

3PAR VSS Provider for Microsoft Windows 1.6 User's Guide

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Revision Notice
This is the first release of this manual. A complete revision history is provided at the end of this manual.

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1 Introduction

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This user's guide provides the information you need to install and use the 3PAR™ VSS (Volume Shadow Copy Service) Provider for Microsoft Windows.

1.1 Audience

This guide is intended for System Administrators and Microsoft Windows Administrators who are responsible for maintaining the Microsoft Windows operating system environment and who understand Microsoft Windows 2003 and 2008.

1.2 Related Documents

The following documents also provide information related to the InServ Storage Server:

For information about…	Read the…
Using the InForm Command Line Interface (CLI) to configure and manage the InServ Storage Server	*3PAR InForm OS CLI Administrator's Manual*
Using the InForm Management Console's user interface to configure and manage the InServ Storage Server	*3PAR InForm OS Management Console Online Help*
Using the InForm Command Line Interface (CLI) for remote clients to install and configure Recovery Manager	*3PAR InForm OS Command Line Interface Reference*.
Identifying InServ Storage Server components and fixing problems	3PAR *InForm OS Messages and Operator's Guide*
Understanding the InServ Storage Server and its features	*3PAR InForm OS Concepts Guide*
Shadow copies using 3PAR VSS Provider for Microsoft Windows	3PAR VSS Provider for Microsoft Windows User Guide

1.3 Organization

This guide is organized as follows:

- This chapter provides an overview of this guide, including intended audience, related documentation, typographical conventions, and advisories.
- Chapter 2, *Overview*, provides an overview and information regarding supported components and system requirements for 3PAR VSS Provider for Microsoft Windows.
- Chapter 3, *Installation, Upgrade and Deinstallation*, provides installation, upgrade, and deinstallation instructions for 3PAR VSS Provider for Microsoft Windows.
- Chapter 4, *Features and Considerations*, describes the features provided by 3PAR VSS Provider for Microsoft Windows.
- Chapter 5, *Diagnostics*, describes the diagnostic capabilities of 3PAR VSS Provider for Microsoft Windows.

1.4 Typographical Conventions

The following typographical conventions are used in this guide:

Typeface	Meaning	Example
ABCDabcd	Used for dialog box elements such as titles and button labels.	Enter your system name in the **Value** box and click **OK**.
ABCDabcd	Used for file names, paths, and screen output, and for text you are to enter.	`Found < 12 > 73G disks.` Enter `cli` at the Windows command prompt.
ABCDabcd	Used to contrast your input with system output.	`cli% removevv VV1` `Removing vv VV1.`
<ABCDabcd>	Used for variables in file names, paths, and screen output, and variables in user input.	[root@(<systemID-nodeID>)root] `To continue Enter your system name ==> <systemname>.`

1.5 Advisories

To avoid injury to people or damage to data and equipment, be sure to observe the cautions and warnings in this guide. ***Always be careful when handling any electrical equipment.***



NOTE: Notes are reminders, tips, or suggestions that supplement the procedures included in this guide.



CAUTION: Cautions alert you to actions that can cause damage to equipment, software, or data.



WARNING: Warnings alert you to actions that can cause injury to people or irreversible damage to data or the operating system.

2 Overview

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This chapter provides an overview of supported components and system requirements for 3PAR VSS Provider for Microsoft Windows.

2.1 Microsoft VSS

Microsoft includes VSS in the Windows 2003 and 2008 operating systems to simplify the enterprise's storage environment. VSS provides a framework for creating a point-in-time copy of a single volume or multiple volumes.

Microsoft Windows Server 2003 and 2008 VSS work with VSS-aware applications to determine when a volume shadow copy (snapshot) can be made. A snapshot is a copy of some data set, (a disk volume for example), at a given point-in-time.

2.2 Operation of 3PAR VSS Provider for Microsoft Windows

3PAR VSS Provider for Microsoft Windows (Figure 2-1) communicates with the operating system and applications, and temporarily freezes computing tasks to allow for the creation of and removal of snapshots. The freeze function allows for the creation of a snapshot that reflects the state of application data at a given point in time. When the process resumes, the original volume will continue to change while the shadow copy of the volume remains constant.

3PAR VSS Provider for Microsoft Windows also gives permission for the backup application to access the volume and back it up in its "frozen" state. The shadow copy volume is then used for the actual backup. After the shadow copy volume is saved on the backup device, the shadow copy is deleted.

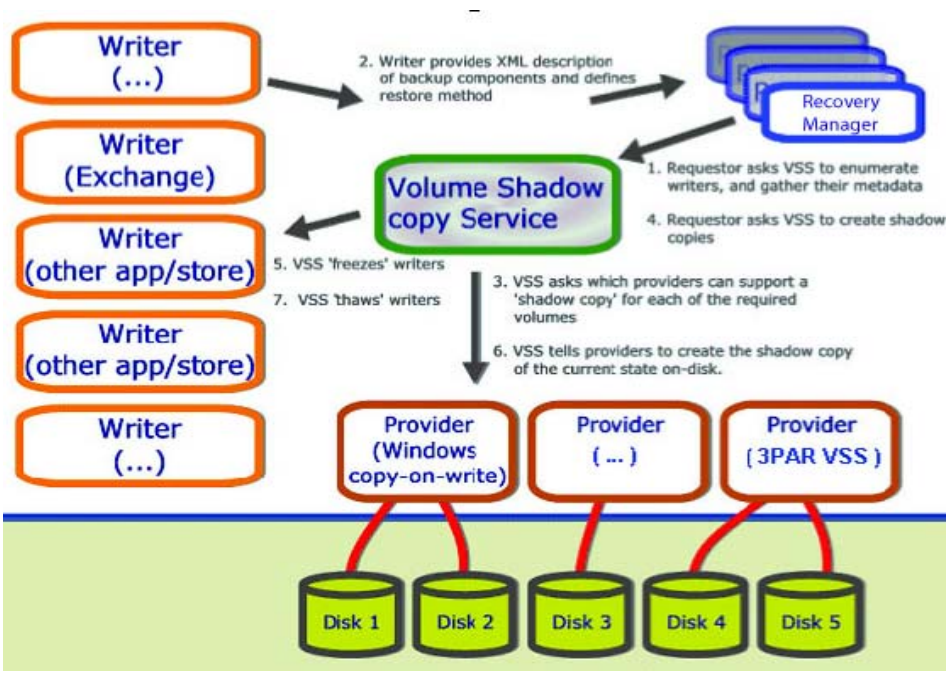


Figure 2-1. 3PAR VSS Provider for Microsoft Windows Operation Overview

2.2.1 3PAR VSS Provider for Microsoft Windows Aware Components

To ensure absolute data integrity for all volumes, especially those that are interrelated, the application, the backup program, and the backup device should be "VSS aware". This means that the components participating in the backup must be specifically programmed to work with 3PAR VSS Provider for Microsoft Windows. Microsoft provides a Software Development Kit (SDK) to enable independent hardware and software vendors to interface with their components. This includes applications, data stores, snapshot engines and backup applications that interface with 3PAR VSS Provider for Microsoft Windows.

3PAR VSS Provider for Microsoft Windows was developed with VSS SDK, release 7.2 for Windows 2003 and Windows Server 2008 Platform SDK, as part of the VSS provider implementation.

These components are called writers, requestors, and providers respectively as described in more detail in Table 2-1.

Table 2-1. 3PAR VSS Provider for Microsoft Windows Components

VSS Component	VSS Component Description
Requestor	The requestor is backup software that initiates the creation of the shadow copy.
Writer	The writer is any application software that participates in the shadow copy process and whose files and data are included in the process.
Provider	The provider is the storage technology that performs the actual shadow copy.

2.3 Host System Requirements

- Microsoft Windows Server 2003 (x86 and x64) or 2008 (x86 and x64).

  For the latest system service pack requirements, refer to the appropriate *3PAR InForm OS Configuration Matrix* (PN 320-200099) which can be accessed through the 3PAR Document Control System (DCS).

- 3PAR InForm CLI installation.

  For the supported InForm CLI version, see the appropriate *3PAR InForm OS Configuration Matrix (PN 320-200099)* which can be accessed through the 3PAR Document Control System (DCS).

- The Windows logical volume must be configured as Basic Disk and located on the 3PAR virtual volume.

- Microsoft .Net Framework 3.5.

- Microsoft Visual C++ Redistributable Package.

2.4 3PAR InServ Requirements

- 3PAR InForm OS with Virtual Copy license enabled.

  For the supported InForm OS release, refer to the appropriate *InForm OS Configuration Matrix* (PN 320-200099) which can be accessed through the 3PAR Document Control System (DCS).

- The 3PAR VSS Provider for Microsoft Windows license must be enabled on the InServ Storage Server.

  Refer to the *3PAR InForm OS Command Line Reference* for instructions on verifying the license from the InServ Storage Server.

- Snapshot space must be available on 3PAR Virtual Volumes. In order to take snapshots on 3PAR's base volume, the volume itself must have snapshot space allocated during the base volume creation.

  Please see the *3PAR InForm OS Command Line Reference* for instructions on creating a base volume with snapshot allocation, or assigning snapshot space after the base volume is created.

2.5 Support for Multiple InServ Connections

The current version of 3PAR VSS Provider for Microsoft Windows supports multiple InServ connections to the same host server where 3PAR VSS Provider for Microsoft is installed. This allows VSS hardware snapshots to be managed from a host that is connected to multiple InServ Storage Servers via HBA or iSCSI.

Consider the scenario where Exchange 2007 CCR is deployed in an organization with 3PAR Recovery Manager for Exchange. The Recovery Manager for Exchange backup server will have connections to two InServ Storage Servers where the Active Exchange Server is connected to the first InServ Storage Server and the Passive Exchange Server is connected to the second. In order for the Recovery Manager for Exchange backup server to support this type of CCR configuration, the 3PAR VSS Provider on the backup server needs to have access to both InServ Storage Servers to manage the snapshots accordingly.

Support for multiple InServ Storage Servers can be accommodated by registering the additional InServ Storage Servers using the `ProvCfg.exe` utility available under the VSS Provider installation folder. Please see *Using the Command Line Interface to Set Up or Modify an InServ Connection* on page 3.18 for more information.



NOTE: By default, the 3PAR VSS Provider for Microsoft Windows installation provides support for a single InServ Storage Server registration. Additional InServ Storage Servers need to be set up and registered using the `ProvCfg.exe` utility.

3 Installation, Upgrade and Deinstallation

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3.1 System Setup

3PAR VSS Provider for Microsoft Windows serves as a communication bridge between Microsoft VSS and 3PAR InServ Storage Servers during the creation and removal of a volume shadow copy (snapshot).

To set up the system for 3PAR VSS Provider for Microsoft Windows:

1. Log on as System Administrator.

   As the Windows System Administrator, you will need a user name and password for VSS. You can subsequently change this password using the CLI `setpassword` command.

2. Install the 3PAR InForm Administration Tools onto the Windows server. See the *3PAR InForm OS CLI Administrator's Manual* and *3PAR InForm OS Management Console Online Help* to install the InForm Administration Tools onto a Windows environment.

3.1.1 Creating an Inform User Using the InForm OS Command Line

If an InForm user doesn't exist, use the InForm CLI `createuser` command to grant users permission to use VSS Provider, and use the `setpassword` command to specify a user password.



NOTE: The system setup, including the InForm OS Command Line for Microsoft Windows installation, must be completed prior to the 3PAR VSS Provider for Microsoft Windows installation. Please refer to the *3PAR InForm OS CLI Reference* for details on using the CLI commands to create a user with the appropriate privileges.

3.2 Installing 3PAR VSS Provider for Microsoft Windows



NOTE: Prior to installing 3PAR VSS Provider for Microsoft Windows, the host server must have 3PAR InForm CLI installed and configured. All corresponding InServ Storage Servers need to have a Virtual Copy license and a VSS Provider for Microsoft Windows license enabled. For instructions on installing and configuring 3PAR InForm CLI, please refer to *System Setup* on page 3.2.



NOTE: If you are installing the application through a remote desktop session, the newly added environment variables will not become effective until you log off from the current session. It is recommended that you install the application directly from the system console.



NOTE: By default, the 3PAR VSS Provider for Microsoft Windows installation only provides support for a single InServ Storage Server registration. Additional InServ Storage Servers need to be set up and registered using the `ProvCfg.exe` utility.

To ensure that the correct level of the Windows operating system is installed:

On Windows 2003

1. Click **Start** > **My Computer**.
2. Right-click **My Computer**.
3. Click **Properties** to look for system information under the **General** tab.

On Windows 2008

1. Click **Start>Sever Manager** (or **Start>Programs>Administrative Tools>Server Manager** for the classical start menu) to look for system information.

For both versions of Windows, ensure that Microsoft Windows Server and the appropriate Service Pack is displayed. Please refer to the appropriate *InForm OS Configuration Matrix* (PN 320-200099) which can be accessed through the 3PAR Document Control System (DCS).

To install 3PAR VSS Provider for Microsoft Windows:

On Windows 2003

1. Log-in as System Administrator.
2. Insert the 3PAR VSS Provider for Microsoft Windows CD into the CD-ROM drive.
3. Click **Start > My Computer** to expand the CD-ROM drive directory.
4. Click the **VSSProvider** directory.
5. Click the **Setup_2k3.exe** command as seen for x86 (32-bit) platform. As an alternative, you can select **Setup_2k3_x64.exe** for the x64 (64-bit) platform.
6. Follow the instructions in the **3PAR VSS Provider for Microsoft Windows installer window** (Figure 3-1).

On Windows 2008

1. Log-in as System Administrator.
2. Insert the 3PAR VSS Provider for Microsoft Windows CD into the CD-ROM drive.
3. Click **Start >Computer** to expand the CD-ROM drive directory.
4. Click the **VSSProvider** directory.
5. Click the **Setup_2k8.exe** command as seen for the x86 (32-bit) platform. As an alternative, you can select **Setup_2k8_x64.exe** for the x64 (64-bit) platform.

6 Follow the instructions in the 3PAR VSS Provider for Microsoft Windows installer window (Figure 3-1).

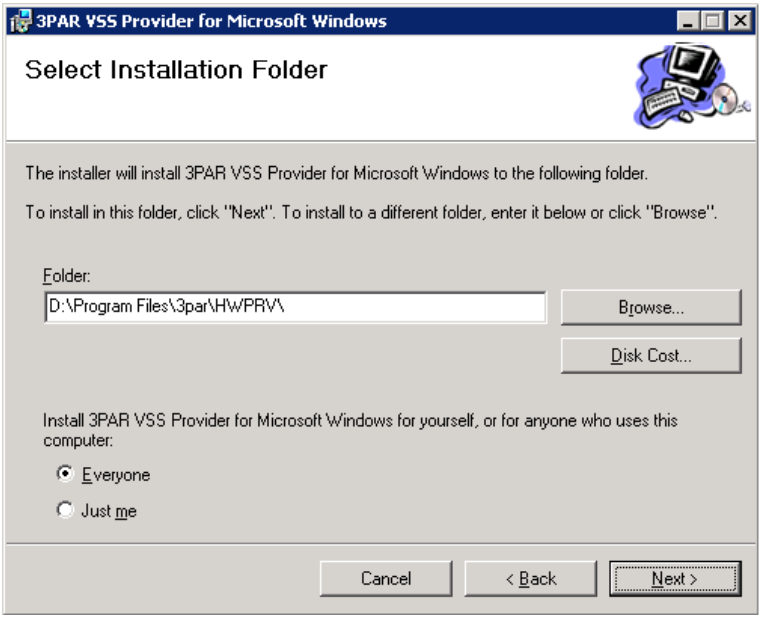


Figure 3-1. Installer Window

NOTE: The **Disk Cost** button analyzes the amount of available storage space and compares it to the amount required for the 3PAR VSS Provider for Microsoft Windows installation. The default options to install for **Everyone** will create a Windows service for everyone who has access to the system. Accept the default settings.

The InServ Storage System Connection Configuration window appears to collect the InServ Storage Server name, InForm user information and password. This information is required when connecting to the InServ Storage Server via the InForm Command Line.

7 Enter the appropriate information for the InServ Connection from the InServ Storage System Connection Configuration window.

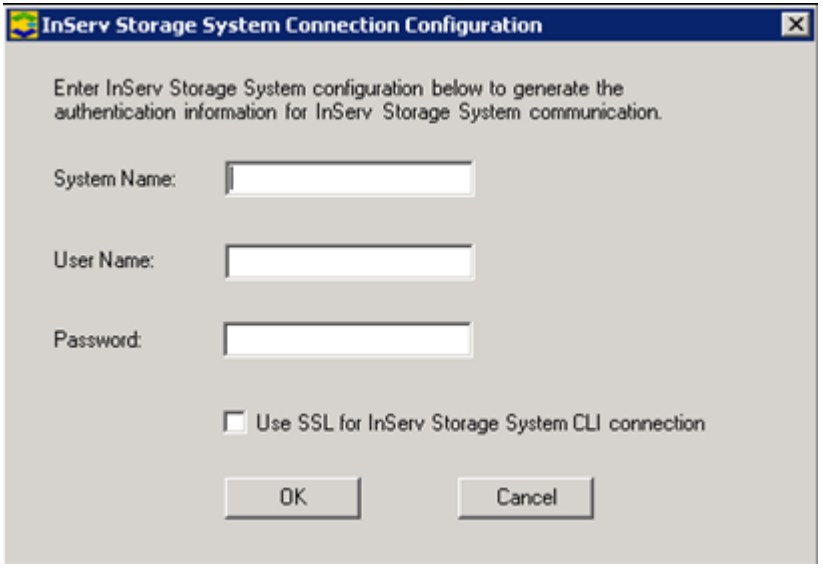


Figure 3-2. InServ Storage System Connection Configuration Window

Fill in the fields in the InServ Connection Configuration window with the following values:

- **System Name**: InServ Storage Server name or IP address.
- **User Name**: InForm user ID; see the *3PAR InForm OS Command Line Reference* for information on determining the user name via the InServ Storage Server.
- **Password**: The password associated with the specified user name.
- **Use SSL for InServ CLI Connection**: Select this option to use SSL for socket connections to the InServ.

8 Click **OK** when you are finished entering information for the InServ configuration.

If the licences are valid for VSS and other required components, an "Operation Success" message box appears with a license entry for "VSS Provider for Microsoft Windows" and the other components indicating that their status is valid.

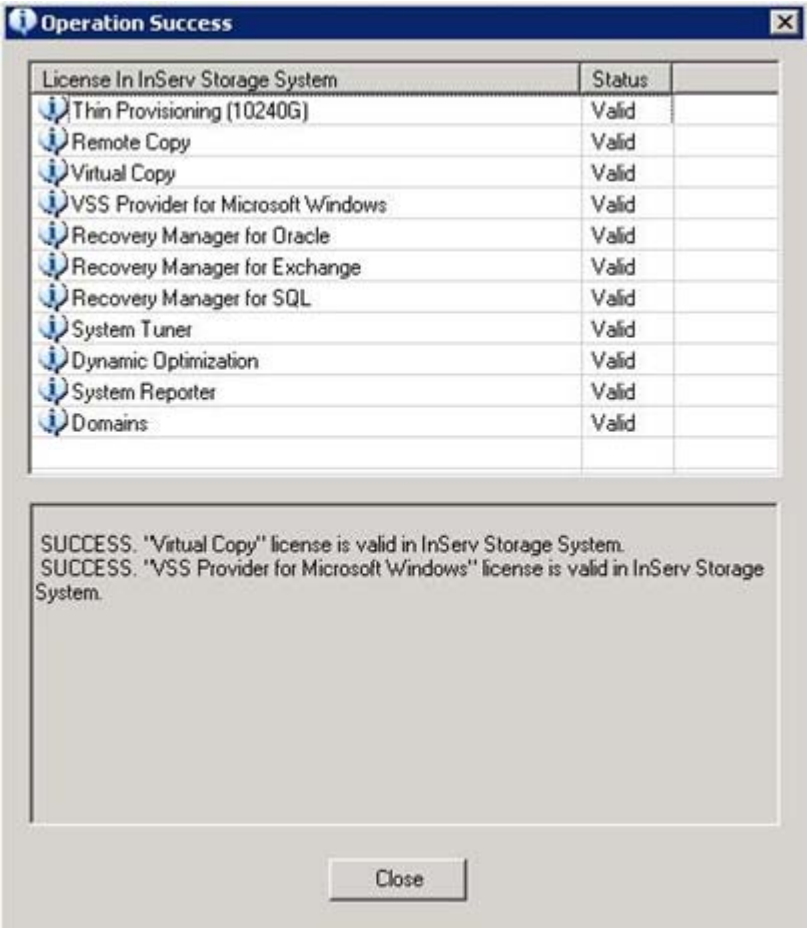


Figure 3-3. Operation Success Window

Explanations for the categories shown on this window are as follows:

- License In InServ Storage System -- This column shows the list of licenses on the InServ Storage Server.
- Status -- This column indicates the state of the license on the InServ Storage Server.



NOTE: A red cross icon indicates that InServ Storage Server does not have either a Virtual Copy or 3PAR VSS Provider for Microsoft Windows license enabled. Installation will be terminated at this point.



NOTE: A warning icon indicates that InServ Storage Server does not have Recovery Manager for Exchange, Recovery Manager for SQL or a Remote Copy license available which are essential to Recovery Manager related products. This serves as a reminder without affecting the VSS Provider installation.



NOTE: The information you supply for the InServ Storage Server configuration needs to be properly validated before the installation can continue. Encrypted authentication information will be stored in the Windows registry under the key name "InServConfig" for 3PAR VSS Provider for Microsoft Windows.

During the installation, a Windows command prompt will be launched to register 3PAR VSS Provider for Microsoft Windows. The Windows command prompt is closed automatically after the registration has completed.

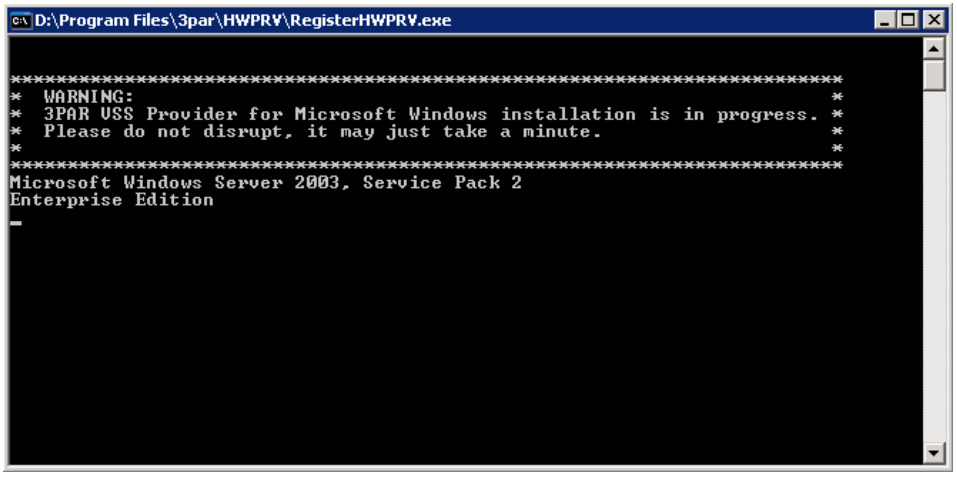


Figure 3-4. Windows Command Prompt

NOTE: After using the Remote Desktop Connection to install 3PAR VSS Provider for Microsoft Windows, you must log out of the session and re-connect to refresh the connection after the installation has completed. You can then activate the Remote Desktop Connection.

3.3 Verifying the Installation

To verify the 3PAR VSS Provider for Microsoft Windows installation:

On Windows 2003

1. Log on as System Administrator.
2. Verify Windows service registration:
   a. Click **Start.**
   b. Right-click **My Computer**.
   c. Click **Manage**.
   d. Expand the **Services and Applications** tree node.
   e. Click **Services**.

On Windows 2008

1. Log on as System Administrator.
2. Verify Window service registration:
   a. Click **Start**.
   b. Click **Server Manager** (or **Start>Programs>Administrative Tools>Server Manager** for the classical start menu).
   c. Expand the **Configuration** tree node.
   d. Click on **Services.**

3 For both, Windows 2003 and 2008, verify that **3PAR VSS Provider** is listed as a service that is currently running.

4 You can verify the Provider registration to 3PAR VSS Provider for Microsoft Windows from a command line prompt by entering the `vssadmin list providers` command as shown in the following example:

```
C:\>vssadmin list providers
vssadmin 1.1 - Volume Shadow Copy Service administrative command-line tool
(C) Copyright 2001 Microsoft Corp.

Provider name: '3PAR VSS Provider'
   Provider type: Hardware
   Provider Id: {5f466535-9c6c-4b33-be9f-8f3147381cf5}
   Version: 1.6.0.5

Provider name: 'Microsoft Software Shadow Copy provider 1.0'
   Provider type: System
   Provider Id: {b5946137-7b9f-4925-af80-51abd60b20d5}
   Version: 1.0.0.7
```

The returned listing should show that **3PAR VSS Provider** is recognized by the Volume Shadow Copy Service.

5 Verify installation by looking at the installation log: `3parprov.log` that is located in the `%SYSTEMROOT%` directory. A listing for 3PAR VSS Provider for Microsoft Windows should indicate that the installation was successful.

3.4 Upgrading from a Previous Version



WARNING: Make sure that no backup jobs are running in the background prior to upgrading 3PAR VSS Provider for Microsoft Windows.

This version of 3PAR VSS Provider for Microsoft Windows does not support a direct upgrade from a previous version. If you already have a previous version of 3PAR VSS Provider for Microsoft Windows installed on your system, please uninstall it before proceeding with the installation. Refer to *Installing 3PAR VSS Provider for Microsoft Windows* on page 3.3 for details once you have unintalled the older version.



NOTE: If you have previously installed 3PAR VSS Provider for Microsoft Windows, you may remove the definition of environment variables TPDSYSNAME and TPDPWFILE. Both environment variables are no longer valid for the current 3PAR VSS Provider release.

3.5 Removing the 3PAR VSS Provider For Microsoft Windows

To remove the 3PAR VSS Provider for Microsoft Windows:

On Windows 2003

1. Log on as System Administrator.
2. Click **Start** > **Control Panel**.
3. Click **Add or Remove Programs**.

   Result: The Add or Remove Programs window appears.
4. Select **3PAR VSS Provider For Microsoft Windows**.
5. Click **Remove**.

On Windows 2008

1. Log on as System Administrator.
2. Click **Start > Control Panel**.
3. Click **Programs and Features**.

   Result: The Add or Remove Programs window appears.
4. Select **3PAR VSS Provider For Microsoft Windows**.
5. Click **Uninstall**.

6 For both versions of Windows, verify the deinstallation procedure by viewing the **3parprov.log** file located in the **%SYSTEMROOT%** directory.

The deinstallation entry in the log file should indicate that the application has been successfully removed.

3.6 System Registry

After installing 3PAR VSS Provider for Microsoft Windows, a **3par->HWPRV** registry key is created under **HKEY_LOCAL_MACHINE->Software**.

CAUTION: DO NOT edit the registry key value unless asked to do so by your local service provider for support purposes.

NOTE: For tracking purposes, you may need to modify the value for LogLevel to a higher number in order to record more detailed information to a file. By default, the log level is set to the highest level of detail.

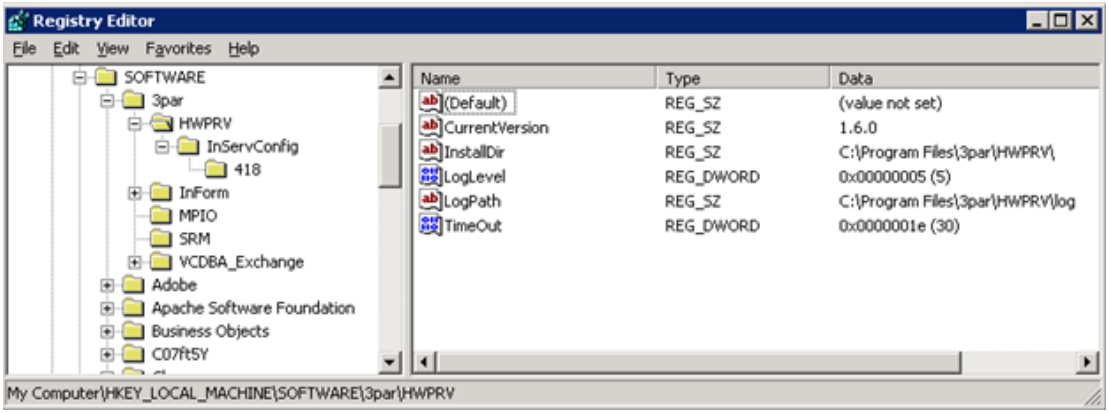


Figure 3-5. Registry Editor Window

Valid registry values for 3PAR VSS Provider for Microsoft Windows are shown in Table 3-1.

Table 3-1. Registry Values for 3PAR VSS Provider for Microsoft Windows.

Name	Value
CurrentVersion	The current release version for 3PAR VSS Provider for Microsoft Windows.
InstallDir	The directory where 3PAR VSS Provider for Microsoft Windows is installed.
LogLevel	The trace level that is set for the log file in the directory specified by LogPath. 1 error occurred 2 warning 3 Information 4 routine route 5 verbose The default value is set to "5".
LogPath	The location where the log file resides.
TimeOut	The timeout value set for SCSI inquiry and InForm CLI operations; the default is 30 seconds.
InServname	The InServ Storage Server to which VSS is connected. This entry is under the InServConfig sub-key.
InServPasswd	Encrypted authentication information that enables access to the InServ non-interactively from the Windows service program. This entry is under the InServConfig sub-key.

Table 3-1. Registry Values for 3PAR VSS Provider for Microsoft Windows. *(continued)*

Name	Value
EnableSSL	Specifies whether an SSL connection is to be used: 0 Disable use of SSL for CLI connection. 1 Enable use of SSL for CLI connection. This entry is under the InServConfig sub-key.
ProductID	Identification information for the registered InServ Storage Server. This entry is under the InServConfig sub-key.
Retry	A numeric value (in seconds) set for the CLI command to retry.



NOTE: The InServ Storage Server configuration details under the InServConfig root key serves as the default entry for backward compatibility for single InServ Storage Server configurations. To add additional InServ Storage Server entries, please refer to *Using the Command Line Interface to Set Up or Modify an InServ Connection* on page 3.18 for more information.

3.7 Using the Command Line Interface to Set Up or Modify an InServ Connection

This section describes the `ProvCfg` command that can be accessed from the Command Line Interface to quickly list details and modify the configuration setup for 3PAR VSS Provider for Microsoft Windows.

COMMAND

ProvCfg

DESCRIPTION

The ProvCfg command is used to view or modify the configuration settings.

SYNTAX

ProvCfg InServ|Conn|Log [options <arg>]

SUBCOMMANDS

InServ

Used to view or modify the communication setup for the InServ Storage Server.

Conn

Used to view or modify the connection settings.

Log

Used to view or modify the log level.

OPTIONS

- The following options can be used with the InServ subcommand:

-sys <name>

Specifies the InServ Storage Server name.

-user <name>

Specifies the InServ Storage Server user name used to generate the password file.

-pass <password>

Specifies the InServ Storage Server password used to generate the password file.

-sockssl <on|off>

Specifies whether SSL should be used for the socket connections to the InServ Storage Server.

-remove <name>

Removes the specified InServ Storage System configuration.

-detail

Shows additional license and connection information.

-default

Sets as default entry.

- The following options can be used with the Conn subcommand:

-timeout <secs>

Specifies the timeout value in seconds to wait for a response from the InServ Storage Server.

-retry <num>

Specifies the number of retries after a response timed out from InServ Storage Server.

- The following options can be used with the Log subcommand:

-level <num>

Changes Log level details output to the log file. The valid range is from 1 to 5. By default, the log level is set to 5.

USAGE:

To view the current InServ communication setup:

```
ProvCfg InServ
```

To view all InServ Storage Server communication setups:

```
ProvCfg InServ [-detail]
```

To view a specific InServ Storage Server communication setup:

```
ProCfg Inserv [<-sys InServNode> [-detal]]
```

To add or modify an InServ Storage Server communication setup:

```
ProvCfg InServ [<-sys InServNode> [<-user InServUserName> <-pass
InServPassword> [-sockssl on|off]]]
```

To enable or disable the use of SSL:

```
ProvCfg InServ [<-sys InServNode> [-sockssl on|off]]
```

To set as default entry:

```
ProvCfg InServ [<-sys InServNode> [-default]]
```

To remove an existing InServ setup:

```
ProvCfg InServ [<-sys InServNode> [-remove]]
```

To view the current connection configuration:

```
ProvCfg Conn
```

To view the current log level:

```
ProvCfg Log
```

To change the current log level:

```
ProvCfg Log -level LevelNumber
```

EXAMPLES:

The following command adds a new entry for InServ Storage Server configuration.

```
ProvCfg InServ -sys MyInServ -user myuser -pass mypassword
```

The following command changes the log level to 4.

```
ProvCfg Log -level 4
```

The following command changes the timeout value to 120 seconds.

```
ProvCfg Conn –timeout 120
```



NOTE: For backward compatibility, the default configuration is used for single InServ Storage System architecture. Use the `–default` option to set a configuration to the default values.



NOTE: Any change to the username and password information used to generate the InServ Storage Server authentication information requires a local authentication update using the following command:

```
ProvCfg InServ –sys <sysname> -user <username> -pass
<password>
```



NOTE: To add an additional InServ Storage Server configuration, use the following command:

```
ProvCfg InServ –sys <sysname> -user <username> -pass
<password>
```

Make sure that the Windows system is connected to the new InServ Storage Server via an FC/ISCSI port prior to the addition.



NOTE: Any change to the Log or InServ option using the `ProvCfg.exe` utility requires that both the Volume Shadow Copy Service and the 3PAR VSS Provider service be restarted.

4
Features and Considerations

In this chapter

4.1 Features 4.1

4.2 Special Considerations 4.3

4.1 Features

The following features are included in 3PAR VSS Provider for Microsoft Windows:

- Atomic Shadow Copy creation.

  Supports up to 64 shadow copies per volume (snapshots to a volume) within a shadow copy set.

- Writable Snapshot Volume.

  Provides a "Point in Time" writable snapshot volume by using the Copy On Write technique to the Volume Shadow Copy Service. This is a very quick process with little storage space required.

- User mode DLL installed as a Windows service to provide communication between VSS and 3PAR InServ Storage Servers.

- Recovery Manager for Exchange.

  Provides the capability to take a non-destructive virtual copy from Microsoft Exchange 2003 and 2007 for backup and fast recovery.

- Recovery Manager for SQL.

  Provides the capability to take a non-destructive virtual copy from Microsoft SQL Server for backup and fast recovery.

- Veritas NetBackup.

  Support for Veritas NetBackup through the VSS snapshot method.

- Transportable shadow copy.

  Supports transportable shadow copy to allow import from another system.

- x86/x64 platform support.

  Provides a 64-bit installation package for working with the x86/x64 platform.

- Secure InServ Storage Server connection.

  Connects to the InServ Storage Server using the encrypted authentication information.

- Support for the following:

  - Microsoft VSS Transportable shadow copy.
  - Egenera environment.
  - VMware environment.
  - iSCSI configurations.

- Command line interface for InServ connection setup.

  A command line interface is provided to quickly determine and modify connection settings.

- Support for multiple InServ Storage Server configurations.

  Provides the capability to handle VSS snapshots on different InServ Storage Servers that are connected to the local host.

4.2 Special Considerations

- Auto-Import Shadow Copies are not supported on Windows Cluster service.

  Windows Cluster service cannot accommodate LUNs with duplicate signatures and partition layout. The shadow copy LUNs must be transported to a host outside the cluster, or the original volume must be dismounted before the shadow copy can be imported. This is a limitation of the Window Cluster service.

- Shadow Copies Containing Dynamic Disks must be Transported.

  The native support for dynamic disks cannot accommodate LUNs with duplicate signatures and configuration database contents. The shadow copy LUNs must be transported to a different host. VSS enforces this by not allowing auto-import shadow copies of dynamic disks. A requestor should not import a transportable shadow copy back to the same host. This is a limitation on Dynamic Disk.

- Create Shadow Copy Volumes Read-Only and Hidden.

  VSS sets flags on each affected LUN such that the resulting shadow copy will be hidden and read-only when detected by a Windows Server 2003 or 2008 system. Drive letters and/or mount points are not automatically assigned. VSS maintains these flags throughout the lifecycle of a shadow copy. Modification of these flags may lead to unpredictable results.

- Shadow Copy Attribute Context.

  The following are shadow copy attributes supported by passing in the shadow copy context:

  - The shadow copy is persistent across reboots.
  - The shadow copy is not automatically deleted when the shadow copy requestor process ends. The shadow copy can be deleted only by a call to: `IvssBackupComponents::DeleteSnapshots`.
  - No writers are allowed in creating the shadow copy.
  - The shadow copy is currently not exposed to the requestor.
  - A copy-on-write mechanism is used to implement shadow copies.

The following shadow copy attributes are not supported in the current release of 3PAR VSS Provider for Microsoft Windows:

- All shadow copies are created with a copy-on-write mechanism.
- All shadow copies are hidden.

- Taking a snapshot on a System Drive is not supported.

  With the additional System Writer involved on the System Drive, taking snapshots on a database where its physical location is on the System Drive is not supported.

- Volume-wide snapshot.

  A virtual copy is taken of the entire volume. Data outside the backup scope that might reside on the same snapshot LUNs is not restorable from the virtual copy.

- Same Snapshot set containing VVs from different InServ Storage Servers is not supported.

  3PAR VSS Provider can not support volumes from different InServ Storage Servers to be processed within the same snapshot set.

- Importing snapshots created on Windows 2003 to 2008 and vice versa is not supported. This is a Microsoft VSS limitation.

- All snapshots imported through VSS will be exposed via host name only. Export on a specific port and matched set is not supported.

- All snapshots imported through VSS will be exposed to the first available host name registered in the same InServ Storage Server that belongs to the current Windows system.

5 Diagnostics

In this chapter

5.1 Volume Shadow Copy Service Trace 5.1

5.2 Application Event Log 5.3

5.1 Volume Shadow Copy Service Trace

In order to get support from Microsoft, if the failure of the VSS request has been determined to be outside the scope of 3PAR VSS Provider for Microsoft Windows, the following information should be gathered:

- Windows Application Event Log
- Windows System Event Log
- Volume Shadow Copy Service Trace

For 3PAR VSS Provider for Microsoft Windows debug purposes, you can turn on the VSS logging by setting up the registry data value on the VSS registry.

```
[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\VSS\Debug\Tracing]
```

To eliminate the risk of modifying the registry database, 3PAR VSS Provider for Microsoft Windows provides a registry file for assistance with turning on VSS logging.

The file `vsstrace.reg` is located under the 3PAR VSS Provider for Microsoft Windows installation directory. Since VSS logging is volume based, the log file cannot be on the volume as part of the shadow copy set. The default location for the TraceFile is set to:

`c:\vsstrace.txt`. Modify it to fit into your system if necessary.

Use Windows Explorer to locate the `vsstrace.reg` file. Double-click on this file to make it active.

The trace log will be appended. In order to receive meaningful information, clear out the contents before a new run begins.

To turn off the VSS tracing, remove the following registry key from the registry database:

```
[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\VSS\Debug\Tracing]
```



NOTE: You can use the `ProvCfg.exe` utility with the `Log` subcommand to specify the appropriate log level. See Chapter 3, *Installation, Upgrade and Deinstallation* -- *Using the Command Line Interface to Set Up or Modify an InServ Connection* on page 3.18 for complete details.

5.1.1 Contents of the vsstrace.reg File

```
Windows Registry Editor Version 5.00

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\VSS\Debug\Tracing]
"TraceFile"="c:\vsstrace.txt"
"TraceLevel"=dword:ffffffff
"TraceEnterExit"=dword:00000001
"TraceToFile"=dword:00000001
"TraceToDebugger"=dword:00000000
"TraceFileLineInfo"=dword:00000001
"TraceForceFlush"=dword:00000000
```

5.2 Application Event Log

This section describes how to view event logs associated with 3PAR VSS Provider for Microsoft Windows and how to interpret the 3PAR Provider messages that get posted through the Application Event Log, in numerical order (Figure 5-1 on page 5.4).



NOTE: Only the English message catalog is currently supported.

To view the message from Window Application Event Viewer:

On Windows 2003

1 Click **Start**.

2 Right-click **My Computer**.

3 Click **Manage**.

4 Expand on the **System Tools** tree node from the left panel.

5 Click **Event,** and then **Application**.

Result: The Application Event log appears on the right panel. (Figure 5-1).

On Windows 2008

1 Click **Start**.

2 Right-click **Server Manager** (or **Start>Programs>Administrative Tools>Server Manager** for the classical start menu).

3 Expand on the **Diagnostics\Event Viewer\Windows Logs** tree node from the left panel.

4 Click **Application**.

Result: The Application Event log appears on the right panel (Figure 5-1).

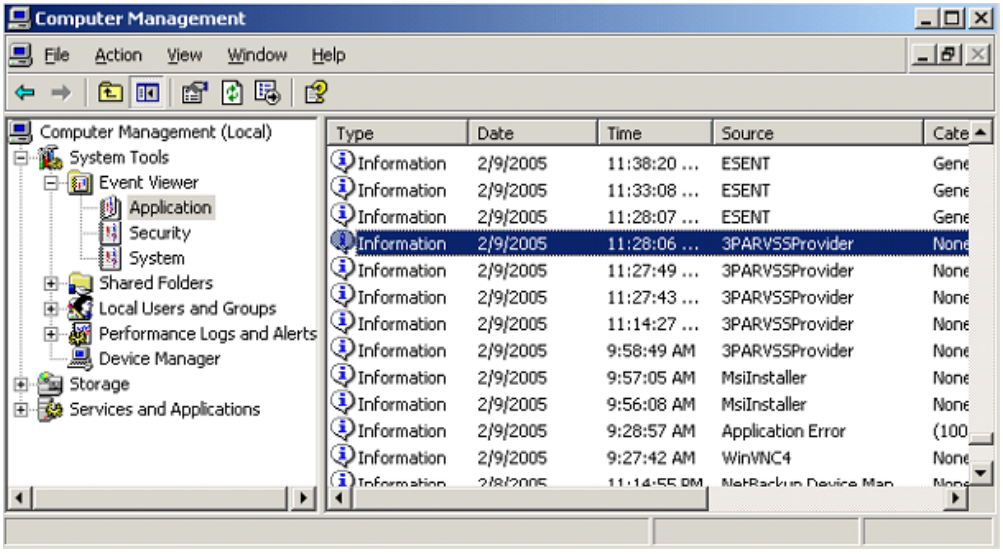


Figure 5-1. Application Event Log on Windows 2003

Table 5-1provides descriptions and actions for the various application events. The **Description** subsection for each message describes the problem. The **Action** subsection suggests possible solutions.

Table 5-1. Application Events

Event ID	Description	Action
5000	3PAR VSS Provider for Microsoft Windows OnLoad was successful. 3PAR VSS Provider for Microsoft Windows has loaded the provider's DLL on demand. This message indicates VSS has invoked the 3PAR VSS Provider for Microsoft Windows successfully.	None
5001	3PAR VSS Provider UnLoad was successful. 3PAR VSS Provider for Microsoft Windows loads the provider's DLL on demand, and releases it once the task has been completed. This message indicates VSS has released the 3PAR VSS Provider for Microsoft Windows from the VSS control.	None

Table 5-1. Application Events

Event ID	Description	Action
5020	Snapshot ID <*snapshot_ID*> prepared. Internal logging, <*snapshot_ID*>. is a unique identifier.	None
5040	SnapshotSet <*snapshot_set*> created. Indicates the SnapshotSet request has been fulfilled.	None
5041	Exec: <*message*> Internal logging, which records the task from the 3PAR VSS Provider for Microsoft Windows to the 3PAR InServ Storage Server.	None
5042	Virtual Copy <*virtual_copy_number*> exported. A point-in-time snapshot disk has been created and exported to the host.	None

Table 5-1. Application Events

Event ID	Description	Action
5043	Virtual Copy *<virtual_copy_ID>* removed. The exported snapshot disk has been removed from the host.	None
5050	Unsupported feature *<feature_ID>.* The 3PAR VSS Provider for Microsoft Windows received an unsupported request through the VSS framework.	The request is unsupported by the current release. Contact your local service provider for a future release.
5051	A snapshot in one set has exceeded the maximum limitation. 3PAR VSS Provider for Microsoft Windows supports up to 64 snapshots in one set. This request has exceeded the maximum limitation.	Reduce the number of snapshot requests in one snapshot set to less than 64, and request again.

Table 5-1. Application Events

Event ID	Description	Action
5052	Could not allocate memory. Internal error, failed to allocate memory during computing.	Insufficient memory is available to allow 3PAR VSS Provider for Microsoft Windows to operate normally. Shutdown some of the idle applications that are still running and resume the previously failed task.
5053	Could not communicate with InForm CLI. The initial check on the InForm CLI configuration has generated an error. This could mean several thing went wrong: ■ the InForm CLI is not installed. ■ A valid password file could not be found or its contents are not valid for this installation.	See *System Setup* on page 3.2, to check for the 3PAR storage server CLI installation.
5054	<message> This is an error message that usually is associated with Event ID 5041. This event describes the cause to the action on Event ID 5041.	Correct the error and retry again, or contact your local service provider if the error continues.

Table 5-1. Application Events

Event ID	Description	Action
5055	<*token_ID*>: Invalid token. Internal error. The output format does not match.	Set the LogLevel to '4' to show the detail error message to log file, and retry.
5056	Could not open the volume mapping file: <*mapping_file*>. Failed to open the mapping file that is generated by the `showvv -d` CLI command.	Set the LogLevel to '4' and look for vvmap as <*some_file_name*> from the `3parprov.log`.
5057	Could not open file: <*filename*>, The 3PAR VSS Provider for Microsoft Windows failed to open the temporary file <*filename*> that is generated internally.	Look for file <*filename*> to see the if the permissions are set correctly.
5058	Could not create file <*filename*>. The 3PAR VSS Provider for Microsoft Windows failed to open the temporary file <*filename*> which is generated internally.	Contact your local service provider with the detailed logfile.
5059	Generic system error. This error message is generated by the system.	Try to correct the system error based on the message.

Table 5-1. Application Events

Event ID	Description	Action
5061	IOCTL inquiry call failed. Failed on SCSI inquiry to the storage device through an IOCTL call.	Check the Window Disk Manager and the 3PAR InServ Storage Server to verify that the device is active and functioning properly.
5062	Could not query the register key value for <*value_number*>. The 3PAR VSS Provider for Microsoft Windows relies on the registry to store certain data for internal use, such as snapshot set ID, or the LogLevel to log the trace.	Check for the existence of the key name <*value_number*> from the register database.
5063	Could not query the register key name of <*key_name*>. The 3PAR VSS Provider for Microsoft Windows relies on the registry to store certain data for internal use, such as snapshot set ID, or the LogLevel to log the trace.	Check for the existence of the key name <*key_name*> from the register database.

Table 5-1. Application Events

Event ID	Description	Action
5064	Could not open the register key for 3PAR VSS Provider for Microsoft Windows. Failed to open register key [HKEY_LOCAL_MACHINE\SOFTWARE\3par\HWPRV]	The registry key was created by the installer program during the 3PAR VSS Provider for Microsoft Windows installation. Check to see if the installation was successful. If necessary, you may have to re-install the 3PAR VSS Provider for Microsoft Windows.
5065	Target LUN *<LUN_number>* is not a 3PAR Virtual Volume. One of the snapshots from the snapshot set is not targeting a 3PAR Virtual Volume.	Move the data out from the non-3PAR Virtual Volume to a 3PAR Virtual Volume, and perform the task again.
5066	The target LUN could not be identified. 3PAR VSS Provider for Microsoft Windows failed to provide the information of the target LUN during the `AreLunsSupport()` interface.	Turn on VSS logging and reproduce the problem to collect VSS trace data for Microsoft Product Support Service.

Table 5-1. Application Events

Event ID	Description	Action
5067	The destination LUN could not be identified. 3PAR VSS Provider for Microsoft Windows failed to provide the information of the destination LUN from the interface.	Turn on VSS logging and reproduce the problem to collect VSS trace data for Microsoft Product Support Service.
5068	Could not retrieve device descriptor *<device_ID>.* Failed to retrieve device *<device_ID>* information.	Check both the Window Disk Manager and the 3PAR InServ Storage Server to see if the device is active and functioning properly.
5069	`DeviceIoControl` call failed. Internal error.	Set the LogLevel to '4' and reproduce the problem. Provide the `3parprov.log` file to your local service provider.
5070	The internal snapshot information is empty. This is an internal error. It is likely that the 3PAR VSS Provider for Microsoft Windows could not find the mounted snapshot volume.	Set the LogLevel to '4' and reproduce the problem. Provide the `3parprov.log` file to your local service provider.

Revision History

Release level	Revision summary
320-200148 Rev A August 2009	First release of this document under part number 320-200148 Rev A for version 1.6. This document was previously published under part number 320-200110.