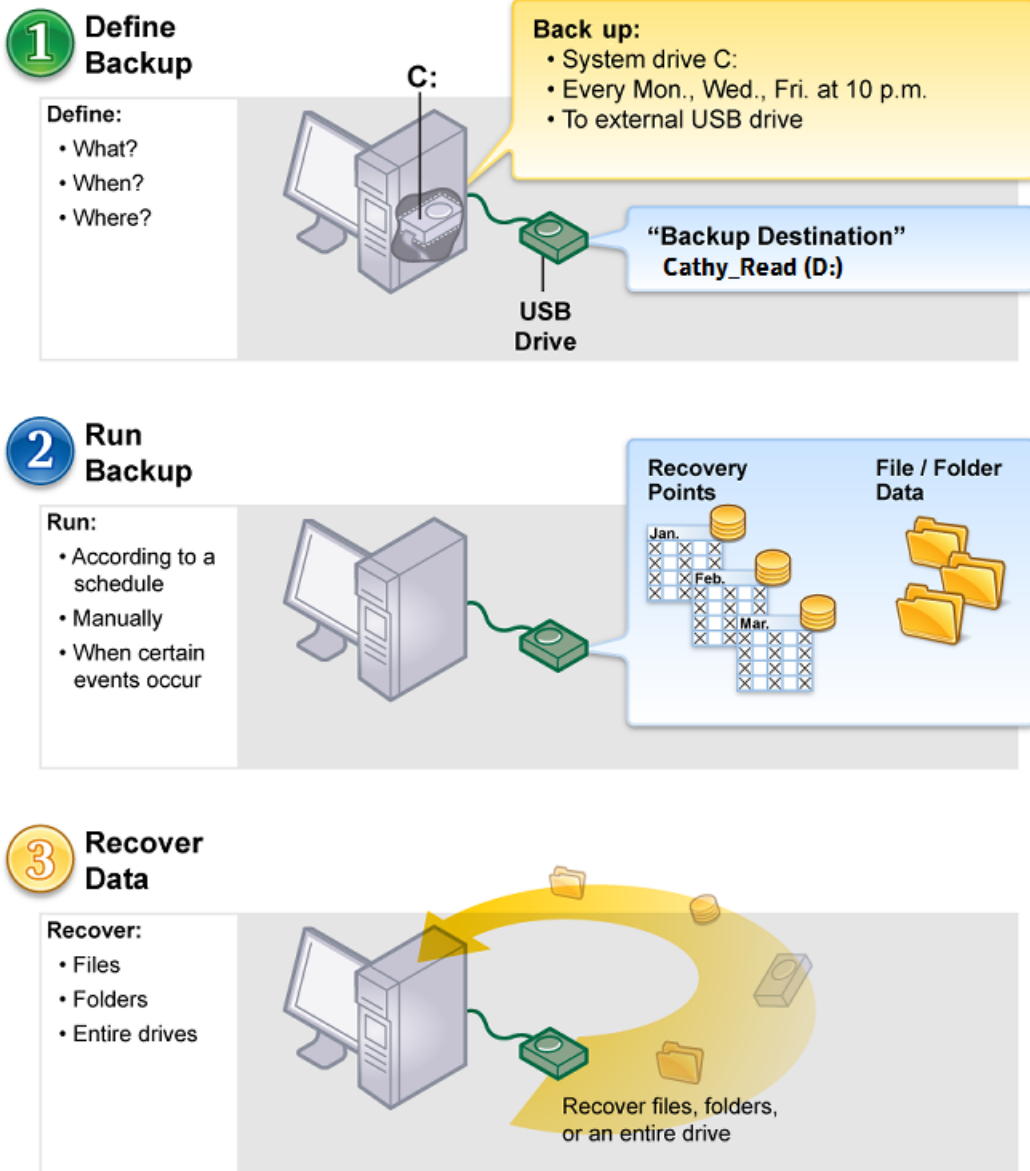
See "Starting Veritas System Recovery" on page 91.

Starting Veritas System Recovery

Veritas System Recovery is installed in the Windows program files folder by default. During installation, a program icon is installed in the Windows system tray from which you can open Veritas System Recovery. You can also open Veritas System Recovery from the Windows Start menu.

To start Veritas System Recovery

◆ Depending on the Windows version you are running, use one of the following methods:

- On the classic Windows taskbar, click **Start > Programs > Veritas System Recovery**.

- On the Windows taskbar, click **Start > All Programs > Veritas System Recovery**.

- In the Windows system tray, double-click the **Veritas System Recovery** tray icon.

- In the Windows system tray, right-click the **Veritas System Recovery** tray icon, and then click **Open Veritas System Recovery**.

When you start Veritas System Recovery, the **Veritas System Recovery Disk** dialog box is displayed that lets you know if a recovery disk is created on your computer. A Veritas System Recovery Disk is critical for system restore and needs to be created before you start creating and running backup jobs. Veritas recommends that you create a recovery disk at the earliest on a computer that has the latest version of the Windows operating system.

On the **Veritas System Recovery Disk** dialog box, click **Create Now** to launch the **Veritas System Recovery Disk Creation Wizard**. You can also click **Tasks > Create New Recovery Disk** to launch the **Veritas System Recovery Disk Creation Wizard**.

Configuring Veritas System Recovery default options

The **Options** dialog box includes several views that let you configure Veritas System Recovery default options.

To configure Veritas System Recovery default options

1 On the **Tasks** menu, click **Options**.

2 Select an option you want to edit, make any necessary changes, and then click **OK**.

Setting up default general backup options

You can specify the default destination for storing recovery points and file and folder backup data that is created when you run a backup. This default location is used if you do not specify a different location when you define a new backup.

You can also choose to prepend your computer's name to backup data file names and save each backup file to a new subfolder.

To set up general backup options

1   On the **Tasks** menu, click **Options**.

2   Click **General**.

3 Set the options for your backups.

The following table describes the options on the **General** page. The options you configure here are used as default backup options.

Prepend computer name to backup data file names	Adds the computer name to the beginning of each backup data file name.
	This option is useful if you back up more than one computer to the same drive. For example, you might back up a laptop and a desktop computer to the same USB or network drive. By prepending the computer name to each backup data file name, you can more easily identify which backup data files belong to which computer.
Save backup files to a unique subfolder	Creates a new subfolder that serves as your backup destination.
	Note: The new subfolder is given the same name as your computer. For example, if your computer name is "My_Laptop", the new subfolder is named \My_Laptop.
Default backup destination	Lets you specify a path to the folder or OpenStorage destination where you want to store the recovery points.
	See "Setting a default backup destination" on page 93.
	See "Defining a drive-based backup" on page 120.

4 Click **OK**.

Setting a default backup destination

You can set a default backup destination for your backup jobs using the **General** options.

To set a default destination

1 On the **Tasks** menu, click **Options**.

2 Click **General**.

3   In the **Default backup destination** field, specify a path to the folder where you want to store recovery points and file and folder backup data.

If you do not know the path, click **Browse** to select the location.

If you entered the path to a location on a network, enter the user name and password that are required for authentication.

Note: You cannot use an encrypted folder as your backup destination. However, you can encrypt your backup data to prevent other users from accessing it. To encrypt your backup data, refer to the **Advanced** options when you define or edit a backup.

---

4   Click **OK**.

Improving your computer's performance during a backup

If a backup is running on your computer, your computer's performance might slow down. The slow down in the computer's performance might be more prominent if it is the one creating an independent recovery point. The performance slows down because Veritas System Recovery uses your computer's hard disk and memory resources to perform the backup.

You can change the speed of the backup to minimize the effect of Veritas System Recovery on your computer while you work.

Note: During a backup or recovery, you have the option of overriding this default setting to fit your needs at that moment.

To adjust the effect of a backup on computer performance

1   On the **Tasks** menu, click **Options**.

2   Click **Performance**.

3   Do one of the following:

- To improve your computer's performance during backup jobs, move the slider bar closer to **Slow**.

- To enable backup jobs to run more quickly, move the slider bar closer to **Fast**.

4   Click **OK**.

Enabling network throttling

You can limit the effect of a backup on network performance by enabling network throttling.

Many variables affect the network performance. Consider the following points before you use this feature:

Table 4-1 Variables that affect network performance

Variable	Description
Network cards	Is your network wired or wireless? What are the speeds of your network cards?
Network backbone	What is the size of your network pipeline? Does it support 10-MB transfer rates, or 1-GB transfer rates?
Network server	How robust is your server hardware? How fast is its processor? How much RAM does it have? Is it fast or slow?
Backing up	How many computers are scheduled to back up at the same time?
Network traffic	Are backups scheduled to run when network traffic is heavy or light?

Consider using this feature only when you know what your network can handle. If you schedule your backups at staggered intervals and when network traffic is low, you may not need to use this feature. Avoid backing up multiple computers at the same time and to the same network destination.

Gather the required information about your network's performance and then schedule backups accordingly. Enable this feature and set the **Maximum network throttling** to a setting that matches the circumstances.

To enable network throttling

1   On the **Tasks** menu, click **Options**.

2   Click **Performance**.

3   Select **Enable network throttling**.

4   In the **Maximum network throttling** field, enter the maximum amount (in KB) of network throughput.

5   Click **OK**.

Setting default options for the Windows notification area

You can turn on the Veritas System Recovery icon or turn it off as required. You can choose to show only error messages, or to show both error messages and other information, such as the completion of a backup.

To adjust default notification area settings

1   On the **Tasks** menu, click **Options**.

2   Click **Tray Icon**, and then select the options you want to use for the notification area.

Show system tray icon	Displays the Veritas System Recovery icon in the notification area.
	You must select this option to enable or disable any of the remaining options.
Show missed backups	Notifies you when a backup was scheduled but did not run.
	For example, it notifies you when your computer was turned off at the time a backup was scheduled to run.
Show system tray questions	Offers you helpful prompts in the form of questions that can help you keep your data backed up.
Show status messages	Displays the messages about the status of backup operations. For example, a backup has started, or your backup destination is about to get full.
Show error messages	Displays the error messages when errors occur so that you can resolve any issues that might hinder data protection.

3   Click **OK**.

File types and file extension

When you define file and folder backups, file types are a quick way to include the files that you use the most. For example, if you keep music files on your computer, you can configure a backup to include all music files. For example, .mp3, .wav.

The most common file types and extensions are already defined for you. But you can define additional file type categories as needed, and then edit them at any time. For example, if you install a new program that requires the use of two new file extensions (for example, .pft and .ptp,). You can define a new file type and define

the two file extensions for that category. Then when you define a backup, you can select the new category. When the backup runs, all files that end with .pft and .ptp are backed up.

See "Adding new file types and extensions" on page 97.

See "Renaming file types and extensions" on page 97.

See "Restoring default file types and extensions" on page 98.

See "Deleting a file type and all of its extensions" on page 98.

Adding new file types and extensions

The most common file types and extensions are already defined for you. However, you can add additional file type categories as needed.

To add a new file type and extensions

1   On the **Tasks** menu, click **Options**.

2   Click **File Types**.

3   At the bottom of the **File types** list, click **Add a file type** (**+**).

4   Type a descriptive name of the new file type category, and then press **Enter**.

5   At the bottom of the **Extensions for** list, click **Add an extension** (**+**).

6   Type an asterisk (*) and a period, followed by the extension of the file type you want to define, and then press **Enter**.

7   Click **OK**.

See "Renaming file types and extensions" on page 97.

See "Restoring default file types and extensions" on page 98.

See "Deleting a file type and all of its extensions" on page 98.

See "File types and file extension" on page 96.

Renaming file types and extensions

You can rename existing file types and extensions as needed.

To rename a file type and extensions

1   On the **Tasks** menu, click **Options**.

2   Click **File Types**.

3   Select a file type from the **File types** list, and then do one of the following:

■   Click **Rename a file type** to edit the name of the selected file type.

- Select an extension from the **Extensions for** list and click **Rename an extension** to edit the name of the extension.

4 Click **OK**.

See "Adding new file types and extensions" on page 97.

See "Restoring default file types and extensions" on page 98.

See "Deleting a file type and all of its extensions" on page 98.

See "File types and file extension" on page 96.

Restoring default file types and extensions

You can restore default file types and extensions as needed.

To restore default file types and extensions

1 On the **Tasks** menu, click **Options**.

2 Click **File Types**.

3 Select a file type from the **File types** list.

4 Click either **Restore default file types list** or **Restore default extensions list** to restore all default file types or extensions.

Caution: Any file types and extensions you have set up are removed. You must add them again manually.

---

5 Click **OK**.

See "Adding new file types and extensions" on page 97.

See "Renaming file types and extensions" on page 97.

See "Deleting a file type and all of its extensions" on page 98.

See "File types and file extension" on page 96.

Deleting a file type and all of its extensions

You can delete a file type and all its extensions as needed.

To delete a file type and all of its extensions

1 On the **Tasks** menu, click **Options**.

2 Click **File Types**.

3 Select a file type from the **File types** list, and then do one of the following:

- Click the **Remove a file type** to delete a file type and all its extensions.

- Select an extension from the **Extensions for** list and click **Remove an extension** to edit the name of the extension.

Note: You cannot delete a default file type. You can delete all but one extension of a default file type, and you can add additional extensions to a default file type.

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4 Click **OK**.

See "Adding new file types and extensions" on page 97.

See "Renaming file types and extensions" on page 97.

See "Restoring default file types and extensions" on page 98.

See "File types and file extension" on page 96.

Removing or changing the unique name for an external drive

Veritas System Recovery lets you assign unique names to external drives when you use them as a backup destination or an Offsite Copy destination. Assigning unique names helps you to manage these destinations and avoid confusion if you use more than one drive. It is especially helpful when the assigned drive letter changes each time you plug in the drive.

The **Options** dialog box lets you see all of your drive unique names in one view. From this view, you can remove or edit existing names. Veritas System Recovery lets you assign a unique name when you plug in an external drive in to your computer for the first time.

Note: Using a unique name does not change the drive label. The unique name is used only when you access a drive from within Veritas System Recovery.

For example, you might swap out two different external drives that are used as Offsite Copy destinations during any given week. It would be difficult to identify which drive your use at any given time based on the drive labels. It becomes more confusing if the previously assigned drive letter has changed.

You can associate unique names with each drive when you use them with Veritas System Recovery. The unique name that is associated with a drive is displayed in various locations in Veritas System Recovery.

Note: Placing physical labels on each external drive to help you manage the task of swapping the drives is also a good idea.

For example, if you assigned the unique name, "Cathy Read" to one drive, and "Thomas Read" to a second drive. Their unique names appear in Veritas System Recovery whenever the drives are plugged in to your computer.

To remove or change unique name for an external drive

1   On the **Tasks** menu, click **Options**.

2   Under **Destinations**, click **External Drives**.

3   Select an external drive from the list and then do one of the following:

  ■   Click **Remove** to delete the unique name that is associated with the external drive.

  ■   Click **Rename** to edit the unique name.

4   Click **OK**.

Configuring default FTP settings for use with Offsite Copy

File transfer protocol , or FTP, is the simplest and most secure way to copy files over the Internet. Veritas System Recovery serves as an FTP client to copy your recovery points to a remote FTP server. You can copy your recovery points to an FTP server as a secondary backup of your critical data.

The **Options** dialog box lets you configure FTP settings to help ensure that your recovery points are copied to your FTP server.

To configure default FTP settings for use with Offsite Copy

1   On the **Tasks** menu, click **Options**.

2   Under **Destinations**, click **Configure FTP**.

3   Select the appropriate options.

Connection mode: Passive (Recommended)	Helps prevent conflicts with security systems. This mode is necessary for some firewalls and routers. When you use passive mode, the FTP client opens the connection to an IP address and port that the FTP server supplies.
Connection mode: Active	Enables a server to open a connection to an IP address and port that the FTP client supplies. Use active mode when connections or transfer attempts fail in passive mode, or when you receive data socket errors.
Limit connection attempts to	Indicates the number of times Veritas System Recovery tries to connect to an FTP server before it gives up. Veritas System Recovery can attempt a maximum of 100 times.
Stop trying to connect after	Indicates the number of seconds Veritas System Recovery tries to connect to an FTP server before it gives up. You can specify up to 600 seconds (10 minutes).
Default port	Indicates the port of the FTP server that listens for a connection.
	You should consult the FTP server administrator to be sure that the port you specify is configured to receive incoming data.

4   Click **OK**.

Logging Veritas System Recovery messages

You can specify which product messages (errors, warnings, and information) are logged as they occur, and where the log file is stored. Product messages can provide useful information about the status of backups or related events. They can also provide helpful information when you need to troubleshoot.

Two logging methods are available: Veritas System Recovery logging and the Windows application log.

To log Veritas System Recovery messages

1 On the **Tasks** menu, click **Options**.

2 Under **Notifications**, click **Log File**.

3 Select the appropriate log file options.

Select the priority and type of messages	Lets you select the priority level at which messages should be logged. You can choose to log all or no messages regardless of priority levels.
	Select one of the following options:
	■ **All messages**
	■ **Medium and high priority messages**
	■ **High priority messages**
	■ **No messages**
Errors	Logs the error messages as they occur.
Warnings	Logs the warning messages as they occur.
Information	Logs the information messages as they occur.
Log file location	Lets you specify a path where you want to create and store the log file.
	If you do not know the path, you can browse to the location.
Maximum file size	Lets you specify the maximum size (in kilobytes) that the log file is allowed to grow.
	The file is kept within the limit you set by replacing the oldest logged items in the file with new items as they occur.

4 Click **OK**.

To configure which product events are written to a Windows event log

1 On the **Tasks** menu, click **Options**.

2 Under **Notifications**, click **Event Log**.

3 Select the appropriate event log options.

Select the priority and type of messages	Lets you select the priority level at which messages should be logged. You can choose to log all or no messages regardless of priority levels.
	Select one of the following options:
	- **All messages**
- **Medium and high priority messages**
- **High priority messages**
- **No messages**
Errors	Logs the error messages as they occur.
Warning	Logs the warning messages as they occur.
Information	Logs the information messages as they occur.

4 Click **OK**.

Enabling email notifications for product (event) messages

Email notifications can be sent to a specified email address if there are any errors or warnings that occurred when a backup is run.

Note: If you do not have an SMTP server, this feature is unavailable to you.

Notifications can also be sent to the system event log and a custom log file. The custom log file is located in the Agent folder of the product installation.

If notifications are not delivered, check the setup of your SMTP server to ensure that it functions properly.

To enable email notifications for product (event) messages

1 On the **Tasks** menu, click **Options**.

2 Under **Notifications**, click **SMTP Email**.

3 Select the appropriate options.

Select the priority and type of messages	Lets you select the priority level at which messages should be logged. You can choose to log all or no messages regardless of priority levels.
	Select one of the following options:
	■ **All messages** ■ **Medium and high priority messages** ■ **High priority messages** ■ **No messages**
Errors	Logs the error messages as they occur.
Warnings	Logs the warning messages as they occur.
Information	Logs the information messages as they occur.
To address (admin@domain.com)	Lets you specify the email address (for example, admin@domain.com) where notifications are to be sent.
From address	Lets you specify the email address of the sender.
	The From address is not mandatory. If you do not specify a From address, the name of the product is used.
SMTP server (smtp.domain.com)	Lets you specify the path to the SMTP server that sends the email notification (for example, smtpserver.domain.com).
Encryption	Lets you select the type of encryption. You can select:
	■ None ■ TLS (Transport Layer Security) ■ SSL (Secured Socket Layer)
Port	Lets you specify the port for encryption that you select.
	If you select **None**, the default port that is selected is 25.
	You can enter the port number for TLS and SSL.
User name	Lets you specify the SMTP user name.

Password   Lets you specify the SMTP password.

4 Click **OK**.

Setting up your first backup using Easy Setup

If you had selected the **Launch Easy Setup** check box during the setup wizard, the **Easy Setup** window appears the first time you open the **Run or Manage Backups** window.

Note: The **Easy Setup** window is not available in server versions of Veritas System Recovery.

To set up your first backup using Easy Setup

1 On the **Tasks** menu, click **Run or Manage Backups**.

2 In the **Easy Setup** window, either accept the default drive and file and folder backup settings, or click any of the settings to edit them.

Note: You cannot back up files and folders to cloud storage. Clear the **Back Up My Documents** check box to backup to cloud.

---

3 Click **OK**.

4 In the **First Backup** window, do one of the following:

- Select **Run first backup according to schedule** to run the backup as per the schedule that you specified.

- Select **Run backup now** to run the backup immediately.

5 Click **OK**.

Home page

The **Home** page provides a general status about the backup protection of your computer and serves as a Dashboard to access the features of Veritas System Recovery. You can do the following actions on the **Home** page:

- View the summary of the backup protection status of your computer.
See "Icons on the Home page" on page 198.

- Customize the status reporting of a selected drive, or files and folders.

See "Customizing the status reporting of a drive (or file and folder backups)"
on page 204.

- Define a backup.
  See "Defining a drive-based backup" on page 120.
  See "Backing up files and folders" on page 160.

- Recover a computer or files and folders.
  See "Recovering a secondary drive" on page 277.
  See "About recovering lost data" on page 269.

- View the properties of a defined backup.
  See "Viewing the properties of a backup job" on page 172.

- View a pie chart of the specified backup destination.
  See "About backup destinations" on page 228.

You can also view the **Home** page from the **View** menu.

To view the Home page

1   Start Veritas System Recovery 18.

2   On the **View** menu, click **Home**.

Status page

The **Status** page lets you monitor the status of your backups. The **Status** page
lists each drive on your computer and includes a calendar that contains your backup
histories. The calendar lets you quickly identify when a backup ran, and what type
of backup it was. It identifies your upcoming, scheduled backups. It also lists the
file and folder backup history if you have defined one or more file and folder backups.

Note: You can right-click any of the calendar icons to access a context-sensitive
menu. These menus offer quick access to related tasks. You can also customize
the status reporting of a selected drive, or files and folders.

To monitor backup protection from the **Status** page, you can do the following:

- On the **Status** page, review the **Backups calendar** and verify that the backup
  appears on the date that you ran it.

- In the **Drives** column, select the drive that you want to view.
  The status information appears in the bottom half of the **Status** page.

- Move your mouse over a backup icon in the calendar to review the status of the
  backup.

- To move around in the calendar, use one of the following methods:

  - Click anywhere in the title bar to navigate quickly to a different point in time.

  - Use the scroll bar at the bottom of the calendar to scroll backward or forward in time.

You can also view the **Status** page from the **View** menu.

To view the Status page

1   Start Veritas System Recovery 18.

2   On the **View** menu, click **Status**.

See "About monitoring backups" on page 197.

See "Icons on the Home page" on page 198.

See "Customizing the status reporting of a drive (or file and folder backups)" on page 204.

See "Recovering a secondary drive" on page 277.

See "Verifying that a backup is successful" on page 172.

See "What to do when a backup is finished " on page 114.

Tasks page

The **Tasks** page provides you the links for backup, recovery, and virtual conversion of your computer.

The following tasks are displayed on the **Tasks** page:

- **Run or Manage Backups**
  You can define, edit, run, and delete backups jobs for your computer or files and folders.
  See "Defining a drive-based backup" on page 120.
  See "Backing up files and folders" on page 160.

- **One Time Backup**
  You can define a backup job only once to create a recovery point without saving the job details.
  See "Running a one-time backup from Veritas System Recovery" on page 141.

- **Recover My Computer**
  You can recover your computer using a specific recovery point created during backup.
  See "Recovering a secondary drive" on page 277.

- **Recover My Files**

You can recover specific files or folders using a recovery point created during backup.

See "About recovering lost data" on page 269.

- **Run or Manage Virtual Conversions**

 You can define, edit, run, and delete a virtual conversion job where recovery points are converted to virtual disks.

 See "Defining a virtual conversion job" on page 244.

- **One Time Virtual Conversion**

 You can define a virtual conversion only once without saving the job details.

 See "Running a one-time conversion of a physical recovery point to a virtual disk" on page 254.

You can also view the **Tasks** page from the **View** menu.

To view the Tasks page

1 Start Veritas System Recovery 18.

2 On the **View** menu, click **Tasks**.

Tools page

The **Tools** page provides you links to the tools that let you perform various other tasks.

The following tools are displayed on the **Tools** page:

- **Manage Backup Destination**

 You can manage the size of your backup destinations using the features available in Veritas System Recovery.

 See "About backup destinations" on page 228.

- **Run Granular Restore Option**

 You can restore emails, mailboxes, email folder, files, and folders using Granular Restore Option.

 See "About the Veritas System Recovery Granular Restore Option" on page 322.

- **Run Recovery Point Browser**

 You can open files within a recovery point and restore the files using Recovery Point Browser.

 See "Opening and restoring files within a recovery point browser" on page 223.

- **Copy Recovery Point**

 You can copy recovery points to another location for added security.

 See "Copying recovery points" on page 233.

■ **Copy My Hard Drive**

You can make a copy of your operating system, applications, and data on a new hard disk.

See "Copying one hard drive to another hard drive" on page 318.

■ **Customize Existing Recovery Disk**

You can customize an existing Veritas System Recovery Disk, which is available on a DVD (manually burned) or USB device and add missing storage or network drivers to the recovery disk. You can customize and save the recovery disk on a USB device or as an ISO file.

See "Customizing an existing Veritas System Recovery Disk" on page 61.

■ **Download OpenStorage Files**

You can download the offsite copy files from the Amazon S3 and Microsoft Azure storage to your local computer or network drive.

See the section called "Using Amazon S3 storage as your Offsite Copy destination" on page 267.

See the section called "Using Microsoft Azure as your offsite copy destination" on page 268.

See "Downloading OpenStorage Files" on page 265.

You can also view the **Tools** page from the **View** menu.

To view the Tools page

1   Start Veritas System Recovery 18.

2   On the **View** menu, click **Tools**.

Advanced page

The **Advanced** page offers experienced Veritas System Recovery users a single view of the most common product features. If you have a good understanding of Veritas System Recovery, you might prefer to perform most tasks from the **Advanced** view.

Note: When you refer to the documentation while you use the **Advanced** page, the first one or two steps do not apply. The first one or two steps merely indicate where to access each feature from the other pages of the user interface. From that point on, follow the remaining steps of each procedure.

You can view the **Advanced** page from the **View** menu.

To view the Advanced page

1   Start Veritas System Recovery 18.

2   On the **View** menu, click **Advanced**.

Best practices for backing up your data

This chapter includes the following topics:

- About backing up your data

- Best practices for backing up data

- What to do when a backup is finished

- Tips for running defined backups

- Backup destinations

- Backing up dual-boot computers

About backing up your data

To back up your computer or your individual files and folders you do the following:

- Define a backup.

- Run the backup.
  See "How to use Veritas System Recovery" on page 89.

When you define a backup, you decide on the following:

- What to back up (files and folders, or an entire drive).

- Where to store the backup data (backup destination).

- Whether or not to use Offsite Copy to copy backup data to remote locations.

- When to run the backup (automatically or manually).

- What compression levels to specify for recovery points, and whether to enable security settings (encryption and password protection).

- Which of the many other options you want to use. You can customize each backup according to your backup needs.

See "Backup destinations" on page 117.

See "Backing up dual-boot computers" on page 118.

Best practices for backing up data

Consider the following best practices before you define and run your first backup.

- For optimum protection, you should define a drive-based backup and run it on a regular basis. A drive-based backup backs up and recovers your computer's system drive. Typically, it is the C drive, which includes your operating system. You can also use a drive-based backup to back up and recover a specific hard drive, such as a secondary drive, or to recover lost or damaged files or folders from a specific point in time.

- To protect your personal files, such as photographs, music, or documents, you should define a file and folder backup and select the specific files and folders that you want to protect.

Table 5-1   Best practices for backing up data

Best Practice	Description
Schedule backups at a time when you know your computer is on.	Your computer must be turned on and Windows must be running at the time a backup occurs. If not, any scheduled backups are skipped until the computer is turned on again. You then are prompted to run the missed backup. **Note:** Veritas recommends that you do not back up volumes while deduplication is running on them. Schedule backups such that deduplication and backup do not run at the same time.
Use a secondary hard disk as your backup destination.	You should store recovery points on a hard disk other than your primary hard disk (C). It helps ensure that you can recover your system in the event that your primary hard disk fails. See "Setting up default general backup options" on page 92.

Table 5-1   Best practices for backing up data *(continued)*

Best Practice	Description
Consider using external drives as your backup destination.	Using an external drive makes your backup data more portable. Should you need to remove your critical data from a particular location, you can quickly grab an external drive on your way out the door. See "How Offsite Copy works" on page 154.
Give unique names to your external drives to help you easily identify them.	You can assign a unique name to each external drive. A unique name helps you to keep a track of where your backup data is stored for each computer you back up. It is more useful in situations when the drive letters change each time you unplug and plug an external drive into your computer. A unique name ensures that you always know which drive is used when you are running Veritas System Recovery. Using a unique name does not change the volume label of a drive. A unique name helps you to identify the drive when you use Veritas System Recovery. Once a unique name is assigned, it stays with the drive. If you plug the drive into a second computer running another copy of Veritas System Recovery, the unique name appears. **Note:** You might also consider placing a sticky label on each drive that matches the unique name that you have assigned.
Use Offsite Copy	Use Offsite Copy to copy your latest recovery points to either a portable storage device or a remote server. By copying recovery points to a portable hard disk, you can then take a copy of your data with you when you leave the office. See "How Offsite Copy works" on page 154.
Run backups frequently on a regular basis.	When you define your backups, schedule them to run frequently so that you have recovery points that span at least the last two months. See "Editing a backup schedule" on page 176. See "Defining a drive-based backup" on page 120.

Table 5-1   Best practices for backing up data *(continued)*

Best Practice	Description
Keep personal data on a separate drive than the drive on which Windows and your software programs are installed.	You should keep your operating system and software programs separate from your own data. It speeds the creation of recovery points and reduces the amount of information that needs to be restored. For example, use the C drive to run Windows and to install and run software programs. Use the D drive to create, edit, and store personal files and folders. For other drive management solutions, go to the Veritas website at the following URL: https://www.veritas.com/
Verify the recovery point after you create it to ensure that it is stable.	While defining a backup, select the option to verify that the recovery point is stable and can be used to recover lost data.
Delete the corrupt images.	When the backup destination is a network location, all backup images in the destination folder are appended with a .tmp extension during the backup. If the backup is successful, the images are automatically renamed with .v2i (base) and .iv2i (incremental) extensions. If a network connection to the destination fails, the backup is unsuccessful. The corrupt images with the .tmp extension are retained. These files are not tracked by Veritas System Recovery 18 and can be deleted safely.

When a backup starts to run on your computer, you might notice that the performance of your computer slows down. Veritas System Recovery requires significant system resources to run a backup. If slowing occurs, you can reduce the speed of the backup to improve computer performance until you are finished working.

See

What to do when a backup is finished

After a backup is complete, consider the following best practices:

Table 5-2   Best practices after a backup is finished

Best Practice	Description
Review the contents of recovery points and file and folder backup data.	Periodically review the contents of your recovery points to ensure that you back up only your essential data. See "To open and restore files within a recovery point" on page 224.
Review the **Status** page to verify that backups have happened and to identify any potential problems.	Periodically review the **Status** page. You can also review the events log on the **Advanced** page. The event log records events when they occur, backups, and any errors that might have occurred during or after a backup. **Note:** Backup status and other messages are also conveyed in the system tray. So you do not need to start the product to identify the status of your backups. See "Verifying that a backup is successful" on page 172. See "To view the Advanced page" on page 110.
Manage storage space by eliminating old backup data.	Delete outdated recovery points to make more hard disk space available. Also, reduce the number of file versions that are created when you back up your files and folders. See "About managing file and folder backup data" on page 239.
Review the level of protection that is provided for each of your computer's drives.	Check the **Status** page on a regular basis to ensure that each drive has a defined backup.
Maintain backup copies of your recovery points.	Store backup copies of your recovery points in a safe place. For example, you can store them elsewhere on a network or you can store them on tapes for long-term, off-site storage. See "Copying recovery points" on page 233.

Table 5-2   Best practices after a backup is finished *(continued)*

Best Practice	Description
Delete corrupt images	When the backup destination is a network location, all backup images in the destination folder are appended with a .tmp extension during the backup. If the backup is successful, the images are automatically renamed with a .v2i extension. If a network connection to the destination fails, the backup is unsuccessful. The corrupt images with the .tmp extension are retained. These files are not tracked by Veritas System Recovery 18 and can be deleted safely.

Tips for running defined backups

Consider the following tips when you run a defined backup:

- Veritas System Recovery does not need to be running for a scheduled backup to start. After you define a backup, you can close Veritas System Recovery.

- The computer that is backed up must be turned on and Windows must be started.

- All defined backups are saved automatically so that you can edit them or run them later.
  See "Running an existing backup job immediately" on page 168.
  See "Running a backup to create an alternate type of recovery point" on page 169.
  See "Editing backup settings" on page 173.

- Do not run a disk defragmentation program during a backup. Doing so significantly increases the time that it takes to create the recovery point and might cause unexpected system resource issues.

- If you have two or more drives that are dependent on each other, you should include both drives in the same backup. Including both the drives in the same backup provides the safest protection.

- Include multiple drives in the same defined backup to reduce the total number of backups that must be run. Doing so minimizes interruptions while you work.

- Use the Progress and Performance feature to reduce the effect of a backup on your computer's performance. For example, say a scheduled backup starts while you are in the middle of a presentation. You can slow down the backup to give more processing resources back to your presentation program.
  See "Adjusting the speed of a backup" on page 171.

- The power management features on a computer can conflict with Veritas System Recovery during a backup.

For example, your computer might be configured to go into hibernation mode after a period of inactivity. You should consider turning off the power management features during a scheduled backup.

- If a backup is interrupted, consider running it again.

- If you experience problems while creating a backup, you may need to restart the computer.

See "Best practices for backing up data" on page 112.

See "What to do when a backup is finished " on page 114.

Backup destinations

You should review the following information before you decide where to store recovery points and file and folder backup data.

The following table contains the information that you need to consider when selecting a backup destination.

Table 5-3   Selecting a backup destination

Backup destination	Information to consider
Local hard drive, USB drive, or FireWire drive (recommended)	The benefits of this option are as follows: - Provides for fast backup and recovery. - Lets you schedule unattended backups. - Reduces cost because drive space can be overwritten repeatedly. - Allows for off-site storage. - Reserves hard drive space for other uses. Although you can save the recovery point to the same drive that is backed up, it is not recommended for the following reasons: - As the number or size of recovery points grows it consumes more disk space. As a result you have less disk space for regular use. - The recovery point is included in subsequent recovery points of the drive, which increases the size of those recovery points. - If the computer suffers a catastrophic failure, you may not be able to recover the recovery point. You may not be able to recover the recovery point even if you save it to a different drive on the same hard disk.

Table 5-3   Selecting a backup destination *(continued)*

Backup destination	Information to consider
Network folder	If your computer is connected to a network, you can save your recovery points and file and folder backup data to a network folder.
	Backing up to a network folder typically requires that you authenticate to the computer that hosts the folder. If the computer is part of a network domain, you must provide the domain name, user name, and password. For example, domain\username.
	If you connect to a computer in a workgroup, you should provide the remote computer name and user name. For example: remote_computer_name\username.
OpenStorage Destination	The benefits of this option are as follows
	■ Lets you select an OpenStorage destination as the primary destination when you define backups and during restore.
	■ Provides flexibility of maintaining large amount of data.
	■ Increases the accessibility of data from anywhere and at any time.
	■ Helps during disaster recovery situation to restore data from the cloud.

Backing up dual-boot computers

You can back up dual-boot computers, even if you have hidden drives (partitions) in the operating system from which you run Veritas System Recovery.

When you run a drive backup, the entire contents of each drive is captured in a recovery point. When you restore a drive, the recovered drive can be used to start your computer.

Consider the following points when backing up dual-boot computers:

- To boot your computer from a restored system, you must back up, and then restore every drive that includes operating system boot information.

- Do not create incremental backups of shared data drives if both the following conditions are true:

  - Veritas System Recovery is installed on both operating systems.

  - Both the operating systems are set to manage the shared drive.

You might encounter issues if you try to use the Veritas System Recovery LightsOut Restore feature on dual-boot systems. It is not supported.

The same is true for the Veritas System Recovery Restore Anyware feature.

See "Defining a drive-based backup" on page 120.

See "About backing up your data" on page 111.

Backing up entire drives

This chapter includes the following topics:

- Defining a drive-based backup
- Compression levels for recovery points
- Running a one-time backup from Veritas System Recovery
- Running a backup from Veritas System Recovery Disk
- How Offsite Copy works

Defining a drive-based backup

A drive-based backup takes a snapshot of your entire hard drive, capturing every bit of information that is stored on it for later retrieval. All of your files, folders, desktop settings, programs, and your operating system are captured into a recovery point. You can then use that recovery point to restore individual files or folders, or your entire computer.

For optimum protection, you should define a drive-based backup and run it on a regular basis.

By default, scheduled independent recovery point file names and recovery point set file names are appended with 001.v2i, 002.v2i, and so forth. Incremental recovery point file names within a set are appended with _i001.iv2i, _i002.iv2i, and so forth. For example, if your base recovery point is called CathyReadF001.v2i, the first incremental recovery point is called CathyReadF001_i001.iv2i.

Veritas System Recovery 18 backups are stored in the backup destination as recovery points. These recovery points can be used to restore the system back to the point-in-time when the image was created.

Note: Veritas recommends that you use AES encryption when you define a backup to prevent unauthorized access to the files.

The following files are intentionally excluded from drive-based backups:

- hiberfil.sys
- pagefile.sys

These files contain temporary data that can take up a large amount of disk space. They are not needed, and there is no negative effect to your computer system after a complete system recovery.

These file names do appear in recovery points, but they are placeholders. They contain no data.

To define a drive-based backup

1 On the **Tasks** menu, click **Run or Manage Backups**.

2 In the **Run or Manage Backups** window, click **Define New**.

   If you have not yet defined a backup, the **Easy Setup** dialog box appears instead.

3 Click **Back up my computer**, and then click **Next**.

4 In the **Drives** panel, select one or more drives to back up, and then click **Next**.

Show Hidden Drives	Lets you see any hidden drives on your hard disk. The drives are displayed in the drive selection table.
Drive selection table	Lets you select one or more drives to include in the backup.

Note: Veritas System Recovery 18 is able to display the drives from a GPT disk even if one of the GPT headers is corrupted or if there is a disk signature collision.

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5 If the **Related Drives** panel appears, set the appropriate option, and then click **Next**. Otherwise, skip to the next step.

Note: When you back up the system drive of a UEFI-based computer, you must back up all the related drives. The **Related Drives** panel lists the EFI System Partition and Windows Recovery Environment Partition (Windows 8 and 2012) that are critical to successfully restore a UEFI-based computer.

Add all related drives (recommended)	Lets you select and include all related drives in the backup definition.
Edit the list of selected drives	Lets you select or clear the related drives that you want or do not want to include in the backup definition.
Do not add related drives	Lets you deselect (not include) all related drives in the backup definition.

6 On the **Recovery point type** panel, select the recovery point type that you want the backup to create, and then click **Next**.

Recovery point set (recommended)	Schedules a base recovery point with additional recovery points that contain only the incremental changes that were made to your computer since the previous recovery point.
	Incremental recovery points are created faster than the base recovery point. They also use less storage space than an independent recovery point.
	Note: You can only have one recovery point set defined for each drive. The **Recovery point set** option is not available if you have already assigned a selected drive to an existing backup and specified **Recovery point set** as the recovery point type. This option also is unavailable if you select an unmounted drive that cannot be part of a recovery point set.
Independent recovery point	Creates a complete, independent copy of the drives that you select. This backup type typically requires more storage space, especially if you run the backup multiple times.

7   On the **Backup Destination** panel, select the appropriate options.

Folder	Indicates the location where you want to store the recovery points.
	If Veritas System Recovery detects that this location does not have enough available space, it alerts you. You should choose another location that has more space.
Browse	Lets you browse to locate a backup destination that you want to use.
Browse for OpenStorage Destination	Lets you browse to select a cloud storage destination that you want to use for backups.
	See " OpenStorage destination options for backups" on page 263.
Destination Details	Displays the type of destination path. If you add a network path it also displays the user name.
	Recovery points are not automatically encrypted.
	Veritas recommends that you create permissions for the backup destination to prevent unauthorized access to any data contained in the recovery points. For more information, refer to the following link:
	https://technet.microsoft.com/en-us/library/cc732880(v=ws.11).aspx
	Note: Veritas recommends that you use AES encryption when defining a backup to prevent unauthorized access to any data contained in the recovery points.
Edit	Lets you enter the user name and password for access to the network that is specified in the **Folder** field. This option is available only if you selected a backup destination that is on a network and if you want to save the recovery point on a network share
	See "Rules for network credentials" on page 134.
Customize recovery point file names	Lets you rename the recovery point.
	Default file names include the name of the computer followed by the drive letter.
	You can also save recovery points to a unique subfolder.
Enable USB Disk Rotation. Backup files to any USB disk inserted at this location	Select this check box to enable the USB disk rotation feature for USB disks.
	See "USB disk rotation" on page 132.

Add	Lets you add up to two Offsite Copy destinations.
	Offsite Copy automatically copies your latest recovery points each time a backup completes to either a portable storage device, such as an external drive, or to a remote server either through a local area network connection or to a remote FTP server.
	See "How Offsite Copy works" on page 154.

You cannot use an encrypted folder as your backup destination. You can choose to encrypt your backup data to prevent another user from accessing it.

8 (Optional) If you want to make copies of your recovery points to store at a remote location for added backup protection, click **Add**, select the appropriate options, and then click **OK**.

Enable Offsite Copy	Turns on the Offsite Copy feature.
Prompt me to start a copy when I attach an external Offsite Copy destination drive	Indicates that you want to have recovery points automatically copied to external Offsite Copy destination drives whenever you plug one in to your computer.
Folder, Network Path, FTP address, or OpenStorage destination	Lets you specify the destination path of the offsite copy. See "Providing the OpenStorage destination path" on page 262.
Browse	Lets you browse to locate an offsite copy destination that you want to use.
Destination Details	Displays the type of destination path. If you add a network path, an ftp path, or an OpenStorage destination, it also displays the user name.
Edit	Lets you edit the user name or password of a specified network path, an ftp path, or an OpenStorage destination.
Add an additional Offsite Copy destination	Lets you add a second destination, and then specify the path to that destination.

9 (Optional) If you specify an OpenStorage destination (Amazon S3 or Microsoft Azure storage) as the Offsite destination, click **OK**.

On the **OpenStorage Destination** dialog box select the appropriate options, and then click **OK**.

Note: Although cloud storage is a part of OpenStorage, Veritas System Recovery 18 refers to cloud storage as OpenStorage.

See " OpenStorage destination options for backups" on page 263.

See the section called "Using Amazon S3 storage as your Offsite Copy destination" on page 267.

See the section called "Using Microsoft Azure as your offsite copy destination" on page 268.

10 Click **Next**.

11 On the **Options** panel, set the recovery point options you want, and then click **Next**.

Recovery point options

Name	Indicates a name for your backup.
	Note: This option does not appear if you create a recovery point using the **Back Up My Computer** feature in Veritas System Recovery Disk.
Compression	Lets you set one of the following compression levels for the recovery point:
	■ None
	■ Standard
	■ Medium
	■ High
	See "Compression levels for recovery points" on page 140.
	The results can vary depending on the types of files that are saved in the drive.
Verify recovery point after creation	Tests whether a recovery point or set of files is valid or corrupt.

Limit the number of recovery point sets saved for this backup	Limits the number of recovery point that can be saved for this backup. You can limit the number of recovery points to reduce the risk of filling up the hard drive with recovery points. Each new recovery point replaces the oldest set on your backup destination drive.
	The backup destination must contain enough free space for the number of recovery points the job is set to retain, plus one. For example, if the maximum number of recovery points to retain is set to 3, the required space in the backup destination should be able to hold 4 recovery point sets. Veritas System Recovery 18 removes the oldest recovery point set only after the successful completion of the current backup. This ensures that the number of recovery points meets the recovery point retention setting.
	Note: This option does not appear if you create a recovery point using the **Back Up My Computer** feature in a Veritas System Recovery Disk.
Include system and temporary files	Includes an indexing support for operating system and temporary files when a recovery point is created on the client computer.
	Note: This option does not appear if you create a recovery point using the **Back Up My Computer** feature in Veritas System Recovery Disk.
Advanced	Lets you add security options to the recovery point.
Command Files	Lets you use command files (.exe, .cmd, .bat) during a backup.
	See "Running command files during a backup" on page 134.
Description	Indicates a description for the recovery point. The description can be anything that helps you further identify the recovery point's contents.

Advanced options for drive-based backups

Divide into smaller files to simplify archiving	Splits the recovery point into smaller files and specifies the maximum size (in MB) for each file.

Disable SmartSector™ Copying	Copies that are used and unused hard-disk sectors. This option increases process time and usually results in a larger recovery point.
	SmartSector technology speeds up the copying process by copying only the hard-disk sectors that contain data. However, in some cases, you might want to copy all sectors in their original layout, whether or not they contain data.
Ignore bad sectors during copy	Runs a backup even if there are bad sectors on the hard disk. Although most drives do not have bad sectors, the potential for problems increases during the lifetime of the hard disk.
Perform full VSS backup	Lets you perform a full backup on the VSS storage and send a request for VSS to review its own transaction log. This option is used for Microsoft Exchange Server only.
	Exchange VSS determines what transactions are already committed to the database and then truncates those transactions. Among other things, truncated transaction logs help keep the file size manageable and limits the amount of hard drive space that the file uses.
	If you do not select this option, backups still occur on the VSS storage. However, VSS does not automatically truncate the transaction logs following a backup.
	Note: This option does not appear if you create a recovery point using the **Back Up My Computer** wizard feature in Veritas System Recovery Disk.

Command files options

Command files folder	Specifies the location of command files if you want them to be located in a place other than the default location. You can also specify a location on a per-job basis, as well as specify a location that can be shared among several computers. If you specify a network location, you are prompted for network credentials.
Browse	Lets you browse to locate a folder for any command files that you want to use.

User name	Specifies the user name to a command file folder that is located in a network path.
Password	Specifies the password to a command file folder that is located in a network path.
Run before snapshot creation	Indicates that you can run a command file after a backup has started and before a recovery point is created. You can run a command during this stage to prepare for the recovery point creation process. For example, you can close any open applications that are using the drive.
	Note: If you use this option, be sure that the command file has an error recovery mechanism that is built into it. If the computer has one or more services that must be stopped at this stage, and the command file does not contain any form of error recovery, one or more of the stopped services may not be restarted. For example, stopping a non-VSS aware database or a resource-intensive application. An error in the command file can cause the recovery point creation process to stop immediately. No other command files can run.
	See "How to use Veritas System Recovery" on page 89.
Run after snapshot creation	Indicates that you can run a command file after a snapshot is created. Running a command during this stage is a safe point to allow services to resume on the drive while continuing the recovery point creation.
	Because the snapshot takes only a few seconds to create, the database is in the backup state momentarily. A minimal number of log files are created.
Run after recovery point creation	Indicates that you can run a command file after the recovery point file is created. You can run a command during this stage to act on the recovery point itself. For example, you can copy it to an offline location.
Timeout (applies to each stage)	Lets you specify the amount of time (in seconds) that a command file is allowed to run.

12 On the **Security Options** panel, set a password, select a level of encryption for the drive-based backup, and then click **Next**.

Use password	Sets a password and enables AES encryption on the recovery point when it is created.
	This check box is selected by default.
Password	Lets you specify a password for the backup. Passwords can include standard characters. Passwords cannot include extended characters, or symbols. (Use characters with an ASCII value of 128 or lower.)
	You must type this password before you restore a backup or view the contents of the recovery point.
Confirm password	Lets you retype the password for confirmation.
AES encryption	Encrypts recovery point data to add another level of protection to your recovery points.
	If you upgrade from a previous version to Veritas System Recovery 18, for older backup jobs where only password protection is defined, you need to edit the jobs to select the AES encryption level. If you do not edit the older backup jobs, they continue to run without AES Encryption. Veritas recommends that you edit the job and select AES encryption level.
	Note: If the **Use Password** check box is selected, you must define AES encryption.
	Choose from the following encryption levels:
	■ **Standard 128-bit (8+ character password)** ■ **Medium 192-bit (16+ character password)** ■ **High 256-bit (32+ character password)**

13 On the **Backup Time** panel, select the appropriate options to specify the time and frequency of the backup, and then click **Next**.

Note: Ensure that the time for running a base backup and an incremental backup is not the same.

Backup Time options for a recovery point set

Schedule	Runs the backup automatically according to a specified start time and the selected days of the week.
Default	Lets you use the default backup time schedule.
Advanced	Sets advanced scheduling options, such as setting up event triggers that start the backup in response to specific events.
Run more than once per day	Sets the time between backups and the number of times to back up.
Start a new recovery point set (base)	Starts a new recovery point set (base) weekly, monthly, quarterly, or yearly.
Custom	(Optional) Indicates how frequently a new recovery point set should be started.
	For example, if you select **Monthly**, a new base recovery point is created the first time the backup runs during each new month.
Select event triggers	Lets you select events that automatically create a recovery point.
Details	Shows you information about the backup time option you have selected or specified.

Backup Time options for an independent recovery point

No Schedule	Runs the backup only when you run it yourself, manually.
Weekly	Runs the backup at the time and on the days of the week that you specify.
	When you select this option, the **Select the days of the week to protect** dialog box appears.

Monthly	Runs the backup at the time and on the days of the month that you specify.
	When you select this option, the **Select the days of the month to protect** dialog box appears.
Only run once	Runs the backup one time on the date and at the time you specify.
	When you select this option, the **Create a single recovery point** dialog box appears.
Details	Indicates information about the backup time option you have selected or specified.

Change Schedule - Drive Backup options

Schedule	Lets you select the days and a start time for when the backup should run.
Run more than once per day	Indicates that you can run the backup more than once a day to protect data that you edit or change frequently.
Time between backups	Specifies the maximum time that should occur between backups.
Number of times	Specifies the number of times per day that the backup should run.
Automatically optimize	Lets you select how often optimization should occur to help manage the disk space that is used by your backup destination.
Start a new recovery point set	Indicates how frequently a new recovery point set should be started
Custom	Lets you customize the start time, and the days of the week or month to run the backup.
Event Triggers - General	Lets you select the type of events that automatically starts a backup.

14 (Optional) If you want to run the new backup immediately, click **Run backup now**.

This option is not available if you configured an independent recovery point with the option to run it only once.

15 Review the options you have selected, then click **Finish**.

When the backup destination is a network location, all backup images in the destination folder are appended with a .tmp extension during the backup. If the backup is successful, the images are automatically renamed with a .v2i extension. If a network connection to the destination fails, the backup is unsuccessful. The corrupt images with the .tmp extension are retained. These files are not tracked byVeritas System Recovery 18 and can be deleted safely.

USB disk rotation

The USB disk rotation feature lets you create a backup destination on multiple USB drives. To use this feature, each USB disk must use the same drive letter assigned to the original USB disk defined in the backup destination. Select the USB disk to enable the **Enable USB Disk Rotation. Backup files to any USB disk inserted at this location** check box. When you select the check box, USB disk rotation is enabled.

As a part of this feature, a warning is displayed when you define a backup and not enough is available to complete the backup. The warning is displayed immediately after the backup job starts. To continue the backup, you can either insert a new USB disk (at the same mount point) or continue to use the existing USB disk, in which case the backup job fails.

See "How USB disk rotation works" on page 132.

How USB disk rotation works

Using the USB disk rotation feature, you can rotate your available USB disks to use as backup destinations. Older backups are automatically cleaned up, depending on the number of USB disks and the number of recovery points the job is set to retain. When the recovery point set limit is reached, older recovery points (base and incrementals) are deleted when the USB disk containing the oldest recovery points is inserted. Using this feature, you are not required to edit the backup job and change the backup destination to add a new USB disk.

The following table displays an example of how USB disk rotation works when the number of USB disks available is 2 and the recovery point set limit is 3.

Table 6-1 USB rotation example

Day	USB 1	USB 2	Remarks
Monday	1.v2i		
Tuesday	1_001.iv2i		
Wednesday	1_002.iv2i		
Thursday		2.v2i	USB rotated
Friday		2_001.iv2i	
Saturday			
Sunday			
Monday	3.v2i		USB rotated
Tuesday	3_001.v2i		
Wednesday		4.v2i	The number of recovery points in this example are set at 3. When you attach USB 2 and recovery point set 4 is created, recovery point set one cannot be deleted as it is on USB 1. When you attach USB 1 in the future, recovery point set 1 is deleted automatically before the backup job starts running.
Thursday		4_001.iv2i	
Friday		4_002.iv2i	
Saturday			
Sunday			
Monday		5.v2i	USB rotated and recovery point set 2 is deleted automatically.
Tuesday		5_001.iv2i	
Wednesday	6_v2i		USB rotated and recovery point set 1 is deleted automatically. After recovery point set 6 is created successfully, recovery point set 3 is deleted automatically.
Thursday	6_001.iv2i		
Friday	6_002.iv2i		

Rules for network credentials

If you connect to a computer on a network, you must provide the user name and password for network access, even if you previously authenticated to the network. The Veritas System Recovery service runs on the local system account.

When you enter network credentials, the following rules apply:

- If the computer you want to connect to is on a domain, provide the domain name, user name, and password. For example:
domain\username

- If you connect to a computer in a workgroup, provide the remote computer name and user name. For example:
remote_computer_name\username

- If you have mapped a drive, you may need to supply the user name and password again because the service runs in a different context and cannot recognize the mapped drive.

By going to the **Tasks** menu and selecting **Options**, you can set a default location. If the default location is a computer on a network, you can also click the **Edit** option and specify the necessary network credentials. Then when you create future backup jobs, the dialog will default to the location you specified. Another option would be to create a specific "backup" user account. Then configure the Veritas System Recovery service to use this account.

See "Defining a drive-based backup" on page 120.

Running command files during a backup

You can use command files (.exe, .cmd, .bat) during a backup. You can use command files to integrate Veritas System Recovery with other backup routines that you might be running on the computer. You can also use command files to integrate with other applications that use a drive on the computer.

Note: You cannot run the command files that include a graphical user interface, such as notepad.exe. Running such command files causes the backup job to fail.

You can run a command file during any of the following stages during the creation of a recovery point:

- Run before snapshot creation
- Run after snapshot creation
- Run after recovery point creation

When you use command files (.exe, .cmd, .bat) during a backup, stop and then restart non-VSS-aware databases.

To use a Visual Basic script file (.vbs) during a backup, you can create a batch file (.bat) to run the script. Veritas System Recovery runs any script using a high privilege account. When the command files are to be located at a place other than the default location, the `Command Files` folder specifies the location of these files.

Note: Veritas recommends that only high privilege users or an administrator have the permission to modify a backup script and access the `Command Files` folder.

For example, you can create a batch file called Stop.bat that contains the following syntax:

`Cscript script_filename.vbs`

Make sure that `Cscript` precedes the file name of the Visual Basic script.

Warning: The command files cannot depend on any user interaction or have a visible user interface. You should test all command files independently of Veritas System Recovery before you use them during a backup.

When the backup begins, the command file is run during the specified stage. The backup is stopped if an error occurs while a command file is running. Or, the backup is stopped if the command file does not finish in the time you specified (regardless of the stage). In either case, the command file is terminated (if necessary), and the error information is logged and displayed.

Table 6-2   Command files options

Option	Description
Command files folder	Specifies the location of command files if you want them to be located in a place other than the default location. You can also specify a location on a per-job basis, as well as specify a location that can be shared among several computers. If you specify a network location, you are prompted for network credentials.
Browse	Lets you browse to locate a folder for any command files that you want to use.
User name	Specifies the user name to a command file folder that is located in a network path.

Table 6-2   Command files options *(continued)*

Option	Description
Password	Specifies the password to a command file folder that is located in a network path.
Run before snapshot creation	Indicates that you can run a command file after a backup has started and before a recovery point is created. You can run a command during this stage to prepare for the recovery point creation process. For example, you can close any open applications that are using the drive. **Note:** If you use this option, be sure that the command file has an error recovery mechanism that is built into it. If the computer has one or more services that must be stopped at this stage, and the command file does not contain any form of error recovery, one or more of the stopped services may not be restarted. For example, stopping a non-VSS aware database or a resource-intensive application. An error in the command file can cause the recovery point creation process to stop immediately. No other command files can run. See "How to use Veritas System Recovery" on page 89.
Run after snapshot creation	Indicates that you can run a command file after a snapshot is created. Running a command during this stage is a safe point to allow services to resume on the drive while continuing the recovery point creation. Because the snapshot takes only a few seconds to create, the database is in the backup state momentarily. A minimal number of log files are created.
Run after recovery point creation	Indicates that you can run a command file after the recovery point file is created. You can run a command during this stage to act on the recovery point itself. For example, you can copy it to an offline location.
Timeout (applies to each stage)	Lets you specify the amount of time (in seconds) that a command file is allowed to run.

Editing backup options

After you define a backup, you can go back at any time and edit the options you chose when you first defined the backup.

To edit backup options

1   On the **Tasks** menu, click **Run or Manage Backups**.

2   Select the backup you want to edit, and then click **Edit Settings**.

3   In the **Define Backup Wizard** make the changes, complete the steps in the wizard, and then click **Finish**.

Verifying the integrity of a recovery point

If you selected the **Verify recovery point after creation** option on the **Options** panel of the **Define Backup** wizard, the following occurs:

- Veritas System Recovery verifies that all of the files that make up the recovery point are available for you to open.

- Internal data structures in the recovery point are matched with the data that is available.

Also, the recovery point can be uncompressed to create the expected amount of data (if you selected a compression level at the time of creation).

Note: The time that is required to create a recovery point is doubled when you use the **Verify recovey point after creation** option.

If you prefer, you can have recovery points automatically verified for integrity at the time they are created.

Table 6-3   Verifying recovery point options

Option	Description
Divide into smaller files to simplify archiving	Splits the recovery point into smaller files and specifies the maximum size (in MB) for each file.

Table 6-3   Verifying recovery point options *(continued)*

Option	Description
Disable SmartSector™ Copying	Copies that are used and unused hard-disk sectors. This option increases process time and usually results in a larger recovery point. SmartSector technology speeds up the copying process by copying only the hard-disk sectors that contain data. However, in some cases, you might want to copy all sectors in their original layout, whether or not they contain data.
Ignore bad sectors during copy	Runs a backup even if there are bad sectors on the hard disk. Although most drives do not have bad sectors, the potential for problems increases during the lifetime of the hard disk.
Perform full VSS backup	Lets you perform a full backup on the VSS storage and send a request for VSS to review its own transaction log. This option is used for Microsoft Exchange Server only. Exchange VSS determines what transactions are already committed to the database and then truncates those transactions. Among other things, truncated transaction logs help keep the file size manageable and limits the amount of hard drive space that the file uses. If you do not select this option, backups still occur on the VSS storage. However, VSS does not automatically truncate the transaction logs following a backup. **Note:** This option does not appear if you create a recovery point using the **Back Up My Computer** wizard feature in Veritas System Recovery Disk.

To verify the integrity of a recovery point

1   On the **Tools** page, click **Run Recovery Point Browser**.

2   Select a recovery point, and then click **OK**.

3   In the tree panel of the Recovery Point Browser, select the recovery point.

   For example: C_Drive001.v2i.

4 On the **File** menu, click **Verify Recovery Point**.

If the **Verify Recovery Point** option is unavailable, you must first dismount the recovery point. Right-click the recovery point and click **Dismount Recovery Point**.

5 When the validation is complete, click **OK**.

See "Recovery point encryption" on page 139.

Viewing the progress of a backup

You can view the progress of a backup while it runs to determine how much time remains until the backup completes.

To view the progress of a backup

◆ While a backup is running, on the **View** menu, click **Progress and Performance**.

See "Defining a drive-based backup" on page 120.

See "Backing up files and folders" on page 160.

Recovery point encryption

You can enhance the data security by using the Advanced Encryption Standard (AES) option to encrypt recovery points that you create or archive. You should use encryption if you store recovery points on a network and want to protect them from unauthorized access and use.

You can also encrypt recovery points that were created with earlier versions of Veritas LiveState Recovery or Veritas System Recovery. However, encrypting those files makes them readable with the current product only.

You can view the encryption strength of a recovery point at any time by viewing the properties of the file from the Recovery Point Browser.

Encryption strengths are available in 128-bit, 192-bit, or 256-bit. While higher bit strengths require longer passwords, the result is greater security for your data.

The following table explains the bit strength and required password length.

Table 6-4 Password length

Bit strength	Password length
128 (Standard)	8 characters or longer
192 (Medium)	16 characters or longer

Table 6-4   Password length *(continued)*

Bit strength	Password length
256 (High)	32 characters or longer

You must provide the correct password before you can access or restore an encrypted recovery point.

Warning: Veritas Technical Support cannot open an encrypted recovery point. Store the password in a secure place. Passwords are case-sensitive. When you access or restore a recovery point that is password encrypted, Veritas System Recovery prompts you for the case-sensitive password. If you do not type the correct password or you forget the password, you cannot open the recovery point.

Besides bit strength, the format of the password can improve the security of your data.

For better security, passwords should use the following general rules:

■ Do not use consecutive repeating characters (for example, BBB or 88).

■ Do not use common words you would find in a dictionary.

■ Use at least one number.

■ Use both uppercase and lowercase alpha characters.

■ Use at least one special character such as {}()[],.<>;:'"?/|\`~!@#$%^&*()_-+=.

■ Change the password after a set period of time.

See "Defining a drive-based backup" on page 120.

See "Backing up files and folders" on page 160.

See "Verifying the integrity of a recovery point" on page 137.

Compression levels for recovery points

During the creation or copying of a recovery point, compression results may vary, depending on the types of files that are saved to the drive you are backing up.

The following table describes the available compression levels.

Table 6-5   Compression level options

Option	Description
None	Indicates that no compression is applied to the recover point. Use this option if storage space is not an issue. If the backup is saved to a busy network drive, high compression may be faster than no compression because there is less data to write across the network.
Standard (recommended)	Uses low compression for a 40 percent average data compression ratio on recovery points. This setting is the default.
Medium	Uses medium compression for a 45 percent average data compression ratio on recovery points.
High	Uses high compression for a 50 percent average data compression ratio on recovery points. This setting is usually the slowest method.
	When a high compression recovery point is created, CPU usage might be higher than normal. Other processes on the computer might also be slower. To compensate, you can adjust the operation speed of Veritas System Recovery. Adjusting the speed may improve the performance of other resource-intensive applications that you are running at the same time.

Running a one-time backup from Veritas System Recovery

You can use **One Time Backup** to quickly define and run a backup that creates an independent recovery point. You use the **One Time Backup** wizard to define the backup. The backup runs when you complete the wizard. The backup definition is not saved for future use. You can use the independent recovery point later.

This feature is useful when you need to back up your computer or a particular drive quickly before a significant event. For example, you can run a one-time backup before you install new software. Or, you can run it when you learn about a new computer security threat.

You can also use Veritas System Recovery Disk to create one-time cold backups.

To run a one-time backup from Veritas System Recovery

1   On the **Tasks** page, click **One Time Backup**.

2   Click **Next**.

3   Select one or more drives to back up, and then click **Next**.

> **Note:** Veritas System Recovery 18 is able to display the drives from a GPT disk even if one of the GPT headers is corrupted or if there is a disk signature collision.

4   If the **Related Drives** dialog box is displayed, set the appropriate option, and then click **Next**. Otherwise, skip to the next step.

Add all related drives (recommended)	Lets you select and include all related drives in the backup definition.
Edit the list of selected drives	Lets you select or clear the related drives that you want or do not want to include in the backup definition.
Do not add related drives	Lets you deselect (not include) all related drives in the backup definition.

5 In the **Backup Destinations** panel, select the appropriate options.

Folder	Indicates the location where you want to store the recovery points.
	If Veritas System Recovery detects that this location does not have enough available space, it alerts you. You should choose another location that has more space.
Browse	Lets you browse to locate a backup destination that you want to use.
Browse for OpenStorage Destination	Lets you browse to select a cloud storage destination that you want to use for backups.
	See " OpenStorage destination options for backups" on page 263.
Destination Details	Displays the type of destination path. If you add a network path it also displays the user name.
	Recovery points are not automatically encrypted.
	Veritas recommends that you create permissions for the backup destination to prevent unauthorized access to any data contained in the recovery points. For more information, refer to the following link:
	https://technet.microsoft.com/en-us/library/cc732880(v=ws.11).aspx
	Note: Veritas recommends that you use AES encryption when defining a backup to prevent unauthorized access to any data contained in the recovery points.
Edit	Lets you enter the user name and password for access to the network that is specified in the **Folder** field. This option is available only if you selected a backup destination that is on a network and if you want to save the recovery point on a network share.
	See "Rules for network credentials" on page 134.
Customize recovery point file names	Lets you rename the recovery point.
	Default file names include the name of the computer followed by the drive letter.
	You can also save recovery points to a unique subfolder.

Enable USB Disk Rotation. Backup files to any USB disk inserted at this location	Select this check box to enable the USB disk rotation feature for USB disks. See "USB disk rotation" on page 132.
Add	Lets you add up to two Offsite Copy destinations. Offsite Copy automatically copies your latest recovery points each time a backup completes to either a portable storage device, such as an external drive, or to a remote server either through a local area network connection or to a remote FTP server. See "How Offsite Copy works" on page 154.

6 Click **Next**.

7 On the **Options** panel, select the appropriate options, and then click **Next**

Recovery Point options

Name	Indicates a name for your backup. **Note:** This option does not appear if you create a recovery point using the **Back Up My Computer** feature in Veritas System Recovery Disk.
Compression	Lets you set one of the following compression levels for the recovery point: ■ None ■ Standard ■ Medium ■ High See "Compression levels for recovery points" on page 140. The results can vary depending on the types of files that are saved in the drive.
Verify recovery point after creation	Tests whether a recovery point or set of files is valid or corrupt.

Limit the number of recovery point saved for this backup	Limits the number of recovery point that can be saved for this backup. You can limit the number of recovery points to reduce the risk of filling up the hard drive with recovery points. Each new recovery point replaces the oldest set on your backup destination drive.
	The backup destination must contain enough free space for the number of recovery points the job is set to retain, plus one. For example, if the maximum number of recovery points to retain is set to 3, the required space in the backup destination should be able to hold 4 recovery point sets. Veritas System Recovery 18 removes the oldest recovery point set only after the successful completion of the current backup. This ensures that the number of recovery points meets the recovery point retention setting.
	This option appears only if you are creating a recovery point set.
	Note: This option does not appear if you create a recovery point using the **Back Up My Computer** feature in a Veritas System Recovery Disk.
Include system and temporary files	Includes an indexing support for operating system and temporary files when a recovery point is created on the client computer.
	Note: This option does not appear if you create a recovery point using the **Back Up My Computer** feature in Veritas System Recovery Disk.
Advanced	Lets you add security options to the recovery point.
Command Files	Lets you use command files (.exe, .cmd, .bat) during a backup.
	See "Running command files during a backup" on page 134.
Description	Indicates a description for the recovery point. The description can be anything that helps you further identify the recovery point's contents.

Advanced options

Divide into smaller files to simplify archiving	Splits the recovery point into smaller files and specifies the maximum size (in MB) for each file.
Disable SmartSector™ Copying	Copies that are used and unused hard-disk sectors. This option increases process time and usually results in a larger recovery point.
	SmartSector technology speeds up the copying process by copying only the hard-disk sectors that contain data. However, in some cases, you might want to copy all sectors in their original layout, whether or not they contain data.
Ignore bad sectors during copy	Runs a backup even if there are bad sectors on the hard disk. Although most drives do not have bad sectors, the potential for problems increases during the lifetime of the hard disk.
Perform full VSS backup	Lets you perform a full backup on the VSS storage and send a request for VSS to review its own transaction log. This option is used for Microsoft Exchange Server only.
	Exchange VSS determines what transactions are already committed to the database and then truncates those transactions. Among other things, truncated transaction logs help keep the file size manageable and limits the amount of hard drive space that the file uses.
	If you do not select this option, backups still occur on the VSS storage. However, VSS does not automatically truncate the transaction logs following a backup.
	Note: This option does not appear if you create a recovery point using the **Back Up My Computer** wizard feature in Veritas System Recovery Disk.

8   In the **Security Options** panel, set the password, select the level of encryption for the one-time backup, and then click **Next**.

Use password	Sets a password and enables AES encryption on the recovery point when it is created.
	This check box is selected by default.
Password	Lets you specify a password for the backup. Passwords can include standard characters. Passwords cannot include extended characters, or symbols. (Use characters with an ASCII value of 128 or lower.)
	You must type this password before you restore a backup or view the contents of the recovery point.
Confirm password	Lets you retype the password for confirmation.
AES encryption	Encrypts recovery point data to add another level of protection to your recovery points.
	If you upgrade from a previous version to Veritas System Recovery 18, for older backup jobs where only password protection is defined, you need to edit the jobs to select the AES encryption level. If you do not edit the older backup jobs, they continue to run without AES Encryption. Veritas recommends that you edit the job and select AES encryption level.
	Note: If the **Use Password** check box is selected, you must define AES encryption.
	Choose from the following encryption levels:
	■ **Standard 128-bit (8+ character password)**
	■ **Medium 192-bit (16+ character password)**
	■ **High 256-bit (32+ character password)**

9 If appropriate, in the lists, select the command files that you want to run during a particular stage in the recovery point creation process. Then, specify the amount of time (in seconds) that you want the command to run before it is stopped.

If you added the command file to the **Command Files folder**, you may need to click **Back**, and then **Next** to see the files in each stage's list.

Command files folder	Specifies the location of command files if you want them to be located in a place other than the default location. You can also specify a location on a per-job basis, as well as specify a location that can be shared among several computers. If you specify a network location, you are prompted for network credentials.
Browse	Lets you browse to locate a folder for any command files that you want to use.
User name	Specifies the user name to a command file folder that is located in a network path.
Password	Specifies the password to a command file folder that is located in a network path.

Run before snapshot creation	Indicates that you can run a command file after a backup has started and before a recovery point is created. You can run a command during this stage to prepare for the recovery point creation process. For example, you can close any open applications that are using the drive.
	Note: If you use this option, be sure that the command file has an error recovery mechanism that is built into it. If the computer has one or more services that must be stopped at this stage, and the command file does not contain any form of error recovery, one or more of the stopped services may not be restarted. For example, stopping a non-VSS aware database or a resource-intensive application. An error in the command file can cause the recovery point creation process to stop immediately. No other command files can run.
	See "How to use Veritas System Recovery" on page 89.
Run after snapshot creation	Indicates that you can run a command file after a snapshot is created. Running a command during this stage is a safe point to allow services to resume on the drive while continuing the recovery point creation.
	Because the snapshot takes only a few seconds to create, the database is in the backup state momentarily. A minimal number of log files are created.
Run after recovery point creation	Indicates that you can run a command file after the recovery point file is created. You can run a command during this stage to act on the recovery point itself. For example, you can copy it to an offline location.
Timeout (applies to each stage)	Lets you specify the amount of time (in seconds) that a command file is allowed to run.

10 Click **Next**.

11 Click **Finish** to run the backup.

Running a backup from Veritas System Recovery Disk

Using a valid license key, you can create independent recovery points using the **Back Up My Computer** feature in Veritas System Recovery Disk. You can create recovery points of a partition without the need to install Veritas System Recovery or its agent. This feature is sometimes known as a cold backup or offline backup.

With a cold backup, all files are closed when the backup occurs. You do not copy any data that may be in the middle of being updated or accessed on the desktop or server. Cold backups are particularly useful for databases. They ensure that no files are written to or accessed at any time during the backup so you have a complete recovery point.

You can also use the Veritas System Recovery Disk to create recovery points if you experience any of the following:

■ A level of corruption prevents you from starting Windows on the computer.

■ Veritas System Recovery does not function properly while it runs on a Windows operating system.

■ You want to back up the condition of a damaged system before you recover. For example, if a computer is severely damaged, you can use the Veritas System Recovery Disk. You can back up what remains of the system. Then, you can recover what you can later, after you restore an independent recovery point.

Note: Recovery points that you create using Veritas System Recovery Disk are restored to dissimilar hardware using Restore Anyware.

When you want to create a backup fromVeritas System Recovery Disk , you are prompted for a valid license key only for the following scenarios:

■ You create a Veritas System Recovery Disk using the **Prompt me for a license key to use the Backup My Feature** option. The computer does not have Veritas System Recovery installed.

■ You create a custom Veritas System Recovery Disk on a computer that has an unlicensed installation (60-day trial) of Veritas System Recovery. You then use the custom Veritas System Recovery Disk to create a backup of a computer. The computer does not have an installation of Veritas System Recovery.
See "Customizing an existing Veritas System Recovery Disk" on page 61.

- You choose not to add a license key at the time you create the customized Veritas System Recovery Disk.

To run a one-time backup from Veritas System Recovery Disk

1   If you intend to store the resulting recovery point on a USB device (for example, an external hard drive), attach the device now.

2   Start the Veritas System Recovery Disk on the computer you want to back up.

    See "Booting a computer by using the Veritas System Recovery Disk" on page 289.

3   On the **Home** panel, click **Back Up My Computer**, and then click **Next**.

4   On the **Welcome** panel, click **Next**.

5   If you are prompted, on the **Specify License Key** panel, enter a valid license key, and then click **Next**.

6   On the **Drives** panel, select one or more drives that you want to back up, and then click **Next**.

Note: Veritas System Recovery 18 is able to display the drives from a GPT disk even if one of the GPT headers is corrupted or if there is a disk signature collision.

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7 On the **Backup Destination** panel, set the options you want, then click **Next**.

Folder	Lets you browse to and specify the location where you want to store the independent recovery point.
Map a network drive	Maps a network drive by using the UNC path of the computer on which you want to store the recovery point.
	For example, \\computer_name\share_name or \\IP_address\share_name.
Browse	Lets you browse to locate a backup destination that you want to use.
OpenStorage Destination	Lets you select a cloud storage destination that you want to use for backups.
	See " OpenStorage destination options for backups" on page 263.
Destination Details	Displays the type of destination path. If you add a network path it also displays the user name.
Recovery point file name	Lets you edit the recovery point file name.
Rename	Lets you rename the recovery point file name.
	Default file names include the name of the computer and then followed by the drive letter.

8 On the **Options** panel, set the desired backup options and advanced options for the recovery point.

Compression	Lets you set one of the following compression levels for the recovery point:
	▪ None
	▪ Standard
	▪ Medium
	▪ High
	See "Compression levels for recovery points" on page 140.
	The results can vary depending on the types of files that are saved in the drive.

Security Options > Use password	Sets a password and enables AES encryption on the recovery point when it is created. This option is selected by default.
Security Options > Password	Lets you specify a password for the backup. Passwords can include standard characters. Passwords cannot include extended characters, or symbols. (Use characters with an ASCII value of 128 or lower.) You must type this password before you restore a backup or view the contents of the recovery point.
Security Options > Confirm Password	Lets you retype the password for confirmation.
Security Options > AES encryption	Encrypts recovery point data to add another level of protection to your recovery points. If you upgrade from a previous version to Veritas System Recovery 18, for older backup jobs where only password protection is defined, you need to edit the jobs to select the AES encryption level. If you do not edit the older backup jobs, they continue to run without AES Encryption. Veritas recommends that you edit the job and select AES encryption level. **Note:** If the **Use Password** check box is selected, you must define AES encryption. Choose from the following encryption levels: ■ **Standard 128-bit (8+ character password)** ■ **Medium 192-bit (16+ character password)** ■ **High 256-bit (32+ character password)**
Verify recovery point after creation	Tests whether a recovery point or set of files is valid or corrupt.
Description	Indicates a description for the recovery point. The description can help you further identify the recovery point's contents.
Advanced	Lets you further add security options to the recovery point.

9 On the **Options** panel, click **Advanced**.

10 On the **Advanced options** panel, set the advanced backup options you want for the recovery point, and then click **OK**.

Divide into smaller files to simplify archiving	Lets you split the recovery point into smaller files and specify the maximum size (in MB) for each file.
Disable SmartSector™ Copying	Lets you copy used and unused hard-disk sectors. This option increases process time and usually results in a larger recovery point.
	SmartSector technology speeds up the copying process by copying only the hard-disk sectors that contain data. However, in some cases, you might want to copy all sectors in their original layout, whether or not they contain data.
Ignore bad sectors during copy	Lets you run a backup even if there are bad sectors on the hard disk. Although most drives do not have bad sectors, the potential for problems increases during the lifetime of the hard disk.

11 On the **Options** panel, click **Next**.

12 On the **Completing the Back Up My Computer Wizard** panel, click **Finish** to run the backup.

13 When the backup is finished, click **Close** to return to the main Veritas System Recovery Disk window.

How Offsite Copy works

Backing up your data to a secondary hard disk is a critical first step to protecting your information assets. But to make certain your data is safe, use **Offsite Copy**. You enable and configure **Offsite Copy** when you define a new drive-based backup job. Or you can edit an existing backup job to enable **Offsite Copy**.

This feature can copy your latest complete recovery points to the following:

- A portable storage device.

- A remote server in your network.

- A remote FTP server.

- An Amazon S3 storage

- A Microsoft Azure storage

Regardless of the method you use, storing copies of your recovery points at a remote location provides a crucial level of redundancy if your office becomes inaccessible. **Offsite Copy** can double your data protection by ensuring that you have a remote copy.

When you enable **Offsite Copy**, you specify up to two offsite copy destinations. After the backup job finishes creating recovery points, **Offsite Copy** verifies that at least one of the offsite copy destinations is available. **Offsite Copy** then begins copying the new recovery points to the offsite copy destination.

The most recent recovery points are copied first, followed by the next newest recovery points. If you have set up two offsite copy destinations, **Offsite Copy** copies recovery points to the destination that was added first. If an offsite copy destination is unavailable, **Offsite Copy** tries to copy recovery points to the second destination, if it is available. If neither destination is available, then **Offsite Copy** copies the recovery points the next time an offsite copy destination becomes available.

For example, suppose you have configured a backup job to run at 6:00 P.M. and configured an external drive as an offsite copy destination. However, when you leave the office at 5:30 P.M., you take the drive with you for safekeeping. When the backup job completes at 6:20 P.M., Veritas System Recovery detects that the offsite copy destination drive is not available and the copy process is aborted. The following morning, you plug the drive back in to the computer. Veritas System Recovery detects the presence of the offsite copy destination drive and automatically begins copying your recovery points.

Offsite Copy is designed to use very few system resources so that the copying process is done in the background. This feature lets you continue to work at your computer with little or no effect on system resources.

If an offsite copy destination runs out of disk space, **Offsite Copy** identifies the oldest recovery points and removes them to accommodate the most current recovery points. **Offsite Copy** then copies the current recovery points to the offsite copy destination.

Using external drives as your Offsite Copy destination

You can use an external drive as your offsite copy destination. This method lets you take a copy of your data with you when you leave the office. By using two

external hard disks, you can be certain that you have a recent copy of your data both on site and off site.

For example, suppose on a Monday morning you define a new backup job of your system drive. You choose a recovery point set as your backup job type. You set up an external drive (A) as the first offsite copy destination, and another external drive (B) as the second offsite copy destination. You schedule the backup job to run every midnight except on the weekends. You also enable recovery point encryption to protect the data from unauthorized access.

Before you leave the office on Monday evening, you plug in drive A and take drive B home with you.
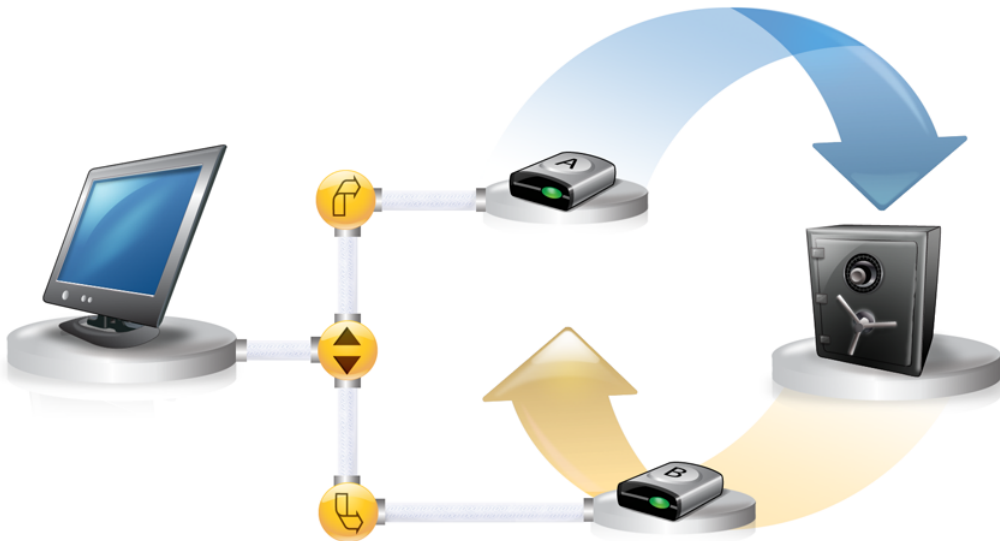
On Tuesday morning, you find that Monday's base recovery point has been successfully copied to drive A. At the end of the day, you unplug drive A and take it home for safekeeping.

On Wednesday morning, you bring drive B to the office. You plug in drive B and Veritas System Recovery detects that drive B is an offsite copy destination. Veritas System Recovery then automatically begins copying Monday night's base recovery point and Tuesday night's incremental recovery point. At the end of the day Wednesday, you take drive B home and place it in a safe place with drive A.

You now have multiple copies of recovery points stored at two separate, physical locations; your original recovery points stored on your backup destinations at the office, and copies of those same recovery points stored on your offsite copy

destination drives. Your offsite copy destination drives are stored in a safe place at your home.

The next morning, Thursday, you take drive A to the office and plug it in. Tuesday and Wednesday night's recovery points are then automatically copied to drive A.

Note: Consider using the external drive naming feature that lets you provide a unique name to each drive. Then place matching physical labels on each external drive to help you manage the task of swapping the drives.

See "Removing or changing the unique name for an external drive" on page 99.

Each time you plug in either drive A or B, the latest recovery points are added to the drive. This method gives you multiple points in time for recovering your computer in the event that the original backup destination drives fail or become unrecoverable.

Using external drives as your offsite copy destination ensures that you have a copy of your backup data stored at two separate, physical locations.

Using a network server as your Offsite Copy destination

You can specify a local area network server as an offsite copy destination. You must be able to access the server that you plan to use. You must either map a local drive to the server, or provide a valid UNC path.

For example, suppose that you set up a local external drive as your first offsite copy destination. Then you identify a server that is located at a second physical location from your own office. You add the remote server as a second offsite copy destination. As backups occur, recovery points are copied first to the external hard drive, and then to the remote server.

If the remote server becomes unavailable for a period of time, **Offsite Copy** copies all recovery points that were created since the last connection. If there is no room to hold all of the recovery points that are available, **Offsite Copy** removes the oldest recovery points from the network server. In turn, it makes room for the newest recovery points.
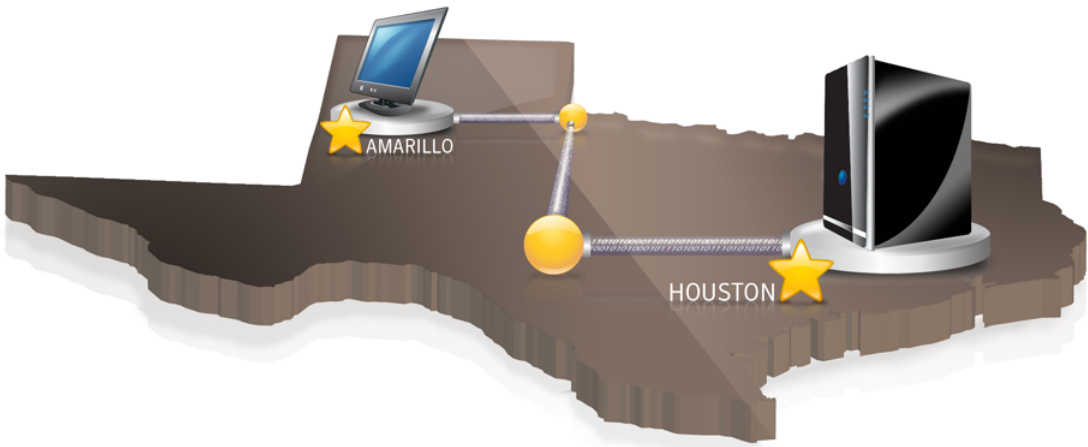
Using an FTP server as your Offsite Copy destination

Using an FTP server as your offsite copy destination is similar to using a network path. You must provide a valid FTP path to the FTP server.

You must also provide the correct FTP connection information to Veritas System Recovery for this method to work correctly. When **Offsite Copy** is configured correctly, it copies recovery points to the directory that you specified on the FTP server. If the server becomes unavailable for a period of time, **Offsite Copy** copies all recovery points that were created since the last connection. If there is no room to hold all of the recovery points that are available, **Offsite Copy** removes the oldest recovery points or recovery point sets from the FTP server. In turn, it makes room for the newest recovery points.

Backing up files and folders

This chapter includes the following topics:

- Backing up files and folders

Backing up files and folders

You can back up specific files and folders you want to protect. When you run this type of backup, copies are made of the files and folders you chose to back up. The files are converted into a compressed format. They are then stored in a subfolder at the location you specify. By default this location is the same backup destination that is used for storing recovery points.

The following folders and their contents are excluded by default from file and folder backups:

- Windows folder
- Program files folder
- Temporary folder
- Temporary Internet Files folder

These folders are typically not used for storing personal files or folders. The folders are backed up when you define and run a drive-based backup of your system drive (typically C).

If you want, you can choose to include these folders when you define the backup.

Note: The file and folder backup is intended for less than 10,000 files. If the data to be backed up exceeds this amount, Veritas strongly recommends to use the drive-based backup.

See "Defining a drive-based backup" on page 120.

To back up files and folders

1   On the **Tasks** menu, click **Run or Manage Backups**.

2   In the **Run or Manage Backups** window, click **Define New**.

    If you have not yet defined a backup, the **Easy Setup** dialog box appears.

3   Select **Back up selected files and folders**, and then click **Next**.

4 On the **Select Files and Folders to Back Up** panel, select the files and folders that you want to include in your backup.

Select Files and Folders to Back Up options

Select All	Selects all check boxes in the **Types and Folders** column. Selected data types and folders are backed up.
Select None	Deselects all check boxes in the **Types and Folders** column. Deselected data types and folders are not backed up.
Add Folder	Lets you specify additional folders to back up.
Add File	Lets you specify additional files to back up.
Add File Type	Lets you specify additional data file types to back up.
Edit	Lets you edit the options, settings, or properties for a selected data type name or folder name in the tables list.
Remove	Lets you remove from the tables list a selected data type name or folder name that you have added.
	Default data types and folders are not removable from the tables list.

Add Folder options

Folder to back up	Lets you specify the path to a folder that you want to back up.
Browse	Lets you browse to a path that contains a folder that you want to back up.
Subfolders	Indicates that you want to back up all subfolders under the parent folder.
All files	Indicates that you want to back up all files in all subfolders.
Only files of type	Lets you specify the data file types that you want to back up.

Add File Type options

Name	Specifies the name of a data file type and folder. The name is added to the table list in the **Select Files and Folder to Back Up** panel.
Add an extension	Adds a specific data type file extension that you want to back up.
Remove an extension	Deletes a specific data type file extension from the list.
Rename an extension	Renames a specific data type file extension that you added to the list.
Restore default extension list	Restores the default file extensions that were added to the predefined list of types and folders in the **Select Files and Folder to Back Up** panel.

Note: On all versions of Windows, the My Documents folder contains two subfolders by default: My Pictures and My Music. These folders contain only the shortcuts to folders at another location and not the actual files.

If you intend to back up your pictures and music files, be sure to include the actual folders where your files are stored.

5 Click **Next**.

6 In the **Name and Destination** panel, enter a backup name and destination, and then click **Next**.

Name	Indicates the name for the new backup.
Description (optional)	Lets you type a description for the new backup.
Advanced	Adds the security options to the recovery point.
Backup destination	Indicates the default backup location. Or, you can specify your own local or network path for the recovery point files.
	Veritas recommends that you create permissions for the backup destination to prevent unauthorized access to any data contained in the recovery points. For more information, refer to the following link:
	https://technet.microsoft.com/en-us/library/cc732880(v=ws.11).aspx

Browse	Lets you browse to locate a folder for storing your backup data.
	You cannot use an encrypted folder as your backup destination. If you want to encrypt your backup data to prevent another user from accessing it, you can use the **Advanced** option.
User name	Specifies the user name if you back up to a folder that is located in a network path.
Password	Specifies the password to a network path.

Advanced Options for a file and folder backup

Exclude	Lets you deselect any of the following folders that you do not want to include in the backup:
	Windows folder **Program Files folder** **Temporary folder** **Temporary Internet Files folder** **Save backup files to a unique subfolder**
	The folders that are listed are typically not used for storing personal files or folders. Therefore, they are all selected for backup exclusion by default. These folders are backed up when you define and run a drive-based backup of your system drive (typically C).
	See

7 Click **Next**

8 In the **Backup Time** panel, select the scheduling options you want.

Note: Ensure that the time for running a base backup and an incremental backup is not the same.

Backup Time options

Schedule	Indicates whether a schedule is enabled for the backup .
Default	Lets you use the default backup schedule.
Start time	Specifies the start time of the backup.
Sun Mon Tue Wed Thu Fri Sat	Lets you select the days of the week that you want the backup to run.
Advanced	Runs the backup more than once per day at a set number of times. You can also specify the amount of time that should lapse between backups.
Select event triggers	Lets you select the types of events that automatically start a backup.

Change Schedule - File Backup Scheduling options

Schedule	Lets you select the days and a start time for when you want to back up files and folders.
Run more than once per day	Runs the backup more than once a day to protect the data that you edit or change frequently.
Time between backups	Specifies the maximum time that should occur between file and folder backups.
Number of times	Specifies the number of times per day file and folder backups should run.

Change Schedule - File Backup event trigger options

General	Lets you select the types of events that automatically start a backup, such as when you log off from the computer.

9 In the **Security Options** panel, set the password, select the encryption for the file and folder backup, and then click **Next**.

Use password	Sets a password and enables AES encryption on the recovery point when it is created.
	This check box is selected by default.
Password	Lets you specify a password for the backup. Passwords can include standard characters. Passwords cannot include extended characters, or symbols. (Use characters with an ASCII value of 128 or lower.)
	You must type this password before you restore a backup or view the contents of the recovery point.
Confirm password	Lets you retype the password for confirmation.
AES encryption	Encrypts recovery point data to add another level of protection to your recovery points.
	If you upgrade from a previous version to Veritas System Recovery 18, for older backup jobs where only password protection is defined, you need to edit the jobs to select the AES encryption level. If you do not edit the older backup jobs, they continue to run without AES Encryption. Veritas recommends that you edit the job and select AES encryption level.
	Note: If the **Use Password** check box is selected, you must define AES encryption.
	Choose from the following encryption levels:
	■ **Standard 128-bit (8+ character password)**
	■ **Medium 192-bit (16+ character password)**
	■ **High 256-bit (32+ character password)**
	See "Recovery point encryption" on page 139.

10 In the **Completing the Define Backup Wizard** panel, review the backup options you have selected.

11 To review the total number and size of files to be included in the backup, click
Preview.

Note: Depending on the amount of data you have identified for file and folder
backup, the preview process can take several minutes.

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12 If you want to run the backup immediately, click **Run backup now**, then click
Finish.

Running and managing backup jobs

This chapter includes the following topics:

Running an existing backup job immediately

If you have a backup job already defined, you can use **Run Backup Now** to make a recovery point immediately. This feature is sometimes useful if you are about to install a software program. Or, maybe you have modified a large number of files and you do not want to wait for a regularly scheduled backup.

You can run an existing backup job at any time.

To run an existing backup immediately from the notification area

1   On the Windows desktop, right-click the Veritas System Recovery notification area icon.

2   Click **Run Backup Now**.

3   Click a backup job to start the backup.

If the menu displays **No Jobs**, you must start Veritas System Recovery and define a backup.

To run an existing backup immediately from within Veritas System Recovery

1   On the **Tasks** menu, click **Run or Manage Backups**.

2   Select a backup from the list, and then click **Run Now**.

See "Running a one-time backup from Veritas System Recovery" on page 141.

See "Enabling event-triggered backups" on page 173.

See "Editing a backup schedule" on page 176.

Running a backup to create an alternate type of recovery point

You can use **Run Backup With Options** to run an existing drive-based backup but create an alternate type of recovery point.

Note: Using this option does not change the original settings of the defined backup. To do that, you must open the backup and edit its settings manually.

To run a backup with options

1   On the **Tasks** menu, click **Run or Manage Backups**.

2   In the **Run or Manage Backups** window, select the drive-based backup job that you want to run.

3   On the **Tasks** menu, click **Run Backup With Options**.

4 On the **Run Backup With Options** panel, select the appropriate options.

Note: Depending on the current state of the backup, one or more options might be disabled. For example, if you have not yet run the backup, you cannot select **Incremental recovery point of recent changes** because the base recovery point is not yet created.

Incremental recovery point of recent changes	Creates a backup that includes the changes that were made to the drive since the last backup. This option is available only if a base recovery point exists.
New recovery point set	Starts a completely new recovery point set and creates a base recovery point.
Independent recovery point	Creates an independent recovery point, which is a complete snapshot of your entire drive. After you select this option, you must enter a backup location.
Folder	Indicates the location where you want to store the recovery point.
Browse	Lets you browse to locate a backup destination that you want to use.
Browse for OpenStorage Destination	Lets you browse to select a cloud storage destination that you want to use for backups. See " OpenStorage destination options for backups" on page 263.
Description Details	Displays the type of destination path. If you add a network path it also displays the user name.
Edit	Lets you enter the user name and password for access to the network that is specified in the **Folder** field. This option is available only if you selected a backup destination that is on a network. Or, if you want to save the recovery point on a network share. See "Rules for network credentials" on page 134.

5 Click **OK** to run the backup job and create the recovery point type you selected.

See "Editing a backup schedule" on page 176.

See "Editing backup settings" on page 173.

Adjusting the speed of a backup

Depending on your computer's speed, amount of installed RAM, and the number of programs you run during a backup, your computer can become sluggish.

You can manually adjust the effect of a backup on the performance of your computer to match your needs at the moment. This feature is useful while you work on your computer and do not want the backup process to slow you down.

To adjust the speed of a backup

1 While a backup is running, on the **View** menu, click **Progress and Performance**.

2 Do one of the following:

- If you want to increase the speed of your computer by reducing the speed of the backup, drag the slider toward **Slow**.

- If you want the backup to complete quickly, and you have minimal work to do on your computer, drag the slider toward **Fast**.

3 When you are finished, click **Hide** to dismiss the **Progress and Performance** dialog box.

See "Defining a drive-based backup" on page 120.

See "Editing backup settings" on page 173.

Stopping a backup or a recovery task

You can stop a backup or a recovery task that has already started.

To stop a backup or a recovery task

◆ Do one of the following:

- If the Progress and Performance dialog box is displayed, click **Cancel Operation**.

- If the Progress and Performance dialog box is hidden, on the **View** menu, click **Progress and Performance**, and then click **Cancel Operation**.

■ If the **Progress and Performance** dialog box is hidden, on the Windows system tray, right-click the Veritas System Recovery tray icon. Click **Cancel Current Operation**.

See "Defining a drive-based backup" on page 120.

See "Editing backup settings" on page 173.

Verifying that a backup is successful

After a backup completes, you can validate the success of the backup to ensure that you have a way to recover lost or damaged data.

The **Status** page contains a scrolling calendar that is aligned with each drive on your computer. The calendar lets you quickly identify when a backup ran, and what type of backup it was. It also identifies upcoming, scheduled backups.

See "Icons on the Status page" on page 200.

Note: When you define a drive-based backup, you should select the option to verify the recovery point after it is created.

Depending on the amount of data being backed up, this verification can significantly increase the time it takes to complete the backup. However, it can ensure that you have a valid recovery point when the backup finishes.

See "Verifying the integrity of a recovery point" on page 137.

To verify that a backup is successful

1 On the **Status** page, review the Backups calendar, and verify that the backup appears on the date that you ran it.

2 Move your mouse over a backup icon to review the status of the backup.

See "Defining a drive-based backup" on page 120.

See "Editing backup settings" on page 173.

Viewing the properties of a backup job

You can review the settings and configuration of a defined backup without opening the backup job.

To view the properties of a backup job

1   On the **Home** page, click **Run or Manage Backups**.

2   In the **Run or Manage Backups** window, select a backup job and then click **Tasks > Properties**.

See "Running an existing backup job immediately" on page 168.

See "Running a backup to create an alternate type of recovery point" on page 169.

See "Editing backup settings" on page 173.

Editing backup settings

You can edit the settings of an existing backup. The **Edit Settings** feature gives you access to several of the key pages of the **Define Backup Wizard**. You can edit every setting except the option to change the recovery point type.

To edit backup settings

1   On the **Tasks** menu, click **Run or Manage Backups**.

2   Select a backup to edit.

3   On the **Run or Manage Backups** toolbar, click **Edit Settings**.

4   Make changes to the backup.

See "Defining a drive-based backup" on page 120.

See "Enabling event-triggered backups" on page 173.

Enabling event-triggered backups

Veritas System Recovery can detect certain events and run a backup when they occur.

For example, when you install new software, a backup can run when it detects that new software is about to be installed. If a problem occurs that harms your computer, you can use this recovery point to restore your computer to its previous state.

You can configure Veritas System Recovery to automatically run a backup when the following events occur:

- Any application is installed or uninstalled.

- A specified application is started.

- Any user logs on or off of the computer.

- The data that was added to a drive exceeds a specified number of megabytes.

This option is unavailable for backing up files and folders.

To enable event-triggered backups

1   On the **Tasks** menu, click **Run or Manage Backups**.

2   Select the backup you want to edit, and then click **Change Schedule**.

3   Under **Event Triggers**, click **General**.

4 Select the events you want to be detected.

Event Triggers - General options

Any application is installed or uninstall	Creates a backup at the time you initiate an install or uninstall of a software application.
Specific applications are launched	Creates a backup when you start a software application.
Application	Lets you specify the software applications that can trigger a backup when you start them.
Any user logs on to the computer	Creates a backup when a user logs on to the computer.
Any user logs off to the computer	Creates a backup when a user logs off from the computer.
Data added to the drive exceeds	Creates a backup when the amount of data that is added to the hard disk exceeds a specified number of megabytes.

Trigger Application options

Application	Identifies the name of the software application's executable file (.exe, .com).
Browse	Lets you browse to a software application.
Applications that trigger a backup	Lists the software applications that can trigger a backup when you start them.
Add	Adds the software application to the list box.
Remove	Removes the software application from the list box.

5 Click **OK**.

See "Defining a drive-based backup" on page 120.

See "Editing backup settings" on page 173.

Editing a backup schedule

You can edit any of the schedule properties for a defined backup to adjust the date and time.

To edit a backup schedule

1   On the **Tasks** menu, click **Run or Manage Backups**.

2   Select a backup to edit.

3   On the toolbar, click **Change Schedule**.

4 Make changes to the schedule.

Backup Time options for a recovery point set

Schedule	Runs the backup automatically according to a specified start time and the selected days of the week.
Default	Lets you use the default backup time schedule.
Advanced	Sets advanced scheduling options, such as setting up event triggers that start the backup in response to specific events.
Run more than once per day	Sets the time between backups and the number of times to back up.
Start a new recovery point set (base)	Starts a new recovery point set (base) weekly, monthly, quarterly, or yearly.
Custom	(Optional) Indicates how frequently a new recovery point set should be started.
	For example, if you select **Monthly**, a new base recovery point is created the first time the backup runs during each new month.
Select event triggers	Lets you select events that automatically create a recovery point.
Details	Shows you information about the backup time option you have selected or specified.

Backup Time options for an independent recovery point

No Schedule	Runs the backup only when you run it yourself, manually.
Weekly	Runs the backup at the time and on the days of the week that you specify.
	When you select this option, the **Select the days of the week to protect** dialog box appears.
Monthly	Runs the backup at the time and on the days of the month that you specify.
	When you select this option, the **Select the days of the month to protect** dialog box appears.

Only run once	Runs the backup one time on the date and at the time you specify.
	When you select this option, the **Create a single recovery point** dialog box appears.
Details	Indicates information about the backup time option you have selected or specified.

5 Click **OK**.

See "Enabling event-triggered backups" on page 173.

Disabling or enabling a backup job

You can turn off a backup and turn it on later. When you turn off a backup, it does not run according to its defined schedule, if it has one. When a backup is turned off, triggered events do not run the backup, nor can you manually run the backup.

You can also delete a defined backup (not recovery points).

To turn off a backup job

1 On the **Tasks** menu, click **Run or Manage Backups**.

2 Select the backup that you want to turn off.

3 On the **Run or Manager Backups** dialog box, on the **Tasks** menu, click **Disable Backup**.

Repeat this procedure to turn on the backup. The **Disable Backup** menu item changes to **Enable Backup** when you disable the selected backup.

See "Deleting backup jobs" on page 178.

Deleting backup jobs

You can delete backup jobs when they are no longer needed.

Deleting a backup job does not delete the recovery points or backed up file and folder data from the storage location. Only the backup job is deleted.

To delete backup jobs

1 On the **Tasks** menu, click **Run or Manage Backups**.

2 Select one or more backup names.

3 On the toolbar, click **Remove**.

4 Click **Yes**.

Adding users who can back up your computer

You can use the **Security Configuration Tool** to control which users on your computer can access and configure key features of Veritas System Recovery.

For example, all users with Limited Windows accounts can run existing backup jobs, but they cannot create new jobs or edit existing jobs. Using the **Security Configuration Tool**, you can grant administrative privileges to a Limited user account. When you do, that user has full access to Veritas System Recovery and can create, edit, delete, and run backup jobs.

Note: By default, all users can run existing backup jobs. But only users with administrative accounts can create, edit, or delete backup jobs.

To add or users who can back up a computer

1   On the Windows taskbar, click **Start > Programs > Veritas System Recovery > Security Configuration Tool**.

2   Click **Add**.

3   In **Enter the object names to select** field, type the names of the users or groups you want to add.

4   Click **OK**.

5   Click **OK** to apply your changes and close the **Security Configuration Tool**.

Configuring access rights for users or groups

You can use the **Security Configuration Tool** to give users or groups certain access rights to the features of Veritas System Recovery.

To configure access rights for users or groups

1   On the Windows taskbar, click **Start > Programs > Veritas System Recovery > Security Configuration Tool**.

On Windows 7, click **Start > All Programs > Veritas System Recovery > Security Configuration Tool**.

2   In **Group or user names**, select a user or group.

3 Choose from the following options:

Permissions	Allow	Deny
Full Control	Gives a user or a group access to all of the features of Veritas System Recovery. Allows a user and group to create, edit, and delete backup jobs, including existing jobs.	Lets the selected user or group run existing backup jobs. Prevents the selected user or group from creating, editing, or deleting backup jobs.
Status Only	Lets the selected user or group run existing backup jobs. Prevents the selected user or group from creating, editing, or deleting backup jobs.	Prevents the selected user or group from accessing any of the features of Veritas System Recovery.

4 Click **OK** to apply your changes and close the **Security Configuration Tool**.

See "Adding users who can back up your computer" on page 179.

Backing up remote computers from your computer

This chapter includes the following topics:

- About backing up other computers from your computer
- About the Veritas System Recovery Agent
- About deploying the Veritas System Recovery Agent
- Best practices for Veritas System Recovery services
- Viewing Veritas System Recovery Agent dependencies
- About controlling access to Veritas System Recovery

About backing up other computers from your computer

Veritas System Recovery lets you connect to a second computer and back it up on your home or your office network. You can manage as many computers as needed, but you can only manage one computer at a time.

Note: You must purchase a separate license for each computer you want to manage. You can deploy the agent without a license for a 60-day evaluation. After that time, you must purchase and install the license to continue managing the remote computer. Visit the following website:

http://veritas.force.com/public

First, you add a computer's name or IP address to the Computer List. Then, you deploy the Veritas System Recovery Agent to the remote computer. After the agent is installed, the computer automatically restarts. After the computer restarts, you can then connect to the computer. The Veritas System Recovery product interface changes to reflect the status of the remote computer. At any time, you can switch back to manage your local computer.

See "Adding remote computers to the Computer List" on page 182.

See "Adding local computers to the Computer List" on page 183.

See "Removing a computer from the Computer List" on page 183.

Adding remote computers to the Computer List

Before you can back up drives on a remote computer, you must first add the computer to the **Computer List**. You can then quickly switch between your local computer and any other computer on the list.

To add remote computers to the Computer List

1   On the **Computers** menu, click **Add**.

2   Do one of the following:

- ■   Type the name of the computer

- ■   Type the IP address of the computer
  If you are in a workgroup environment instead of a domain you must manually specify the computer name for the computer you want to manage. You can do so by browsing to it using the **Browse** option.

- ■   Click **Browse** to search for the name or IP address of the computer

3   Click **OK** to add the computer to the **Computer List**.

See "About backing up other computers from your computer" on page 181.

See "Adding local computers to the Computer List" on page 183.

See "Removing a computer from the Computer List" on page 183.

Adding local computers to the Computer List

Before you can back up drives on a local computer, you must first add the computer to the **Computer List**. You can then quickly switch between your local computer and any other computer on the list.

To add a local computer to the Computer List

1   On the **Computers** menu, click **Add Local Computer**.

2   Click **OK**.

Removing a computer from the Computer List

You can remove local or remote computers from the **Computer List**.

Removing a computer from the **Computer List** does not uninstall the agent from the computer. You must run your operating system's uninstall program instead.

To remove a computer from the Computer List

1   On the **Computers** menu, click **Edit List**.

2   Select the remote or the local computer that you want to remove, and then click the minus sign (–).

3   Click **OK**

About the Veritas System Recovery Agent

The Veritas System Recovery Agent is the unseen "engine" that does the actual backing up and restoring of data on a remote computer. Because the Veritas System Recovery Agent functions as a service, it does not have a graphical user interface.

The Veritas System Recovery Agent does, however, have a tray icon.available from the Windows notification area. The icon provides feedback of current conditions and lets you perform common tasks. For example, you can view backup jobs,

reconnect the Veritas System Recovery Agent, or cancel a task that is currently running.

You can install the agent manually by visiting each computer you want to protect and installing the agent from the product DVD. A more efficient method, however, is to use the Veritas System Recovery Deploy Agent feature. You can remotely install the agent on a computer in the domain whose data you want to protect.

See "About managing the Veritas System Recovery Agent through Windows Services" on page 184.

See "About controlling access to Veritas System Recovery " on page 194.

Using the Veritas System Recovery Agent

You can use the Veritas System Recovery tray icon in the Windows notification area to quickly access a variety of useful tasks.

To use the Veritas System Recovery Agent

◆ On the Windows notification area, do one of the following:

- Right-click the Veritas System Recovery tray icon, and then click **Reconnect** to restart the service automatically.
  You cannot run a backup until the service is running.

- If Veritas System Recovery is installed on the computer, double-click the Veritas System Recovery tray icon to start the program.
  If only the agent is installed, double-clicking the tray icon only displays an About dialog box.

- If the computer has the software installed, right-click the Veritas System Recovery tray icon to display a menu of common agent tasks.

See "About the Veritas System Recovery Agent " on page 183.

See "About managing the Veritas System Recovery Agent through Windows Services" on page 184.

About managing the Veritas System Recovery Agent through Windows Services

The Veritas System Recovery Agent is a Windows service that runs in the background.

It provides the following:

- The ability to locally run scheduled backup jobs, even when there are no or unauthorized users that are logged on to the computer.

- The ability to allow administrators to remotely back up computers throughout an enterprise from Veritas System Recovery running on another computer.

See "Using the Veritas System Recovery Agent" on page 184.

To use the features of Veritas System Recovery, the Veritas System Recovery Agent must be started and properly configured. You can use the Windows Services tool to manage and troubleshoot the agent.

Note: To manage the Veritas System Recovery Agent, you must be logged on as a local administrator.

You can manage the Veritas System Recovery Agent in the following ways:

- Start, stop, or disable the Veritas System Recovery Agent on local and remote computers.

  See "Starting or stopping the Veritas System Recovery Agent service" on page 190.

- Configure the user name and password that the Veritas System Recovery Agent uses.

  See "About controlling access to Veritas System Recovery " on page 194.

- Set up recovery actions to take place if the Veritas System Recovery Agent fails to start.

  For example, you can restart the Veritas System Recovery Agent automatically or restart the computer.

  See "Setting up recovery actions when the Veritas System Recovery Agent does not start" on page 192.

About deploying the Veritas System Recovery Agent

You can deploy the Veritas System Recovery Agent to the computers that are on the **Computer List** by using the Agent Deployment feature. After you install the agent, you can create backup jobs directly from Veritas System Recovery.

See "About backing up other computers from your computer" on page 181.

If you deselected the Agent Deployment option during installation, this feature is not available. You can run the installation again, and select the **Modify** option to add this feature back in.

Your computer must meet the minimum memory requirement to run the **Recover My Computer** wizard or the **Recovery Point Browser** in Veritas System Recovery Disk.

If you install a multilingual version of the product, you must have a minimum of 1 GB of RAM to run Veritas System Recovery Disk.

If your computers are set up in a workgroup environment, you should prepare your local computer before you deploy an agent.

See "Preparing a computer in a workgroup environment to deploy the Veritas System Recovery Agent" on page 186.

See "Deploying the Veritas System Recovery Agent" on page 187.

See "Manually installing the Veritas System Recovery Agent" on page 187.

Preparing a computer in a workgroup environment to deploy the Veritas System Recovery Agent

You must complete certain steps in Windows to prepare a computer in a workgroup environment to deploy the Veritas System Recovery Agent.

To prepare a computer in a workgroup environment to deploy the agent

1   On the Windows taskbar, right-click **Start**, and then click **Explore**.

2   On the **Tools** menu, click **Folder Options > View**.

3   On the **View** tab, scroll to the end of the list and verify that the **Use simple file sharing** check box is not selected, and then click **OK**.

4   On the Windows Control Panel, click **Windows Firewall**.

    You may need to also click **Change Settings** if you are running Windows Server 2008.

5   On the **Exceptions** tab, select **File and Printer Sharing**, and then click **OK**.

Note: You should close any open applications before you continue with the agent installation. If the **Reboot** check box is selected, the computer automatically restarts at the end of the installation wizard.

See "About deploying the Veritas System Recovery Agent" on page 185.

See "Deploying the Veritas System Recovery Agent" on page 187.

See "Manually installing the Veritas System Recovery Agent" on page 187.

Deploying the Veritas System Recovery Agent

You can deploy the Veritas System Recovery Agent to local or to remote computers.

To deploy the Veritas System Recovery Agent

1   Ensure that you have completed the steps to prepare the computer to deploy the Veritas System Recovery agent.

See "Preparing a computer in a workgroup environment to deploy the Veritas System Recovery Agent" on page 186.

2   On the Veritas System Recovery menu bar, click **Computers** > select a computer from the menu.

You must have administrator rights on the computer to which you install the agent.

3   Click **Deploy Agent**.

4   In the **Deploy Veritas System Recovery Agent** dialog box, specify the administrator user name (or a user name that has administrator rights) and the password.

In a workgroup environment, you must specify the remote computer name. You cannot use an IP address, even if you have successfully connected to the computer by using an IP address.

For example, type *RemoteComputerName\UserName*

5   If you want to restart the computer when the agent installation is finished, click **Reboot when finished**.

Note: The computer cannot be backed up until the computer is restarted. However, be sure to warn the user of the impending reboot so that they can save their work.

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6   Click **OK**.

See "About deploying the Veritas System Recovery Agent" on page 185.

See "Manually installing the Veritas System Recovery Agent" on page 187.

Manually installing the Veritas System Recovery Agent

You can manually install the Veritas System Recovery Agent to local or to remote computers.

To manually install the Veritas System Recovery Agent

1   Ensure that you have completed the steps to prepare the computer to deploy
the Veritas System Recovery agent.

See "Preparing a computer in a workgroup environment to deploy the Veritas
System Recovery Agent" on page 186.

2   Insert the Veritas System Recovery product DVD into the media drive of the
computer.

The installation program should start automatically.

If the installation program does not start, on the Windows taskbar, click **Start
> Run**, type the following command, then click **OK**.

```
<drive>:\browser.exe
```

where <drive> is the drive letter of your media drive.

3   In the **DVD browser** panel, click **Install Veritas System Recovery**.

4   In the **Welcome** panel, click **Next**.

5   Read the license agreement, click **I accept the terms in the license
agreement**, and then click **Next**.

6   If you want to change the default location for the program files, click **Change**.
Then locate the folder in which you want to install the agent, and then click
OK.

7   Click **Next**.

8   Click **Custom**, and then click **Next**.

9   Click **Veritas System Recovery Service**, and then click **This feature will be
installed on local hard drive**.

This feature is the agent.

10 Set all other features to **This feature will not be installed**.

11 Click **Next**, and then click **Install**.

See "About deploying the Veritas System Recovery Agent" on page 185.

See "Deploying the Veritas System Recovery Agent" on page 187.

See "Manually installing the Veritas System Recovery Agent" on page 187.

Best practices for Veritas System Recovery services

The following table describes some best practices for using Veritas System Recovery services.

Table 9-1   Best practices for using Veritas System Recovery services

Best practice	Description
Check the **Events** tab first before using Services.	The **Events** tab in the **Advanced** view can help you to track down the source of a problem. Particularly when it is associated with the Veritas System Recovery Agent. You should view the most recent log entries in the **Events** tab for more information about the potential causes of the problem.
Verify that the Veritas System Recovery Agent starts without user intervention.	The Veritas System Recovery Agent is configured to start automatically when Veritas System Recovery starts. You can view the status information to verify that the Veritas System Recovery Agent has started. The status area in the **Task** pane displays a **Ready** status message when the agent starts.
	You can also test that the Veritas System Recovery Agent starts automatically by looking in Services. You can check the status and restart the service if necessary. If the **Startup type** is set to automatic, you should restart the agent.
	See "Starting or stopping the Veritas System Recovery Agent service" on page 190.

Table 9-1   Best practices for using Veritas System Recovery services
(continued)

Best practice	Description
Use caution when changing default settings for the Veritas System Recovery Agent.	Changing the default Veritas System Recovery Agent properties can prevent Veritas System Recovery from running correctly. You should use caution when changing the default **Startup type** and **Log On** settings of the Veritas System Recovery Agent. It is configured to start and log on automatically when you start Veritas System Recovery .

Opening Windows services

You can use several methods to open Windows services to manage the Veritas System Recovery Agent.

To open Windows services

1   Do one of the following:

- On the Windows **Control Panel**, click **Administrative Tools > Services**.

- On the Windows taskbar, click **Start > Run**.
  In the Open text field, type **services.msc**, and then click **OK**.

2   Under the **Name** column, scroll through the list of services until you see Veritas System Recovery (the name of the agent).

Its status should be **Started**.

Starting or stopping the Veritas System Recovery Agent service

To start, stop, or restart the Veritas System Recovery Agent service, you must be logged on as an administrator. (If your computer is connected to a network, network policy settings might prevent you from completing these tasks.)

You might need to start, stop, or restart the Veritas System Recovery Agent service for the following reasons:

Table 9-2   Starting ot stopping the Veritas System Recovery Agent service

Action	Description
Start or Restart	You should start or restart the agent if Veritas System Recovery is unable to connect to it on a computer. Or, you cannot reconnect from Veritas System Recovery.
Restart	You should restart the agent. This restart is necessary if you changed the user name or password that you use to log on to the agent service. You should also restart the agent after you have used the Security Configuration Tool to give additional users the ability to back up computers. See "About controlling access to Veritas System Recovery " on page 194.
Stop	You can stop the agent if you believe that it causes a problem on the computer, or if you want to temporarily free memory resources. If you stop the agent, you also prevent all of your drive-based backups and file and folder backups from running.

If you stop the Veritas System Recovery Agent service and then start Veritas System Recovery, the agent restarts automatically. The Status changes to Ready.

If you stop the Veritas System Recovery Agent service while the software runs, you receive an error message. Veritas System Recovery is disconnected from the agent. In most cases, you can click **Reconnect** from the **Task** pane or from the Tray icon to restart the Veritas System Recovery Agent.

To start or stop the Veritas System Recovery Agent service

1   On the Windows taskbar, click **Start > Run**.

2   In the **Run** window, type **services.msc**

3   Click **OK**.

4   In the **Services** window, in the **Name** column, click **Veritas System Recovery**.

5   On the **Action** menu, select one of the following:

   ■ **Start**

   ■ **Stop**

   ■ **Restart**

See "Setting up recovery actions when the Veritas System Recovery Agent does not start" on page 192.

Setting up recovery actions when the Veritas System Recovery Agent does not start

You can specify the computer's response if the Veritas System Recovery Agent fails to start.

To set up recovery actions when the Veritas System Recovery Agent does not start

1   On the Windows taskbar, click **Start > Run**.

2   In the **Run** window, type **services.msc**

3   Click **OK**.

4   In the **Services** window, on the **Action** menu, click **Properties**.

5   On the **Recovery** tab, in the **First failure, Second failure, and Subsequent failures** lists, select the action that you want:

Restart the Service	Specify the number of minutes before an attempt to restart the service is made.
Run a Program	Specify a program to run. You should not specify any programs or scripts that require user input.
Restart the Computer	Click **Restart Computer Options**, and then specify how long to wait before restarting the computer. You can also create a message that you want to display to remote users before the computer restarts.

6   In the **Reset fail count after** box, specify the number of days that the agent must run successfully before the fail count is reset.

When the fail count is reset to zero, the next failure triggers the action that is set for the first recovery attempt.

7   Click **OK**.

See "Starting or stopping the Veritas System Recovery Agent service" on page 190.

Viewing Veritas System Recovery Agent dependencies

The Veritas System Recovery Agent depends on other required services to run properly. If a system component is stopped or is not running properly, the dependent services can be affected.

If the Veritas System Recovery Agent fails to start, check the dependencies. Check to ensure that they are installed and that their **Startup** type is not set to **Disabled**.

Note: To view the **Startup** type setting for each of the interdependent services, you must select one service at a time. Then click **Action > Properties > General**.

The top list box on the **Dependencies** tab displays services the Veritas System Recovery Agent requires to run properly. The bottom list box does not have any services that need the Veritas System Recovery Agent to run properly.

The following table lists the services the Veritas System Recovery Agent requires to run properly, along with their default startup setting.

Table 9-3   Required services

Service	Startup type
Event log	Automatic
Plug and play	Automatic
Remote procedure call (RPC)	Automatic

To view Veritas System Recovery Agent dependencies

1   On the Windows taskbar, click **Start > Run**.

2   In the **Run** window, type **services.msc**.

3   Click **OK**.

4   In the **Services** window, under **Name**, click **Veritas System Recovery**.

5   On the **Action** menu, click **Properties**.

6   Click the **Dependencies** tab.

About controlling access to Veritas System Recovery

You can use the **Security Configuration Tool** to grant the necessary permissions to access the agent, or the full Veritas System Recovery user interface.

When you use the **Security Configuration Tool**, any permission that you grant to the Users group applies to the members within that group.

Note: The agent service can only be run as LocalSystem or by a user who belongs to the Administrator's group.

The following table describes the permissions that can be allowed or denied for user and groups who use the Veritas System Recovery Agent.

Table 9-4   Permission options

Option	Description
Full Control	Gives the user or the group complete access to all Veritas System Recovery functionality as if they are the administrator. If you do not want users to define, change, or delete backups, or to manage recovery point storage, do not give them Full Control.
Status Only	Users or groups can get status information, and can run a backup job. But they cannot define, change, or delete any backup jobs, or use any other function of the product.
Deny	Users cannot perform any function, or see any information. They are blocked from any access to Veritas System Recovery.

A deny setting takes precedence over an inherited allow setting. For example, a user who is a member of two groups is denied permissions if the settings for one of the groups denies permissions. User-denied permissions override group-allow permissions.

See "Enabling users or groups to access Veritas System Recovery" on page 195.

See "Changing permissions for a user or a group" on page 195.

See "Disabling access for users or groups to Veritas System Recovery" on page 196.

See "Running Veritas System Recovery using different user rights" on page 196.

Enabling users or groups to access Veritas System Recovery

You can use the **Security Configuration Tool** to add a user or a group so they can access Veritas System Recovery.

To add users and groups

1 On the Windows taskbar, click **Start > Programs > Veritas System Recovery > Security Configuration Tool**.

2 Click **Add**.

3 In the **Select Users or Groups** dialog box, click **Advanced**.

4 If necessary, click **Object Types** to select the types of objects that you want.

5 If necessary, click **Locations** to select the location that you want to search.

6 Click **Find Now**, select users and groups you want, and then click **OK**.

7 Click **OK** when you are finished.

See "About controlling access to Veritas System Recovery " on page 194.

See "Changing permissions for a user or a group" on page 195.

See "Disabling access for users or groups to Veritas System Recovery" on page 196.

See "Running Veritas System Recovery using different user rights" on page 196.

Changing permissions for a user or a group

You can use the **Security Configuration Tool** to change the Veritas System Recovery access permissions of a user or a group.

To change permissions for a user or a group

1 On the Windows taskbar, click **Start > Programs > Veritas System Recovery > Security Configuration Tool**.

2 In the **Permissions for Veritas System Recovery** dialog box, select the user or group whose permissions you want to change. Then do one of the following:

■ To set Full Control permissions, click **Allow** or **Deny** for the selected user or group.

■ To set Status Only permissions, click **Allow** or **Deny** for the selected user or group.

3 Click **OK** when you are finished.

See "About controlling access to Veritas System Recovery " on page 194.

See "Enabling users or groups to access Veritas System Recovery" on page 195.

See "Disabling access for users or groups to Veritas System Recovery" on page 196.

Disabling access for users or groups to Veritas System Recovery

You can use the **Security Configuration Tool** to remove a user or a group so they cannot access Veritas System Recovery.

To remove a user or a group

1   On the **Windows Start** menu, click **Programs > Veritas System Recovery > Security Configuration Tool**.

2   Select the user or group that you want to remove, and then click **Remove**.

3   Click **OK** when you are finished.

Running Veritas System Recovery using different user rights

If the permissions for a user are insufficient for running Veritas System Recovery, you can use the **Run As** feature in Windows. The **Run As** feature lets you run the software using an account that has sufficient rights. This situation is true even if you are not currently logged on with the account.

To perform Run As from Windows

1   On the Windows taskbar, click **Start > All Programs > Veritas System Recovery**.

2   Right-click **Veritas System Recovery**, and then click **Run As**.

3   In the **Run As** dialog box, click **The following user** to log onto with another account.

4   In the **User name** and **Password** fields, enter the account name and password that you want to use, and then click **OK**.

Monitoring the status of your backups

This chapter includes the following topics:

- About monitoring backups

- Icons on the Home page

- Icons on the Status page

- Configuring Veritas System Recovery to send SNMP traps

- Customizing the status reporting of a drive (or file and folder backups)

- Viewing drive details

- Improving the protection level of a drive

- About using event log information to troubleshoot problems

About monitoring backups

You should monitor your backups to ensure that you can effectively recover lost data when you need it.

The Home page provides a general status of your backup protection. The Status page provides details about which drives are protected, as well as a calendar view of past and future backups.

Note: In addition to ensuring that you back up each drive, carefully review and follow best practices for backing up your computer.

Refreshing the information that displays about hard disk configuration changes

Use Refresh to update the drive information that is displayed in various views of the product. This feature is useful when hard disk configurations have changed but the changes do not immediately appear in Veritas System Recovery. For example, adding hard disk space or creating a partition.

When you use Refresh, Veritas System Recovery scans all attached hard disks for any configuration changes. It also updates information on removable media, media drives, hard drives, file systems, and hard drive letters.

To rescan a computer's hard disks

◆ On the **View** menu, click **Refresh**.

The status bar at the bottom of the product's window indicates when the scanning takes place.

Icons on the Home page

On the **Home** page, the **Backup Status** pane provides a summary of the backup protection status of your computer. For example, suppose one or more drives are not included in a defined backup. In such cases, the background color and status icon change to reflect the level of backup protection. The **Status Details** pane provides recommendations on which actions you should take.

The following table describes each of the levels of backup protection that the **Home** page displays.

Table 10-1   Backup protection levels

Icon	Title	Description
	Backed up	At least one drive-based backup is defined and it runs on a regular basis. This status indicates that all drives, files, and folders can be fully recovered, if necessary.

Table 10-1 Backup protection levels *(continued)*

Icon	Title	Description
	Partially backed up	A backup is defined, but it is not scheduled or has not run for a long time. This status can indicate that the existing recovery points are outdated. It can also indicate that one or more drives are not assigned to a defined backup.

A partially protected drive can be recovered, but if the recovery points are outdated, it might not contain the latest versions of your data. |
| | At risk | No defined backup exists and no recovery points are available from which to recover the drive.

An unprotected drive cannot be recovered and is at risk. |
| | Status unknown | The status is forthcoming, or you have not yet licensed your product.

Either wait a few seconds for the status to display, or make sure that you have licensed your copy of the product. |
| | No backup protection assigned | The drive that displays this icon is not monitored for backup status; or, it is monitored for errors only. However, there are no errors to report.

Use the **Customize Status Report** feature on the **Status** page to change the status report setting. |

See "About monitoring backups" on page 197.

Icons on the Status page

Refer to the following table for the meaning of each icon that is displayed in the Backups calendar of the **Status** page.

Table 10-2   Backups calendar icons

Icon	Description	States
	Represents a drive-based backup that is configured to create a single, independent recovery point. When this icon appears in the Backup timeline, it indicates that a drive-based backup is scheduled to occur.	This icon can appear in the following states: Indicates that a backup has run and an independent recovery point was created. Indicates that the backup is unavailable. Indicates that the backup did not run as scheduled. This problem could occur if an error prevents the backup from running or if you manually cancel a backup before it completes. Indicates a drive-based backup that is scheduled to run at a future time.

Table 10-2 Backups calendar icons *(continued)*

Icon	Description	States
	Represents a drive-based backup that is configured to create incremental recovery points. It indicates that a drive-based backup is scheduled to occur on the day that it appears in the backup timeline.	This icon can appear in the following states: Indicates that a backup has run and an incremental recovery point was created. Indicates that the backup is unavailable. Indicates that the backup did not run as scheduled. This problem could occur if an error prevents the backup from running or if you manually cancel a backup before it completes. Indicates that the backup is scheduled to run at a future time.

Table 10-2   Backups calendar icons *(continued)*

Icon	Description	States
	Represents backing up files and folders. It indicates that a backup of files and folders occurs on the day that it appears in the backup timeline.	This icon can appear in the following states: Indicates that a backup has run and that backup data for files and folders was created successfully. Indicates that the backup is not available. Indicates that the backup did not run as scheduled. This problem could occur if an error prevents the backup from running, or if you manually canceled a backup before it completed. Indicates that the backup is scheduled to run at a future time.

Table 10-2   Backups calendar icons *(continued)*

Icon	Description	States
	Represents two or more backups are scheduled to run on the day on which this icon appears.	This icon can appear in the following states: Indicates that two or more backups have run and the last backup was created successfully. Indicates that two or more backups are scheduled and that at least one is unavailable. Indicates that two or more backups have run and the last backup was unsuccessful. This problem could occur if an error prevents a backup from running. Indicates that the backup is scheduled to run at a future time.

Configuring Veritas System Recovery to send SNMP traps

If you use Network Management System (NMS) applications, you can configure Veritas System Recovery to send SNMP traps for different priority and notification types.

By default, Veritas System Recovery is not enabled to send SNMP traps to NMS managers. You can configure Veritas System Recovery to send SNMP traps for different priority and notification types.

To configure Veritas System Recovery to send SNMP traps

1   On the **Tasks** menu, click **Options**.

2   Under **Notifications**, click **SNMP Trap**.

3 Click the **Select the priority and type of messages** list and select the priority level at which traps should be generated.

All messages	Send all messages, regardless of priority levels.
Medium and high priority messages	Send only medium and high priority messages.
High priority messages only	Send only high priority messages.
No messages	Do not send any messages, regardless of priority levels.

4 Select one or more of the following options:

- **Errors**

- **Warnings**

- **Information**

5 Select the version of SNMP traps to be sent (Version 1 or Version 2), and then click **OK**.

The Veritas System Recovery Management Information Base (MIB) is an enterprise MIB. It contains the Veritas System Recovery SNMP trap definitions. All Network Management System (NMS) applications have options to load an MIB. You can use any of these options to load the Veritas System Recovery MIB. If you do not load the MIB, the NMS application can still receive, and display the traps. However, the traps are not displayed in informative text. The MIB file, named `ssr_mib.mib`, is located in the **Support** folder on the Veritas System Recovery product DVD.

Customizing the status reporting of a drive (or file and folder backups)

You can configure how Veritas System Recovery reports the status of a particular drive (or all backups of files and folders).

For example, suppose that drive D contains unimportant data and you have chosen not to include it in a drive-based backup. The status on the **Home** page continues to report that your computer is at risk. You can configure Veritas System Recovery to ignore drive D. By ignoring it, you ensure that it does not calculate the status of drive D in the **Backup Status** panel on the **Home** page.

Or, you can specify that only errors, such as missed or failed backups, are included in the status report.

Note: The backup status of each drive is reported throughout the product, wherever the drive is listed. When you customize status reporting for a drive, the status is reflected anywhere that the drive is listed in Veritas System Recovery.

You should first determine the importance of the data that is on a particular drive. Or, the importance of data you have included in a backup of files and folders. Then you can decide on the level of status reporting to assign to it.

To customize the status reporting of a drive (or file and folder backups)

1 On the **Status** page, click a drive (or **File and folders**) to select it.

You can also click **Customize status reporting** from the **Home** page.

2 Click **Customize status reporting**.

3 Select a status reporting option.

Full status reporting	Shows the current status of the selected drive or file and folder backups on the **Home** and **Status** pages.
	Select this option if the data is critical.
Errors only status reporting	Shows the current status of the selected drive or file and folder backups only when errors occur.
	Select this option if the data is important, but you only want the status to report errors, whenever they occur.
No status reporting	Does not show any status for the selected drive or file and folder backups.
	Select this option if the data is unimportant and missed or failed backups do not need to be reported.

4 Click **OK**.

Viewing drive details

The **Advanced** page lets you view details about your hard drives.

To view drive details

1 On the **View** menu, click **Advanced**.

2 On the **Drives** tab, in the **Drive** column of the table, select a drive.

3 Review the **Details** section.

Name	Displays the name that you assigned to the backup when you defined it.
Type	Identifies the type of recovery point that the backup creates when it runs.
Destination	Identifies the storage location of the recovery point, or the location in which the drive should be backed up.
Last Run	Displays the day and time when the backup was last run.
Next Run	Displays the day and time of the next scheduled backup.

See "Improving the protection level of a drive" on page 206.

Improving the protection level of a drive

When the status of a drive-based backup indicates that it needs attention, you should take steps to improve the status.

You might need to add a drive to an existing backup, edit the schedule of a backup, or edit the settings of a backup. Or, you may need to define a new backup.

See "About backing up your data" on page 111.

To improve the protection level of a drive

1   On the **View** menu, click **Status**.

2   In the **Drives** column, select a drive that requires attention.

3   In the **Status** panel, right-click on the name of a backup job you want to edit, and then select one of the following menu items:

Run Backup Now	Runs the selected backup job immediately.
Run Backup With Options	Opens the **Run Backup With Options** dialog box, which lets you select the desired recovery point type. Recovery point option types include Incremental recovery point, Recovery point set, and Independent recovery point.
Change Schedule	Opens the **Run When** dialog box so that you can edit the backup schedule.
Edit Settings	Opens the **Define Backup Wizard**, which lets you edit the backup definition. This option takes you to the second page of the wizard.
Edit Offsite	Opens the **Offsite Copy Settings** dialog box, where you can edit or change settings for the **Offsite Copy** feature.
Remove Backup Job	Deletes the backup that you have selected. When you delete a backup, only the backup definition is deleted. The backup data is not deleted (for example, the recovery points or the backup data of files and folders).
Disable (Enable) Backup	Turns on or turns off the backup that you have selected.
Define New Backup	Opens the **Define Backup Wizard**, where you can select between backing up your computer or backing up selected files and folders. This option is useful if a drive in the **Drives** column is not yet assigned to a backup. You can select a drive that is assigned to a backup job. Then you have access to the shortcut method for starting the **Define Backup Wizard** from the **Status** page.
Manage Backup Destination	Opens the **Manage Backup Destination** dialog box, where you can specify destination drives as well as delete, copy, or explore existing recovery points on destination drives.

Customize Status Reporting	Opens the **Customize Status Reporting** dialog box, where you can specify if you want status reporting, and the type of status reporting.

See "Editing backup settings" on page 173.

About using event log information to troubleshoot problems

When Veritas System Recovery performs an action, it records the event (for example, when a backup job runs). It also records program error messages.

You can use the event log to track down the source of problems or to verify the successful completion of a backup job.

Log entries provide information about the success or failure of numerous actions by Veritas System Recovery or by a user. It offers a single view of all of the information and the program error messages.

To access the event log

1   On the **Tasks** menu, click **Options**.

2   Under **Notifications**, click **Event Log**.

3   Select the appropriate event log options.

The generated event log includes the following information:

Type	Indicates if the event is an error message or other information, such as the successful completion of a backup job.
Source	Identifies if Veritas System Recovery generates the message or another program.
Date	Displays the exact date and time that a selected event occurred.
Description	Lets you review information about an event that can help you troubleshoot errors.

See "Logging Veritas System Recovery messages" on page 101.

Monitoring the backup status of remote computers using Veritas System Recovery Monitor

This chapter includes the following topics:

About Veritas System Recovery 18 Monitor

Veritas System Recovery 18 Monitor is an extremely simple, standalone, lightweight, and easy to use monitoring application. Veritas System Recovery 18 Monitor helps you determine the backup protection status of the remote computers that you backed

up using Veritas System Recovery. The Veritas System Recovery application was formerly known as Symantec System Recovery 2013 R2. Monitoring the remote computers ensures that you can recover lost data.

The Veritas System Recovery 18 Monitor application lets you do the following:

- Monitor the backup protection status for a maximum of 100 remote computers at a time.

- Select the view for the remote computers that you want to monitor.

- Refresh any of the computers in the Computer List to view the latest protection status. You can also configure an hourly refresh interval for the remote computers.

Starting Veritas System Recovery 18 Monitor

Veritas System Recovery 18 Monitor is installed in the Windows **All Programs** menu. During installation, a program icon is installed in the system tray from which you can open Veritas System Recovery 18 Monitor. You can also open Veritas System Recovery 18 Monitor from the Windows taskbar.

To start Veritas System Recovery 18 Monitor

◆ On the Windows taskbar , click **Start > All Programs > Veritas System Recovery Monitor > Veritas System Recovery 18 Monitor.**

The Veritas System Recovery 18 Monitor console appears.

Icons on the Veritas System Recovery 18 Monitor console

The following table describes the icons on the Veritas System Recovery 18 Monitor console:

Table 11-1   About the Veritas System Recovery 18 Monitor console icons

Icon	Title	Description
	View Options	Lists shortcuts to access most of the commonly used features of Veritas System Recovery Monitor application, such as add computer, switch view, and remove computer.
	Add new computer (Ctrl + N)	Adds a remote computer to the Computer List that displays in the **Backup Status** pane. See "Adding a remote computer to the Computer List" on page 216.
	Import Computers (Ctrl + I)	Imports a text file to add multiple remote computers. This text file contains the IP addresses of the remote computers. See "Adding a remote computer to the Computer List" on page 216.
	Export (Ctrl + X)	Exports the **Protection Status** report for the selected computers on the Veritas System Recovery 18 Monitor console in an HTML or in a CSV format. See "Viewing the Protection Status report" on page 220.
	Application settings (Ctrl + S)	Opens the Settings pane and configure the Veritas System Recovery 18 Monitor default options. See "Configuring Veritas System Recovery 18 Monitor default options" on page 214.
	Switch View (Ctrl + T)	Switches between the Category view and All Computers view.
	Help (F1)	Accesses the Veritas System Recovery 18 Monitor's Help system.
	Exit (Alt + F4)	Closes the Veritas System Recovery 18 Monitor console.
		Searches a remote computer from the Computer List.
	At Risk	Indicates that no drive-based backup policy has been created for the computers that appear in the Computer List. The drives, files, or folders of these computers are unprotected and cannot be recovered and are at risk.

Table 11-1   About the Veritas System Recovery 18 Monitor console icons
(continued)

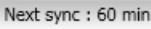| Icon	Title	Description
⚠	Need Attention	Indicates that: ■ A drive-based backup policy for the computers that appear in this Computer List was defined. However, the policy has not run recently or the computers are not assigned to the defined backup policy. ■ Some computers can be recovered, however, if the recovery points are outdated, they may not contain the latest version of your data.
?	Unknown	Indicates that the backup protection status of the computers in the Computer List is not known. This status may appear if the Veritas System Recovery Monitor cannot connect to the remote computer due to the following issues: ■ Network connectivity issues ■ Firewall issues ■ Incorrect user name or password
✔	Backed up	Indicates that a drive-based backup policy was created and it runs on a regular basis. All the drives, files, and folders of the remote computers are protected and can be recovered, if necessary.
ⓘ	Computer Details	Opens the Computer Details pane. The Computer Details pane displays a summary of the backup protection status for the selected remote computer. See "Viewing the backup protection status of a remote computer" on page 218.
⥥ ⥣	Expand / Collapse	Expands or Collapses the Status pane, which displays the Category view of the remote computers in the Computer List.
✖	Remove Computer (Delete)	Removes a remote computer from the Computer List. See "Removing a remote computer from the Computer List" on page 218.

Table 11-1   About the Veritas System Recovery 18 Monitor console icons
(continued)

Icon	Title	Description
	Refresh Protection Status (Ctrl + R)	Manually refresh the Backup Status pane to see the latest backup protection status for the Computer List. You can also select an individual computer from the Computer List and select refresh to see the latest backup protection status.
	Edit Computer (Ctrl + E)	Modifies the logon credentials for the remote computers. See "Modifying the logon credentials for the remote computers" on page 217.
Next sync : 60 min	Next Synchronization Time	Displays the time in minutes that remains for the next automatic refresh.

See "Configuring Veritas System Recovery 18 Monitor default options" on page 214.

See "Adding a remote computer to the Computer List" on page 216.

Configuring Veritas System Recovery 18 Monitor default options

The **Settings** pane lets you configure the Veritas System Recovery 18 Monitor default options. The following table describes the options on the **Settings** pane.

To view the Settings pane

1   Do one of the following:

- On the Veritas System Recovery 18 Monitor console, click the **View Options** icon and then click **Settings**.

- On the Veritas System Recovery 18 Monitor console, click the **Application settings** icon.

2   On the **Settings** pane, configure the default options.

See "Adding a remote computer to the Computer List" on page 216.

Table 11-2   Configure the Veritas System Recovery 18 Monitor default options

Settings	Do the following
Always on Top	Select the check box to display the Veritas System Recovery 18 Monitor application on the top of the other Microsoft Windows applications.
Save window location on exit	Select the check box to save the location of the console when you close the application. When you launch the application again the console displays in the location you saved.
Start with window OS	Select the check box to automatically start the Veritas System Recovery 18 Monitor application with the Microsoft Windows operating system. When you log on to Microsoft Windows, Veritas System Recovery 18 Monitor automatically starts and monitors the remote computers.
Auto Refresh **Refresh interval <enter the time> minutes**	Select the check box to enable the automatic refresh Veritas System Recovery 18 Monitor. You can modify the refresh interval. Ensure that the interval value must be between 60 min to 720 min.
Expand all tabs on load	Select the check box to expand all the status tabs in the category view on the Veritas System Recovery Monitor console, on load. You can also manually expand and collapse all the Status tabs as follows. ■ To expand the Backup Status pane, click the **Expand** icon. ■ To collapse the Backup Status pane, click the **Collapse** icon.
Domain Account and Password	Select the check box if you want to access and monitor a group of remote computers available in a domain account or an Active Directory.
Username: (Domain\username)	Enter the global account name in the format <Domain name \ username>. For example, Veritas\IMG.
Password	Enter the password.
Confirm Password	Retype the password.
Save	To store the Veritas System Recovery 18 Monitor default options, click **Save**.

Adding a remote computer to the Computer List

Before you can monitor the backup protection status for a remote computer, you must add the remote computer to the Computer List.

To add remote computers to the Computer List

1   From the bottom-left corner of the Veritas System Recovery 18 Monitor console, click **Add Machine**.

See "Icons on the Veritas System Recovery 18 Monitor console" on page 211.

2   In the **Hostname** or **IP address** field, type the name or the IP address of the computer that you want to add.

For more information about controlling access to the Veritas System Recovery, see the *Veritas™ System Recovery User's Guide.*

3   In the **Username** field, type the user name for an account that has appropriate permissions to access the backup protection status of the computer.

4   In the **Password** field, type the password for the user account.

5   In the **Confirm Password** field, type the password again to confirm it.

6   Click **Add**.

See "Modifying the logon credentials for the remote computers" on page 217.

To add multiple remote computers to the Computer List, you can import a text file that contains the IP address of all the remote computers.

To import a text file

1   Select and configure the domain account and password in the **Settings** pane. See "Configuring Veritas System Recovery 18 Monitor default options" on page 214.

2   Create a text file that contains the IP addresses of the remote computers that you want to monitor.

3   On the Veritas System Recovery 18 Monitor console, click **Import Text file to add multiple Computers**.

4   Browse to select the text file that contains the IP addresses of the remote computers.

5   Click **OK**.

Importing a text file to add multiple remote computers to the Computer List

To add multiple remote computers to the Computer List, you can import a text file that contains the IP address of all the remote computers.

See "Adding a remote computer to the Computer List" on page 216.

See "Modifying the logon credentials for the remote computers" on page 217.

See "Viewing the backup protection status of a remote computer" on page 218.

Before you import a text file, you must ensure that you do the following:

- Select and configure the domain account and password in the **Settings** pane.
  See "Configuring Veritas System Recovery 18 Monitor default options" on page 214.

- Create a text file that contains the IP addresses of the remote computers that you want to monitor.

To import a text file

1   On the Veritas System Recovery 18 Monitor console, click **Import Text file to add multiple Computers**.

2   Browse to select the text file that contains the IP addresses of the remote computers.

3   Click **OK**.

Modifying the logon credentials for the remote computers

You can modify the logon credential for the selected remote computer from the Computer List.

To modify the logon credentials for the remote computer

1   On the Veritas System Recovery 18 Monitor console, select the remote computer from the Computer List.

2   Click **Edit Computer**.

3   In the **Hostname or IP address** field, modify the host computer name or the IP address of the host computer.

4   In the **Username** field, modify the user name for an account that has necessary permissions to access the backup protection status of the computer.

5 In the **Password** field, modify the password for the user account.

6 In the **Confirm Password** field, retype the modified password for the user account.

See "Adding a remote computer to the Computer List" on page 216.

Removing a remote computer from the Computer List

You can remove remote computers from the Computer List.

To remove a remote computer from the Computer List

1 On the Veritas System Recovery 18 Monitor console, select the remote computer that you want to remove.

Note: If you want to remove multiple computers, **Ctrl** + click the remote computers in the Computer List and press **Delete** key.

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2 Click **Remove Computer.** Deleted computer disappears from the Computer List.

See "Adding a remote computer to the Computer List" on page 216.

Viewing the backup protection status of a remote computer

After you add a remote computer to the Computer List, Veritas System Recovery 18 Monitor does the following:

- Automatically monitors the remote computer.

- Displays a Computer List where all remote computers can be viewed under the following protection status category:

  - At Risk

  - Need Attention

  - Unknown

  - BackedUp

- Lets you view the backup protection status of an individual remote computer.

- Lets you view the reason or detailed information, if the remote computer that you monitor is displayed under the following protection state category:

  - At Risk

  - Need Attention

  - Unknown

The Computer Details pane lets you view the detailed information about the monitored backup protection status for the remote computer.

To view the protection status of a remote computer

1 On the Veritas System Recovery 18 Monitor console, select a remote computer from the Computer List.

2 Right-click the Veritas System Recovery 18 Monitor console. A shortcut menu appears.

3 Click **Computer Details**.

Last Updated Time	Displays the last time, when Veritas System Recovery 18 Monitor accessed the computer to check the protection status.
VSR Version	Displays the version of the Veritas System Recovery application.
OS Version	Displays the operating system version of the remote computer, for which the backup protection status is monitored.
State	Displays the backup protection status of the computer.
Reason	Specifies the reason for the protection state.

See "Icons on the Veritas System Recovery 18 Monitor console" on page 211.

The **View Console** functionality lets you monitor a remote computer and view the backup protection status in the Veritas System Recovery application. You are not required to enter the command line parameters or user credentials to connect to the remote computer.

Note: If you have Symantec System Recovery 2013 R2 or later on your host computer, the **View Console** link appears active. On a host computer with a previous version of Symantec System Recovery the link appears inactive.

See "Adding a remote computer to the Computer List" on page 216.

See "Viewing the Protection Status report" on page 220.

To view the backup protection status for a remote computer in the Veritas System Recovery

1   On the Veritas System Recovery 18 Monitor console, select a remote computer from the Computer List.

2   Click **View Console**.

Viewing the Protection Status report

The protection status report provides detailed information about the backup protection status for all the remote computers that are backed up with Veritas System Recovery. You can export the protection status report to one of the following formats:

- Hypertext Markup Language (HTML)

- Comma Separated Value (CSV)

See "Icons on the Veritas System Recovery 18 Monitor console" on page 211.

See "Adding a remote computer to the Computer List" on page 216.

See "Removing a remote computer from the Computer List" on page 218.

To export and view the protection status report

1   On the Veritas System Recovery 18 Monitor console, click **List of exportable data formats**.

2   From the list of exportable data formats, select **HTML** or **CSV**.

3   Click **Export computer information to a File**.

4   In the **Save As** window, enter the file name and location where you want to export the report.

5   Click **Save**.

Exploring the contents of a recovery point

This chapter includes the following topics:

- About exploring recovery points

- Exploring a recovery point through Windows Explorer

- Opening and restoring files within a recovery point browser

- Dismounting a recovery point drive

- Viewing the drive properties of a recovery point

About exploring recovery points

You can use Veritas System Recovery to explore files in a recovery point. You mount the recovery point and assign it a drive letter so that it is visible from Windows Explorer.

You can perform the following tasks on the assigned drive:

- Run ScanDisk (or CHKDSK).

- Perform a virus check.

- Copy folders or files to an alternate location.

- View disk information about the drive, such as used space and free space.

- Run programs existing within a mounted recovery point.
  Within a mounted recovery point, programs that you run cannot rely on any registry values. The programs also cannot rely on COM interfaces, Dynamic Link Libraries (DLLs), or other similar dependencies.

You can set up a mounted drive as a shared drive. Users on a network can connect to the shared drive and restore files and folders from the recovery point.

You can mount one or more recovery points at a time. The drives remain mounted until you unmount them or you restart the computer. Mounted drives do not take up extra hard-disk space.

You do not need to mount a drive to restore the files or folders from within a recovery point.

All security on the NTFS volumes remains intact when they are mounted.

See "Exploring a recovery point through Windows Explorer" on page 222.

See "Dismounting a recovery point drive" on page 226.

See "Viewing the drive properties of a recovery point" on page 227.

Exploring a recovery point through Windows Explorer

When you explore a recovery point, Veritas System Recovery mounts the recovery point as a drive letter and opens the recovery point in Windows Explorer.

For each drive that is included in the recovery point, a new mounted drive letter is created. For example, if your recovery point contains backups of drives C and D, two newly mounted drives appear (for example, E and F). The mounted drives include the original drive labels of the drives that were backed up.

To explore a recovery point through Windows Explorer

1   On the **Tasks** menu, click **Manage Backup Destination**.

2   Do one of the following:

- Select a recovery point set that you want to explore and in the **Range** column, double-click the date range.
  In the **Explore Recovery Points** dialog box, select the required recovery points and then click **OK**.

- Select the recovery point or recovery point set that you want to explore, and then click **Explore**.
  If you select a recovery point set, in the **Explore Recovery Points** dialog box, select the required recovery points and then click **OK**.

See "About exploring recovery points" on page 221.

Mounting a recovery point from Windows Explorer

You can manually mount a recovery point as a drive by opening your backup destination folder in Windows Explorer.

You can use Windows Explorer to search the contents of the recovery point. For example, if you cannot remember where a particular file was originally stored, you can use the Windows Explorer search feature. You can locate the file, as you normally would locate a file on your hard drive.

To mount a recovery point from Windows Explorer

1   In Windows Explorer, navigate to a recovery point.

    The recovery point is located in the storage location that you selected when you defined your backup.

2   Right-click the recovery point, and then click **Mount**.

3   In the **Mount Recovery Point** window, under the **Drive Label** column, select the drive that you want to mount.

4   In the **Drive letter** list, select the letter that you want to associate with the drive.

5   Click **OK**.

See "About exploring recovery points" on page 221.

Opening and restoring files within a recovery point browser

Using the **Recovery Point Browser**, you can open files within a recovery point. The file opens in the program that is associated with that file type. You can also restore files by saving them using the application that is associated with them. Or, you can restore files by using the **Recover Files** option in the **Recovery Point Browser**.

If the file type is not associated with a program, the Microsoft **Open With** dialog box is displayed. You can then select the correct program for opening the file.

Note: In the **Recovery Point Browser**, you cannot view encrypted file system (EFS) NTFS volumes.

To open and restore files within a recovery point

1   On the **Tools** page, click **Run Recovery Point Browser**.

2 In the **Select Recovery Point** panel, select a recovery point to restore, and then click **OK**.

Recovery Point options by Date

View recovery points by - Date	Displays all discovered recovery points in the order that they are created. If no recovery points are discovered, the table is empty. In such cases, you can search all local drives on the computer or browse to find a recovery point.
Select source folder	Lets you view a list of all the available recovery points that exist on your computer's local drives or on a specific drive.
Browse	Locates a recovery point on a local drive or a network folder.
OpenStorage Destination	Lets you select an OpenStorage storage destination that you want to use for restoring the recovery points.
	See " OpenStorage destination options for backups" on page 263.
Select a recovery point	Lets you select the recovery point to restore.
Recovery point details	Displays additional information about the recovery point that you want to restore.

Recovery Point options by Filename

View recovery points by - File name	Lets you view recovery points by their file name.
Recovery point folder and file name	Specifies a path and a file name of a recovery point.
OpenStorage Destination	Lets you select an OpenStorage storage destination that you want to use for restoring the recovery points.
	See "OpenStorage destination options for recovery" on page 264.
Browse	Locates a recovery point on a local drive or a network folder.
Recovery point details	Displays additional information about the recovery point that you want to restore.

3 In the **Recovery Point Browser**, in the tree panel on the left, select a drive.

4 In the right content panel, double-click the folder that contains the file that you want to view.

5 Right-click the file that you want to view, and then click **View File**.

The **View File** option is grayed out if you select program files with the .exe, .dll, or .com file extensions.

6 To restore a file, in the **Recovery Point Browser**, in the list panel on the right, select one or more files.

7 Click **Recover Files**, and then click **Recover** to restore them to their original location.

If you are prompted, click **Yes**, or **Yes to All** to overwrite the existing (original) files.

See "About exploring recovery points" on page 221.

Dismounting a recovery point drive

All of your mounted recovery point drives are dismounted when you restart the computer. You can also dismount the drives without restarting the computer.

Note: Any data that is written to a mounted recovery point is lost when the recovery point is unmounted. This data includes any data that is created, edited, or deleted at the time.

To dismount a recovery point drive

1 Do one of the following:

- In **Windows Explorer**, navigate to the mounted recovery point.

- In **Recovery Point Browser**, in the tree view, locate the mounted recovery point.

Note: To access the recovery point browser, on the **Tools** page, click **Run Recovery Point Browser**.

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2 Right-click the mounted recovery point that is displayed as a drive, and then click **Dismount Recovery Point**.

See "About exploring recovery points" on page 221.

See "Viewing the drive properties of a recovery point" on page 227.

Viewing the drive properties of a recovery point

You can view various drive properties of a recovery point using the **Recovery Point Browser**.

To view the drive properties of a recovery point

1　In the **Recovery Point Browser**, in the tree panel on the left, click the recovery point that contains the drive that you want to view.

2　Select a drive.

3　Do one of the following:

- On the **File** menu, click **Properties**.

- Right-click the recovery point, and then click **Properties**.

Description	A user-assigned comment that is associated with the recovery point.
Original drive letter	The original drive letter that was assigned to the drive.
Cluster size	The cluster size (in bytes) of the FAT, FAT32, or NTFS drive.
File system	The file system type that is used within the drive. For example, FAT, FAT32, or NTFS.
Primary/Logical	The selected drive's status as either a primary partition or a logical partition.
Size	The total size (in MB) of the drive. This total includes used space and unused space.
Used space	The amount of used space (in MB) within the drive.
Unused space	The amount of unused space (in MB) within the drive.
Contains bad sectors	Indicates if any bad sectors exist on the drive.
Cleanly quiesced	Indicates whether the database application quiesced properly when a recovery point was created.

Managing backup destinations

This chapter includes the following topics:

- About backup destinations

- Differences between drive-based backups and file and folder backups

- Cleaning up old recovery points

- Deleting a recovery point set

- Deleting recovery points within a recovery point set

- Copying recovery points

- About managing file and folder backup data

- Automating the management of backup data

- Moving your backup destination

About backup destinations

A *backup destination* is the location in which your backup data is stored.

Veritas System Recovery includes the features for managing the size of your backup destinations so that you can use your computer's valuable disk space for other purposes.

If you have defined multiple backup destinations, the **Backup Destination** panel on the **Home** page lets you select a destination for which a pie chart is displayed. The pie chart of the selected destination displays the following information about the backup drive or folder:

- Actual data backup

- Other used space

- Free space available

See "Cleaning up old recovery points" on page 230.

See "Deleting a recovery point set" on page 231.

See "Deleting recovery points within a recovery point set" on page 232.

See "Copying recovery points" on page 233.

Differences between drive-based backups and file and folder backups

Veritas System Recovery offers two backup methods:

Table 13-1   Backup methods

Method	Description
Drive-based backup	Use this option to back up an entire drive (for example your system drive which is typically C). You can then restore any file or folder, or your entire drive.
	See "Defining a drive-based backup" on page 120.
File and folder backup	Use this option to back up only the files and folders that you select. You can then restore any file or all of them at any time.
	This option typically requires less disk space than drive-based backups.
	See "Backing up files and folders" on page 160.

Drive-based backups

When you run a drive-based backup, a snapshot of everything is taken and stored on your computer's hard disk. Each snapshot is stored on your computer as a recovery point. A recovery point is a point in time. You can use the recovery point to restore your computer back to the way it was when the snapshot was created.

Table 13-2   Types of recovery points

Type	Description
Independent recovery point (.v2i)	Creates a complete, independent copy of the drives that you select. This backup type typically requires more storage space than a recovery point set.
Recovery point set (.iv2i)	Includes a base recovery point. A base recovery point is a complete copy of your entire drive, and is similar to an independent recovery point. The recovery point set also includes recovery points. These recovery points capture only the changes that were made to your computer since the creation of the base recovery point.

Although you can recover files and folders from a drive-based backup, you cannot select a specific set of files or folders to back up. Your entire hard drive is backed up.

File and folder backups

You can edit or create a select set of personal documents and folders, and then define a backup for those files and folders. For example, you might want to define a backup to capture one or more folders. Within those folders contain the files that you change on a regular basis. This kind of backup is useful because you do not need to use additional hard disk resources to back up your entire computer.

File and folder backups let you select individual files or folders to back up. You can also specify a file type to back up. Then Veritas System Recovery can locate and back up all files of the type you specified. For example, suppose you have Microsoft Word documents stored at several locations on your computer. Veritas System Recovery locates all Word documents (files that end with .doc) and includes them in your backup. You can even edit the list of file types to include the types that are unique to the software you use.

Veritas System Recovery also keeps multiple versions of the same files for you. This redundancy means you can restore the version of a file that contains the changes you need to restore. You can even set a limit to the number of versions that are kept so that you can control the use of disk space.

Cleaning up old recovery points

Over time, you might end up with recovery points that you no longer need. For example, you might have several older recovery points that you no longer need because you have more current ones containing your latest work.

See "Automating the management of backup data" on page 241.

The **Clean Up** feature deletes all but the most current recovery point set, to help make more space available on your hard disk.

Note: After you delete a recovery point, you no longer have access to the files or system recovery from that point in time. You should explore the contents of the recovery point before you delete it.

To clean up old recovery points

1   On the **View** menu, click **Tools**.

2   Click **Manage Backup Destination**. and then click **Clean Up**.

    Note: The **Clean Up** button is enabled based on the settings that are selected in the **Manage Backup Destination Settings** dialog box and when the recovery point set limit is reached.

3   In the **Clean Up Recovery Points** dialog box, select the recovery points that you want to delete.

    The recovery point sets that can be safely removed without eliminating your latest recovery point are selected automatically. You can also select or deselect the recovery point sets to specify which ones to remove.

4   Click **Delete**.

5   Click **Yes** to confirm the deletion.

6   Click **OK**.

Deleting a recovery point set

If you know that you no longer want a particular recovery point set, you can delete it at any time.

Note: After you delete a recovery point, you no longer have access to file or system recovery for that point in time.

To delete a recovery point set

1   On the **View** menu, click **Tools**.

2   Click **Manage Backup Destination**.

3   In the **Recovery Point Sets** table, select a recovery point set that you want to delete.

The recovery point set you select should have only one set associated with it and appear as "1 Recovery Point" in the table.

4   In the **Manage Backup Destination** window, on the **Tasks** menu, click **Delete**.

5   In the **Delete Recovery Point Set** dialog box, click **Yes** to confirm the deletion.

6   Click **OK**.

See "Cleaning up old recovery points" on page 230.

See "Deleting recovery points within a recovery point set" on page 232.

See "Copying recovery points" on page 233.

See "About exploring recovery points" on page 221.

Deleting recovery points within a recovery point set

A recovery point set can contain multiple recovery points that were created over time. You can delete recovery points to reclaim more storage space.

The **Delete Recovery Points** option lets you delete all the recovery points that were created between the first recovery point and last recovery point in the set.

Warning: Be careful about which recovery points you choose to delete. You can inadvertently lose data. For example, you create a new document, which is captured in the third recovery point in a recovery point set. You then accidentally delete the file, which is captured in the fourth recovery point. If you delete the third recovery point, you permanently lose the version of the file that was backed up. If you are unsure, you should explore the contents of a recovery point before you delete it.

See "Opening and restoring files within a recovery point browser" on page 223.

You can manually select which recovery points to remove, if you know which recovery points that you want to keep within a set.

See "Cleaning up old recovery points" on page 230.

To delete recovery points within a set

1 On the **View** menu, click **Tools**.

2 Click **Manage Backup Destination**.

3 In the **Recovery Point Sets** table, select the recovery point set that contains recovery points that you want to delete.

The recovery point set you select should have more than one set associated with it. For example, a recovery point set that contains more than one recovery point may appear as "4 Recovery Points" in the table.

4 In the **Manage Backup Destination** window, on the **Tasks** menu, click **Delete**.

5 Do one of the following:

- To automatically delete all but the first and last recovery point in the set, click **Automatic**.

- To manually select which recovery points in the set to delete, click **Manual**, and then select the recovery points you want to delete.

- To delete all the recovery points in the set you selected, click **Delete all recovery points in the set**.

6 Click **OK**.

See "Deleting a recovery point set" on page 231.

See "Copying recovery points" on page 233.

See "About exploring recovery points" on page 221.

Copying recovery points

You can copy recovery points to another location for added security. For example, you can copy them to another hard disk, another computer on a network, or on removable media such as USB disks. You can then store these copies in a protected location.

You can also create archive copies of your recovery points to free up disk space. For example, you can copy recovery points to a network location or USB disk, and then manually delete the original recovery points. You should verify the copies of the recovery points to ensure that they are valid.

To make copies of recovery points

1   On the **View** menu, click **Tools**.

2   Click **Manage Backup Destination**.

3   In the **Recovery Point Sets** table, select a recovery point set.

4   In the **Manage Backup Destination** window, on the **Tasks** menu, click **Copy**.

5   If the **Copy Recovery Point** dialog box is displayed, select a recovery point within the set that you want to copy. Otherwise, skip to the next step.

6   On the **Welcome** panel of the **Copy Recovery Point Wizard**, click **Next**.

7   Do one of the following:

-   If you selected a recovery point in step 5, the recovery point that you want to copy is already highlighted (selected) for you in the **Date** table of the **Source** panel. Click **Next**.

-   On the **Source** panel, select the recovery point that you want to copy. Recovery point sets appear as single recovery points. Select **View all recovery points** to display all incremental recovery points that are included within the recovery point sets.

    Source options when you copy recovery points by Date

View by - Date	Displays all of the discovered recovery points in the order in which they were created.
Date	Lets you select an alternate date by using the drop-down calendar. Use the calendar if no recovery points are discovered and displayed in the table.
View all recovery points	Lets you view all recovery points that are available.

    Source options when you copy recovery points by File name

View by - File name	Lets you view recovery points by their file name.
File name	Specifies a path and a file name of a recovery point.

Browse	Lets you browse to a path that contains a recovery point.
	For example, you can browse for a recovery point (.v2i) or incremental recovery point (.iv2i) file on an external (USB) drive. Or, you can browse to a network location, or removable media.
OpenStorage Destination	Lets you select an OpenStorage storage destination that you want to use for restoring the recovery points.
	See "OpenStorage destination options for recovery" on page 264.
User name	Specifies the user name if you specify a recovery point file name that is located in a network path.
	See "Rules for network credentials" on page 134.
Password	Specifies the password to a network path.

Source options when you copy recovery points by System

View by - System	Lets you use the current system index file that is located in the recovery point storage location. The system index file displays a list of all of the drives on your computer and any associated recovery points from which you can select.
	The use of a system index file reduces the time it takes to convert multiple recovery points. When a recovery point is created, a system index file is saved with it. The system index file contains a list of the most recent recovery points, which includes the original drive location of each recovery point.
Date	Lets you select an alternate date of a system index file date by using the drop-down calendar. Use the calendar if no recovery points are discovered and displayed in the table.

Use latest recovery points for this computer	Restores the most recent recovery points that exist in the recovery point storage location on your computer.
	The list of drives, source files (.v2i and .iv2i files), and dates comes from the most current system index file (.sv2i).
Use alternate system index (.sv2i) file	Restores the recovery points that exist on another computer.
Browse to and select the .sv2i file for the desired system	Specifies a path to a system index file (.sv2i) file that resides elsewhere, such as a network location.
	If you selected a system index file that is stored on a network, you are prompted for your network credentials.
	See "Rules for network credentials" on page 134.
Browse	Lets you browse to a path that contains a system index file.
	For example, you can browse to an external (USB) drive, a network location, or to removable media to select a system index file.
OpenStorage Destination	Lets you select an OpenStorage storage destination that you want to use for restoring the recovery points.
	See "OpenStorage destination options for recovery" on page 264.
Drives	Lets you select the drives with the recovery points that you want to restore based on the selected system index file.

8   Click **Next**.

9 In the **Destination Location** panel, specify the folder path where you want to copy the recovery point, and then click **Next**.

Folder	Lets you type the path to which you want to copy the recovery point.
Browse	Lets you browse to a folder path where you want to copy the recovery point.
OpenStorage Destination	Lets you select an OpenStorage storage destination that you want to use for restoring the recovery points.
	See "OpenStorage destination options for recovery" on page 264.
Edit	Lets you edit the destination information.
File name	Lets you select a file name that you want to rename.
Rename	Lets you renames the file that you have selected in the File name table.

10 On the **Options** panel, set the options you want for the copied recovery point, and then click **Next**.

Copy recovery point options

Compression	Lets you use one of the following compression levels for the recovery point:
	■ None
	■ Standard
	■ Medium
	■ High
	See "Compression levels for recovery points" on page 140.
	The results can vary depending on the types of files that are saved in the drive.
Verify recovery point after creation	Verifies whether the recovery point is valid after it is created.
Include system and temporary files	Includes indexing support for an operating system and temporary files when a recovery point is created or copied on the client computer.

Advanced	Lets you add security options to the recovery point.
Description	Indicates a description for the recovery point. The description can be anything that helps you further identify the recovery point's contents.

Advanced options

Divide into smaller files to simplify archiving	Lets you split the recovery point into smaller files and specifies the maximum size (in MB) for each file.
	For example, to copy a recovery point to ZIP disks from your backup destination, specify a maximum file size of 100 MB, according to the size of each ZIP disk.

11 In the **Security Options** panel, set the password, select the encryption for the copied recovery point, and then click **Next**.

Use password	Sets a password and enables AES encryption on the recovery point when it is created.
	This check box is selected by default.
Password	Lets you specify a password for the backup. Passwords can include standard characters. Passwords cannot include extended characters, or symbols. (Use characters with an ASCII value of 128 or lower.)
	You must type this password before restoring a backup or view the contents of the recovery point.
Confirm password	Lets you retype the password for confirmation.

AES encryption	Encrypts recovery point data to add another level of protection to your recovery points.
	If you upgrade from a previous version to Veritas System Recovery 18, for older backup jobs where only password protection is defined, you need to edit the jobs to select the AES encryption level. If you do not edit the older backup jobs, they continue to run without AES Encryption. Veritas recommends that you edit the job and select AES encryption level.
	Note: If the **Use Password** check box is selected, you must define AES encryption.
	Choose from the following encryption levels:
	■ **Standard 128-bit (8+ character password)**
	■ **Medium 192-bit (16+ character password)**
	■ **High 256-bit (32+ character password)**

12 Review the options that you selected, and then click **Finish**.

After the recovery points are safely copied, you can delete them from your computer.

See "Deleting a recovery point set" on page 231.

See "Cleaning up old recovery points" on page 230.

See "Deleting recovery points within a recovery point set" on page 232.

About managing file and folder backup data

Drive-based backups capture your entire hard drive. As such, the size of a recovery point is typically much larger than the data that is captured during the backup of files and folders. However, file and folder backup data can take up significant disk space if it is not managed. For example, audio files, video files, and photographs are typically large files.

You must decide how many versions of backup files that you want to keep. This decision can depend on how frequently you change the content of your files and how frequently you run the backups.

Viewing the amount of file and folder backup data that is stored on a backup destination

You can view the total amount of file and folder backup data that you have currently stored.

To view how much file and folder backup data is stored

1 On the **Tasks** menu, click **Manage Backup Destination**.

2 In the **Drives** list, select the drive that you want to use as a backup destination.

Based on the drive that you select, in the **Manage Backup Destination** panel, the **Space used for file and folder storage** box displays the amount storage space that is currently used.

See "About managing file and folder backup data" on page 239.

Manually deleting files from your backups of files and folders

You can manually delete the files that are stored in your backup destination.

To manually delete files from your backups of files and folders

1 On the **Tasks** menu, click **Recover My Files**.

2 Do one of the following:

- In the **Find files to recover** box, type the file name of the file that you want to delete, and then click **Search**.

- If you do not know the name of the file, click **Search**, and then browse for the file.

3 Click **View All Versions** to display all versions of each file that exist in the backup of files and folders data.

4 Select one or more files that you want to delete.

5 Right-click, and then click **Delete**.

See "About managing file and folder backup data" on page 239.

Finding versions of a file or folder

You can use **Windows Explorer** to view information about the available versions that are included in a backup of files and folders.

You can limit the number of versions of each file and folder that you want to store.

See "Automating the management of backup data" on page 241.

To find versions of a file or folder

1   Open **Windows Explorer**.

2   Navigate to a file that you know is included in a backup of files and folders.

3   Right-click the file, and then click **Show Versions**.

See "About managing file and folder backup data" on page 239.

Automating the management of backup data

Veritas System Recovery can monitor your backup storage space and notify you when it gets full. It can also automatically delete old recovery points and older versions of files from file and folder backups exceeding the threshold. If you do not specify a threshold, Veritas System Recovery notifies you when the disk reaches 90 percent of its total capacity.

You can also manage your file and folder backup data by limiting the number of versions of backup files that you keep. This kind of maintenance can significantly reduce the amount of disk space that is required, especially if the file size is large.

To automate the management of backup data

1   On the **Tasks** menu, click **Manage Backup Destination**.

2   On the **Manage Backup Destination** dialog box, click **Settings**.

3   Select **Limit file versions for file and folder backups**, and then type a number between 1 and 99.

4   Select **Monitor disk space usage for backup storage**. Drag the slider to limit the total amount of disk space that can be used for your backup data.

5   Do one of the following:

   ■   Select **Warn me when backup storage exceeds threshold** if you only want to be notified when the storage size is exceeded, but you do not want any action to be taken.

   ■   Select **Automatically optimize storage** if you want Veritas System Recovery to manage the backup data automatically, without prompting you.

Veritas System Recovery automatically deletes the old recovery points, and limits file versions to remain within the threshold that you set.

6 Select **Delay changes until next backup** if you do not want to apply your changes until the next backup runs.

7 Click **OK**.

See "About managing file and folder backup data" on page 239.

Moving your backup destination

You can change the backup destination for your recovery points and move your existing recovery points to a new location. For example, suppose you install an external hard drive for storing your backup data. You can then change the backup destination for one or more backups to the new drive.

When you select a new location, you can also choose to move the existing recovery points to the new destination. All future recovery points for the backups that you select are created at the new location.

Note: You can move your backup destination to a new internal or external hard drive. Make sure that the drive is properly installed or connected before you proceed.

To move your backup destination

1 On the **Tasks** menu, click **Manage Backup Destination**.

2 In the **Manage Backup Destination** window, in the **Drives** list, select the drive that contains the backup destination that you want to move.

3 Click **Move**.

4 In the **Move Backup Destination** dialog box, do one of the following:

- In the **New backup destination** box, type the path to the new backup destination.

- Click **Browse** to locate and select a new backup destination, and then click **OK**.

5 Select the defined backups that should use the new backup destination.

Deselect the defined backups that you do not want to move.

6 Select **Save as default backup destination** if you want to use this destination as the default backup destination for any new backups that you define in the future.

7 Click **OK**.

8 To move existing recovery points to the new backup destination, select **Move recovery points**, and then do one of the following:

- Select **Move the latest recovery points for each backup and delete the rest**.

- Select **Move all recovery points to the new destination**.

9 If you have file and folder backup data that you want to move to the new backup destination, click **Move file backup data**.

The **Move file backup data** option is not available if no backup data of files and folders is found at the original backup destination.

10 Click **OK**.

See "About managing file and folder backup data" on page 239.

Managing virtual conversions

This chapter includes the following topics:

- Defining a virtual conversion job

- Running an existing virtual conversion job immediately

- Viewing the properties of a virtual conversion job

- Viewing the progress of a virtual conversion job

- Editing a virtual conversion job

- Deleting a virtual conversion job

- Running a one-time conversion of a physical recovery point to a virtual disk

Defining a virtual conversion job

You can use Veritas System Recovery to convert recovery points of a physical computer to VMware virtual disk. You can create a schedule to convert recovery points to a VMware virtual disk (.vmdk format) or a Microsoft virtual disk (.vhd format).

Note: If the disk sector size is 4K, the Microsoft virtual disk can only be converted to a .vhdx format.

You can also convert recovery points directly to VMware ESXi Server. Virtual disks are excellent for testing and evaluation purposes.

Note: You cannot convert a 4K disk to a .vmdk format.

You can find a list of platforms that support the virtual disks that are created from recovery points in the software compatibility list. The software compatibility list is available at the following URL:

https://www.veritas.com/support/en_US/search-results.html?keyword=V-306-17*

Scheduled conversions use the system index file (.sv2i) to convert recovery points to virtual disks. The .sv2i file reduces the time it takes to convert multiple recovery points. When a recovery point is created, a .sv2i file is saved with it. The .sv2i file contains a list of the most recent recovery points, which includes the original drive location of each recovery point.

You can also create a one-time virtual conversion.

See "Running a one-time conversion of a physical recovery point to a virtual disk" on page 254.

To define a virtual conversion job

1 On the **Tasks** menu, click **Run or Manage Virtual Conversions**.

2 On the toolbar, click **Define New**.

3 Select the virtual disk type (and version, if applicable) that you want to create, and then click **Next**.

VMware Virtual Disk (.vmdk)	Converts the recovery points to a .vmdk format.
	This format only supports Workstation version 8.
VMware ESXi Server	Converts the recovery points to a VMware ESXi Server.
	Note: Veritas System Recovery 18.0.2 no longer supports physical to virtual conversion for ESXi on a 32-bit operating system.
Microsoft Virtual Disk	Converts the recovery points to a .vhd or .vhdx format. The .vhd format is supported for all versions before Windows 8 and the .vhdx format is supported for Windows 8 and above.
	Note: The Microsoft Virtual Disk type supports .vhd and .vhdx conversions. The .vhd conversion is available for all operating systems. The .vhdx conversion is only available for Windows 8/2012 R2 and above. If the sector size is 4K, the virtual disk can only be converted to a .vhdx format.

4 In the **Source** panel, select the recovery points you want to convert, and then click **Next**.

Note: If you have specified a password while defining a backup job, the **Enter Password** dialog box is displayed. Enter the password that you specified when you created the backup job and click **OK**.

Perform conversion using latest recovery points for this computer	Converts the most recent recovery points that exist in the recovery point storage location on your computer.
	The list of drives, source files (.v2i and .iv2i files), and dates comes from the most current system index file (.sv2i).
Perform conversion using recovery points for another computer	Converts the recovery points that exist on another computer.
Browse to and select the .sv2i file for the desired system	Specifies a path to a system index file (.sv2i) that resides elsewhere, such as a network location.
	If you selected a system index file that is stored on a network, you are prompted for your network credentials.
	See "Rules for network credentials" on page 134.
Browse	Lets you browse to a path that contains a system index file.
	For example, you can browse to an external (USB) drive, a network location, or to removable media to select a system index file.
Drives	Lets you select the drives with the recovery points that you want to convert based on the selected system index file.
Sector Size	Displays the sector size as 4K or 512.

5 In the **Virtual Disks Destination** panel, set the options you want based on the virtual disk format and version (if applicable) that you selected earlier. Then click **Next**.

Note: Veritas recommends that you select a secure remote network location as the virtual conversion over a network is unencrypted. If the virtual disk files and images are stored on a local computer, select a protected folder. Only privileged users or an administrator should have the rights to access the folder. The recommendation also applies to a one-time virtual conversion of a recovery point to a virtual disk.

Virtual Disks Destination options for converting to VMware virtual disk or Microsoft virtual disk

Folder for virtual disks	Lets you type the path to the folder where you want to place the virtual disk files. **Note:** When you select a path to place the virtual disk files, the **Sector Size** of the source and the destination must be the same.
Browse	Lets you browse to locate the folder in which you want to place the virtual disk files.
User name	Lets you type the user name if you specified a virtual disk folder location on a network See "Rules for network credentials" on page 134.
Password	Specifies the password to a network path.
Create one virtual disk per volume	Creates one virtual disk file per volume. If you do not select this option, each drive is matched to its respective hard drive letter assignment during the conversion. Therefore, it results in multiple drives within one virtual disk file. **Note:** This option is not available if the volumes are on separate disks.
Rename	Lets you edit the file name of the resulting virtual disk file.

Virtual Disks Destination options for converting to VMware ESXi Server

ESXi server name or IP address	Lets you type the name of the server or the server's IP address.
User name	Lets you type a valid administrator user name that has sufficient rights to an ESXi server.
Password	Lets you type a valid password to the ESXi server.
Destination for the virtual disks	Lets you type the path to the folder where you want to place the virtual disk files.
Browse	Lets you browse to a destination location for the virtual disks.
Rename	Lets you edit the name of the resulting virtual disk file.
Next	Specifies the additional options for VMware ESXi Server virtual disks.
Temporary location for conversion	Lets you type the name of the server or the server's IP address that you can use as a temporary location for files.
Temporary Location Credentials	Lets you type a valid administrator user name and password that has sufficient rights.

6 In the **General Options** panel set the conversion options you want, and then click **Next**.

Conversion job name	Lets you type a name for the virtual conversion job or you can leave the default name.
Split virtual disk into 2 GB (.vmdk) files	Lets you split the virtual disk into multiple 2 GB .vmdk files.
	For example, use this option if your virtual disk is stored on a FAT32 drive. Or, any file system that does not support files larger than 2 GB. Or, if you want to copy the virtual disk files to a DVD but the size is larger than the DVD allows.
	Note: This option is specific to VMware; it is not available if you selected **Microsoft Virtual Disk** as the conversion format.

7 In the **Conversion Time** panel, set the conversion job schedule that you want, and then click **Next**.

Conversion Time options for a Weekly schedule

Automatically convert latest recovery points - Weekly	Converts the latest recovery points to virtual disks using a weekly schedule.
Default	Uses the default conversion schedule.
Start time	Lets you select the time you want the conversion to start.
Days	Lets you select the day of the week that you want the conversion to take place.
Run more than once per day	Converts the recovery points multiple times throughout a day.
Time between conversions	Lets you select the amount of time to elapse before the next conversion.
Number of times	Specifies the number of times that you want the conversion to occur, beginning from the selected start time.
Details	Displays the conversion time information you have selected.

Conversion Time options for a Monthly schedule

Automatically convert latest recovery points - Monthly	Converts the latest recovery points to virtual disks using a monthly schedule.
Default	Lets you use the default conversion schedule.
Start time	Lets you select the time you want the conversion to start.
Days of the month	Lets you select the day of the month that you want the conversion to take place.
Details	Displays the conversion time information you have selected.

Conversion Time options for an Only Run Once schedule

Automatically convert latest recovery points - Only run once	Runs the conversion one time on the date and at the time that you specify.
Date	Lets you select the day, month, and year that you want the conversion to run.
Time	Lets you select the time that you want the conversion to start.
Details	Displays the conversion time information you have selected.

8 If you want to run the new conversion job immediately, click **Run conversion now**.

This option is not available if you selected the **Only run once** option in the **Conversion Time** panel.

9 Click **Finish**.

See "Viewing the properties of a virtual conversion job" on page 252.

See "Viewing the progress of a virtual conversion job" on page 252.

See "Editing a virtual conversion job" on page 252.

See "Running an existing virtual conversion job immediately" on page 251.

See "Deleting a virtual conversion job" on page 253.

Running an existing virtual conversion job immediately

After you create a conversion job, you can use **Run Now** to create an on-demand recovery point conversion to virtual disk format. A manual conversion starts immediately.

To run an existing virtual conversion job immediately

1 On the **Tasks** menu, click **Run or Manage Virtual Conversions**.

2 Select the name of a conversion job that you want to run immediately.

3 On the toolbar, click **Run Now**.

See "Viewing the properties of a virtual conversion job" on page 252.

See "Viewing the progress of a virtual conversion job" on page 252.

See "Editing a virtual conversion job" on page 252.

See "Deleting a virtual conversion job" on page 253.

Viewing the properties of a virtual conversion job

You can use **Properties** for a selected virtual conversion job to review a summary of the settings, options, and assigned schedule.

To view the properties of a virtual conversion job

1   On the **Tasks** menu, click **Run or Manage Virtual Conversions**.

2   Select the name of a conversion job whose properties you want to view.

3   On the **Tasks** menu, click **Properties**.

4   Click **OK**.

See "Viewing the progress of a virtual conversion job" on page 252.

See "Editing a virtual conversion job" on page 252.

See "Running an existing virtual conversion job immediately" on page 251.

See "Deleting a virtual conversion job" on page 253.

Viewing the progress of a virtual conversion job

You can view the progress of a virtual conversion job while it runs to determine how much time remains until the conversion completes.

To view the progress of a virtual conversion job

◆   Do one of the following:

  ■   On the **View** menu, click **Progress and Performance**.

  ■   On the **Tasks** menu, click **Run or Manage Virtual Conversions**, and then on the **View** menu, click **Progress and Performance**.

See "Viewing the properties of a virtual conversion job" on page 252.

See "Editing a virtual conversion job" on page 252.

See "Running an existing virtual conversion job immediately" on page 251.

See "Deleting a virtual conversion job" on page 253.

Editing a virtual conversion job

You can edit the schedule portion of an existing conversion job or you can edit all aspects of the job.

To edit a virtual conversion job

1   On the **Tasks** menu, click **Run or Manage Virtual Conversions**.

2   Select the name of a conversion job that you want to edit.

3   Do one of the following:

To change the schedule	On the toolbar, click **Change Schedule**.
	Make changes to the conversion schedule, and then click **OK**.
To change the job settings	On the toolbar, click **Edit Settings**.
	Make the changes you want in each wizard pane, and then click **Finish**.

See "Viewing the properties of a virtual conversion job" on page 252.

See "Viewing the progress of a virtual conversion job" on page 252.

See "Running an existing virtual conversion job immediately" on page 251.

See "Deleting a virtual conversion job" on page 253.

Deleting a virtual conversion job

You can delete virtual conversion jobs you no longer need or use.

When you delete a virtual conversion job, no recovery points or virtual disks are deleted from the storage location. Only the conversion job itself is deleted.

To delete a virtual conversion job

1   On the **Tasks** menu, click **Run or Manage Virtual Conversions**.

2   Select the names of one or more conversion jobs that you want to delete.

3   On the toolbar, click **Remove**.

4   Click **Yes** to confirm the deletion.

See "Viewing the properties of a virtual conversion job" on page 252.

See "Viewing the progress of a virtual conversion job" on page 252.

See "Editing a virtual conversion job" on page 252.

See "Running an existing virtual conversion job immediately" on page 251.

Running a one-time conversion of a physical recovery point to a virtual disk

You can use Veritas System Recovery to convert recovery points of a physical computer to VMware virtual disk. You can create a schedule to convert recovery points to a VMware virtual disk (.vmdk format) or a Microsoft virtual disk (.vhd format).

Note: If the disk sector size is 4K, the Microsoft virtual disk can only be converted to a .vhdx format.

You can also convert recovery points directly to VMware ESXi Server. Virtual disks are excellent for testing and evaluation purposes.

Note: You cannot convert a 4K disk to a .vmdk format.

You can find a list of platforms that support the virtual disks that are created from recovery points in the software compatibility list. The software compatibility list is available at the following URL:

https://www.veritas.com/support/en_US/search-results.html?keyword=V-306-17*

You can also create scheduled recovery point conversions to virtual disks.

To run a one-time recovery point conversion to virtual disk

1   On the **Tasks** menu, click **One Time Virtual Conversion**.

2   Click the virtual disk type (and version, if applicable) that you want to create, and then click **Next**.

VMware Virtual Disk (.vmdk)	Converts the recovery points to a .vmdk format. This format only supports Workstation version 8.
VMware ESXi Server	Converts the recovery points to a VMware ESXi Server.
	Note: Veritas System Recovery 18.0.2 no longer supports physical to virtual conversion for ESXi on a 32-bit operating system.
Microsoft Virtual Disk	The .vhd format is supported for all versions before Windows 8 and the .vhdx format is supported for Windows 8 and above.
	Note: The Microsoft Virtual Disk type supports .vhd and .vhdx conversions. The .vhd conversion is available for all operating systems. The .vhdx conversion is only available for Windows 8/2012 R2 and above. If the sector size is 4K, the virtual disk can only be converted to a .vhdx format.

3   Do one of the following:

■   Click **View all recovery points** near the bottom of the pane, and then select a recovery point in the list based on its creation date.

■   In the **View by** list, select a recovery point source.

Note: If you have specified a password while defining a backup job, the **Enter Password** dialog box is displayed. Enter the password that you specified when you created the backup job and click **OK**.

Source options when you view recovery points by Date

View by - Date	Displays all of the discovered recovery points in the order in which they were created.
Date	Lets you select an alternate date by using the drop-down calendar. Use the calendar if no recovery points are discovered and displayed in the table.
View all recovery points	Lets you view all recovery points that are available.
Sector Size	Lets you view the sector size, which is displayed as 4K or 512.

Source options when you view recovery points by File name

View by - File name	Lets you view recovery points by their file name.
File name	Specifies a path and a file name of a recovery point.
Browse	Lets you browse to a path that contains a recovery point.
	For example, you can browse for a recovery point (.v2i) or incremental recovery point (.iv2i) file on an external (USB) drive. Or, you can browse to a network location, or removable media.
User name	Specifies the user name if you specify a recovery point file name that is located in a network path.
	See "Rules for network credentials" on page 134.
Password	Specifies the password to a network path.

Source options when you view recovery points by System

View by - System	Lets you use the current system index file that is located in the recovery point storage location. The system index file displays a list of all of the drives on your computer and any associated recovery points from which you can select.
	The use of a system index file reduces the time it takes to convert multiple recovery points. When a recovery point is created, a system index file is saved with it. The system index file contains a list of the most recent recovery points, which includes the original drive location of each recovery point.
Date	Lets you select an alternate date of a system index file by using the drop-down calendar. Use the calendar if no recovery points are discovered and displayed in the table.
Perform conversion using latest recovery points for this computer	Converts the most recent recovery points that exist in the recovery point storage location on your computer.
	The list of drives, source files (.v2i and .iv2i files), and dates comes from the most current system index file (.sv2i).
Perform conversion using recovery points for another computer	Converts the recovery points that exist on another computer.
Browse to and select the .sv2i file for the desired system	Specifies a path to a system index file (.sv2i) that resides elsewhere, such as a network location.
	If you selected a system index file that is stored on a network, you are prompted for your network credentials.
	See "Rules for network credentials" on page 134.

Browse	Lets you browse to a path that contains a system index file.
	For example, you can browse to an external (USB) drive, a network location, or to removable media to select a system index file.
Drives	Lets you select the drives with the recovery points that you want to convert based on the selected system index file.
Sector Size	Lets you view the sector size, which is displayed as 4K or 512.

4 Click **Next**.

5 Set the virtual disk destination options based on the virtual disk format and version (if applicable) that you selected, and then click **Next**.

Virtual Disks Destination options for converting to VMware virtual disk or Microsoft virtual disk

Folder for virtual disks	Lets you type the path to the folder where you want to place the virtual disk files.
	Note: When you select a folder to place the virtual disk files, the **Sector Size** of the source and destination must be the same.
Browse	Lets you browse to locate the folder in which you want to place the virtual disk files.
User name	Lets you type the user name if you specified a virtual disk folder location on a network
	See "Rules for network credentials" on page 134.
Password	Specifies the password to a network path.
Create one virtual disk per volume	Lets you create one virtual disk file per volume.
	If you do not select this option, each drive is matched to its respective hard drive letter assignment during the conversion. Therefore, it results in multiple drives within one virtual disk file.
	Note: This option is not available if the volumes are on separate disks.
Rename	Lets you edit the file name of the resulting virtual disk file.

Virtual Disks Destination options for converting to VMware ESXi Server

ESXi server name or IP address	Indicates the name of the server or the server's IP address.
User name	Indicates a valid administrator user name that has sufficient rights to an ESXi server.

Password	Indicates a valid password to the ESXi server.
Destination for the virtual disks	Indicates the path to the folder where you want to place the virtual disk files.
Browse	Lets you browse to a destination location for the virtual disks.
Rename	Lets you edit the name of the resulting virtual disk file.
Next	Specifies a temporary location options for VMware ESXi Server virtual disks.
Temporary location for conversion	Lets you type the name of the server or the server's IP address that you can use as a temporary location for files.
Temporary Location Credentials	Lets you type a valid administrator user name and password that has sufficient rights.

6 Set the general conversion options you want, and then click **Next**.

Split virtual disk into 2 GB (.vmdk) files	Splits the virtual disk into multiple 2 GB .vmdk files.
	For example, use this option if your virtual disk is stored on a FAT32 drive. Or, any file system that does not support files larger than 2 GB. Or, if you want to copy the virtual disk files to a DVD but the size is larger than the DVD allows.
	Note: This option is specific to VMware; it is not available if you selected **Microsoft Virtual Disk** as the conversion format.

7 Review the summary of the choices you made.

If you need to make any changes, click **Back**.

8 Click **Finish**.

See "Viewing the properties of a virtual conversion job" on page 252.

See "Viewing the progress of a virtual conversion job" on page 252.

See "Editing a virtual conversion job" on page 252.

See "Running an existing virtual conversion job immediately" on page 251.

See "Deleting a virtual conversion job" on page 253.

Managing cloud storage

This chapter includes the following topics:

- Direct to cloud

- Downloading OpenStorage Files

- How Offsite Copy works for cloud storage

Direct to cloud

You can now enable cloud storage as the primary destination when you define backups and during restore.

You are not required to maintain large amounts of data on-premise. Cloud storage gives you the flexibility of maintaining large amounts of data. You can access data from anywhere, at any time.

If a disaster occurs, as all your data is maintained in the cloud, there is no data loss and you can recover your data at any time.

For backups you can specify the OpenStorage destination when you define a drive based backup, a one time backup, and also when you backup using Veritas System Recovery Disk.

For restores, you can specify the OpenStorage destination when you restore files and folders, drives, and use the Veritas System Recovery Disk for restore.

Note: Although cloud storage is a part of OpenStorage, Veritas System Recovery 18 refers to cloud storage as OpenStorage.

You can provide OpenStorage as a primary destination. The path for OpenStorage logical storage unit must be:

- Microsoft Azure storage path: Azure:azure:azure.com/*container name*

■ Amazon S3 Storage path: S3:amazon:amazon.com/*bucket name*

Note: In Veritas System Recovery, a bucket and container are referred to as a logical storage unit.

The Direct to cloud feature is supported only on a 64-bit operating system.

You cannot restore recovery points from the cloud storage using the Granular Restore Option.

You cannot directly create a .vhd or .vhdx file to cloud and cannot use a .v2i file as a source for physical to virtual conversions.

See "Defining a drive-based backup" on page 120.

See "Running a one-time backup from Veritas System Recovery" on page 141.

See "Running a backup from Veritas System Recovery Disk" on page 150.

See "Running an existing backup job immediately" on page 168.

See "Opening and restoring files within a recovery point browser" on page 223.

See "Copying recovery points" on page 233.

See "Recovering files and folders" on page 272.

See "Recovering a secondary drive" on page 277.

See "Recovering a drive" on page 281.

See "Recovering files and folders by using Veritas System Recovery Disk " on page 284.

See "Recovering a computer" on page 292.

See "Recovering a computer with different hardware" on page 302.

Providing the OpenStorage destination path

When you define OpenStorage destination path for cloud storage, you must do the following:

For Amazon S3

To specify the OpenStorage destination, type **S3:amazon:amazon.com/*<bucket name>***

Where

<bucket name> is the location on the Amazon S3 storage.

For Microsoft Azure

To specify the OpenStorage destination, type
Azure:azure:azure.com/<*container_name*>

Where

<*container_name*> is the location on the Microsoft Azure storage.

See "Defining a drive-based backup" on page 120.

OpenStorage destination options for backups

The following table describes the options on the **OpenStorage Destination** dialog
box.

Table 15-1   OpenStorage destination options for backups

OpenStorage Destination	Option and Description	Option and Description	Option and Description	Option and Description	Option and Description
	Server type	Server name	Log on: User name	Log on: Password	Logical storage unit
Amazon S3	**S3**	**amazon:amazon.com**	Amazon account access key.	Amazon account secret key.	The storage unit is called a bucket.
Microsoft Azure	**Azure**	**azure:azure.com**	Microsoft Azure storage user name.	Microsoft Azure storage account access key. You can enter the primary access key or the secondary access key.	The storage unit is called a container/blob.

See "Defining a drive-based backup" on page 120.

See the section called "Using Amazon S3 storage as your Offsite Copy destination"
on page 267.

See the section called "Using Microsoft Azure as your offsite copy destination"
on page 268.

See "Downloading OpenStorage Files" on page 265.

See "Running a one-time backup from Veritas System Recovery" on page 141.

See "Running a backup from Veritas System Recovery Disk" on page 150.

See "Running an existing backup job immediately" on page 168.

OpenStorage destination options for recovery

The following table describes the options on the **OpenStorage Destination** dialog box.

Table 15-2 OpenStorage destination options for recovery

OpenStorage Destination	Option and Description	Option and Description	Option and Description	Option and Description	Option and Description
	Server type	Server name	Log on: User name	Log on: Password	Logical storage unit
Amazon S3	**S3**	**amazon:amazon.com**	Amazon account access key.	Amazon account secret key.	The storage unit is called a bucket.
Microsoft Azure	**Azure**	**azure:azure.com**	Microsoft Azure storage user name.	Microsoft Azure storage account access key. You can enter the primary access key or the secondary access key.	The storage unit is called a container/blob.

Click **OK**.

The **OpenStorage File Selection** dialog box is displayed.

Based on the logical storage unit that you select, all available recovery points are listed. In **Select the recovery points (*.v2i) that you want to restore**, select the recovery points.

For the recover my computer, recover files and folders, recovery point browser, the **Filename** option, lets you select only one .v2i, .iv2i file and for **System**, you can select only one .sv2i file.

See "Recovering files and folders" on page 272.

See "Recovering a secondary drive" on page 277.

See "Recovering a drive" on page 281.

See "Recovering files and folders by using Veritas System Recovery Disk " on page 284.

See "Recovering a computer" on page 292.

See "Recovering a computer with different hardware" on page 302.

See "Opening and restoring files within a recovery point browser" on page 223.

See "Copying recovery points" on page 233.

Downloading OpenStorage Files

When you use the Offsite Copy option to backup your recovery points to the Amazon S3 or Microsoft Azure storage, these files (recovery points) are available in OST (OpenStorage Technology) format. You must download these files to your computer or a network destination to use them to restore your computer. Veritas System Recovery 18 has created a utility using which you can select the OpenStorage location (Amazon S3 or Microsoft Azure storage), the files that you want to download, and then download the files.

To download OpenStorage files

1   On the **View** menu, click **Tools**.

2   Click **Download OpenStorage Files** and select the appropriate options.

OpenStorage location	Lets you select the OpenStorage location from where you want to download the recovery points.
	Click the **Browse for OpenStorage Destination** icon to change the logical storage unit name and the logon credentials. Refer to `Step 9` of the `Defining a drive-based backup` procedure.
	See "Defining a drive-based backup" on page 120.
Download destination	Lets you select the destination to where you want to download the recovery points. You can click **Browse** and save the recovery points to your computer or a network location.
Download destination details	Lets you view the details of the download destination that you selected.
	If you selected a network location, click **Edit** to update the network credentials.
Files available in the OpenStorage location	Lets you select the files (recovery points) that you want to download.
Select file types available in the OpenStorage location	Displays the type of files that you can download.
	Recovery Points (*.v2i, *.iv2i, *.sv2i)

3   Click **OK**.

See the section called "Using Amazon S3 storage as your Offsite Copy destination" on page 267.

See the section called "Using Microsoft Azure as your offsite copy destination" on page 268.

How Offsite Copy works for cloud storage

Using Amazon S3 storage as your Offsite Copy destination

When you create or edit a backup job, you can provide an Amazon S3 storage as an offsite destination. After the backup is complete, the recovery points are copied at the offsite destination (Amazon S3 storage).

Requirements for using the Amazon S3 storage

- Veritas System Recovery 18 installed.
- An Amazon S3 account
  - An Amazon access key
  - An Amazon secret key
- An Amazon S3 bucket
  You must create buckets before configuring the offsite destination in Veritas System Recovery. The buckets are not available for use in Veritas System Recovery if the bucket name does not comply with the bucket naming convention. Refer to the following technote to view the bucket naming conventions: http://www.veritas.com/docs/000107885
- Ensure that you have Internet connectivity and access to HTTP (Port 80) and HTTPS (Port 443).

The recovery points created during backup are stored on the cloud storage as OST (OpenStorage Technology) files. You cannot directly restore your computer using the OST files available on the Amazon S3 storage. You must first download these recovery points using the **Download OpenStorage Files** utility to your computer or a network location and then start the restore process.

See "Downloading OpenStorage Files" on page 265.

Using Microsoft Azure as your offsite copy destination

When you create or edit a backup job, you can provide a Microsoft Azure storage as an offsite destination. After the backup is complete, the recovery points are copied at the offsite destination (Microsoft Azure storage).

Requirements for using the Microsoft Azure storage

- Veritas System Recovery 18.0.2 installed.

- A Microsoft Azure portal account. You should also have a "Storage Account" and a "Container" associated with that "Storage Account.

  Note: To understand more about how to configure a "Storage Account" in Azure portal, see the following link:

  https://azure.microsoft.com/en-in/documentation/articles/storage-create-storage-account/

- A Microsoft Azure storage account, and at least one storage access key (Primary access key or Secondary access key).

- Ensure that the Blob Service containers are already created. Containers represent a logical unit of storage on the cloud-based storage device.

  Note: As a best practice, specific containers should be created to use exclusively with Veritas System Recovery.

- Ensure that the container names meet the following Veritas System Recovery requirements:
  - Container names can contain lowercase letters, numbers, and hyphens.
  - Containers names cannot begin with a hyphen.

  Note: The containers are not available for use in Veritas System Recovery if the container names do not comply with the container naming convention.

The recovery points created during backup are stored on the cloud storage as OST (OpenStorage Technology) files. You cannot directly restore your computer using the OST files available on the Microsoft Azure storage. You must first download these recovery points using the **Download OpenStorage Files** utility to your computer or a network location and then start the restore process.

See "Downloading OpenStorage Files" on page 265.

Recovering files, folders, or entire drives

This chapter includes the following topics:

- About recovering lost data

- Recovering files and folders by using file and folder backup data

- Recovering files and folders

- Recovering a secondary drive

- Recovering a drive

- Exploring files and folders on your computer by using Veritas System Recovery Disk

- Recovering files and folders by using Veritas System Recovery Disk

About recovering lost data

Veritas System Recovery can restore lost files, folders, or entire drives by using recovery points or file and folder backup data.

You must have either a recovery point or file and folder backup data to recover lost files and folders. You must have a recovery point to recover an entire drive. You can recover recent changes to a lost file or folder. However, your backup data must be at least as current as the changes that were made to the lost file or folder.

See "Recovering files and folders by using file and folder backup data" on page 270.

See "Recovering files and folders" on page 272.

Recovering files and folders by using file and folder backup data

If you defined a backup of files and folders and need to recover files, you can recover them from a recent file and folder backup.

Veritas System Recovery includes a search tool to help you locate the files that you want to recover.

See "About recovering lost data" on page 269.

To recover files and folders by using file and folder backup data

1   On the **Tasks** menu, click **Recover My Files**.

2   In the left pane of the **Recover My Files** dialog box, select **File and Folder** as the search method.

3   Do one of the following:

   ■   In the **Find files to recover** search box, type the whole name or partial name of a file or folder that you want to restore. Click **Search**.
       For example, type **recipe**. Any file or folder that includes the word recipe in its name such as Chocolate Cheesecake Recipes.doc, Cathy Read Recipes.xls, Recipes for Success.mp3 are found.

   ■   Click **Advanced Search**, type or select your search criteria, and then click **Search**.

Name	Specify a file name that you want to search.
	You can use the following options to filter your search:
	■ **contains**
	■ **is**
	■ **starts with**
	■ **ends with**
Look in	Lets you select the local drives or folders for a file.
	Select the **Include subfolders** check box to extend the search to the subfolders of the drives or folders.

File date/time	Lets you select the time and the date of a file by using the drop-down calendar.
	You can use the following options to filter your search:
	■ **anytime**
	■ **on**
	■ **before**
	■ **after**
	■ **between**
File size	Lets you specify the size of the file that you want to search in KB, MB, or GB.
	You can use the following options to filter your search:
	■ **any size**
	■ **less than**
	■ **greater than**
	■ **between**

To return to the standard search text box, click **Basic search**.

4 In the search results list box, select the files that you want to restore.

5 Click **Recover Files**.

6 In the **Recover My Files** dialog box, do one of the following:

- ■ Click **Original folders** to restore your files to the same folders where they existed when they were backed up.
  If you want to replace the original files, select **Overwrite existing files**. If you do not select this option, a number is added to the file name. The original file is untouched.

  Caution: The **Overwrite existing files** option replaces your original files with the files that you restore. Or, it replaces the files of the same names that are currently stored at that location.

- ■ Click **Recovered Files folder on the desktop** to restore your files to a **Recovered Files** folder on your Windows desktop.
  Veritas System Recovery creates this folder during the restore.

- ■ Click **Alternate folder** and type the path to the location in which you want to restore your files.

7 Click **Recover**.

8   If you are prompted to replace the existing file, click **Yes**. Be certain that the file that you what to recover is the file that you want.

9   Click **OK**.

See "Recovering files and folders" on page 272.

Recovering files and folders

You can restore files or folders using recovery points if you have defined and run a drive-based backup.

See "About recovering lost data" on page 269.

To recover files and folders by using a recovery point

1   On the **Tasks** menu, click **Recover My Files**

2   In the left pane of the **Recover My Files** dialog box, select **Recovery Point** as the search method.

3 If you want to use a different recovery point than the one selected for you in the **Recovery Point** dialog box, click **Change**. Locate the recovery point you want to use, and then click **OK**.

Select Recovery Point options when you view recovery points by Date

View by - Date	Displays all of the discovered recovery points in the order in which they were created.
Date	Lets you select an alternate date by using the drop-down calendar. Use the calendar if no recovery points are discovered and displayed in the table.
View all recovery points	Lets you view all recovery points that are available.

Select Recovery Point options when you view recovery points by File name

View by - File name	Lets you view recovery points by their file name.
File name	Specifies a path and a file name of a recovery point.
Browse	Lets you browse to a path that contains a recovery point.
	For example, you can browse for a recovery point (.v2i) or incremental recovery point (.iv2i) file on an external (USB) drive. Or, you can browse to a network location, or removable media.
Browse for OpenStorage Destination	Lets you browse an OpenStorage storage destination that you want to use for restoring the recovery points.
	See "OpenStorage destination options for recovery" on page 264.
User name	Specifies the user name if you specify a recovery point file name that is located in a network path.
	See "Rules for network credentials" on page 134.

| **Password** | Specifies the password to a network path. |

Select Recovery Point options when you view recovery points by System

View by - System	Uses the current system index file that is located in the recovery point storage location. The system index file displays a list of all of the drives on your computer and any associated recovery points from which you can select.
	The use of a system index file reduces the time it takes to convert multiple recovery points. When a recovery point is created, a system index file is saved with it. The system index file contains a list of the most recent recovery points, which includes the original drive location of each recovery point.
Date	Lets you select an alternate date of a system index file date by using the drop-down calendar. Use the calendar if no recovery points are discovered and displayed in the table.
Use latest recovery points for this computer	Restores the most recent recovery points that exist in the recovery point storage location on your computer.
	The list of drives, source files (.v2i and .iv2i files), and dates comes from the most current system index file (.sv2i).
Use alternate system index (.sv2i) file	Restores the recovery points that exist on another computer.
Browse to and select the .sv2i file for the desired system	Specifies a path to a system index file (.sv2i) file that resides elsewhere, such as a network location.
	If you selected a system index file that is stored on a network, you are prompted for your network credentials.
	See "Rules for network credentials" on page 134.
Browse	Lets you browse to a path that contains a system index file.
	For example, you can browse to an external (USB) drive, a network location, or to removable media to select a system index file.

Browse for OpenStorage Destination	Lets you browse an OpenStorage storage destination that you want to use for restoring the recovery points.
	See "OpenStorage destination options for recovery" on page 264.
Drives	Lets you select the drives with the recovery points that you want to restore based on the selected system index file.

Note: If Veritas System Recovery cannot locate any recovery points, the **Select Recovery Point** dialog box opens automatically.

4   In the **Find files to recover** field, type the whole name or partial name of a file or folder that you want to restore, and then click **Search**.

For example, type **recipe**. Any file or folder that includes the word recipe in its name such as Chocolate Cheesecake Recipes.doc, Cathy Read Recipes.xls, Recipes for Success.mp3 are found.

5   In the **Name** table, select the files that you want to restore.

6   Click **Recover Files**.

7   In the **Recover My Files** dialog box, select the option you want.

Original folders	Recovers the files to the original folder where they existed when they were backed up.
New folder ("Recovered Files") on the desktop	Recovers the files to a new folder that is created on your Windows desktop called Recovered Files.
Alternate folder	Specifies the path to an alternate location where you want your files to be restored.

8   Click **Recover**.

9   If you are prompted to replace the existing file, click **Yes**. Be certain that the file that you want to recover is the file that you want.

10   Click **OK**.

See "Recovering files and folders by using file and folder backup data" on page 270.

Recovering a secondary drive

If you lose data on a secondary drive, you can use an existing recovery point for that drive to restore the data. A secondary drive is a drive other than the drive on which your operating system is installed.

For example, your computer has a D drive and the data is lost. You can restore the D drive back to an earlier date and time.

To recover a drive, you must have a recovery point that includes the drive that you want to recover. If you are not sure, review the Status page to determine what recovery points are available.

See "Icons on the Status page" on page 200.

Note: Before you proceed, close any applications and files that are open on the drive that you want to restore.

Warning: When you recover a drive, the data in the recovery point replaces all of the data on the drive. Any changes that you made to the data on a drive after the date of the recovery point you use to recover it are lost. For example, if you created a new file on the drive after you created the recovery point, the new file is not recovered.

To recover a secondary drive

1   On the **Tasks** menu, click **Recover My Computer**.

2   Select a recovery point.

Recover My Computer options when you view recovery points by Date

View by - Date	Displays all of the discovered recovery points in the order in which they were created.
Date	Lets you select an alternate date by using the drop-down calendar. Use the calendar if no recovery points are discovered and displayed in the table.
View all recovery points	Lets you view all recovery points that are available.

Recover My Computer options when you view recovery points by File name

View by - File name	Views the recovery points by their file name.
File name	Specifies a path and a file name of a recovery point.
Browse	Lets you browse to a path that contains a recovery point.
	For example, you can browse for a recovery point (.v2i) or incremental recovery point (.iv2i) file on an external (USB) drive. Or, you can browse to a network location, or removable media.
Browse for OpenStorage Destination	Lets you browse an OpenStorage storage destination that you want to use for restoring the recovery points.
	See "OpenStorage destination options for recovery" on page 264.
User name	Specifies the user name if you specify a recovery point file name that is located in a network path.
	See "Rules for network credentials" on page 134.
Password	Specifies the password to a network path.

Recover My Computer options when you view recovery points by System

View by - System	Uses the current system index file that is located in the recovery point storage location. The system index file displays a list of all of the drives on your computer and any associated recovery points from which you can select.
	The use of a system index file reduces the time it takes to convert multiple recovery points. When a recovery point is created, a system index file is saved with it. The system index file contains a list of the most recent recovery points, which includes the original drive location of each recovery point.
Date	Lets you select an alternate date of a system index file date by using the drop-down calendar. Use the calendar if no recovery points are discovered and displayed in the table.
Use latest recovery points for this computer	Restores the most recent recovery points that exist in the recovery point storage location on your computer.
	The list of drives, source files (.v2i and .iv2i files), and dates comes from the most current system index file (.sv2i).
Use alternate system index (.sv2i) file	Restores the recovery points that exist on another computer.
Browse to and select the .sv2i file for the desired system	Specifies a path to a system index file (.sv2i) file that resides elsewhere, such as a network location.
	If you selected a system index file that is stored on a network, you are prompted for your network credentials.
	See "Rules for network credentials" on page 134.
Browse	Lets you browse to a path that contains a system index file.
	For example, you can browse to an external (USB) drive, a network location, or to removable media to select a system index file.
Browse for OpenStorage Destination	Lets you browse an OpenStorage storage destination that you want to use for restoring the recovery points.
	See "OpenStorage destination options for recovery" on page 264.
Drives	Lets you select the drives with the recovery points that you want to restore based on the selected system index file.

3 Click **Recover Now**.

4 Click **OK**.

5 Click **Yes**.

Recovering a drive

You can set various options to customize the recovery of a drive.

To customize the recovery of a drive

1   On the **Tasks** menu, click **Recover My Computer**.

2   Select a recovery point and click **Tasks** > **Custom Recovery** to start the
    Recover Drive Wizard.

3   On the wizard's **Welcome** panel, click **Next**.

4   In the **Recovery Point to Restore** panel, set the options you want.

Recovery point file name	Specifies the recovery point you want to use to recover the drive.
	You can use the recovery point that is already added to this field, or you can browse to a different recovery point.
Browse	Lets you browse to a path that contains a recovery point.
	For example, you can browse for a recovery point (.v2i) or incremental recovery point (.iv2i) file on an external (USB) drive. Or, you can browse to a network location, or removable media.
Browse for OpenStorage Destination	Lets you browse an OpenStorage storage destination that you want to use for restoring the recovery points.
	See "OpenStorage destination options for recovery" on page 264.
User name	Specifies the user name if you specify a recovery point file name that is located in a network path.
	See "Rules for network credentials" on page 134.
Password	Specifies the password to a network path.

5 In the **Target Drive** panel, select one or more drives that you want to restore, and then click **Next**.

If the drive does not have enough space available to restore a recovery point, press **Shift**. Select multiple, contiguous destinations that exist on the same hard disk.

Note: When you select a **Target Drive**, the **Sector Size** of the backed-up drive and the destination drive, must be the same.

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6 If the recovery point is password-protected, in the **Password** dialog box, type the password, and then click **OK**.

7 In the **Recovery Options** panel, select the restore options you want.

Ignore recovery point corruption during restore (potential data loss)	Automatically excludes the corrupted data and continues to restore the recovery point. The restored data does not contain the corrupted portion of data. **Note:** There may be potential data loss as corrupted data is excluded from restore.
Verify recovery point before restore	Verifies whether a recovery point is valid or corrupt before it is restored. This option can significantly increase the time that is required for the recovery to complete.
Do not verify recovery point before restore	Does not verify whether a recovery point is valid or corrupt before it is restored. During restore, if there is corrupted data on the recovery point, an error message is displayed and you cannot restore the recovery point.
Check for file system errors	Checks the restored drive for errors after the recovery point is restored.
Resize restored drive	Expands the drive automatically to occupy the target drive's remaining unallocated space.
Set drive active (for booting OS)	Makes the restored drive the active partition (for example, the drive from which the computer starts). This option is appropriate if you restore the drive on which your operating system is installed.

Restore original disk signature	Restores the original, physical disk signature of the hard drive.
	Disk signatures are part of all Windows operating systems that Veritas System Recovery supports. Disk signatures are required to use the hard drive.
	Select this option if either of the following situations are true:
	■ Your computer's drive letters are atypical (for example, assigned letters other than C, D, E, and so forth).
	■ You restore a recovery point to a new, empty hard disk.
Primary partition	Because hard disks are limited to four primary partitions, this option is appropriate if the drive has four or fewer partitions.
Logical partition	This option is appropriate if you need more than four partitions. You can have up to three primary partitions, plus any number of logical partitions, up to the maximum size of your hard disk.
Drive letter	Lets you assign a drive letter to the partition.

The options that are available depend on the restore destination that you have selected.

8 Click **Next**, and then review your selections.

9 Click **Finish**, then click **Yes**.

Sometime the wizard cannot lock the drive to perform the recovery in Windows (typically, because the drive is in use by a program). In such cases, make sure that the drive is not in use. For example, close any files or applications that may be in use, and then click **Retry**.

If the **Retry** option fails, click **Ignore** to attempt a forced lock on the drive. If **Ignore** fails, you might be prompted to insert the Veritas System Recovery Disk. You must then manually start the recovery environment so that you can complete the recovery. When the recovery is finished, the computer restarts automatically.

See "Recovering a secondary drive" on page 277.

Exploring files and folders on your computer by using Veritas System Recovery Disk

You can explore the files and folders on your computer from Veritas System Recovery Disk by using the **Explore My Computer** feature.

This feature uses the Recovery Point Browser and functions similar to Windows Explorer. You can browse the file structure of any drive that is attached to your computer from Veritas System Recovery Disk.

To explore files and folders on your computer by using Veritas System Recovery Disk

1 Start the computer by using the Veritas System Recovery Disk.

See "Booting a computer by using the Veritas System Recovery Disk" on page 289.

2 In the **Analyze** panel, click **Explore My Computer**.

See "Recovering files and folders by using Veritas System Recovery Disk " on page 284.

Recovering files and folders by using Veritas System Recovery Disk

You can use the Veritas System Recovery Disk to start your computer and to restore files and folders from within a recovery point.

To recover files and folders by using Veritas System Recovery Disk

1 Start the computer by using the Veritas System Recovery Disk.

See "Booting a computer by using the Veritas System Recovery Disk" on page 289.

2 Click **Recover**, and then click **Recover My Files**.

3 Do one of the following:

- If Veritas System Recovery Disk cannot locate any recovery points, you are prompted to locate one. In the **Select Recovery Point** dialog box, navigate to a recovery point, select one, and then click **OK**.
Select Recovery Point options when you view recovery points by date

View by - Date	Displays all of the discovered recovery points in the order in which they were created.
	If no recovery points were discovered, the table is empty. In such cases, you can search all local drives on the computer or browse to find a recovery point.
Select source folder	Lets you view a list of all available recovery points that may exist on your computer's local drives or on a specific drive.
Map a network drive	Specifies a shared network folder path and assign it a drive letter. You can then browse the folder location for the recovery point file you want.
Browse	Lets you locate a recovery point on a local drive or a network folder.
OpenStorage Destination	Lets you select an OpenStorage storage destination that you want to use for restoring the recovery points.
	See " OpenStorage destination options for backups" on page 263.
Select a recovery point	Lets you select the recovery point to restore.
Recovery point details	Gives you additional information about the recovery point you want to restore.

Select Recovery Point options when you view recovery points by file name

View by - File name	Lets you view recovery points by their file name.
Recovery point folder and file name	Specifies a path and a file name of a recovery point.
Map a network drive	Specifies a shared network folder path and assign it a drive letter. You can then browse the folder location for the recovery point file you want.
Browse	Lets you locate a recovery point on a local drive or a network folder.

OpenStorage Destination	Lets you select an OpenStorage storage destination that you want to use for restoring the recovery points.
	See "OpenStorage destination options for recovery" on page 264.
Recovery point details	Gives you additional information about the recovery point you want to restore.

- If Veritas System Recovery Disk finds recovery points, select a recovery point from the list, and then click **OK**.

Note: If you cannot find the recovery points in a network location, type the name of the computer and the share that holds your recovery points. For example, \\computer_name\share_name.

If you still have trouble, try entering the computer's IP address.

See "About using the networking tools in Veritas System Recovery Disk" on page 310.

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4   In the tree view pane of the Recovery Point Browser, double-click the drive that contains the files or folders that you want to restore.

5   In the content pane of the Recovery Point Browser, select the files or folders that you want to restore.

6   Click **Recover Files**.

In the **Recover Items** dialog box, the **Restore to this folder** field may already contain the original path from which the files originated.

If the original location does not include a drive letter, you must type the drive letter at the beginning of the path.

Note: While in the recovery environment, drive letters and labels might not match what appears in Windows. You might have to identify the correct drive based on its label, which is the name assigned to it.

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7   If the original path is unknown or you want to restore the selected files to a different location, click **Browse** to locate the destination.

8   Click **Recover** to restore the files.

9   Click **OK** to finish.

Recovering a computer

This chapter includes the following topics:

About recovering a Unified Extensible Firmware Interface (UEFI)-based computer

Veritas System Recovery Disk lets you recover the computers that use the Unified Extensible Firmware Interface (UEFI) standard. However, consider the following points when you recover UEFI-based computers:

- You must start UEFI-based computers using the 64-bit version of Veritas System Recovery Disk.

- When you boot a UEFI-based computer, ensure that the system drive and the boot drive are located on a GPT disk. Similarly, when you boot a BIOS-based computer, your system drive and boot drive must be located on an MBR disk.

- You cannot restore backups of the boot partition and the system partition of UEFI-based computers to BIOS-based computers. Backups of UEFI-based computers must be restored to GPT disks. Similarly, you cannot restore backups of the boot partition and the system partition of BIOS-based computers to UEFI-based computers. Backups of BIOS-based computers must be restored to MBR disks.

Note: While you recover your computer using Veritas System Recovery Disk, the firmware type of the backup is displayed. Depending on the firmware type of the backup, restore the backups to the appropriate disks, either GPT or MBR.

- If your computer supports both UEFI and BIOS firmware, and you backed it up in UEFI mode, you must start the computer using UEFI firmware.

- When you recover UEFI-based computers, do not select the following options on the **Edit target drive and Options** panel in the **Recover My Computer** wizard:

  - **Set drive active (for booting OS)**

  - **Restore master boot record**
    These options are applicable only for MBR-style disks. They are not applicable to GPT-style disks.

- When you recover UEFI-based computers, you must restore the EFI System Partition first if it does not exist.

- When you recover UEFI-based computers, an empty MSR partition is created if it does not exist.

- You cannot recover the boot volumes and the system volumes of UEFI-based computers to dynamic disks.

See "Recovering a computer" on page 292.

Booting a computer by using the Veritas System Recovery Disk

The Veritas System Recovery Disk lets you boot a computer that can no longer run the Windows operating system. You can create a recovery disk using Veritas System Recovery. When you boot your computer using the Veritas System Recovery Disk,

a simplified version of Windows starts that runs a recovery environment. In the recovery environment, you can access the recovery features of Veritas System Recovery.

Note: Veritas System Recovery Disk requires a minimum of 1 GB of RAM to run. If your computer's video card is configured to share your computer's RAM, you might need more than 1 GB of RAM.

To boot a computer by using the Veritas System Recovery Disk

1   If you store your recovery points on a USB device, attach the device now (for example, an external hard drive).

Note: You should attach the device before you restart the computer. Otherwise, Veritas System Recovery Disk might not detect it.

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2   Attach the Veritas System Recovery Disk that is on a USB Device, into the media drive. If your Veritas System Recovery Disk is on a DVD, insert it into the media drive of the computer.

If a computer manufacturer installed Veritas System Recovery, the recovery environment already could be installed on your computer's hard drive. Either watch your computer monitor after the computer restarts for on-screen instructions, or refer to your manufacturer's documentation.

3   Restart the computer.

If you cannot start the computer from the USB device or DVD, you might need to change the startup settings on your computer.

4   As soon as you see the prompt **Press any key to boot from DVD or USB device**, press a key to start Veritas System Recovery Disk.

Note: You must watch for this prompt. It can come and go quickly. If you miss the prompt, you must restart your computer again.

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5   Read the license agreement, and then click **Accept**.

If you decline, you cannot start Veritas System Recovery Disk, and your computer restarts.

Configuring a computer to start from a USB device or DVD

Your Veritas System Recovery Disk might be on a USB device or DVD. Accordingly, to run Veritas System Recovery Disk, you must be able to start your computer using a USB device or DVD.

See "Booting a computer by using the Veritas System Recovery Disk" on page 289.

To configure a computer to start from a USB device or DVD

1 Turn on your computer.

2 As the computer starts, watch the bottom of the screen for a prompt that tells you how to access the BIOS/UEFI setup.

Generally, you need to press the **Delete** key or a function key to start your computer's BIOS/UEFI program.

3 In the **BIOS/UEFI setup** window, select **Boot Sequence**, and then press **Enter**.

4 Follow the on-screen instructions to set the USB device or DVD to be the first startup device in the list.

5 Attach the Veritas System Recovery Disk that is on a USB Device, into the media drive. If your Veritas System Recovery Disk is on a DVD, insert it into the media drive.

6 Save the changes and exit the BIOS/UEFI setup to restart the computer with the new settings.

7 Press any key to start Veritas System Recovery Disk.

When you start your computer with the Veritas System Recovery Disk USB device or DVD in the drive, you see a prompt to **Press any key to boot from DVD or USB device**. If you do not press a key within five seconds, your computer attempts to start from the next startup device.

Note: Watch carefully as the computer starts. If you miss the prompt, you must restart the computer again.

See "Recovering a computer" on page 292.

Preparing to recover a computer by checking the hard disk for errors

If you suspect that your hard disk is damaged, you can examine it for errors.

To prepare to recover a computer by checking the hard disk for errors

1   Boot the computer by using the Veritas System Recovery Disk.

See "Booting a computer by using the Veritas System Recovery Disk"
on page 289.

2   In the **Analyze** panel of Veritas System Recovery Disk, click **Check Hard
Disks for Errors**.

3   Select the drive that you want to check.

4   Select any of the following options.

   ■   **Automatically fix file system errors**
       Fixes the errors on the selected disk. If you do not select this option, errors
       are displayed but are not fixed.

   ■   **Find and correct bad sectors**
       Locates the bad sectors and recovers readable information.

5   Click **Start**.

See "Recovering a computer" on page 292.

Recovering a computer

If Windows fails to start or does not run normally, you can still recover your computer.
You can use the Veritas System Recovery Disk and an available recovery point or
a virtual disk that you created from a recovery point.

Note: If you can start Windows and the drive that you want to restore is a
non-operating system drive, you can restore the drive within Windows.

The Veritas System Recovery Disk lets you run a recovery environment that provides
temporary access to Veritas System Recovery recovery features. For example, you
can access the recovery features of Veritas System Recovery to restart the computer
into its previous, usable state.

Note: If you purchased Veritas System Recovery from your computer manufacturer,
some features in the recovery environment might not be available. For example, if
the manufacturer installed the recovery environment on your computer's hard disk.
Your manufacturer might also assign a keyboard key for the purpose of starting the
recovery environment. When you restart your computer, watch for instructions on
your computer monitor, or refer to your manufacturer's instructions.

If you have a recovery point for the hard drives that you want to recover, you can fully restore your computer. Or, you can recover another hard drive back to the state it was in when the recovery point was created.

Note: If you restore a recovery point to a computer that uses different hardware, the Restore Anyware feature is automatically enabled for you.

See "Recovering a computer with different hardware" on page 302.

Veritas System Recovery 18 does not create a dynamic disk or storage pool layout. To restore a volume, you need to manually create a dynamic disk or a storage pool configuration. Boot the computer using the Veritas System Recovery Disk and on the **Analyze** panel click **Open Command Shell Window**.

- If you want to create a dynamic disk configuration, run the DISKPART utility. The following technote provides information about restoring dynamic disks. http://www.veritas.com/docs/000037965

- If you want to create a storage pool configuration, use PowerShell commandlets.

Note: For the PowerShell commandlets configuration, create a recovery disk using the **Advanced** option.

After you create the required configuration, you can continue with the steps to recover a computer.

To recover a computer

1   Boot the computer by using the Veritas System Recovery Disk.

    See "Booting a computer by using the Veritas System Recovery Disk" on page 289.

2   Check the hard disk for errors.

    See "Preparing to recover a computer by checking the hard disk for errors" on page 291.

3   On the **Home** panel of Veritas System Recovery Disk, click **Recover My Computer**.

    If your recovery points are stored on media and you only have one media drive, you can eject the Veritas System Recovery Disk now. Attach the USB device or insert the DVD that contains your recovery points.

4   On the **Welcome** page of the wizard, click **Next**.

5 On the **Select a Recovery Point to Restore** panel, select a recovery point to restore, and then click **Next**.

Select Recovery Point to Restore options when you view recovery points by Date

View by - Date	Displays all of the discovered recovery points in the order in which they were created.
	If no recovery points were discovered, the table is empty. In such cases, you can search all local drives on the computer or browse to find a recovery point.
Select source folder	Lets you view a list of all available recovery points that may exist on your computer's local drives or on a specific drive.
Map a network drive	Specifies a shared network folder path and assign it a drive letter. You can then browse the folder location for the recovery point file you want.
Browse	Locates a recovery point on a local drive or a network folder.
Select a recovery point	Lets you select the recovery point to restore.
Recovery point details	Gives you additional information about the recovery point you want to restore.

Select Recovery Point to Restore options when you view recovery points by File name

View by - File name	Lets you view recovery points by their file name.
Recovery point folder and file name	Specifies a path and a file name of a recovery point.
Map a network drive	Specifies a shared network folder path and assign it a drive letter. You can then browse the folder location for the recovery point file you want.
Browse	Locates a recovery point on a local drive or a network folder.
OpenStorage Destination	Lets you select an OpenStorage storage destination that you want to use for restoring the recovery points.
	See "OpenStorage destination options for recovery" on page 264.

Recovery point details	Gives you additional information about the recovery point you want to restore.

Select Recovery Point to Restore options when you view recovery points by System

View by - System	Lets you use the current system index file that is located in the recovery point storage location. The system index file displays a list of all of the drives on your computer and any associated recovery points from which you can select.
	The use of a system index file reduces the time it takes to convert multiple recovery points. When a recovery point is created, a system index file is saved with it. The system index file contains a list of the most recent recovery points, which includes the original drive location of each recovery point.
System index folder and filename	Specifies a path and a file name of a system index file that you want to use for recovery.
Map a network drive	Specifies a shared network folder path and assign it a drive letter. You can then browse the folder location for the system index file (.sv2i) you want.
Browse	Lets you browse to a path that contains a system index file.
	For example, you can browse to an external (USB) drive, a network location, or to removable media to select a system index file.
OpenStorage Destination	Lets you select an OpenStorage storage destination that you want to use for restoring the recovery points.
	See "OpenStorage destination options for recovery" on page 264.

If disks with no layout structures are detected, you are prompted to initialize the disk layout. A list of disks without layout structures is displayed. The list shows the default disk layout type, either GPT, or MBR. If required, you can change the layout type for the disks, and then click **OK** to initialize layouts on them.

Note: If you are recovering a UEFI-based computer, you must restore its system partitions to a GPT disk.

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6 On the **Drives to Recover** panel, select each drive that you want to recover and set the options that you want, and then click **Next**.

Select drives to recover	Lets you select the drives that you want to recover.
Add	Adds the additional drives that you want to recover.
Remove	Removes the selected drives from the list of drives to recover.
Edit	Lets you edit the recovery options for a selected drive.
Ignore recovery point corruption during restore (potential data loss)	Automatically excludes the corrupted data and continues to restore the recovery point. The restored data does not contain the corrupted portion of data. **Note:** There may be potential data loss as corrupted data is excluded from restore.
Verify recovery point before restore	Verifies whether a recovery point is valid or corrupt before it is restored. If the recovery point is invalid, the recovery is discontinued. This option can significantly increase the time that is required for the recovery to complete.
Do not verify recovery point before restore	Does not verify whether a recovery point is valid or corrupt before it is restored. During restore, if there is corrupted data on the recovery point, an error message is displayed and you cannot restore the recovery point.
Use Restore Anyware to recover to different hardware	Selected automatically if any of the following are true: ■ You recover a non-operating system drive to new or to different computer hardware. Or, you can recover both an operating system drive and one or more data drives to new or to different computer hardware. ■ You upgrade to new or to different computer hardware from an older computer. ■ The motherboard on the computer has failed. If you recover a data drive only to new or to different computer hardware, this option is not selected for you.

When you recover your computer, select the drive on which Windows is installed. On most computer systems, this drive is the C drive. In the recovery environment, the drive letters and labels might not match what appears in Windows. You might need to identify the correct drive based on its label. Or,

you can identify the drive by its name, or by browsing the files and folders in the recovery point.

7 Optionally, select a drive that you want to recover, and then click **Edit**.

Select the options that you want to perform during the recovery process, and then click **OK** to return to the **Drives to Recover** panel.

Delete Drive	Deletes a selected drive in the list to make space available to restore your recovery point.
	When you use this option, the drive is only marked for deletion. The actual deletion of the drive takes place after you click **Finish** in the wizard.
Undo Delete	Returns a deleted drive to the list of drives.
Resize drive after recover (unallocated space only)	Resizes a disk after the recovery point is restored. After you select this option, you can specify the new size in megabytes. The size must be greater than the identified size of the disk that you selected in the list.
Primary partition	Because hard disks are limited to four primary partitions, this option is appropriate if the drive has four or fewer partitions.
Logical partition	This option is appropriate if you need more than four partitions. You can have up to three primary partitions, plus any number of logical partitions, up to the maximum size of your hard disk.
Check for file system errors after recovery	Checks the restored drive for errors after the recovery point is restored.
Set drive active (for booting OS)	Makes the restored drive the active partition (for example, the drive from which the computer starts).
	You should select this option if you restore the drive on which your operating system is installed.
	Note: Do not select this option if you are restoring system partition or boot partition of a UEFI-based computer. This option is applicable only for MBR-style disks.

Restore original disk signature	Restores the original, physical disk signature of the hard drive.
	Disk signatures are part of all Windows operating systems that Veritas System Recovery supports. Disk signatures are required to use the hard drive.
	Select this option if either of the following situations are true:
	■ Your computer's drive letters are atypical (for example, assigned letters other than C, D, E, and so forth).
	■ You restore a recovery point to a new, empty hard disk.
Restore master boot record	Restores the master boot record. The master boot record is contained in the first sector of a physical hard disk. The master boot record consists of a master boot program and a partition table that describes the disk partitions. The master boot program analyzes the partition table of the first hard disk to see which primary partition is active. It then starts the boot program from the boot sector of the active partition.
	This option is recommended only for advanced users and is available only if you restore a whole drive in the recovery environment.
	Select this option if any of the following situations are true:
	■ You restore a recovery point to a new, empty hard disk.
	■ You restore a recovery point to the original drive, but the drive's partitions were modified since the recovery point was created.
	■ You suspect that a virus or some other problem has corrupted your drive's master boot record.
	Note: Do not select this option if you are restoring system partition or boot partition of a UEFI-based computer. This option is applicable only for MBR-style disks.

8 Click **Next** to review the recovery options that you selected.

9 Select **Reboot when finished** if you want the computer to restart automatically after the recovery process finishes.

10 Click **Finish**.

11 Click **Yes** to begin the recovery process.

See "Recovering a computer from a virtual disk file" on page 299.

See "Recovering files and folders by using Veritas System Recovery Disk " on page 284.

Recovering a computer from a virtual disk file

Using the recovery environment, you can recover your computer from within a virtual disk file (.vmdk or .vhd). If you have a virtual disk for the hard drives that you want to recover, you can fully recover your computer. Or, you can recover another hard drive back to the state it was in when the original virtual disk was created.

Note: You cannot recover a UEFI-based computer from a virtual disk file.

See "Defining a virtual conversion job" on page 244.

See "Running a one-time conversion of a physical recovery point to a virtual disk" on page 254.

Note: If you restore a virtual disk to a computer that uses different hardware, the Restore Anyware feature is automatically enabled for you.

To recover a computer from a virtual disk file

1   Boot the computer by using the Veritas System Recovery Disk.

See "Booting a computer by using the Veritas System Recovery Disk" on page 289.

2   On the **Home** panel of Veritas System Recovery Disk, click **Recover My Computer**.

3   On the **Welcome** panel of the wizard, click **Next**.

4   On the **Select a Recovery Point to Restore** panel, in the **View recovery points by** list, select **Filename**.

If disks with no layout structures are detected, you are prompted to initialize the disk layout. A list of disks without layout structures is displayed. The list shows the default disk layout type, either GPT, or MBR. If required, you can change the layout type for the disks, and then click **OK** to initialize layouts on them.

5   On the **Select a Recovery Point to Restore** panel, click **Browse** to locate, select, and open a virtual disk file (.vmdk or .vhd).

If necessary, click **Map a network drive**. Specify a shared network folder path and assign it a drive letter. You can then browse the folder location for the virtual disk file you want.

6   Click **Next**.

7   In the **Target Drive** panel, select the target drive where you want to restore the virtual disk.

8   Optionally, do any of the following:

■   Click **Delete Drive**.
Delete a selected drive in the list to make space available to restore your virtual disk.
When you click **Delete Drive**, the drive is only marked for deletion. The actual deletion of the drive takes place after you click **Finish** in the wizard.

■   Click **Undo Delete**.
If you delete a drive and then change your mind, click **Undo Delete** to return the drive to the list.

9   Click **Next**.

Use Restore Anyware to recover to different hardware is already selected for you if you recover an operating system drive (the drive on which Windows is installed; usually the C drive).

This option is not selected if the virtual disk already contains the necessary drivers for the target computer. Or, if you restore a virtual disk that contains a data drive.

10   If necessary, enter the product license key.

A license key is required to use Restore Anyware when you recover a system from a virtual disk file.

If you choose, you can add a license key directly to a custom Veritas System Recovery Disk by using the **Create Custom Recovery Disk** wizard. When you restore a virtual disk and Restore Anyware is enabled in Veritas System Recovery Disk, you are not prompted to enter the license key. It is already a part of the custom Veritas System Recovery Disk.

See "Customizing an existing Veritas System Recovery Disk" on page 61.

11   Click **Next**.

12   In the **Recovery Options** panel, select the options that you want to perform during the recovery process.

Verify recovery point before recovery	Verifies whether a recovery point is valid or corrupt before it is restored. If the recovery point is invalid, the recovery is discontinued.
	This option can significantly increase the time that is required for the recovery to complete.
Check for file system errors after recovery	Checks the restored drive for errors after the recovery point is restored.
Resize drive after recover (unallocated space only)	Specifies the new drive size in megabytes.
Primary partition	Because hard disks are limited to four primary partitions, this option is appropriate if the drive has four or fewer partitions.
Logical partition	This option is appropriate if you need more than four partitions. You can have up to three primary partitions, plus any number of logical partitions, up to the maximum size of your hard disk.
Set drive active (for booting OS)	Makes the restored drive the active partition (for example, the drive from which the computer starts).
	You should select this option if you restore the drive on which your operating system is installed.
Restore original disk signature	Restores the original, physical disk signature of the hard drive.
	Disk signatures are part of all Windows operating systems that Veritas System Recovery supports. Disk signatures are required to use the hard drive.
	Select this option if either of the following situations are true:
	■ Your computer's drive letters are atypical (for example, assigned letters other than C, D, E, and so forth).
	■ You are restore a recovery point to a new, empty hard disk.

Restore master boot record	Restores the master boot record. The master boot record is contained in the first sector of a physical hard disk. The master boot record consists of a master boot program and a partition table that describes the disk partitions. The master boot program analyzes the partition table of the first hard disk to see which primary partition is active. It then starts the boot program from the boot sector of the active partition.
	This option is recommended only for advanced users and is available only if you restore a whole drive in the recovery environment.
	Select this option if any of the following situations are true:
	■ You restore a recovery point to a new, empty hard disk.
	■ You restore a recovery point to the original drive, but the drive's partitions were modified since the recovery point was created.
	■ You suspect that a virus or some other problem has corrupted your drive's master boot record.

The options that are available depend on the target drive that you selected earlier.

13 Click **Next** to review the recovery options that you selected.

14 Select **Reboot when finished** if you want the computer to restart automatically after the recovery process finishes.

15 Click **Finish**.

16 Click **Yes** to begin the recovery process.

See "Recovering a computer" on page 292.

See "Recovering a computer with different hardware" on page 302.

Recovering a computer with different hardware

The Veritas System Recovery Restore Anyware feature lets administrators restore a system drive of a supported Windows platform computer. You can restore the

system even if it has different hardware than was found in the original computer from which the recovery point was made.

Restore Anyware lets you make the necessary changes for the system to be able to start. Depending on your configuration, you may need to make additional changes for the computer to run exactly as it did previously.

Restore Anyware lets you restore a recovery point onto new hardware. For example, Restore Anyware is automatically used for you in the following scenarios:

- Your computer's motherboard has failed and you replaced it with a new or a different motherboard.

- You want to upgrade to new hardware from an older computer.

- You want to restore a virtual disk file back to a physical computer.

This feature is used to recover drives only; it cannot be used to recover at a more granular level such as files and folders.

Note: You can obtain more information about domain controller support.

See https://www.veritas.com/support/en_US/search-results.html?keyword=V-269-16*

Warning: If you have an OEM license from your hardware vendor or a single-user license, you might be prompted to reactivate your Windows software. You can reactivate by using your Windows license key. Be aware that OEM and single-user licenses might have a limited number of activations. Verify that using Restore Anyware does not violate your operating system or application license agreements.

Keep in mind the following when Restore Anyware is used:

- Performing a Restore Anyware to hardware that is significantly different might require you to do the following:

  - Add mass storage device drivers.

  - Install hot fixes for the Windows operating system that you restore.

  - Reactivate your Windows operating system when the system restarts.

  - Provide your license key when the system restarts.

  - Provide a local user name and password when the system restarts.

- When you restore a recovery point with Restore Anyware, you might be prompted for the local administrator name and password. You should have this information ready before you perform the restore. Technical support cannot restore a lost password.

- Restore Anyware is not used to restore a single recovery point to multiple computers. The product does not generate a unique SID (security identifier) for every computer.

- When you use Restore Anyware with a computer that uses a static IP address, you must manually reconfigure the computer after the restore is complete.

- Veritas System Recovery supports one NIC on a system. If you have a dual NIC system, you might need to manually configure the additional NICs to perform a restore through Restore Anyware.

If you restore to identical (or very similar) hardware on which the recovery point was originally made, the Restore Anyware feature is deselected for you.

Before you restore a computer with Restore Anyware, you must save the recovery point or virtual disk file to an accessible location. During the recovery, you might also be prompted to supply disk drivers, service packs, hot fixes, and so forth. You should have your Windows media CD available.

For more information about getting Restore Anyware drivers, go to the Veritas Knowledge Base at the following URL:

https://www.veritas.com/support/en_US/search-results.html?keyword=V-269-15*

Warning: Before you restore a computer through Restore Anyware, test your access to the recovery points or virtual disk in the recovery environment. You should ensure that you have access to SAN volumes and that you can connect to the network.

To recover a computer through Restore Anyware

1   Start the computer by using the Veritas System Recovery Disk.

    See "Booting a computer by using the Veritas System Recovery Disk"
    on page 289.

2   On the **Home** panel, click **Recover My Computer**.

    Your recovery points or virtual disks may be stored on media. In such cases, if you only have one USB drive, you can eject the Veritas System Recovery Disk now. Attach the USB device that contains your recovery points or virtual disks.

3   On the **Welcome** panel of the wizard, click **Next**.

4   Do one of the following:

    - If Veritas System Recovery Disk located recovery points, proceed to step 7.

    - If Veritas System Recovery Disk does not locate any recovery points, proceed to the next step.

5   On the **Select a Recovery Point to Restore** panel, select a recovery point to restore.

Select Recovery Point to Restore options when you view recovery points by Date

View by - Date	Displays all of the discovered recovery points in the order in which they were created.
	If no recovery points were discovered, the table is empty. In such cases, you can search all local drives on the computer or browse to find a recovery point.
Select source folder	Lets you view a list of all available recovery points that may exist on your computer's local drives or on a specific drive.
Map a network drive	Specifies a shared network folder path and assign it a drive letter. You can then browse the folder location for the recovery point file you want.
Browse	Locates a recovery point on a local drive or a network folder.
Select a recovery point	Lets you select the recovery point to restore.
Recovery point details	Gives you additional information about the recovery point you want to restore.

Select Recovery Point to Restore options when you view recovery points by File name

View by - File name	Lets you view recovery points by their file name.
Recovery point folder and file name	Specifies a path and a file name of a recovery point.
Map a network drive	Specifies a shared network folder path and assign it a drive letter. You can then browse the folder location for the recovery point file you want.
Browse	Locates a recovery point on a local drive or a network folder.
OpenStorage Destination	Lets you select an OpenStorage storage destination that you want to use for restoring the recovery points.
	See "OpenStorage destination options for recovery" on page 264.

Recovery point details	Gives you additional information about the recovery point you want to restore.

Select Recovery Point to Restore options when you view recovery points by System

View by - System	Lets you use the current system index file that is located in the recovery point storage location. The system index file displays a list of all of the drives on your computer and any associated recovery points from which you can select.
	The use of a system index file reduces the time it takes to convert multiple recovery points. When a recovery point is created, a system index file is saved with it. The system index file contains a list of the most recent recovery points, which includes the original drive location of each recovery point.
System index folder and filename	Specifies a path and a file name of a system index file that you want to use for recovery.
Map a network drive	Specifies a shared network folder path and assign it a drive letter. You can then browse the folder location for the system index file (.sv2i) you want.
Browse	Lets you browse to a path that contains a system index file.
	For example, you can browse to an external (USB) drive, a network location, or to removable media to select a system index file.
OpenStorage Destination	Lets you select an OpenStorage storage destination that you want to use for restoring the recovery points.
	See "OpenStorage destination options for recovery" on page 264.

If disks with no layout structures are detected, you are prompted to initialize the disk layout. A list of disks without layout structures is displayed. The list shows the default disk layout type, either GPT, or MBR. If required, you can change the layout type for the disks, and then click **OK** to initialize layouts on them.

Note: If you are recovering a UEFI-based computer, you must restore its system partitions to a GPT disk.

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6   Click **Next**.

7   On the **Drives to Recover** panel, select each drive that you want to recover and set the options that you want, and then click **Next**.

Select drives to recover	Lets you select the drives that you want to recover.
Add	Adds the additional drives that you want to recover.
Remove	Removes the selected drives from the list of drives to recover.
Edit	Lets you edit the recovery options for a selected drive.
Ignore recovery point corruption during restore (potential data loss)	Automatically excludes the corrupted data and continues to restore the recovery point. The restored data does not contain the corrupted portion of data. **Note:** There may be potential data loss as corrupted data is excluded from restore.
Verify recovery point before restore	Verifies whether a recovery point is valid or corrupt before it is restored. If the recovery point is invalid, the recovery is discontinued. This option can significantly increase the time that is required for the recovery to complete.
Do not verify recovery point before restore	Does not verify whether a recovery point is valid or corrupt before it is restored. During restore, if there is corrupted data on the recovery point, an error message is displayed and you cannot restore the recovery point.
Use Restore Anyware to recover to different hardware	Selected automatically if any of the following are true: ■ You recover a non-operating system drive to new or to different computer hardware. Or, you can recover both an operating system drive and one or more data drives to new or to different computer hardware. ■ You upgrade to new or to different computer hardware from an older computer. ■ The motherboard on the computer has failed. If you recover a data drive only to new or to different computer hardware, this option is not selected for you.

When you recover your computer, select the drive on which Windows is installed. On most computer systems, this drive is the C drive. In the recovery environment, the drive letters and labels might not match what appears in Windows. You might need to identify the correct drive based on its label. Or,

you can identify the drive based on the name that is assigned to it. Or, you can browse the files and folders in the recovery point.

See "Recovering files and folders by using Veritas System Recovery Disk " on page 284.

8 Optionally, select a drive that you want to recover, and then click **Edit**.

Select the options that you want to perform during the recovery process, and then click **OK** to return to the **Drives to Recover** panel.

Delete Drive	Deletes a selected drive in the list to make space available to restore your recovery point.
	When you use this option, the drive is only marked for deletion. The actual deletion of the drive takes place after you click **Finish** in the wizard.
Undo Delete	Returns a deleted drive to the list of drives.
Resize drive after recover (unallocated space only)	Resizes a disk after the recovery point is restored. After you select this option, you can specify the new size in megabytes. The size must be greater than the identified size of the disk that you selected in the list.
Primary partition	Because hard disks are limited to four primary partitions, this option is appropriate if the drive has four or fewer partitions.
Logical partition	This option is appropriate if you need more than four partitions. You can have up to three primary partitions, plus any number of logical partitions, up to the maximum size of your hard disk.
Check for file system errors after recovery	Checks the restored drive for errors after the recovery point is restored.
Set drive active (for booting OS)	Makes the restored drive the active partition (for example, the drive from which the computer starts).
	You should select this option if you restore the drive on which your operating system is installed.
	Note: Do not select this option if you are restoring system partition or boot partition of a UEFI-based computer. This option is applicable only for MBR-style disks.

Restore original disk signature	Restores the original, physical disk signature of the hard drive.
	Disk signatures are part of all Windows operating systems that Veritas System Recovery supports. Disk signatures are required to use the hard drive.
	Select this option if either of the following situations are true:
	■ Your computer's drive letters are atypical (for example, assigned letters other than C, D, E, and so forth).
	■ You restore a recovery point to a new, empty hard disk.
Restore master boot record	Restores the master boot record. The master boot record is contained in the first sector of a physical hard disk. The master boot record consists of a master boot program and a partition table that describes the disk partitions. The master boot program analyzes the partition table of the first hard disk to see which primary partition is active. It then starts the boot program from the boot sector of the active partition.
	This option is recommended only for advanced users and is available only if you restore a whole drive in the recovery environment.
	Select this option if any of the following situations are true:
	■ You restore a recovery point to a new, empty hard disk.
	■ You restore a recovery point to the original drive, but the drive's partitions were modified since the recovery point was created.
	■ You suspect that a virus or some other problem has corrupted your drive's master boot record.
	Note: Do not select this option if you are restoring system partition or boot partition of a UEFI-based computer. This option is applicable only for MBR-style disks.

9   Click **Next** to review the recovery options you have selected.

10   Select **Reboot when finished** if you want the computer to restart automatically when the recovery process finishes.

11   Click **Finish**.

12   Click **Yes** to begin the recovery process.

See "Recovering a computer" on page 292.

See "Recovering a computer from a virtual disk file" on page 299.

About using the networking tools in Veritas System Recovery Disk

If you store your recovery points on a network, you need access to the network. This access lets you restore your computer or your files and folders from Veritas System Recovery Disk. The Veritas System Recovery Disk includes a variety of networking tools that you can use to assist you with recovery.

Note: Additional computer memory might be required to recover your computer or files across a network.

See "Starting networking services" on page 310.

See "Mapping a network drive from within Veritas System Recovery Disk" on page 310.

See "Configuring network connection settings" on page 311.

Starting networking services

You can start networking services manually.

To start networking services

◆   On the **Network** panel in Veritas System Recovery Disk, click **Start My Networking Services**.

     To verify the connection to the network, you can map a network drive.

     See "Mapping a network drive from within Veritas System Recovery Disk" on page 310.

See "About using the networking tools in Veritas System Recovery Disk" on page 310.

Mapping a network drive from within Veritas System Recovery Disk

If you started the networking services after you started the recovery environment, you can map a network drive. This mapping lets you browse to that drive and select the recovery point that you want to restore. Or, if you create backups from the recovery environment, you can select a destination that resides on a network location.

See "About using the networking tools in Veritas System Recovery Disk" on page 310.

If there is no DHCP server or the DHCP server is unavailable, you must provide a static IP address. You must also provide a subnet mask address for the computer on which you are running Veritas System Recovery Disk.

After you provide the static IP address and subnet mask address, you can enter the recovery environment. However, there is no way to resolve computer names. When you run the **Recover My Computer** wizard or the **Recovery Point Browser**, you can only browse the network by using the IP addresses to locate a recovery point. You can map a network drive so that you can locate the recovery points more effectively. Or, you can use the mapped network drive as a destination for recovery points that you create from within the recovery environment.

To map a network drive from within Veritas System Recovery Disk

1   In Veritas System Recovery Disk, on the **Network** panel, click **Map a Network Drive**.

2   Map a network drive by using the UNC path of the computer on which the recovery point is located.

For example: **\\computer_name\share_name** or **\\IP_address\share_name**

You can also map a network drive from within the **Recover My Computer** wizard or the **Back Up My Computer** wizard in Veritas System Recovery Disk.

Configuring network connection settings

You can access the **Network Configuration** window to configure network settings while running in the Veritas System Recovery Disk environment.

To configure network connection settings

1   In the Veritas System Recovery Disk environment, click **Network**, and then click **Configure Network Connection Settings**.

You can configure settings such as, IP address (static and dynamic), subnet mask, DNS server, and default gateway.

2   If you are prompted to start networking services, click **Yes**.

Setting a status IP address to enable recovery from a recovery point on a network share or drive

You can restore a recovery point that is located on a network drive or share. Sometimes, however, you cannot map a drive or browse to the drive or share on the network to access the recovery point. The lack of an available DHCP service can cause such a failure. In such cases, you can assign a unique static IP address to the computer that is running the recovery environment. You can then map to the network drive or share.

See "Configuring network connection settings" on page 311.

See "About using the networking tools in Veritas System Recovery Disk" on page 310.

To get a static IP address

1   In the Veritas System Recovery Disk environment, click **Network**, and then click **Configure Network Connection Settings**.

2   In the **Network Adapter Configuration** dialog box, click **Use the following IP address**.

3   Specify a unique IP address and subnet mask for the computer that you want to restore.

     Be sure that the subnet mask matches the subnet mask of the network segment.

4   Click **OK**.

5   Click **Close** to return to the recovery environment's main menu.

6   In the **Network** panel, click **Ping a Remote Computer**.

7   Type the address of the computer that you want to ping on the network segment.

8   Click **OK**.

     If you specified a computer name or a computer name and domain as the address method, make note of the IP address that is returned.

     If communication to the storage computer operates as expected, you can use the **Map Network Drive** utility to map a drive to the recovery point location.

See "Recovering a computer" on page 292.

Getting a static IP address if pinging is unsuccessful

If you ping an address and the address does not respond, you can use the `ipconfig /all` command to determine the correct IP address.

See "Configuring network connection settings" on page 311.

See "About using the networking tools in Veritas System Recovery Disk" on page 310.

To get an IP address if the ping is unsuccessful

1   On the computer that contains the recovery point that you want to restore, at a DOS prompt, type the following command, and then press **Enter**.

    ipconfig /all

2   Write down the IP address that is displayed.

    Return to the computer that is running the Veritas System Recovery Disk environment.

3   In the **Network** panel of the Veritas System Recovery Disk environment, click **Ping a Remote Computer** and use the IP address you wrote down.

See "Recovering a computer" on page 292.

Viewing the properties of a recovery point in the Veritas System Recovery Disk

You can view various properties of a recovery point by using the Recovery Point Browser.

See "Viewing the properties of a drive within a recovery point in the Veritas System Recovery Disk" on page 314.

To view the properties of a recovery point in the Veritas System Recovery Disk

1   Start the computer by using the Veritas System Recovery Disk.

    See "Booting a computer by using the Veritas System Recovery Disk" on page 289.

2   Do one of the following:

    ■   In Veritas System Recovery, on the **View** menu, click **Tools**. Click **Run Recovery Point Browser**.

    ■   On the Windows **Start** menu, click **Programs > Veritas System Recovery > Recovery Point Browser**.

3   In the Recovery Point Browser, in the tree panel, select the recovery point file name that you want to view.

4   Do one of the following:

    ■   On the **File** menu, click **Properties**.

    ■   Right-click on the recovery point file name, and then click **Properties**.

Description	Displays a user-assigned comment that is associated with the recovery point.
Size	Displays the total size (in megabytes) of the recovery point.
Created	Displays the date and time that the recovery point file was created.
Compression	Displays the compression level that is used in the recovery point.
Split across multiple files	Identifies whether the entire recovery point file is spanned over several files.
Password protected	Displays the password protection status of the selected drive.
Encryption	Displays the encryption strength that is used with the recovery point.
Version	Displays the version number that is associated with the recovery point.
Computer name	Displays the name of the computer on which the recovery point was created.
Restore Anyware	Identifies whether Restore Anyware was enabled for the recovery point.
Search engine support	Identifies whether you enabled search engine support for the recovery point.
Created by	Identifies the application (Veritas System Recovery) that was used to create the recovery point.

Viewing the properties of a drive within a recovery point in the Veritas System Recovery Disk

You can view the properties of a drive within a recovery point in the Veritas System Recovery Disk.

See "Viewing the properties of a recovery point in the Veritas System Recovery Disk" on page 313.

To view the properties of a drive within a recovery point in the Veritas System Recovery Disk

1 Start the computer by using the Veritas System Recovery Disk.

See "Booting a computer by using the Veritas System Recovery Disk" on page 289.

2 Click **Recover**, and then click **Recover My Files**.

3 Do one of the following:

- In Veritas System Recovery, on the **View** menu, click **Tools**. Click **Run Recovery Point Browser**.

- On the Windows **Start** menu, click **Programs > Veritas System Recovery > Recovery Point Browser**.

4 In the Recovery Point Browser, in the tree panel, double-click the recovery point file name that contains the drive that you want to view.

5 Select the name of the drive.

6 Do one of the following:

- On the **File** menu, click **Properties**.

- Right-click on the drive name within the recovery point, and then click **Properties**.

Description	Displays a user-assigned comment that is associated with the recovery point.
Original drive letter	Displays the original drive letter that was assigned to the drive.
Cluster size	Displays the cluster size (in bytes) that is used in a FAT, FAT32, or NTFS drive.
File system	Displays the file system type that is used within the drive.
Primary/Logical	Displays the selected drive's drive status as either the primary partition or the logical partition.
Size	Displays the total size (in megabytes) of the drive. This total includes used and unused space.
Used space	Displays the amount of used space (in megabytes) within the drive.

Unused space	Displays the amount of unused space (in megabytes) within the drive.
Contains bad sectors	Identifies whether there are any bad sectors on the drive.
Cleanly quiesced	Identifies whether the database application quiesced properly when a recovery point was created.

About the Support Utilities

The Veritas System Recovery Disk environment has several support utilities. Veritas Technical Support might ask you to use these utilities to troubleshoot any hardware issues that you encounter.

You might be required to supply the information that these utilities generate if you call Veritas Technical Support for help resolving problems.

Note: You should only use these tools as directed by Veritas Technical Support.

See "Recovering files and folders by using Veritas System Recovery Disk " on page 284.

Copying a hard drive

This chapter includes the following topics:

- Preparing to copy a hard drive
- Copying one hard drive to another hard drive

Preparing to copy a hard drive

Before you begin, make sure that you delete all the partitions on the destination drive and make it unallocated. Do not format the destination drive. You can use Windows Disk Management utility or any other disk utility to delete the partitions on the destination drive. You must have the hardware configured correctly to copy the hard drives. Perform the following steps to prepare the hardware.

To prepare to copy a drive

1 Do all of the following:

- Get the manufacturer's directions for installing the drive.
- Shut down the computer, and then disconnect the power cord.
- Discharge electricity by touching a grounded metal object.
- Remove the computer cover.

2 Change the jumper settings on the new hard drive to make it slave and attach the data cable. If you use cable select settings for the hard drive, attach it as the slave.

If you use Serial ATA drives (SATA), skip to next step.

3 Attach the power connector to the new hard drive.

4 Anchor the drive in the bay area according to the manufacturer's instructions.

5 Start your computer.

6   Change the BIOS settings to recognize the new hard disk.

If you use SATA drives, make sure that the boot settings are configured to boot from your old drive.

7   Save the BIOS settings and restart the computer.

Copying one hard drive to another hard drive

You can use the **Copy My Hard Drive** feature to copy your operating system, applications, and data to a new had disk. If the hard disk that you want to copy contains multiple partitions, you must copy the partitions one at a time.

You can use the **Copy My Hard Drive** feature to do the following:

■   Upgrade to a larger hard disk.

■   Add a second hard disk and keep the original.

If the power or other hardware fails when you copy data, no data is lost from the source drive. You can start the process again after the failure is resolved.

Note: You should not use the **Copy My Hard Drive** feature to set up a hard disk that would be used in another computer.

Perform the following steps to copy one hard drive to another hard drive.

Note: If you want to copy a hard drive that has Windows 7 installed on it, you need to copy the System Reserved partition first. After you complete the copying of System Reserved Partition, copy other partitions in the remaining unallocated space on the destination drive.

To copy one hard drive to another hard drive

1   On the **View** menu, click **Tools**.

2   Click **Copy My Hard Drive**.

3   In the **Welcome** panel, click **Next**.

4   In the **Source Drive** panel, select the drive that you want to copy, and then click **Next**.

If the drive that you want to copy is not listed, check the **Show Hidden Drives** option.

5 In the **Destination** panel, select the destination drive for the copy, and then click **Next**.

Note: When you select the destination, the **Sector Size** for the source drive that you want to copy and the destination drive must be the same.

6 In the **Advanced Options** panel, set the copy options you want, and then click **Next**.

Check source for file system errors	Checks the source drive for errors before you copy it. The source drive is the original drive.
Check destination for file system errors	Checks the destination drive for errors after you copy the drive. The destination drive is the new drive.
Resize drive to fill unallocated space.	Expands the drive to occupy the destination drive's remaining unallocated space.
Set drive active (for booting OS)	Makes the destination drive the active partition (the drive from which the computer starts). Only one drive can be active at a time. To boot the computer, it must be on the first hard disk, and it must contain an operating system. When the computer boots, it reads the partition table of the first hard disk to find out which drive is active. It then boots from that location. If you cannot start the computer from the drive, have a boot disk ready. You can use the Veritas System Recovery Disk.
	The **Set drive active** option is valid for basic disks only (not dynamic disks).
Disable SmartSector copying	Speeds up the copying process by only copying the clusters and sectors containing data.
	In high-security environments, you might want to copy all clusters and sectors in their original layout, regardless of whether they contain data. In such cases, this option should be deselected.
Ignore bad sectors during copy	Copies the drive even if there are errors on the disk.
Copy MBR	Copies the master boot record from the source drive to the destination drive. Select this option if you intend to copy the C:\ drive to a new, empty hard drive.
	You should not select this option if you want to copy a drive to another space on the same hard drive as a backup.
	You should also not select this option if the destination drive has partitions and you do not want to overwrite them.
Primary partition	Lets you make the destination (new) drive a primary partition.
Logical partition	Lets you make the destination (new) drive a logical partition inside an extended partition.
Drive letter	Lets you select the drive letter you want assigned to the partition.

> **Note:** When you copy the System Reserved Partition of Windows 7, make sure that you select the **Set drive active** option. Also, uncheck the **Resize drive to fill unallocated space** option and do not assign a drive letter. Do not select the **Set drive active** option while copying other partitions from the hard disk that has Windows 7 installed.

7 Click **Finish** to begin the copy.

8 Repeat the same steps to copy other partitions on the hard drive.

9 After you are done copying the hard drive, disconnect the old drive, and then boot up the destination drive.

> **Note:** After you successfully boot your computer using the destination drive, you can reconnect the old drive to your computer.

See

Using the Veritas System Recovery Granular Restore Option

This chapter includes the following topics:

About the Veritas System Recovery Granular Restore Option

The Granular Restore Option is an administrative tool that works with Veritas System Recovery to provide granular restore capabilities for the following applications:

- Microsoft Exchange™ 2007, 2010, and 2013
  If you want to be able to restore emails using the Granular Restore Option, you must have Microsoft Outlook 2007, 2010, or 2013 installed. Outlook 2013 can

be installed in combination with Outlook 2007 or 2010. Using Granular Restore Option, you cannot view, forward, or restore an email folder or a mailbox (.pst file)with Outlook 2013. If you have Outlook 2013 and 2010 installed, you cannot restore an email folder or a mailbox for either of the Outlook versions.

You can only restore email messages of Exchange 2013 when Outlook 2013 is installed (or Outlook 2013 with 2010 or 2007). To import messages to your Outlook mailbox, you can import the restored messages to Outlook, and they are then added to your mailbox (.pst file)

To use all features of Granular Restore Option, you can install Outlook 2007 or 2010.

- File and folder data

What you can do with the Granular Restore Option

Veritas System Recovery is used to create volume-level recovery points. Using theGranular Restore Option, you can open these recovery points and restore Microsoft Exchange mailboxes, folders, and individual messages. You can also restore unstructured files and folders.

You can do the following tasks with the Granular Restore Option.

Table 19-1   Granular Restore Option tasks

Task	More information
- Restore Exchange mail. - Open a specific recovery point. - Restore a mailbox. - Restore an email folder. - Restore or forward an email message.	See "Restoring a Microsoft Exchange mailbox" on page 329. See "Restoring a Microsoft Exchange email folder" on page 331. See "Restoring a Microsoft Exchange email message" on page 333.
- Restore unstructured files and folders. - Open one or more recovery points. - Search or browse for a lost file or folder. - Restore lost files and folders. - Restore a version of a file.	See "Restoring files and folders using Granular Restore Option" on page 334.

See "Restoring a Microsoft Exchange email folder" on page 331.

See "Restoring a Microsoft Exchange email message" on page 333.

Best practices when you create recovery points for use with the Granular Restore Option

When creating a recovery point, you should use the following guidelines:

- Select the option to back up your computer, not the option to back up selected files and folders.
  See "Defining a drive-based backup" on page 120.

- When you select which drives to back up, make sure that you select all of the drives on the system.
  See "Protecting your Microsoft Exchange server for successful backups" on page 325.

- When you select the type of recovery point to create, you should select **Recovery Point Set** instead of **Independent Recovery Point**. This selection makes subsequent recovery points much smaller.

Recovery point set (recommended)	Schedules a base recovery point with additional recovery points that contain only the incremental changes that were made to your computer since the previous recovery point.
	Incremental recovery points are created faster than the base recovery point. They also use less storage space than an independent recovery point.
	Note: You can only have one recovery point set defined for each drive. The **Recovery point set** option is not available if you have already assigned a selected drive to an existing backup and specified **Recovery point set** as the recovery point type. This option also is unavailable if you select an unmounted drive that cannot be part of a recovery point set.

Independent recovery point	Creates a complete, independent copy of the drives that you select. This backup type typically requires more storage space, especially if you run the backup multiple times.

- The Exchange server does not need to be turned off for a backup to run successfully. However, you should schedule the backup at a time when the server is less busy (for example, after midnight).

Schedule	Lets you select the days and a start time for when the backup should run.
Run more than once per day	Indicates that you can run the backup more than once a day to protect data that you edit or change frequently.
Time between backups	Specifies the maximum time that should occur between backups.
Number of times	Specifies the number of times per day that the backup should run.
Automatically optimize	Lets you select how often optimization should occur to help manage the disk space that is used by your backup destination.
Start a new recovery point set	Indicates how frequently a new recovery point set should be started.
Custom	Lets you customize the start time, and the days of the week or month to run the backup.
Event Triggers - General	Lets you select the type of events that automatically starts a backup.

- If you use mount points, make sure that you select them for backup.

See "About the Veritas System Recovery Granular Restore Option" on page 322.

Protecting your Microsoft Exchange server for successful backups

The recommended way to protect your Exchange server is to create a single backup job that contains all of the drives on your server. However, you can choose to run

your backups at the storage group and message store levels. You should consider the following to ensure a successful backup:

Include the drive that contains your Exchange installation	Granular Restore Option uses the recovery point of the Exchange server to perform the restore operation. Therefore, you should routinely back up your Exchange server. When you create the recovery point, you should select the drive that contains your Exchange installation directory.
	For example, if you installed Exchange in the C:\Program File\Exchsrvr directory, make sure that you include the entire C drive in your recovery point.
Include the storage group for the message store that you want to back up	A storage group is a collection of message stores. Each storage group contains a transaction log that is used to buffer writes to the message stores. You must back up the drive that contains the storage group's log files for the message store that you want to protect.
	For example, suppose you have a storage group named *First Storage Group*. If the storage group contains a transaction logon E:\Exchsrvr\mdbdata, you should include the entire E drive as part of the recovery point. If you have multiple storage groups, you should back them up at the same time. If you want to back up your storage groups on different schedules, you still need to include Exchange in your backups.
Include the message stores that you want to protect	A message store is a database file that stores email. Message stores are subgroups of storage groups. When you create a recovery point for a message store, you must also include its storage group.
	For example, if you have a message store named *Message Store* (myserver) that is located on F:\Exchsrvr\mdbdata\Message Store (myserver).stm, you should include the entire F drive in your recovery point.

See "Best practices when you create recovery points for use with the Granular Restore Option" on page 324.

Starting the Granular Restore Option

How you start Granular Restore Option depends on the version of Windows you use.

To start the Granular Restore Option

◆ Do one of the following:

- In Veritas System Recovery, on the **Tools** page, click **Run Granular Restore Option**.

- On the classic Windows taskbar, click **Start > Programs > Veritas System Recovery > Granular Restore Option**.

- On the Windows 2008 or Windows 7 taskbar, click **Start > All Programs > Veritas System Recovery > Granular Restore Option**.

Starting Granular Restore Option and opening a specific recovery point

You open recovery points so you can restore mailboxes, email folders and messages, and files and folders.

To open a specific recovery point

1 Do one of the following:

- In Veritas System Recovery, on the **Tools** page, click **Run Granular Restore Option**.

- On the classic Windows taskbar, click **Start > Programs > Veritas System Recovery > Granular Restore Option**.

- On the Windows 2008 or Windows 7 taskbar, click **Start > All Programs > Veritas System Recovery > Granular Restore Option**.

2 In the **Open Recovery Points** dialog box, select the option you want and then click **OK**.

Use latest recovery points for this computer	Opens a recovery point using the latest recovery points from the computer on which you work.
Use alternate system index (.sv2i) file	Opens a recovery point using its system index file.
System index file name	Lets you specify a path and a file name of a system index file that you want to use for recovery.
Browse	Lets you browse to a path that contains a system index file.
	For example, you can browse to an external (USB) drive, a network location, or to removable media to select a system index file.
Use recovery points for another computer.	Opens a recovery point that resides on another computer.
Browse	Lets you browse to a path that contains recovery points.
	For example, you can browse to an external (USB) drive, a network location, or to removable media to select recovery points.
Computer Name	Identifies the names of recovery point files and virtual disk files in the specified path of another computer.

3 You can change the backup date that you view by selecting a different date in the upper right-hand corner.

You can now restore exchange mail, or files and folders.

See "Restoring a Microsoft Exchange mailbox" on page 329.

See "Restoring a Microsoft Exchange email folder" on page 331.

See "Restoring a Microsoft Exchange email message" on page 333.

Restoring a Microsoft Exchange mailbox

A restored mailbox consists of all of the email that was contained in a user's mailbox when the recovery point was created. A recover mailbox is saved on the disk as a PST file.

You can use Microsoft Outlook to open and view the contents of the file. After a restored mailbox has been opened in Outlook, you can then drag email or folders back to their original locations.

Note: In many cases, it is easier to restore a user's entire mailbox than find a single message.

To restore a mailbox

1 On the **View** menu, click **Tools**.

2 Click **Run Granular Restore Option**.

3   In the **Open Recovery Points** dialog box, open the recovery point for the last known time that the mail was present on the Exchange server.

Use latest recovery points for this computer	Opens a recovery point using the latest recovery points from the computer on which you work.
Use alternate system index (.sv2i) file	Opens a recovery point using its system index file.
System index file name	Lets you specify a path and a file name of a system index file that you want to use for recovery.
Browse	Lets you browse to a path that contains a system index file.
	For example, you can browse to an external (USB) drive, a network location, or to removable media to select a system index file.
Use recovery points for another computer.	Opens a recovery point that resides on another computer.
Browse	Lets you browse to a path that contains recovery points.
	For example, you can browse to an external (USB) drive, a network location, or to removable media to select recovery points.
Computer Name	Identifies the names of recovery point files and virtual disk files in the specified path of another computer.

4   Click **OK**.

5   On the **Exchange Mail** tab, from the list of mailboxes, select the mailbox you want to restore.

6   Right-click the mailbox, and then click **Recover Mailbox**.

7   Select the folder where you want to place the restored mailbox, and then click **Save**.

Note: If the size of the mailbox is large, you may want to copy it to a shared folder.

Restoring a Microsoft Exchange email folder

You can restore a single folder instead of an entire mailbox. For example, if a user needs a copy of a sent message, it may be quicker to restore only the Sent Items folder.

A restored folder is saved on the disk as PST file. You can use Microsoft Outlook to open and view the contents of the folder. After a restored email folder has been opened in Outlook, you can drag email or folders back to their original locations.

To restore an email folder

1   On the **View** menu, click **Tools**.

2   Click **Run Granular Restore Option**.

3   In the **Open Recovery Points** dialog box, open the recovery point for the last
        known time that the mail was present on the Exchange server.

Use latest recovery points for this computer	Opens a recovery point using the latest recovery points from the computer on which you work.
Use alternate system index (.sv2i) file	Opens a recovery point using its system index file.
System index file name	Lets you specify a path and a file name of a system index file that you want to use for recovery.
Browse	Lets you browse to a path that contains a system index file.
	For example, you can browse to an external (USB) drive, a network location, or to removable media to select a system index file.
Use recovery points for another computer.	Opens a recovery point that resides on another computer.
Browse	Lets you browse to a path that contains recovery points.
	For example, you can browse to an external (USB) drive, a network location, or to removable media to select recovery points.
Computer Name	Identifies the names of recovery point files and virtual disk files in the specified path of another computer.

4   Click **OK**.

5   On the **Exchange Mail** tab, select the mailbox for the user who requested the
        restore.

6   In the folder list, right-click the folder you want to restore, and then click **Recover
        Folder**.

7   Select the folder where you want to place the restored folder, and then click
        Save.

See "Restoring a Microsoft Exchange email folder" on page 331.

See "Restoring a Microsoft Exchange email message" on page 333.

Restoring a Microsoft Exchange email message

You can use the Granular Restore Option to restore individual email messages. You can save individual messages in an .msg file format on the disk, or you can forward them directly to a user. Use Microsoft Outlook to open and view the contents of a saved message file.

To restore an email message

1 On the **View** menu, click **Tools**.

2 Click **Run Granular Restore Option**.

3 In the **Open Recovery Points** dialog box, open the recovery point for the last known time that the mail was present on the Exchange server.

Use latest recovery points for this computer	Opens a recovery point using the latest recovery points from the computer on which you work.
Use alternate system index (.sv2i) file	Opens a recovery point using its system index file.
System index file name	Lets you specify a path and a file name of a system index file that you want to use for recovery.
Browse	Lets you browse to a path that contains a system index file.
	For example, you can browse to an external (USB) drive, a network location, or to removable media to select a system index file.
Use recovery points for another computer.	Opens a recovery point that resides on another computer.
Browse	Lets you browse to a path that contains recovery points.
	For example, you can browse to an external (USB) drive, a network location, or to removable media to select recovery points.
Computer Name	Identifies the names of recovery point files and virtual disk files in the specified path of another computer.

4 Click **OK**.

5 Click the **Exchange Mail** tab, select the mailbox for the user who requested the restore.

6 Select the folder that contains the message you want to restore.

7 Select the message to restore.

Note: You can sort the list by clicking the column headers. You can also search the subject lines of the messages by entering a search term in the search field (near the message list). When you add or delete characters in the search box, it automatically changes the results.

---

8 To return the email message to the user, do one of the following:

- If you have Microsoft Outlook installed, double-click the message to open it in Outlook. You can use Outlook to send the message back to its owner.

- To forward the message in Outlook, right-click the message, and then click **Forward.**
  Outlook opens a new message. The message that you want to forward is included as an attachment. You can then forward the message to the original owner.

- To save the message to a disk, right-click the message, and then click **Recover Message**. Type the file name, and then click **Save**.
  The email message is saved on the disk. You can use Outlook to open the message.

See "Restoring a Microsoft Exchange mailbox" on page 329.

See "Restoring a Microsoft Exchange email folder" on page 331.

Restoring files and folders using Granular Restore Option

Granular Restore Option can be used to restore unstructured files and folders. This feature is particularly useful if you need to search more than one recovery point (multiple backup dates) to find a missing file or folder.

To restore a file or folder

1 On the **View** menu, click **Tools**.

2 Click **Run Granular Restore Option**.

3 In the **Open Recovery Points** dialog box, open the recovery point for the last known time that the mail was present on the Exchange server.

Use latest recovery points for this computer	Opens a recovery point using the latest recovery points from the computer on which you work.
Use alternate system index (.sv2i) file	Opens a recovery point using its system index file.
System index file name	Lets you specify a path and a file name of a system index file that you want to use for recovery.
Browse	Lets you browse to a path that contains a system index file.
	For example, you can browse to an external (USB) drive, a network location, or to removable media to select a system index file.
Use recovery points for another computer.	Opens a recovery point that resides on another computer.
Browse	Lets you browse to a path that contains recovery points.
	For example, you can browse to an external (USB) drive, a network location, or to removable media to select recovery points.
Computer Name	Identifies the names of recovery point files and virtual disk files in the specified path of another computer.

4 Click **OK**.

5 On the **Files and Folders** tab, browse or search for the file that you want to restore.

6 You can view more than one recovery point at a time. To see a view of the file system that contains multiple recovery points, click **Versions**. Now select the versions that you want to view by checking them in the list.

You can sort the list by clicking the column headers. You can enter a search term in the search field (near the documents list). When you add or delete characters in the search box, the results change automatically.

7 Click the file to view its contents or to restore it, and then select the check box beside it.

8 On the **Tasks** menu, click **Restore Files**, and then select the destination for the restore.

Note: If you view multiple recovery points and more than one version of a file is available, you can expand the list of versions. Click the plus sign next to each file. After you select a file for restore, choose the version of the file that you want.

See "Restoring a Microsoft Exchange mailbox" on page 329.

See "Restoring a Microsoft Exchange email folder" on page 331.

See "Restoring a Microsoft Exchange email message" on page 333.

Backing up databases using Veritas System Recovery

This appendix includes the following topics:

- About backing up databases using Veritas System Recovery
- Creating a manual cold (offline) backup
- Creating an automatic warm backup
- Creating a hot (online) backup using Veritas System Recovery

About backing up databases using Veritas System Recovery

Veritas System Recovery enables you to back up both, Microsoft's Volume Shadow Copy Service (VSS)-aware and non-VSS aware databases. For backing up VSS-aware databases, Veritas System Recovery integrates with VSS to automate the backup process. While, for backing up non-VSS-aware databases, you can create manual or automatic cold or hot recovery points of the databases.

VSS-aware databases

Veritas System Recovery integrates with Microsoft's VSS to automate the process of backing up VSS-aware databases, such as the following:

- Exchange Server 2007 or later
- SQL Server 2005 or later

- Windows Server 2008-based domain controller or later

VSS-aware databases are auto-enabled and cannot be turned off. VSS lets administrators create a shadow copy backup of volumes on a server. The shadow copy includes all files and includes open files.

When it creates a recovery point, Veritas System Recovery alerts the Volume Shadow Copy Service. VSS then puts the VSS-aware databases into a temporary sleep state. While in this quiesced state, the database continues to write to transaction logs during the backup. After the databases are quiesced, Veritas System Recovery takes the snapshot. VSS is then notified that a snapshot is completed. The databases are awakened, and the transaction logs continue to be committed to the database. Meanwhile, the recovery point is created. The databases are only quiesced for the snapshot, and are active for the rest of the recovery point creation.

Veritas System Recovery supports Exchange Server 2007 or later, which implements VSS technology. However, if the database load is heavy, the VSS request might be ignored. Create recovery points at the lightest load time.

Be sure that you have installed the latest service packs for your given database.

Note: For backing up Exchange databases, additional backup applications are not needed to run with Veritas System Recovery.

Non VSS-aware databases

With Veritas System Recovery, you can create manual cold backups, automatic warm backups, or hot backups of non-VSS-aware databases.

Creating a manual cold (offline) backup

A manual cold (or offline) backup ensures that all database transactions are committed to the hard disk. You can then use either Veritas System Recovery or the Veritas System Recovery Disk to create the recovery point, and then restart the database.

The following table summarizes the steps for creating a cold backup manually using Veritas System Recovery or Veritas System Recovery Disk.

Table A-1   Creating a cold back manually

Step	Action	Description
Step 1	Stop the database	Manually stop the database you want to back up.

Table A-1   Creating a cold back manually *(continued)*

Step	Action	Description
Step 2	Create a recovery point	Create a recovery point using either Veritas System Recovery or the Veritas System Recovery Disk.
		Do one of the following:
		■ Use Veritas System Recovery to run a backup immediately using the **Run Backup** or **One-time Backup** feature. See "Running a one-time backup from Veritas System Recovery" on page 141.
		■ Use the Veritas System Recovery Disk to create a one time cold backup. See "Running a backup from Veritas System Recovery Disk" on page 150.
Step 3	Restart the database	Manually restart the database anytime after the recovery point progress bar appears in the **Monitor** page of the console.
		While the database is restarted, the actual recovery point is immediately created from the virtual volume recovery point.

See "About backing up databases using Veritas System Recovery" on page 337.

Creating an automatic warm backup

You can automate the creation of a warm backup of a non-VSS-aware database by running a command file in the backup job. Run this command file before data capture to stop (quiesce) the database momentarily and commit all transaction logs to the hard disk. Veritas System Recovery instantaneously snaps a virtual volume recovery point.

Run a second command file in the backup job to restart the database while the recovery point is created from the virtual volume recovery point.

Because the virtual volume snapshot takes only a few seconds to create, the database is in the recovery point state momentarily. As a result, there is a minimal number of log files created.

The following table summarizes the steps for creating a warm backup automatically using Veritas System Recovery.

Table A-2   Creating a warm backup automatically

Step	Action	Description
Step 1	Define a backup	Define a backup that includes the command files that you have created for the following stages of the recovery point: ■ Before data capture: A command file that stops the database. ■ After data capture: A command file that restarts the database.
Step 2	Run the backup job	Using Veritas System Recovery, run the backup job that includes the command files.

See "Running command files during a backup" on page 134.

See "About backing up databases using Veritas System Recovery" on page 337.

Creating a hot (online) backup using Veritas System Recovery

If a cold or a warm backup is not possible in your organization, create a hot (or online) backup for backing up non-VSS-aware databases.

Veritas System Recovery takes a crash consistent recovery point. Such a recovery point is equivalent to the state of a system that was running when the power failed. A database that can recover from this type of failure can be recovered from a crash consistent recovery point.

To create a hot backup

◆ Use Veritas System Recovery to create a recovery point without the need to stop or restart the database.

Veritas System Recovery instantaneously snaps a virtual volume recovery point from which the recovery point is created.

See "About backing up databases using Veritas System Recovery" on page 337.

Backing up Active Directory

This appendix includes the following topics:

- Tips for protecting a domain controller in Active Directory

Tips for protecting a domain controller in Active Directory

When protecting a domain controller with Veritas System Recovery, be aware of the following:

- If your domain controller is Windows Server 2008, it supports Microsoft Volume Shadow Copy Service (VSS). Veritas System Recovery automatically calls VSS to prepare the Active Directory database for backup.

- To participate on a domain, every domain computer must negotiate a trust token with a domain controller. This token is refreshed every 30 days by default. This time frame can be changed, and is referred to as a secure channel trust. But a trust token that is contained in a recovery point is not updated automatically by the domain controller. Therefore, a computer that is recovered using a recovery point containing an outdated token cannot participate in the domain. For such a computer to participate in the domain it must be re-added to the domain by someone who has the proper credentials.
  In Veritas System Recovery, this trust token can be re-established automatically if the computer participates in the domain when the recovery process is started.

- In most cases, domain controllers should be restored non-authoritatively. Restoring domain controllers non-authoritatively prevents outdated objects in the Active Directory from being restored. Outdated objects are referred to as tombstones. Active Directory does not restore data older than the limits it sets.

Restoring a valid recovery point of a domain controller is the equivalent of a non-authoritative restore. To determine which type of restore you want to perform, please refer to the Microsoft documentation. A non-authoritative restore prevents tombstone conflicts.

For additional details about protecting non-VSS aware domain controllers, see the white paper titled "Protecting Active Directory," located on the Web.

http://eval.veritas.com/mktginfo/enterprise/white_papers/ent-whitepaper_protecting_active_directory.pdf

You can also refer to the Veritas Knowledge Base:

https://www.veritas.com/support/en_US/search-results.html?keyword=V-269-16*

Backing up Microsoft virtual environments

This appendix includes the following topics:

- About backing up Microsoft virtual hard disks
- About backing up and restoring Microsoft Hyper-V virtual machines

About backing up Microsoft virtual hard disks

Microsoft Windows 7/Server 2008 R2 now support the use of Virtual Hard Disks (VHDs). Microsoft does not support backing up a physical disk and a VHD on that physical disk in the same backup job. This limitation also applies to Veritas System Recovery. You cannot back up a physical disk and its VHD counterpart in the same backup job using Veritas System Recovery. Also not supported is the ability to back up a VHD that is hosted on or "nested" within another VHD. If you want to back up a physical disk and a VHD on that disk, you must create separate backup jobs for each disk.

Backing up a physical disk that hosts a VHD is supported as long as it is not included as another volume in the same backup. When a physical disk hosting a VHD is backed up, the VHD is treated as another file that is part of the physical disk backup.

VHDs can be attached and detached from their physical disk hosts (volumes). Microsoft recommends that you detach a VHD that is stored on a host volume before you back up. Not detaching a VHD before you back up a host volume can result in an inconsistent copy of the VHD in the backup. After you restore a host volume, you can re-attach the VHD file.

https://www.veritas.com/support/en_US/search-results.html?keyword=V-306-2*

You can find more information on backing up VHDs on the Microsoft website.

http://technet.microsoft.com/en-us/library/dd440865(WS.10).aspx

Find information about backing up and restoring Microsoft Hyper-V virtual machines:

See "About backing up and restoring Microsoft Hyper-V virtual machines" on page 344.

About backing up and restoring Microsoft Hyper-V virtual machines

To create a backup of a Microsoft Hyper-V virtual machine, you must back up the volumes of the computer where the virtual machine is hosted. Create either a live backup or a system state backup of the host machine. You cannot back up or restore a specific virtual machine. A live backup is created while the virtual machine is running (hot backup).

A system state backup is created in any of the following conditions:

- The guest operating system on the virtual machine is not running (cold backup).

- The Hyper-V VSS integration component is not installed in the virtual machine.

Note: Veritas System Recovery is unable to back up cluster shared volumes. Because volumes in such a configuration are accessible to each of the clustered Hyper-V host computers, a given volume cannot be locked for backup . However, clustered disks can be backed up by Veritas System Recovery because one host has exclusive access to the disk.

To create a backup of a running virtual machine, the following conditions must be met:

- The guest operating system must be running.

- The guest computer must be running Windows Server 2008 or later.
  If the guest computer is running Windows 2000, you can only create a system state backup (cold backup).

- The Hyper-V VSS integration component must be installed on each virtual machine to be backed up.
  If you move a virtual machine from Virtual Server 2005 to Hyper-V, first uninstall the Virtual Server 2005 integration component from the virtual machine. After you Virtual Server 2005 integration component, you can install the Hyper-V VSS integration component.

- The guest virtual machine should be configured to only use basic disks, not dynamic disks.

This configuration is the default for installing a Windows virtual machine.

- All the volumes on the fixed disks must support the creation of snapshots.

If you perform a backup when these conditions are not met, Veritas System Recovery creates a system state recovery point that is crash-consistent. A crash-consistent recovery point captures the virtual machine as if it had experienced a system failure or power outage.

You can restore a specific virtual machine from the recovery point of the host computer using the Recovery Point Browser. Use the Recovery Point Browser to extract the files that make up the virtual machine. The host computer recovery point must include the volume that holds the virtual machine that you want to restore.

To know about the limitations of Hyper-V when backing up databases on virtual machines, refer to the Veritas Knowledge Base:

https://www.veritas.com/support/en_US/search-results.html?keyword=V-306-2*

Find information about backing up Microsoft virtual hard disks:

See "About backing up Microsoft virtual hard disks" on page 343.

Using Veritas System Recovery 18 and Windows Server 2008 Core

This appendix includes the following topics:

- About Veritas System Recovery 18 and Windows Server 2008 Core
- Installing Veritas System Recovery 18 on Windows Server 2008 Core using commands

About Veritas System Recovery 18 and Windows Server 2008 Core

Windows Server 2008 Core does not include the traditional graphical user interface (GUI) that is available with other versions of Windows. It is installed and managed primarily using commands at the command line interface.

Although Veritas System Recovery 18 can be installed on Windows Server 2008 Core, it is an agent only install. Windows Server 2008 Core does not support Microsoft .NET. Therefore, the Veritas System Recovery GUI cannot be installed. Veritas System Recovery is supported on Windows Server 2008 Core by a headless agent only. You can install Veritas System Recovery 18 using commands at the command line. You can also install (push) the agent from a remote machine.

One-to-one management is the only supported method for backing up and restoring a Windows Server 2008 Core computer. This means, after you install the agent on a Windows Server 2008 Core computer, connect to it from a remote machine running one of the following:

- Veritas System Recovery 18

- Veritas System Recovery 18 Management Solution

Before installing the agent remotely on a Windows Server 2008 Core computer, you must configure the firewall to allow access to the server. By default, the firewall is configured to allow no access to the server.

For more information on configuring the firewall on a Windows Server 2008 Core computer, see the Microsoft website.

Windows-on-Windows 64-bit (WoW64) is a subsystem of the Windows operating system and is required for running 32-bit applications on 64-bit versions of Windows. It is installed by default and is included on all 64-bit versions of Windows. If you have uninstalled WoW64 on a Windows Server 2008 Core R2 computer, you must reinstall it before installing Veritas System Recovery 18.

See "Installing Veritas System Recovery 18 on Windows Server 2008 Core using commands" on page 347.

Installing Veritas System Recovery 18 on Windows Server 2008 Core using commands

The following options exist for installing Veritas System Recovery 18 on a Windows Server 2008 Core system. They are

- Full install with GUI support

- Full silent install with logging

- Agent-only silent install with logging

Installing Veritas System Recovery 18 using the option for full install with GUI support

1   On the Veritas System Recovery 18 DVD, browse to and run `Browser.exe`.

A graphical environment (GUI) is launched where you complete the remainder of the installation.

2   Complete the installation by following the steps in the installation wizard.

Even though the full Veritas System Recovery is installed, only the agent is needed and used on Windows Server 2008 Core.

To install Veritas System Recovery 18 using the option for full silent install with logging

1 On the Veritas System Recovery 18 DVD, change to the Install directory.

2 Run the following command:

```
Setup.exe /S: /FULL:
```

Even though the full Veritas System Recovery is installed, only the agent is needed and used on Windows Server 2008 Core.

To install Veritas System Recovery 18 using the option for agent-only silent install with logging

1 On the Veritas System Recovery 18 DVD, change to the Install directory.

2 Run the following command:

```
Setup.exe /S: /SERVICE:
```

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