



Sil 4726 Manager User's Guide

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About this guide

This guide describes how to configure the SiI 4726 Storage Appliance for the optimum allocation of available disk storage space for your applications.

Note: The SiI 4726 Manager User's Guide presents screens captured in MS Windows. If a dialog appears differently on the Macintosh vs. MS Windows operating systems, the Mac OS X images are presented in addition to the MS Windows images.

Audience

This guide provides the information needed to pre-configure the SiI 4726 for the end-user so that it can be sold as a ready-to-use storage device. Experienced end-users may configure the SiI 4726 Storage Appliance on an exception basis.

1 Introducing the SiI 4726 Storage Appliance

This chapter introduces the SiI 4726 Storage Appliance through a product overview, a description of system-level function, and definition of the SiI 4726 storage policies.

Product overview

The **SiI 4726 Storage Appliance** is powered by Silicon Image's industry-leading Serial Advanced Technology Attachment (SATA). SATA is an interface between desktop computers/servers and attached hard disk drives. SATA supersedes the Parallel Ultra ATA/100 interface, improving performance from 100 MB/sec to a data transfer rate of 150 MB/sec with SATA Generation 1 (gen1) and 300 MB/sec with SATA Gen2. Populated with five SATA drives, the SiI 4726 Storage Appliance stores as much as 2.5 terabytes of data.

The SiI 4726 Storage Appliance is coupled with a processing architecture that provides enhanced data protection, high-performance storage, and plug-and-play functionality. The SiI 4726 Storage Appliance is a simple and affordable solution that transparently replicates data, eliminating a vulnerability that is too often overlooked or considered too expensive to solve. Volumes can be created with mirrored drives, providing automated data protection along with notifications when a drive needs replacement.

The SiI 4726 Storage Appliance is available from leading storage partners in preconfigured user set-ups or it can be set up on site. The end-user does not need to be an experienced storage network administrator to understand and configure the SiI 4726 Storage Appliance, nor does he need prior knowledge of physical disk drives or storage concepts. The SiI 4726 Manager can be run at any time to monitor or reconfigure the Storage Appliance. The SiI 4726 Manager's monitoring function allows preventive maintenance and enables troubleshooting by using environment-control feedback. The guided configuration utility helps the end-user set up and maintain the best possible configuration for his/her organization.

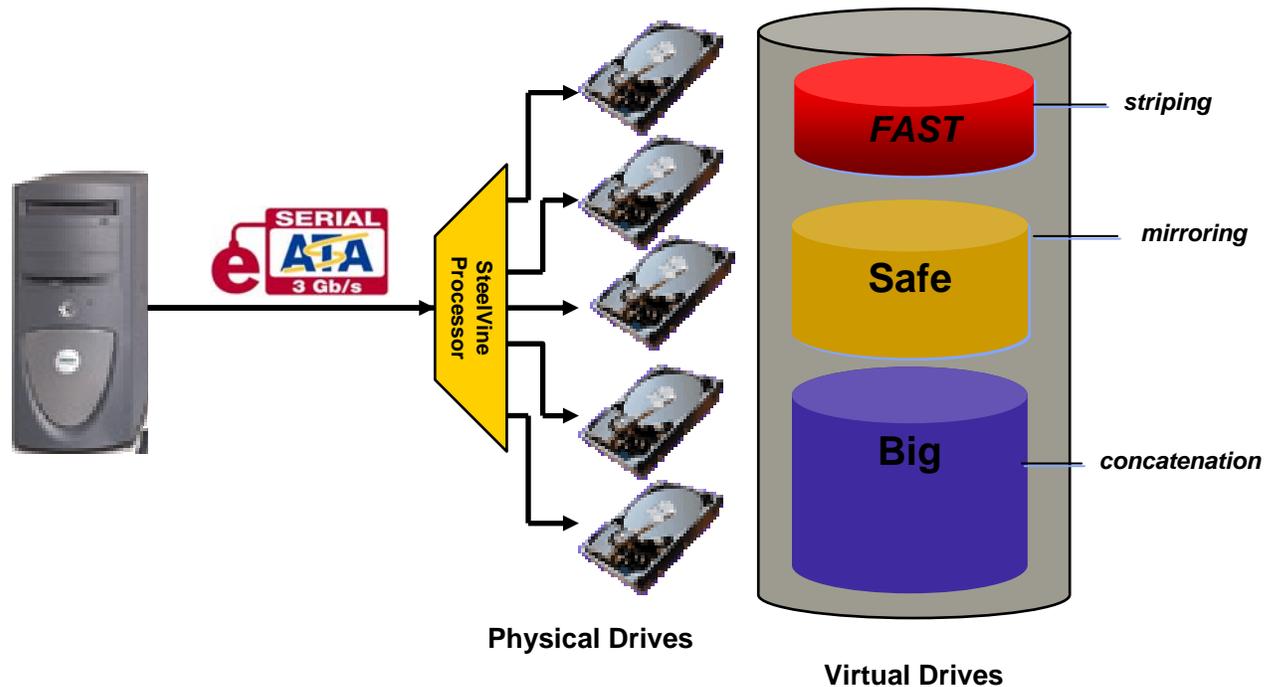
For demanding performance applications such as video or audio editing, digital imaging, sophisticated data manipulation, or just the fastest gaming platform in town, the SiI 4726 Storage Appliance can be preconfigured as a striped disk array, simultaneously accessing multiple drives for blazing fast disk performance.

The industry-approved external SATA connector assures a robust and reliable interconnect and extends the reach of your SiI 4726 Storage Appliance.

How the SiI 4726 Storage Appliance operates

The SiI 4726 architecture (Figure 1) supports configuration and management of multiple storage devices connected to a single host. Its built-in features include RAID configuration, disk rebuild, and virtualization capabilities. Disk virtualization uses the SiI 4726's innovative SteelVine processor technology to map the physical drives to virtual drives for optimal storage.

Figure 1: Basic SiI 4726 operation



In its basic form, the SiI 4726 Storage Appliance supports individual mapping of a hard disk drive to a corresponding volume or virtual drive.

Using complex mapping options, the physical drives can be concatenated and mapped to virtual drives in several ways to implement **FAST**, **SAFE**, or **BIG** storage policies, as described in the next section. Depending on the end-user's choice, the data is written to one or more disks sequentially or simultaneously.

The *SiI 4726 Manager User's Guide* assumes that end-users are using the SV-HBA3124-4 host bus adapter and driver, which provide port multiplier support as a SATA host. Refer to "[Install the SiI 4726 hardware](#)" for more information on running the SiI 4726 Storage Appliance with other hosts that may not support port multipliers.

Sil 4726 storage policies

The following terms represent Sil 4726 configuration options, or *storage policies*, for mapping physical to virtual drives. The end-user can choose from these policies when s/he configures the volumes (virtual drives) using the Basic Configuration Wizard or the Advanced Configuration Wizard.

- JBOD** A storage policy that grants the host computer direct access to a physical disk drive. With **JBOD** (*just a bunch of disks*), the number of available virtual drives is equal to the number of physical drives. **JBOD** is also called the *bypass* mode because the host bypasses the SteelVine virtualization engine to access the drive directly.
- SAFE** A storage policy in which all data are stored in duplicate on separate hard disk drives to protect against data loss due to drive failure. At least two hard disk drives *mirror* each other at all times, equivalent to RAID 1. Every write operation goes to both drives. **SAFE** provides the highest level of data protection, but halves the amount of storage space because all data must be stored twice.
- To implement the **SAFE** storage policy, the Basic Configuration Wizard creates two volumes. Each volume consists of two hard disk drives that mirror each other. The remaining hard disk drive is specified as a Hot Spare for both volumes.
- BIG** A storage policy configuration in which multiple physical hard disk drives are concatenated and treated as one large volume. This configuration allows the end-user to increase logical volume size beyond the capacity of individual hard disk drives. **BIG** provides the maximum amount of storage space, but no additional performance or data redundancy.
- The Basic Configuration Wizard implements the **BIG** storage policy by concatenating all the hard disk drives into a single volume.
- FAST** A storage policy in which I/O processing is balanced evenly in a method known as *striping*, equivalent to RAID 0. Striping increases storage operation speed as each portion of data is divided into segments that are written to different disks simultaneously. **FAST** offers the best performance in terms of speed, but has no redundancy of data.
- To implement the **FAST** storage policy, the Basic Configuration Wizard creates a single volume of up to five hard disk drives in a striped format.
- SAFE and BIG** A storage policy in which one-half of the available storage space is concatenated. The other half mirrors the first half to provide full data redundancy.
- To implement the **SAFE and BIG** storage policy, the Basic Configuration Wizard creates a volume consisting of four hard disk drives and designates the remaining drive as a Hot Spare.
- SAFE and FAST** A storage policy in which an array of *stripes* is created. Each stripe consists of two *mirrored* drives. **SAFE and FAST** provides the I/O load balancing features of striping and the added reliability of mirrored data, equivalent to RAID 1+0. Data are written to mirrored disks in a striped format.
- To implement the **SAFE and FAST** storage policy, the Basic Configuration Wizard creates a virtual drive consisting of four hard disk drives and designates the remaining drive as a Hot Spare.
- Hot Spare** One or more hard disk drives are unused during normal operation and are configured to be a *spare*. If an active drive in a **SAFE** volume fails, the data on the remaining hard disk drive is duplicated onto the **Hot Spare** to regain redundancy. All **SAFE** volumes can have a designated **Hot Spare** (**SAFE**, **SAFE and FAST**, and **SAFE and BIG**).

- Volume** A *virtual* drive comprised of one or more physical hard disk drives. Once the end-user creates a volume, the operating system uses and maintains the volume as if it were a single hard disk drive. This allows software to overcome size restrictions imposed by physical disk drives.
- Daemon** Component of the SiI 4726 Manager responsible for status tracking and **SAFE** volume rebuilds. See “Manager Client Connection to the Daemon” for further details regarding the daemon.

2 Installing the SiI 4726 Storage Appliance

This chapter describes how to install the SiI 4726 Storage Appliance and SiI 4726 Manager software.

Prerequisites

The SiI 4726 installation has the following hardware and software prerequisites for the host computer(s) that will be connected to the SiI 4726 Storage Appliances.

Hardware

- *For x86 platforms:* An Intel PIII 500MHz equivalent or faster
- *For Mac platforms:* A Mac G4 500MHz or faster
- CD-ROM drive
- 64 MB of RAM minimum
- 250 MB of free hard disk space
- Super VGA (800 x 600) or higher resolution with 256 colors
- Mouse or compatible pointing device
- External SATA cable connection between the SiI 4726 Storage Appliance and the host computer

Software

- *For x86 platforms:* Microsoft Windows 2000, Windows XP, or Windows Server 2003 with the latest Service Pack installed.
- *For Mac platforms:* Mac OS X with the latest set of patches installed.
- SV-HBA3124 CD

Install the SiI 4726 hardware

In order to run the SiI 4726 Manager, first install the Silicon Image SV-HBA3124 host controller (card and driver) or another SATA host controller with port multiplier (PM) support. The host controller provides a software and hardware link between the host computer and the SiI 4726 Storage Appliance.

The SV-HBA3124 board uses the SiI3124-2 SATA II controller with port multiplier support. You can use the SiI 4726 Storage Appliance with any SATA host controller with port multiplier support. In addition to the SV-HBA3124 host card, the following Silicon Image controllers provide port multiplier support:

- SiI3124-2
- SiI3124-4
- SiI3132

Install the SV-HBA3124 card and driver

1. Turn off the host computer.
2. Install the SV-HBA3124 card into a PCI-X or PCI slot. Refer to the *SV-HBA3124 Quick Installation Guide* included on your SV-HBA3124 CD for details.
3. Insert the CD into the CD-ROM drive.
4. Click the **SV3124 Setup** icon in the Windows or Mac directory and follow the Installation Wizard to complete the installation. Refer to the *SV-HBA3124 User's Guide* for details.
5. Check www.steelvine.com for updated software and manuals. Upgrade the driver software if needed.

Connect the host to the SiI 4726 Storage Appliance

The SiI 4726 Storage Appliance houses five configurable hard disk drives. After installing the SV-HBA3124 card and drivers, connect the host computer to the SiI 4726 Storage Appliance. Take a moment to verify that the host computer sees the SiI 4726 hard disk drives.

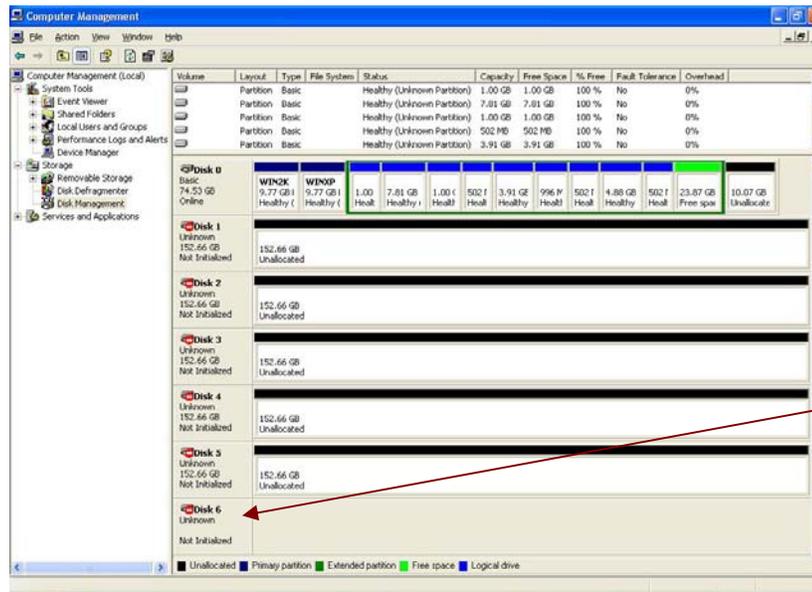
MS Windows

1. Plug the SiI 4726 Storage Appliance into an AC power outlet and turn the SiI 4726 power switch to ON.
2. Attach the SiI 4726 Storage Appliance to the SV-HBA3124 on the host computer with an external SATA cable.
3. Right-click the **My Computer** icon on your desktop and select **Manage** from the pop-up menu.



4. Click **Disk Management** under **Storage** to view the disk drives.
5. If an **Initialize and Convert Disk Wizard** dialog appears, click **Cancel** to close the Wizard and proceed to **Disk Management**.
6. Verify that all five drives are visible in their preconfigured and unallocated state. If the host does not see the SiI 4726 hard disk drives, refer to the Troubleshooting section for corrective actions.

The Status window provides details of the volume allocation. A sixth disk appears without capacity in the list to represent the SteelVine processor. Do not initialize or partition this SteelVine disk.



Do not initialize or partition the sixth (last) SteelVine disk.

Note: Do not initialize or partition the sixth, SteelVine disk. Windows recognizes five 152.50GB hard disk drives for a SiI 4726 Storage Appliance in JBOD (Bypass mode) populated with five 160GB hard disk drives.

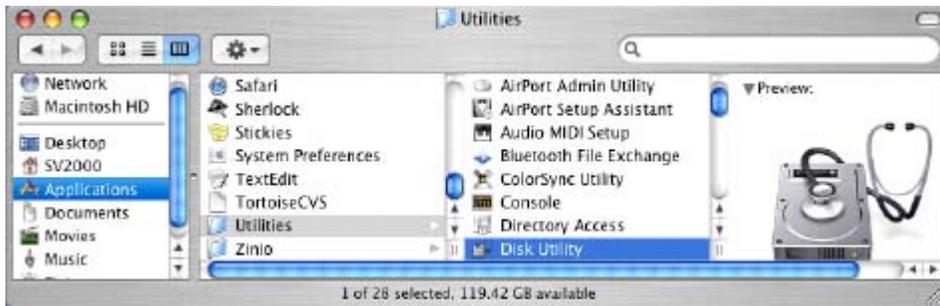
Mac OS X

1. Plug the SiI 4726 Storage Appliance into an AC power outlet and turn the SiI 4726 power switch to ON.
2. Attach the SiI 4726 Storage Appliance to the SV-HBA3124 with an external SATA cable.
3. A warning appears. Because the SiI 4726 ships with empty drives, Mac OS X does not identify a recognizable file system. Click **Ignore** as many times as needed to dismiss the message boxes.

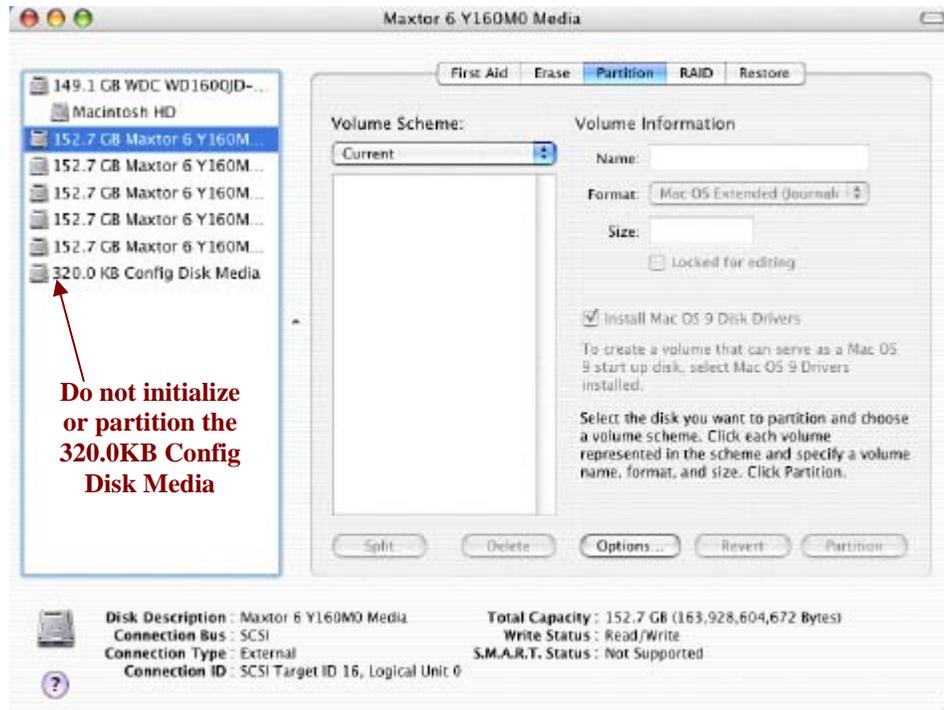
Note: This warning will show up every time you reboot the Mac system. This pop-up warning will be displayed for the config drive. Ignore this as functionally it has no impact.



4. Launch **Disk Utility** from the **Application > Utilities** folder to view the disk drives.



5. Verify that all five drives are visible in their pre-configured and unallocated state. If the host does not recognize the SiI 4726 hard disk drives, refer to the Troubleshooting section for corrective actions. A “320.0 KB Config Disk Media” disk appears in the list of hard disk drives to represent the SteelVine processor. Do not initialize or partition the “320.0 KB Config Disk Media” disk.



Note: Do not initialize or partition the “320.0 KB Config Disk Media” drive. Mac OS X recognizes five 152.7 GB hard disk drives for an SiI 4726 Storage Appliance in JBOD (bypass mode) populated with five 160GB hard disk drives.

The SiI 4726 Manager searches for an active daemon and launches a daemon process if the daemon is not active. This application also launches the SiI 4726 Manager to display the information captured by the daemon.

The daemon launch script is also added to the **Library/StartupItems/SiI 4726Daemon** directory to launch the daemon every time Mac OS is started.

Note: The daemon has “root user” privileges.

Check www.steelvine.com for updated software and manuals. Install a new version of the SiI 4726 Manager if needed. See the “Quick Install Guide” for details.

3 Getting Started

This chapter explains how to start the SiI 4726 Manager and describes the Status window.

Start the SiI 4726 Manager

The SiI 4726 Manager starts with the Status window visible so the end-user can monitor the SiI 4726 Storage Appliances connected to the host computer. Access the Basic Configuration Wizard from the Status window. From there, the end-user can optionally use the Advanced Configuration Wizard to create multiple volumes (virtual drives) on each hard disk drive.

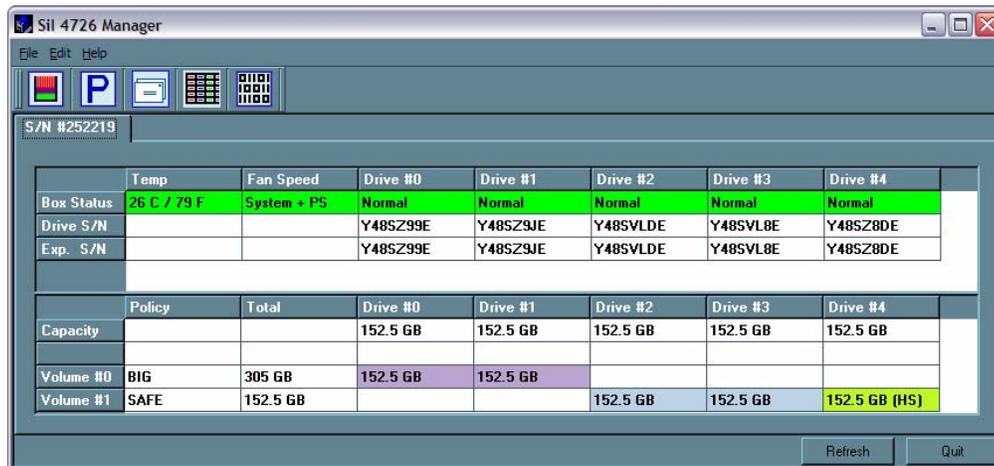
Start the SiI 4726 Manager

MS Windows

1. Select the **Start > All Programs > SiI 4726 > SiI 4726 Manager** icon to start the Manager.



2. Monitor the status of SiI 4726 Storage Appliances on the Status window.



3. Select menu options or click toolbar buttons and follow the instructions in the remainder of this guide to configure SiI 4726 Storage Appliances. When prompted, enter the administrative password. The default password is **admin**. The end-user can customize the password. See “Change password” for details.

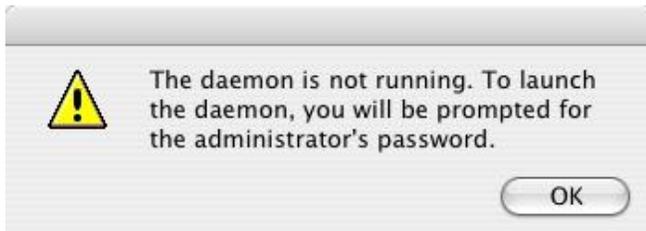


Mac OS X

1. Launch the Finder and locate the **SiI 4726** program within the **Applications > Utilities > SteelVine** folder. Click the **SiI 4726** icon to start the SiI 4726 Manager.



2. If the launch sequence does not find an active daemon, a warning appears. Click **OK**.



3. Enter the administrator password and click **OK**.

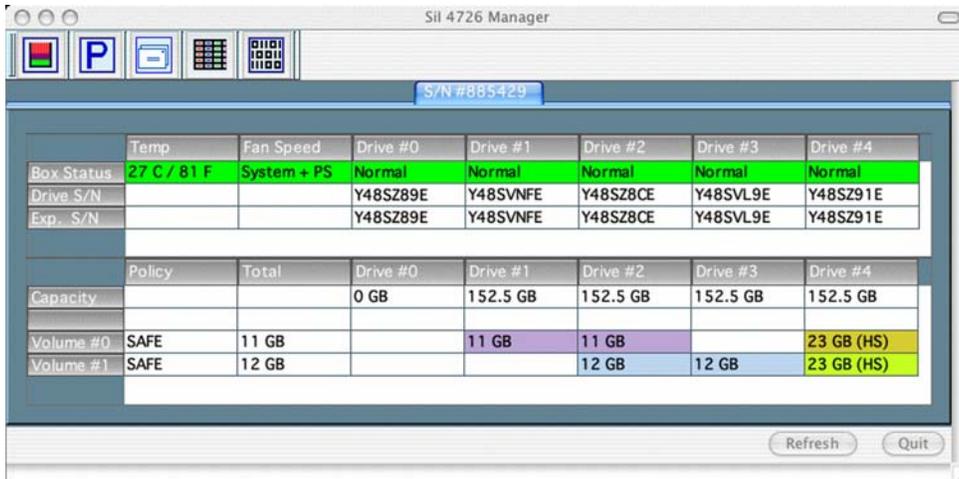


- A notice appears as the launch sequence attempts to start the daemon. Click **OK**.



If the daemon fails to start, an error appears. Follow the recommendations in the error message to correct the problem.

- Monitor the status of SiI 4726 Storage Appliances on the Status window.



- Select menu options or click toolbar buttons and follow the instructions in the remainder of this guide to configure SiI 4726 Storage Appliances. When prompted, enter the administrative password. The default password is **admin**. You end-user can customize your password. See "[Change password](#)" for details.



A Look at the SiI 4726 Status Window

The Status window displays a separate tab for each SiI 4726 Storage Appliance attached to the host computer.

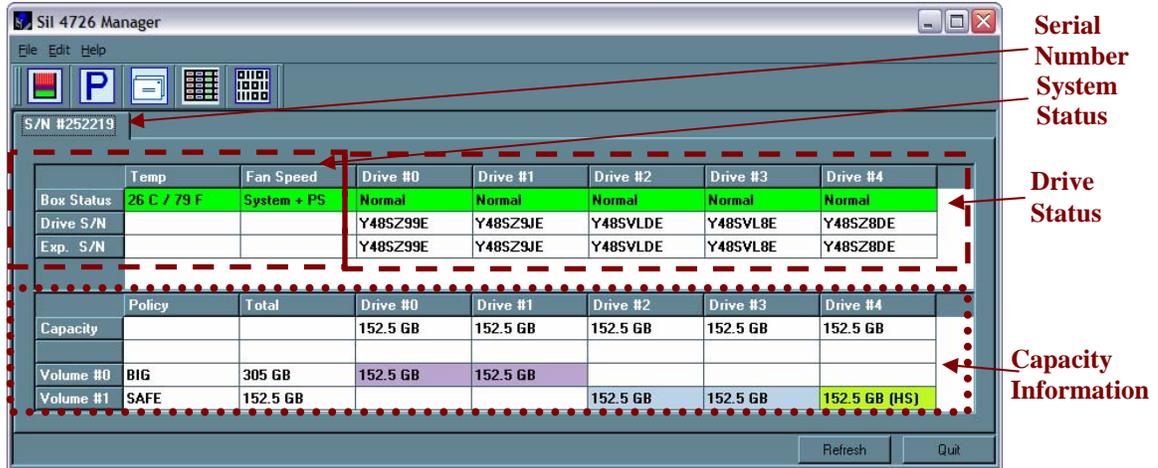


Table 1 Sections of the Status Window

Status Cells	Description
System Status section	
Temp	Indicates the current temperature of the SiI 4726 Storage Appliance.
Fan Speed	Indicates the system fan status . Use this data to monitor possible malfunctions.
Drive Status section	
Box Status	Shows the drive status : Normal, Rebuilding, Unplugged, Needs Rebuild, New Drive, Wrong Slot.
Drive S/N	Shows the unique serial number assigned by the disk manufacturer.
Exp. S/N	Shows the expected serial number of the hard disk drive. The daemon compares the Expected and actual Drive serial numbers to detect when a drive’s status changes.
Capacity Information section	
Policy	Shows the storage policy configured for each volume.
Total	Shows the combined capacity of the volume.
Drive #	Shows capacity information for each hard disk drive.
Capacity	Shows the full amount of storage space (in GB) available on each hard disk drive.
Volume	Shows the total volume capacity and the drive capacities assigned to each volume.

Table 2 File Menu on the Status Window

File Menu Item	Description
Change Password	Opens a dialog to establish a new password .
Scan Devices	Refreshes the status details presented on the Status window.
Change Connections	Opens a dialog to make remote connections .

Table 3 Edit Menu on the Status Window

Edit Menu Item	Description
Configure Box	Opens the Basic Configuration Wizard . From there, the end-user can access the Advanced Configuration Wizard .
Specify Policy	Opens the Rebuild Policy dialog.
Specify Email Notification	Sends email notification for the selected items.
Event Log	Opens the Event Log viewer.
Specify Firmware	Opens the Firmware Selection dialog.

Table 4 Toolbar on the Status Window

Button	Tooltip	Description
	Configure Box	Opens the Basic Configuration Wizard . From there, the end-user can access the Advanced Configuration Wizard .
	Specify Policy Information	Opens the Rebuild Policy dialog.
	Email Notification	Sends email notification for the selected items.
	Show Event Log	Opens the Event Log viewer.
	Specify Firmware	Opens the Firmware Selection dialog.

4 Basic Configuration

This chapter describes the Basic Configuration Wizard and explains how to configure volumes (virtual drives).

A Look at the Basic Configuration Wizard

The SiI 4726 Basic Configuration Wizard is accessible from the Status window and allows volume management. The Basic Configuration Wizard defines volumes based on a selected storage policy. An end-user cannot modify volume counts or capacities. To protect against unintended changes, the SiI 4726 Manager prompts for a password for first time access of the Wizard. The default password is **admin**. (See “Change Password” for additional information on password management.)



Table 5 Sections of the Basic Configuration Wizard

Wizard Section	Description
Storage Policy	Identifies available storage policies to assign to the SiI 4726 configuration.
Volume List	Shows Volume, Mode (storage policy), and Size details for created volumes. The 'Total GB's Left' field (beneath the volume list) shows the remaining capacity in gigabytes for all the hard disk drives.
Drive Graph	Displays disk space for each hard disk drive. All space allocated to the same volume appears in a matching color. A hatch pattern indicates a proposed configuration and a solid block indicates an existing volume. The 'Cap' field beneath each drive in the drive graph shows the maximum capacity in gigabytes for that hard disk drive.

Table 6 Toolbar on the Basic Configuration Wizard

Button	Tooltip	Description
	Read a configuration from a file	Reads a saved configuration so the end-user can apply the configuration to the SiI 4726 Storage Appliance.
	Write configuration from system to a file	Saves a configuration to a file on the host computer.
	Restore configuration to last commit	Cancels proposed changes.

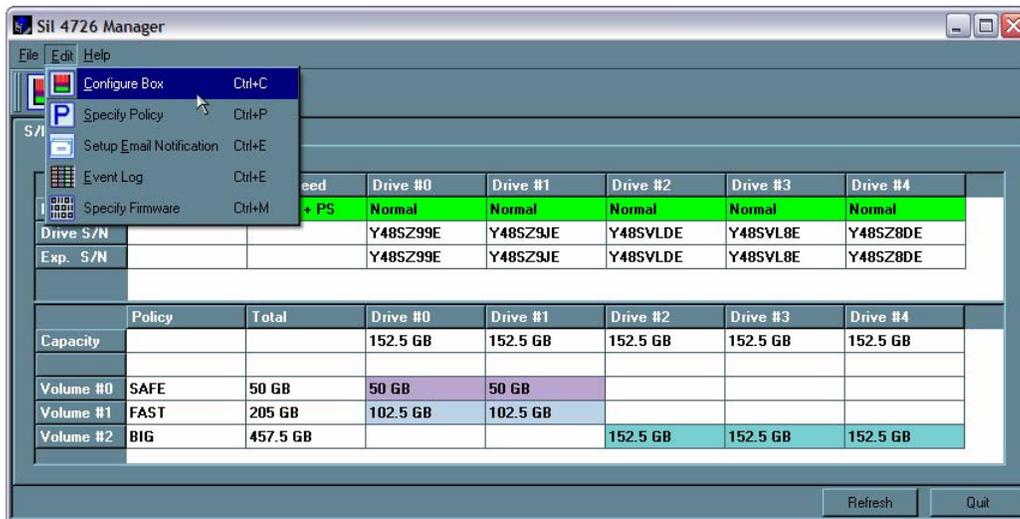
Table 7 Command Buttons on the Basic Configuration Wizard

Button Label	Description
To Advanced Mode	Opens the Advanced Configuration Wizard .
Apply	Submits configuration changes to the SiI 4726 Storage Appliance and closes the Configuration Wizard.
Cancel	Aborts the changes and closes the Configuration Wizard.

Configure Volumes

Note: Use the Disk Management utility provided by the OS to delete all Sil 4726 partitions - except the un-allocated, un-initialized disk that represents the SteelVine processor. See ["Partitioning volumes"](#) for details.

1. Select **Configure Box** from the Edit menu or click the **Configure Box** toolbar button to open the Configuration Wizard.



2. When prompted, enter the administrator password. The default password is **admin**.



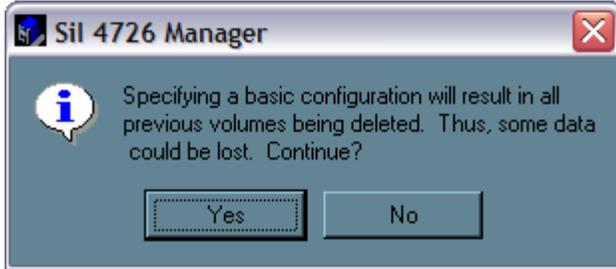
3. Select a [storage policy](#) in the **Storage Policy** frame.



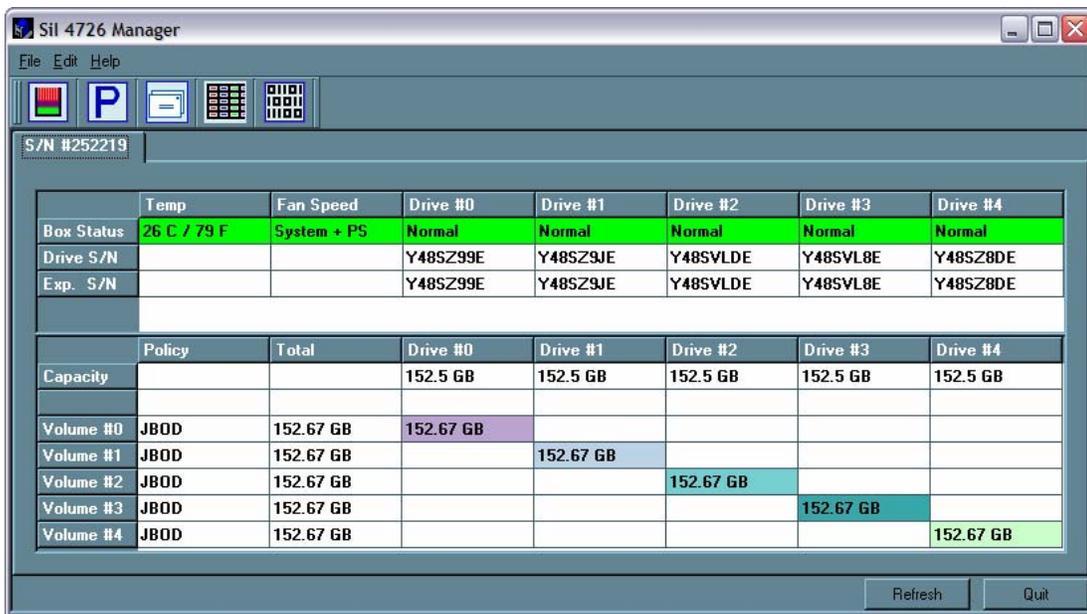
Table 8 Basic Storage Policy Options

Storage Policy	Description
JBOD (bypass)	Creates a logical volume for each physical hard disk drive.
SAFE (RAID 1)	Creates two volumes. For each volume, one hard disk drive is mirrored onto a second drive. Makes the remaining drive the Hot Spare for both volumes.
BIG (span)	Concatenates all hard disk drives into a single volume.
FAST (RAID 0)	Creates one volume that is striped across up to five hard disk drives.
SAFE and BIG	Concatenates half the available space on four hard disk drives and mirrors that half to the second half of the available space. Makes the remaining drive the Hot Spare.
SAFE and FAST (RAID 1+0)	Creates one volume consisting of four hard disk drives (data is written to the mirrored disks in a striped format). Makes the remaining drive the Hot Spare.

- When prompted to acknowledge that the configuration change may result in data loss, click **Yes** to accept the configuration.



- Select **Save to Config File** from the File menu or click the **Write configuration for system to a file** toolbar button to save the configuration.
- Click **Apply** to create the selected configuration. The Volume display will close automatically and the Status window will refresh (within a minute or so).



- Partition the configured volume(s) to complete the implementation. See “Partitioning Volumes” for details.

5 Advanced Configuration

This section describes how to use the Advanced Configuration Wizard to apply more than one storage policy to volumes on the SiI 4726 Storage Appliance.

Why Advanced Configuration?

The Basic Configuration Wizard provides six predefined storage policies to quickly configure the SiI 4726 Storage Appliance. Each predefined storage policy allocates the maximum system capacity to the selected storage policy.

Using the Advanced Configuration Wizard, you can configure up to ten volumes - each with different storage policies and capacities. This flexibility provides numerous combinations of performance, redundancy, and capacity to meet your business requirements. For example:

- For applications that produce critical data, redundancy is important. You could use the Basic Configuration Wizard to implement the predefined **SAFE**, **SAFE and FAST**, or **SAFE and BIG** storage policy. This format would allocate all hard disk drives to **SAFE** volumes. This may be excessive for your needs. Use the Advanced Configuration Wizard to create additional volumes and allocate capacity more efficiently.
- For applications that require hundreds of gigabytes of storage space, the added redundancy of a **SAFE** configuration's Hot Spare may not be an acceptable luxury. Use the Advanced Configuration Wizard to create multiple volumes that make use of every gigabyte of available space.

These are just a few of the possible combinations of storage policy and capacity allocations that you can create with the Advanced Configuration Wizard. Experiment with other combinations to allocate the total system capacity to meet your needs.

A Look at the Advanced Configuration Wizard

The Advanced Configuration Wizard is an extension of Basic mode that allows you to create two volumes (virtual drives) on each physical hard disk drive.

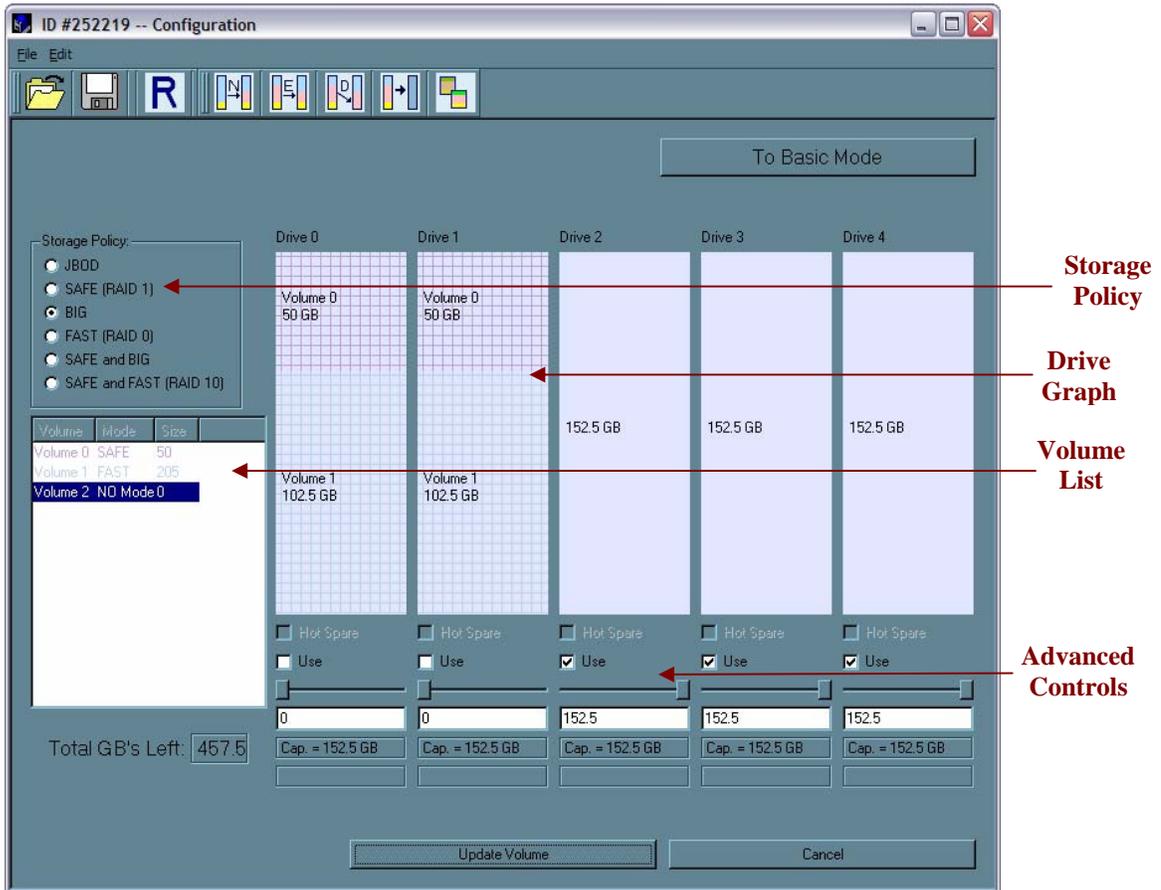


Table 9 Sections of the Advanced Configuration Wizard

Section	Description
Storage Policy	Shows the available storage policies that you can assign to volumes. The options are enabled after you create a new volume or select an existing volume to edit.
Volume List	Shows Volume, Mode (storage policy), and Size details for currently configured volumes. Select a volume to edit or delete it. The Total GB's Left field beneath the volume list shows the remaining capacity in gigabytes for all the hard disk drives.
Drive Graph	Displays disk space for each hard disk drive. All space allocated to the same volume appears in a matching color. A hatch pattern indicates a proposed configuration and a solid block indicates an existing volume.
Advanced Controls	<p>Permit volume creation and modification on each hard disk drive:</p> <ul style="list-style-type: none"> • Hot Spare check box indicates space on this drive is allocated as rebuild space for the selected SAFE volume. • 'Use' check box indicates drive membership within a volume. • Slider specifies capacity allocated to a volume. • Text field shows the capacity specified by manipulating the slider. • 'Cap' field shows maximum capacity for the hard disk drive. • 'Vol#' shows the virtual volume with which each hard disk drive is associated.

Table 10 Toolbar Buttons on the Advanced Configuration Wizard

Button	Tooltip	Description
	Read a configuration from a file	Reads a saved configuration into the Advanced Configuration Wizard so you can apply the configuration to the SiI 4726 Storage Appliance. Available in Basic and Advanced modes.
	Write configuration for system to a file	Saves a configuration to a file on the host computer. Available in Basic and Advanced modes.
	Restore configuration to last Commit	Cancels proposed changes. Available in Basic and Advanced modes.
	Create a new volume	Creates a new volume on which to set the storage policy and capacity. You can create up to 2 volumes on each hard disk drive (10 total).
	Edit selected volume	Permits the storage policy and capacity of an existing volume to be modified.
	Delete selected volume	Deletes the volume that is currently selected in the volume list.
	Delete all volumes	Deletes all configured volumes.
	Copy configuration from other device in the system	Copies the configuration of one SiI 4726 Storage Appliance to the current SiI 4726 Storage Appliance.

Table 11 Command Buttons on the Advanced Configuration Wizard

Button	Description
To Basic Mode	Opens the Basic Configuration Wizard .
When configuring a volume (create a new volume or edit a selected volume)	
Update Volume	Applies the selected storage policy to a specific portion of a hard disk drive as a proposed configuration.
Cancel	Aborts the pending changes and returns the Wizard to the point where you can perform different advanced configuration functions.
After configuring a volume	
Apply	Submits configuration changes to the Sii 4726 Storage Appliance, closes the Wizard, and displays the updated configuration on the Status window.
Cancel	Aborts the in-progress changes and closes the Wizard.

Configure Multiple Volumes

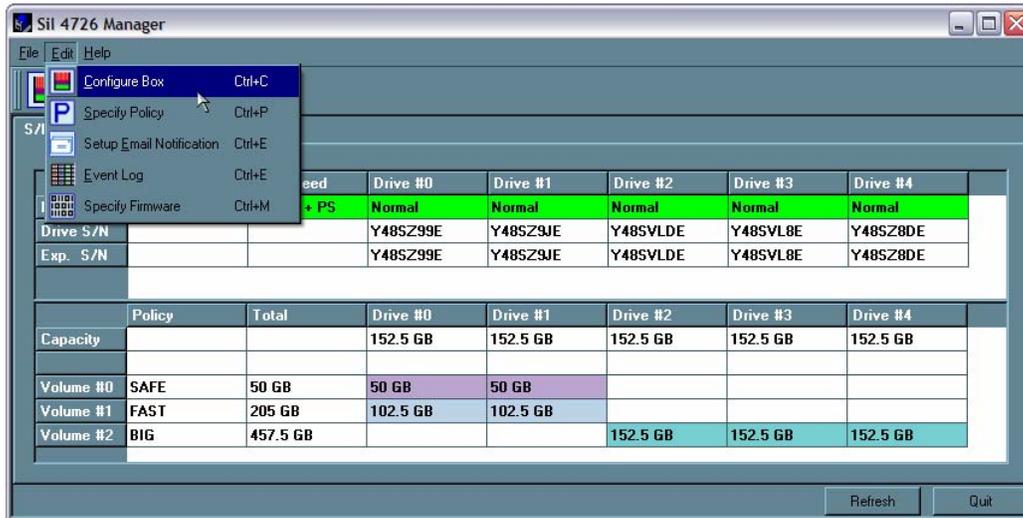
The Advanced Configuration Wizard allows many combinations of storage policies and capacities. This procedure shows how to modify a basic **SAFE** configuration so that it contains several volumes, each with different storage policies. This example illustrates one possible combination that allocates all of the system’s available capacity to:

- One 50-gigabyte (GB) **SAFE** volume on drives 0 and 1, with no reserved space for a Hot Spare.
- One **FAST** volume that uses the remaining capacity on drives 0 and 1.
- One **BIG** volume that uses all of the capacity on drives 2, 3, and 4.

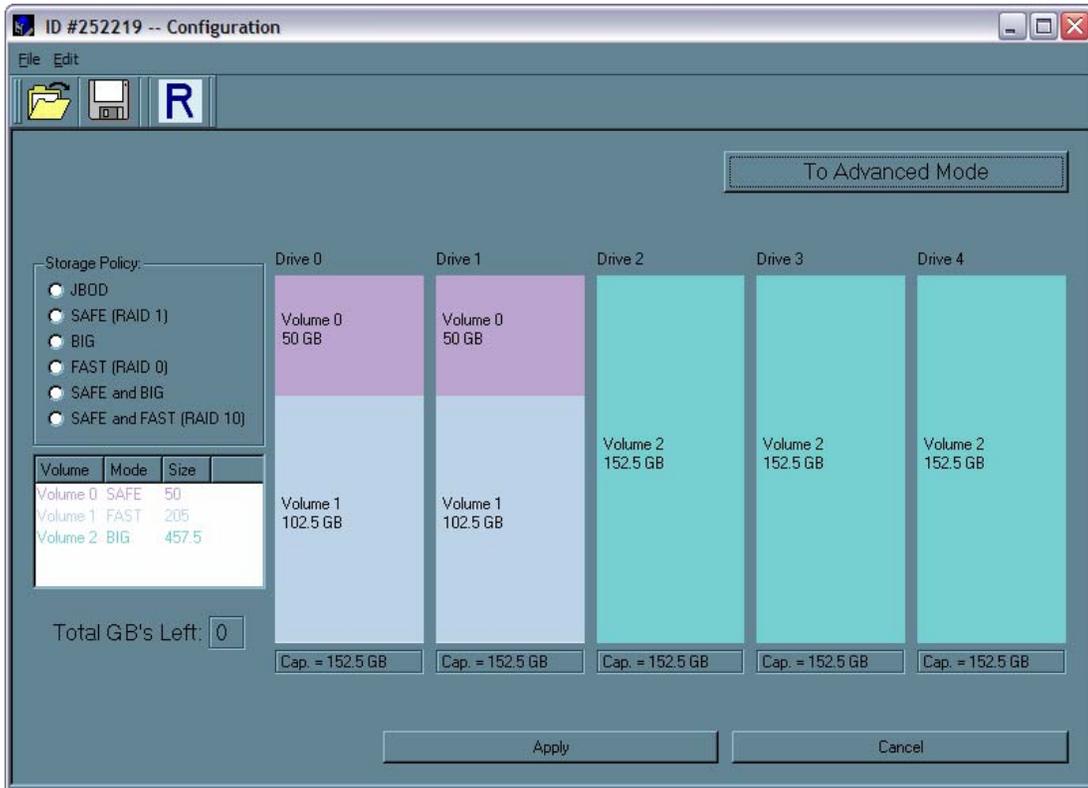
The same sequence of steps applies to any configuration you choose to implement; only the storage policy and capacity allocation vary for different configuration options.

Note: Before reconfiguring an existing Sil 4726 Storage Appliance with a new configuration, back-up the data. Use the Disk Management utility provided by your OS to delete all Sil 4726 partitions - except the unallocated, un-initialized disk that represents the SteelVine processor. Once the configuration and partitioning of the new volumes has taken place, it is safe to restore the backed-up data to the new configuration. See “Partitioning volumes” for details.

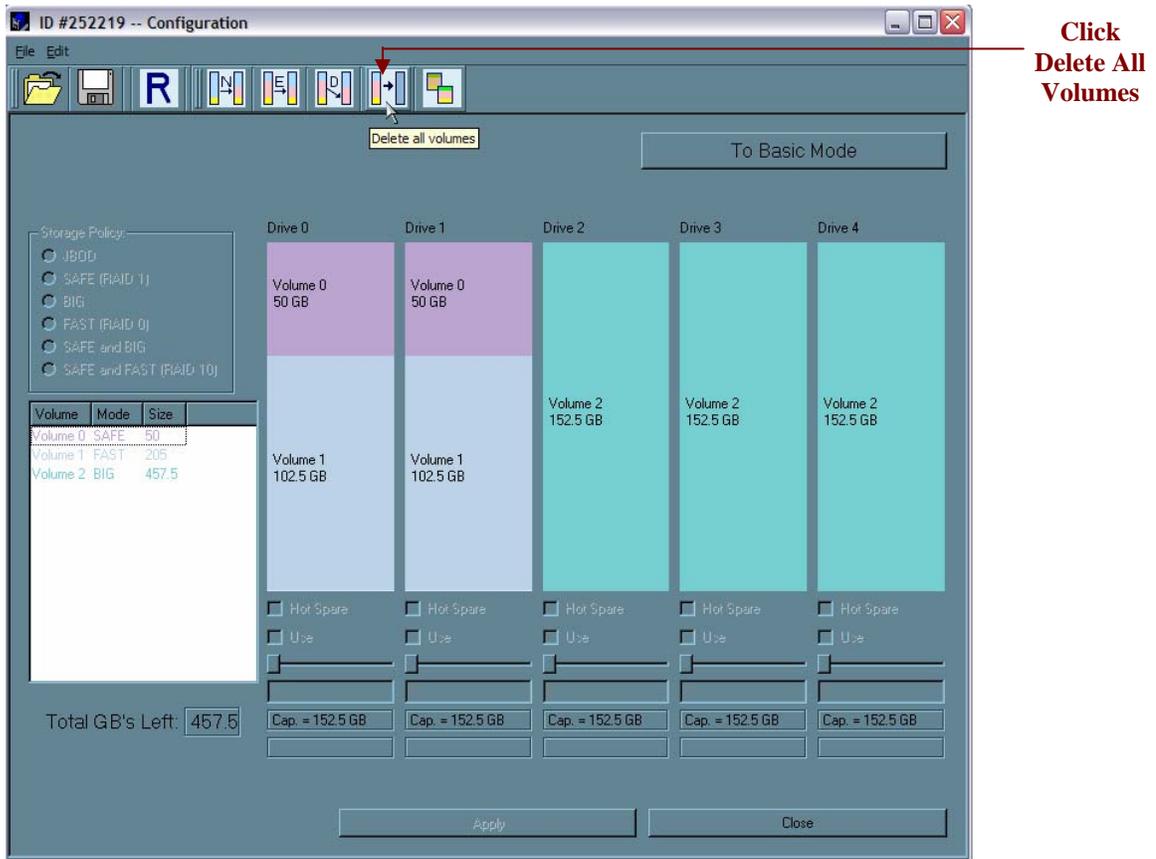
1. Click the **Configure Box** toolbar button to open the Basic Configuration Wizard.



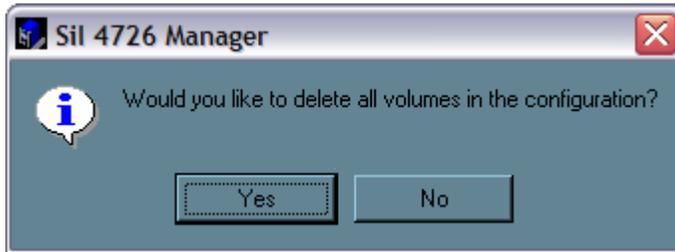
2. Click **To Advanced Mode** to open the Advanced Configuration Wizard.



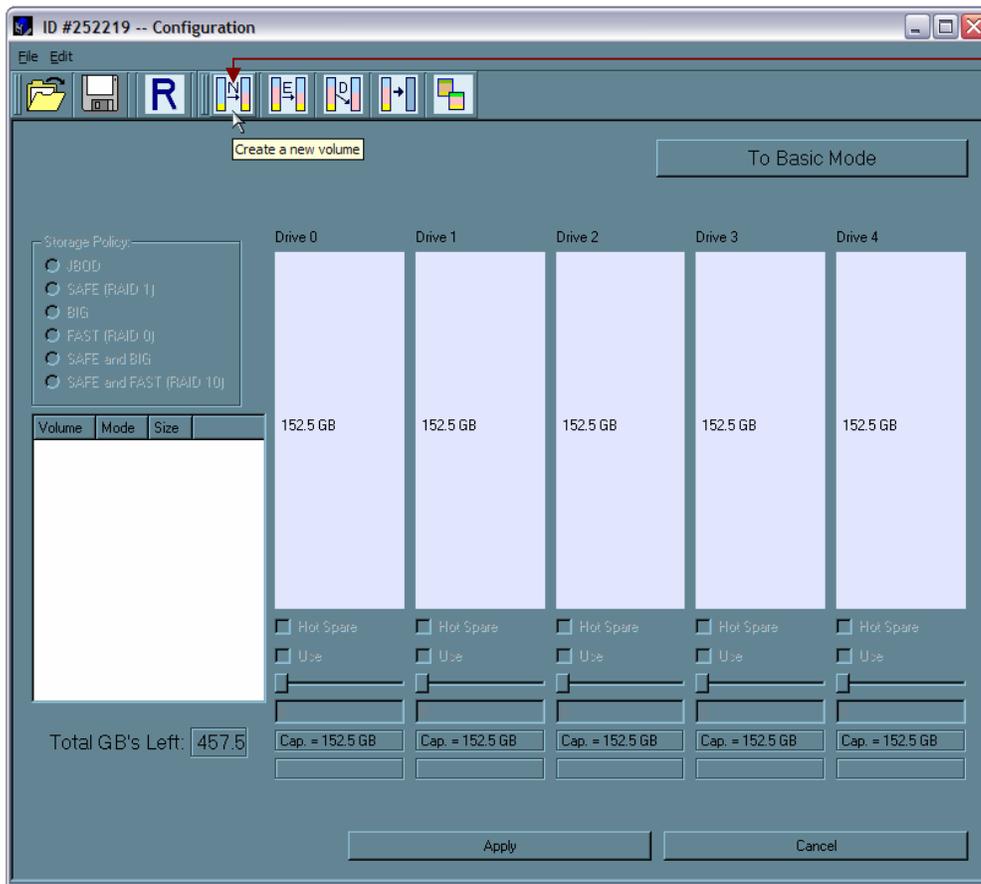
3. Select the “Delete all volumes” from the toolbar.



4. When prompted to confirm the deletion of the volumes, click **Yes**.



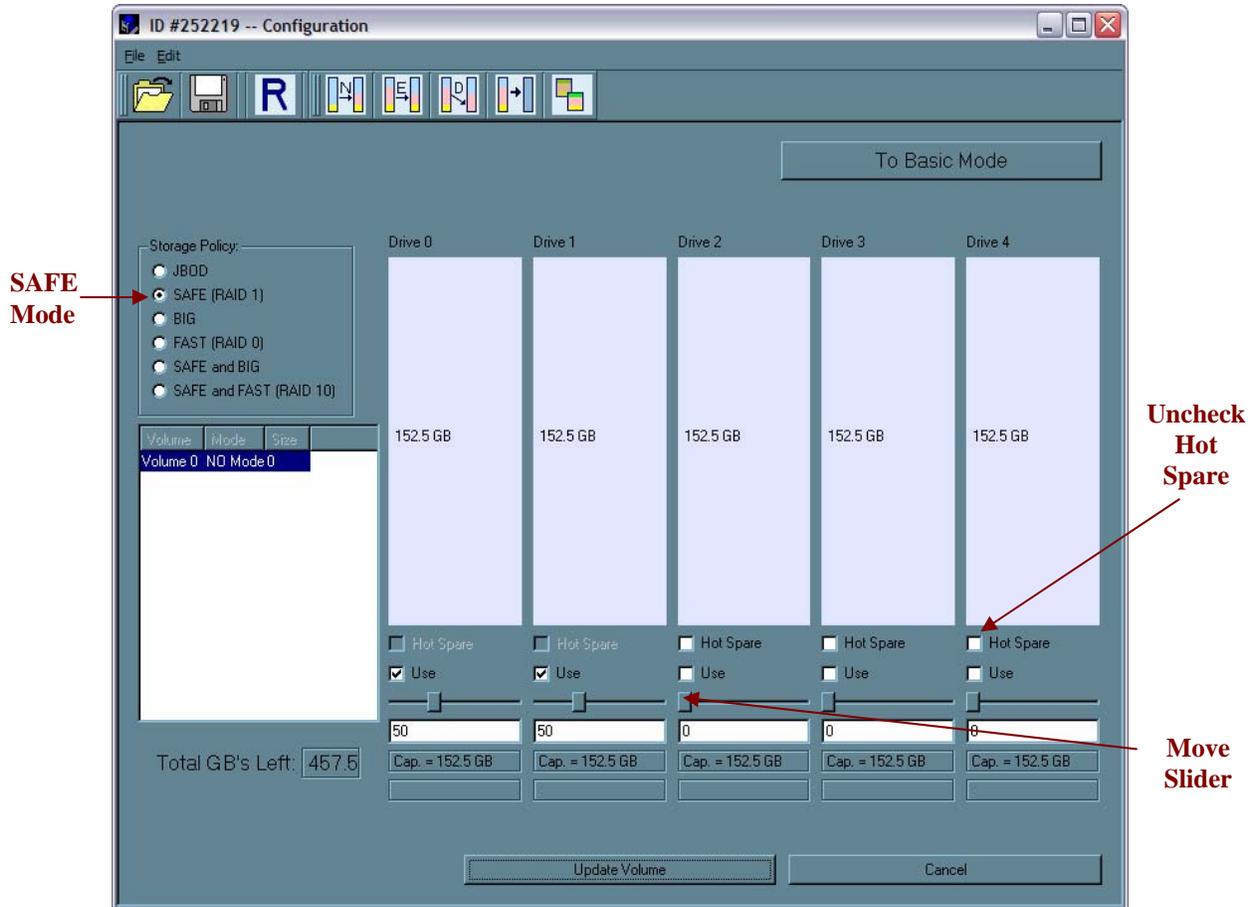
5. Select "Create a new volume" from the toolbar.



**Click
Create a
new
volume.**

6. Select SAFE (RAID 1) as the Storage Policy. Click on the “Use” check boxes underneath Drives 0 and 1. Move the slide to 50.

Tip: Click to the right or left of the slider within the slider’s channel to make half-GB changes.

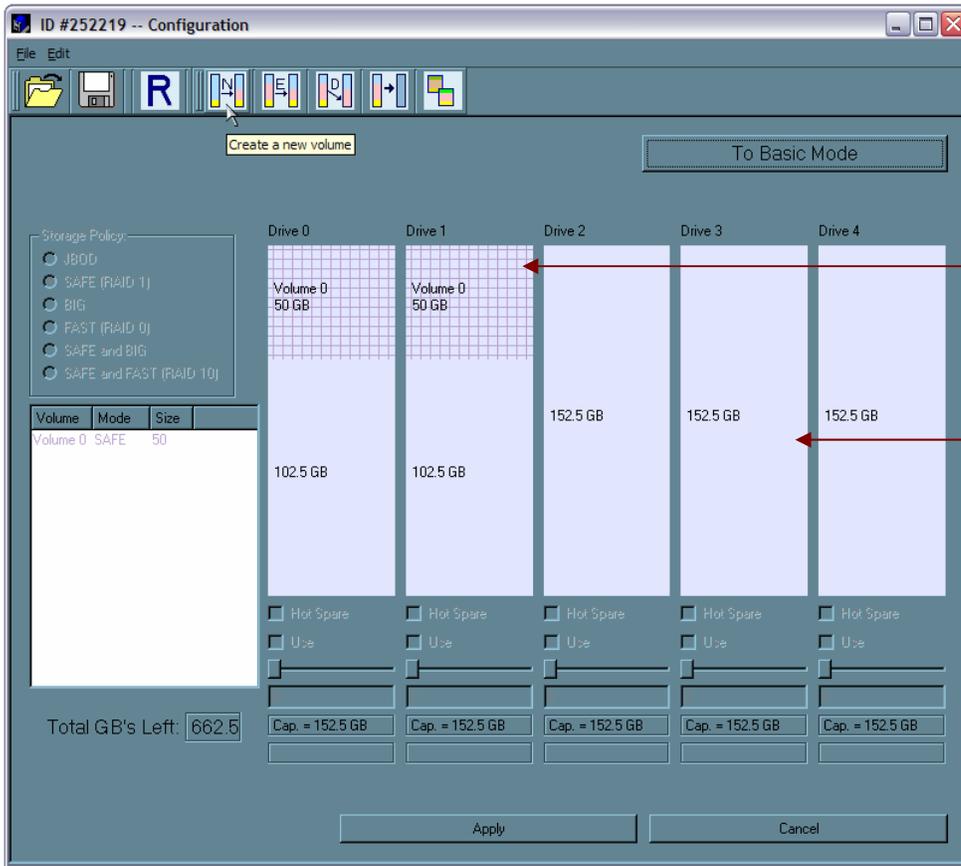


7. Click **Update Volume**.
8. When prompted whether to create a Hot Spare for the SAFE volume, click **No**.



In some configurations, the end-user may want the added redundancy of a Hot Spare. The goal of this example is to use all available system capacity to deliberately avoid the Hot Spare.

9. Click the **Create a New Volume** toolbar button.

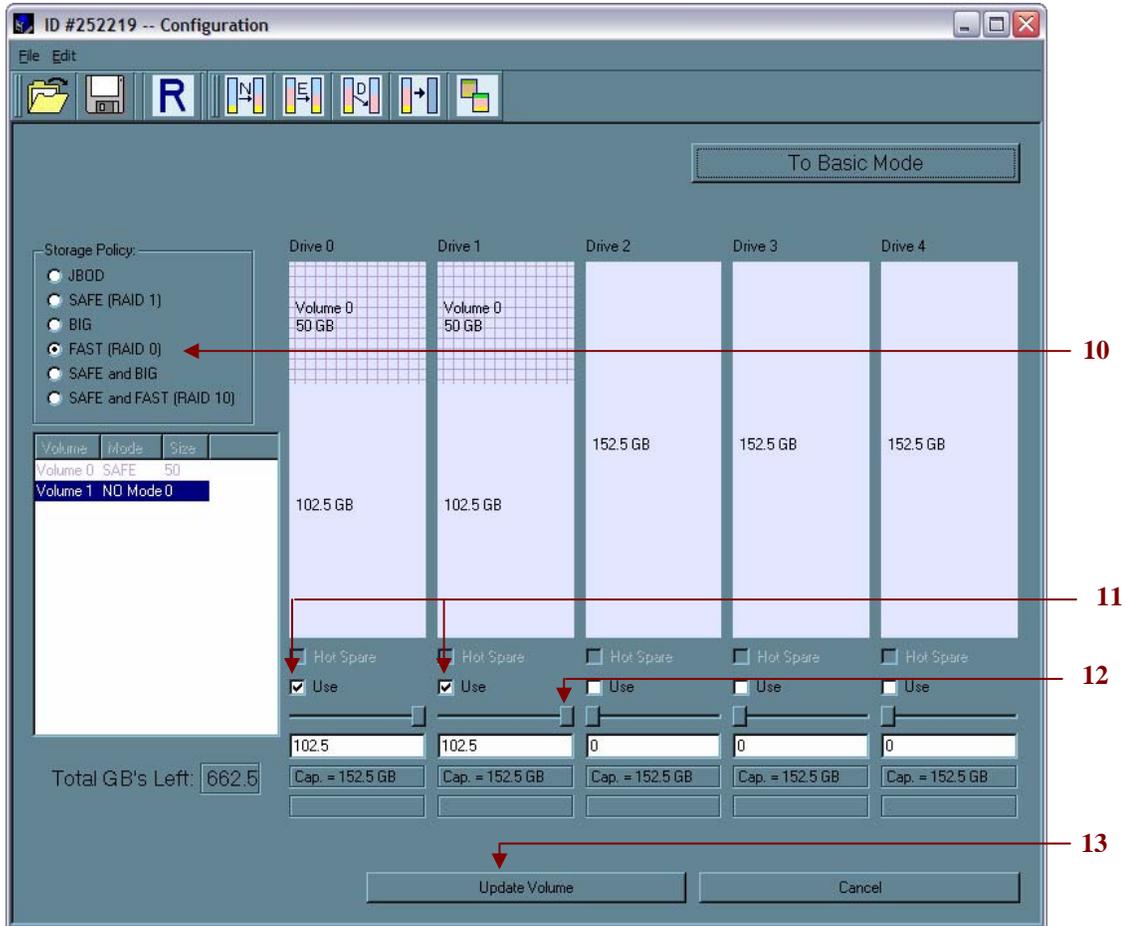


Cross-hatches identify allocated space for updated volumes (not yet saved)

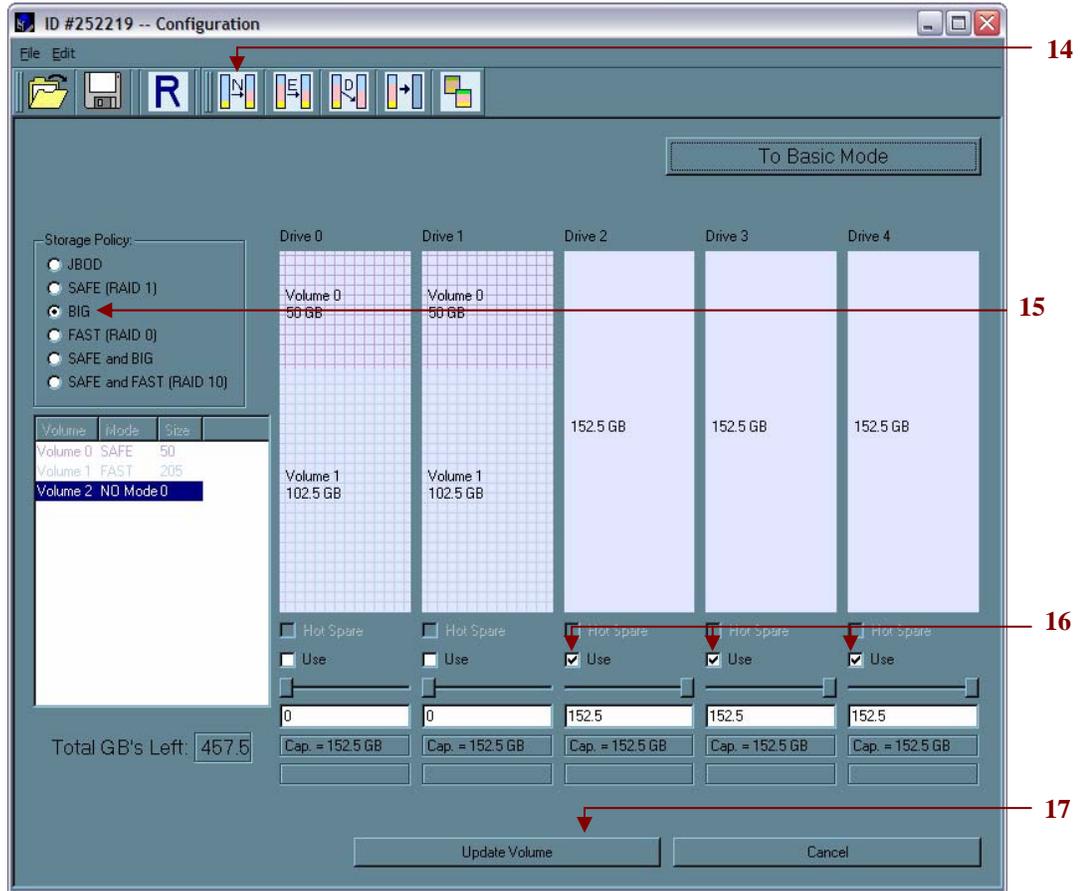
Light solid colors identify unallocated disk space

10. Select the **FAST** radio button in the Storage Policy section.
11. Select the **'Use'** check box beneath both Drive 0 and Drive 1. This example illustrates two-drive striping.
12. Move the slider beneath Drive 0 all the way to the right to allocate the remaining capacity on the two drives to the Fast volume.

If you wish, you can allocate less than the total remaining capacity to the new volume. However, doing so makes the unallocated capacity unavailable and unused.
13. Click **Update Volume**.

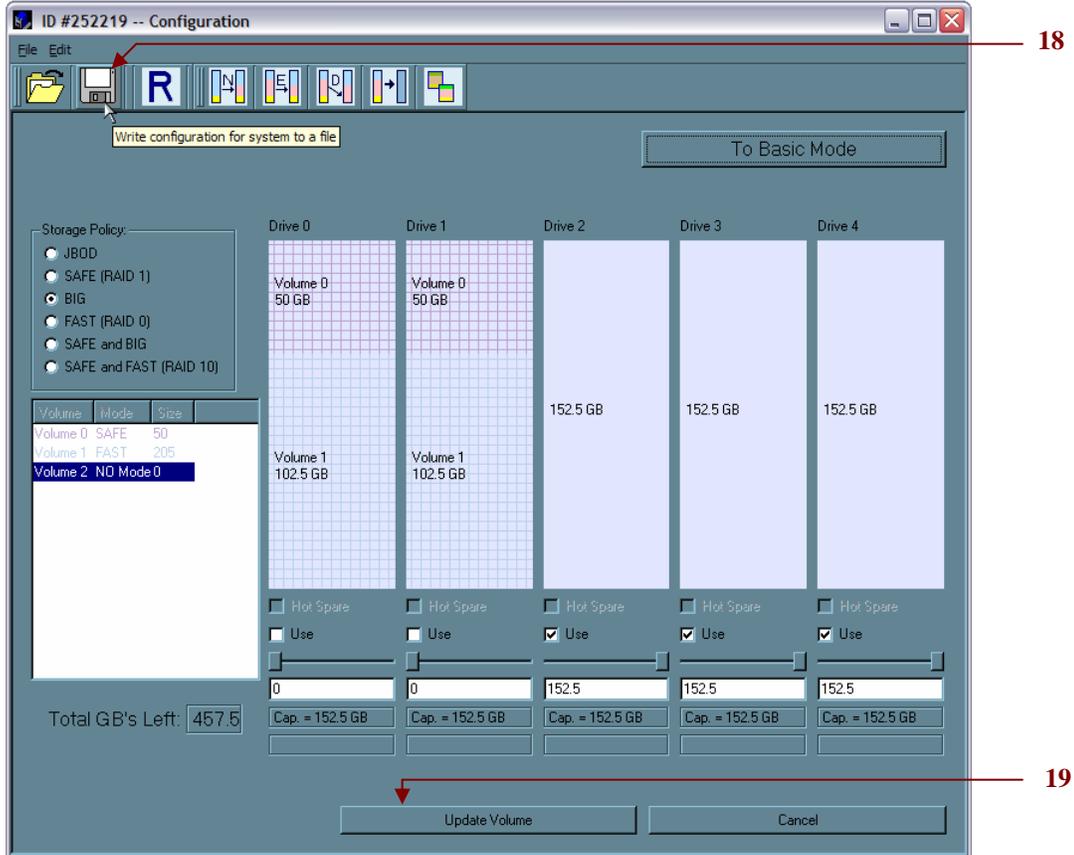


14. Click the **Create a New Volume** toolbar button.
15. Select the **BIG** radio button in the Storage Policy section.
16. Select the 'Use' check box beneath Drive 2, Drive 3, and Drive 4 to allocate all of the remaining system capacity to the **BIG** volume.
17. Click **Update Volume**.

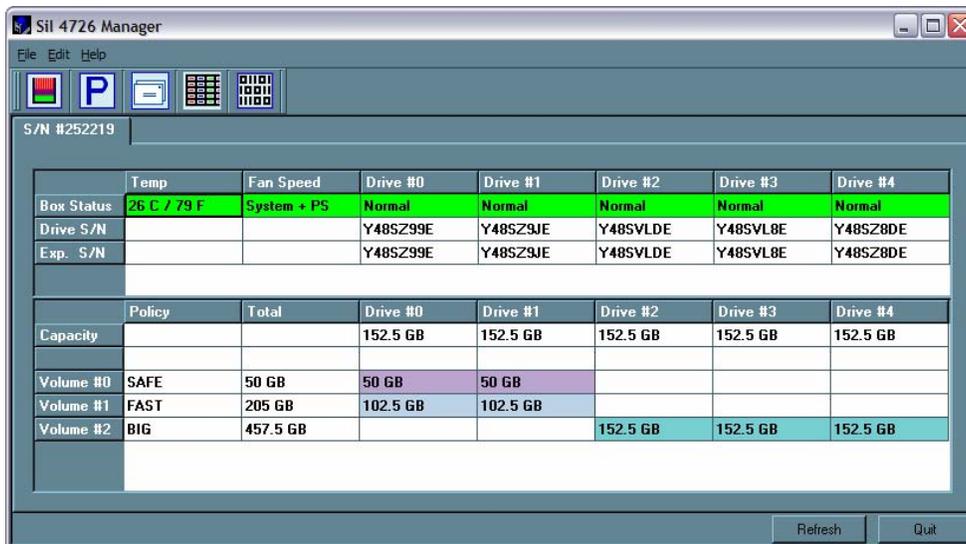


Note: Only the last Volume listed (in the above example, Volume 2) can be edited. In order to edit Volume 1, Volume 2 must be deleted. In order to edit Volume 0, all Volumes must be deleted and the end-user will need to start with a New Volume (refer to list item 9 - 13 for more details).

18. Click the **Write Configuration for System to a File** toolbar button to save the configuration.



19. Click **Update Volume** to create the multi-volume configuration, close the Wizard, and display the volumes in the Status window (within a minute or so).



20. Partition the configured volumes to complete the implementation. See “Partitioning Volumes” for details.

Manage Configuration Files

The Basic Configuration Wizard provides menus and icons to manage configuration files.

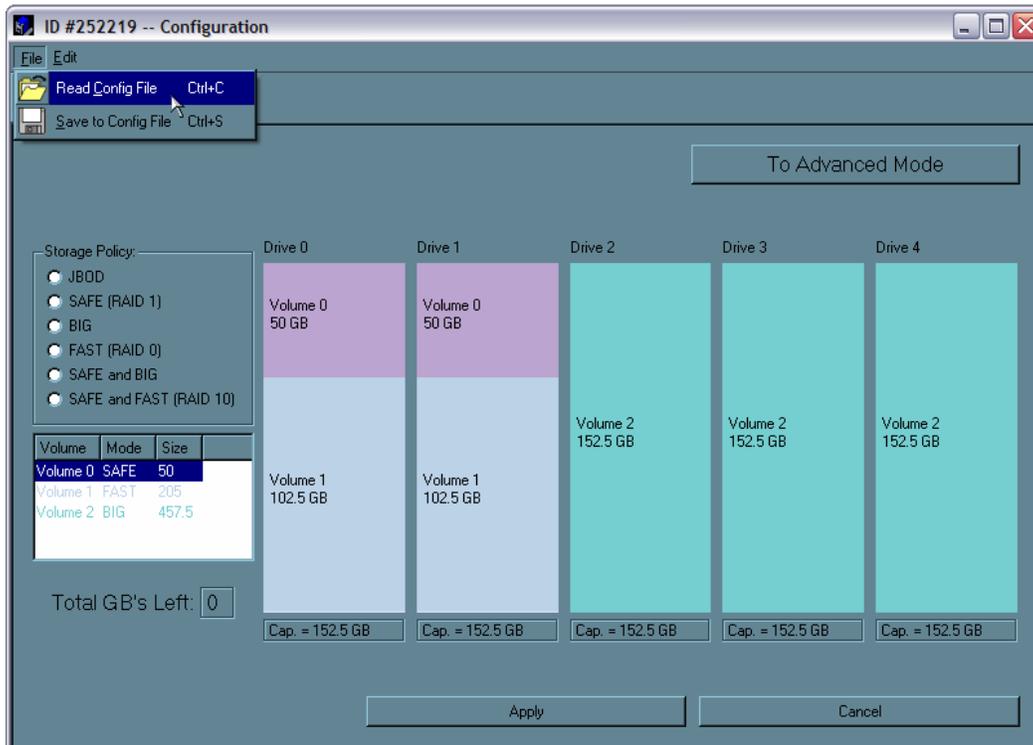
- The **Read Config File** command from the File menu in the Basic Configuration Wizard imports a configuration file so that the end-user can restore a previously saved configuration (storage policy).
- The **Save to Config File** command from the File menu in the Basic Configuration Wizard exports an SiI 4726 configuration to a file.

Each of the procedures in the “Basic Configuration” chapter prompts you to save a configuration file.

Import a configuration file

Note: The end-user must have previously saved a configuration file so that one is available to import it. See “Save a configuration file” for details.

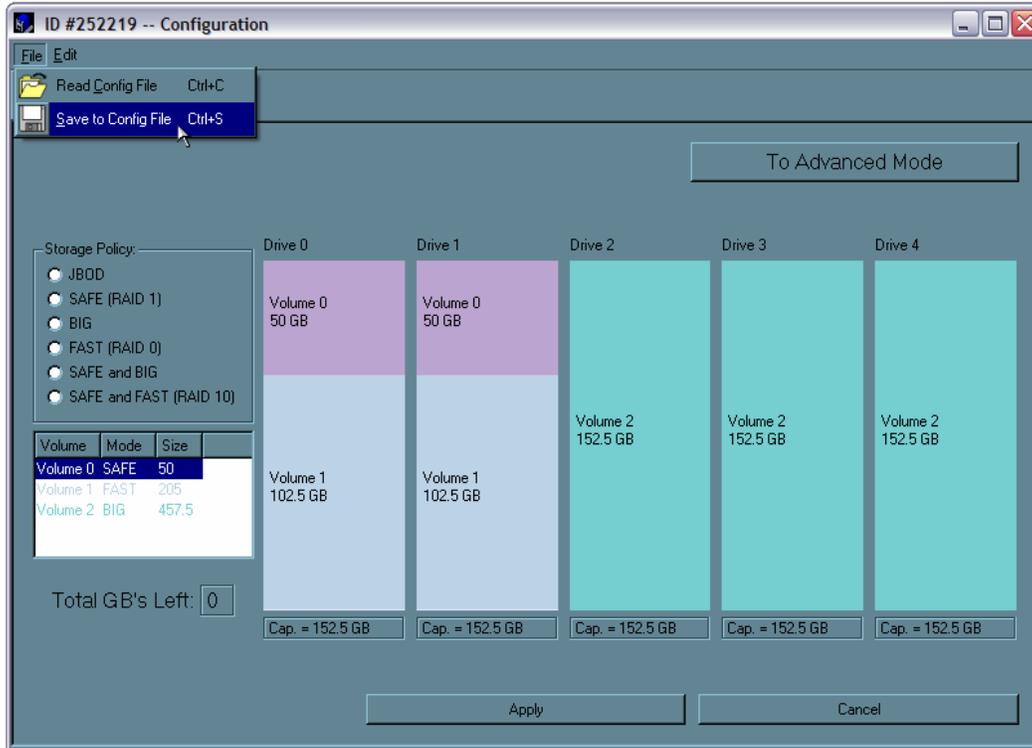
1. Select **Configure Box** from the Edit menu or click the **Configure Box** toolbar button in the Status window to open the Basic Configuration Wizard.
2. Select **Read Config File** from the File menu in the Basic Configuration Wizard.



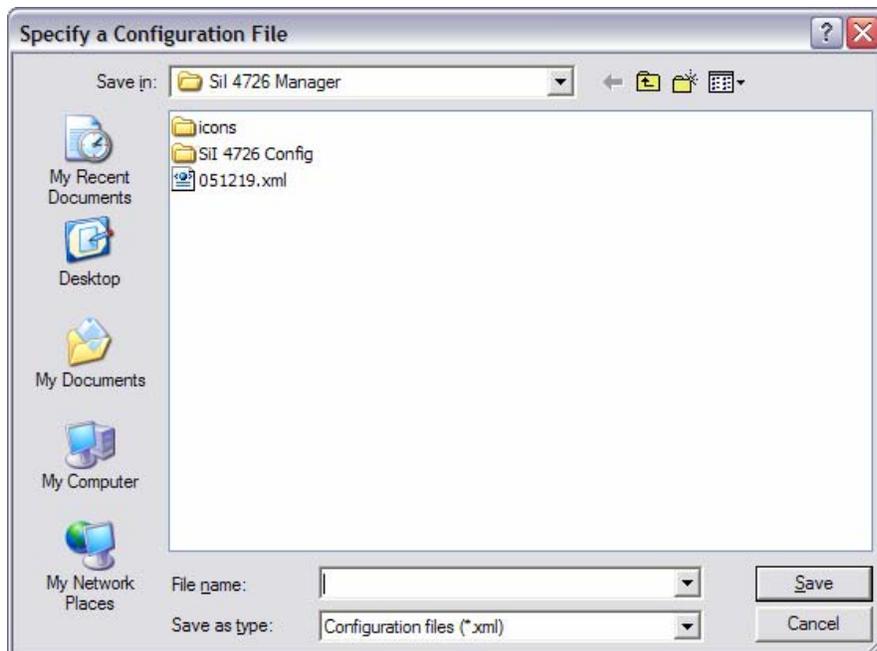
3. Navigate to the required file and click **Open** to import it. The Basic Configuration Wizard provides notice of a successful import and graphically displays the imported volumes.
4. Click **OK** to implement the imported configuration.

Save a configuration file

1. Select **Configure Box** from the Edit menu or click the **Configure Box** toolbar button in the Status window to open the Basic Configuration Wizard.
2. Select **Save to Config File** from the File menu in the Basic Configuration Wizard.



3. Navigate to the appropriate directory, specify a file name in the **File Name** text box, and click the **Save** button.



6 Partitioning Configured Volumes

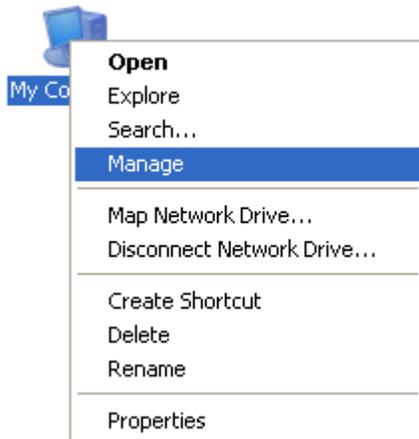
This chapter explains how to partition volumes after configuring them with the SiI 4726 Manager. The end-user must partition volumes for the host computer's operating system before one can store data on the volumes. Refer to the operating system documentation for further guidance.

Partition a Volume

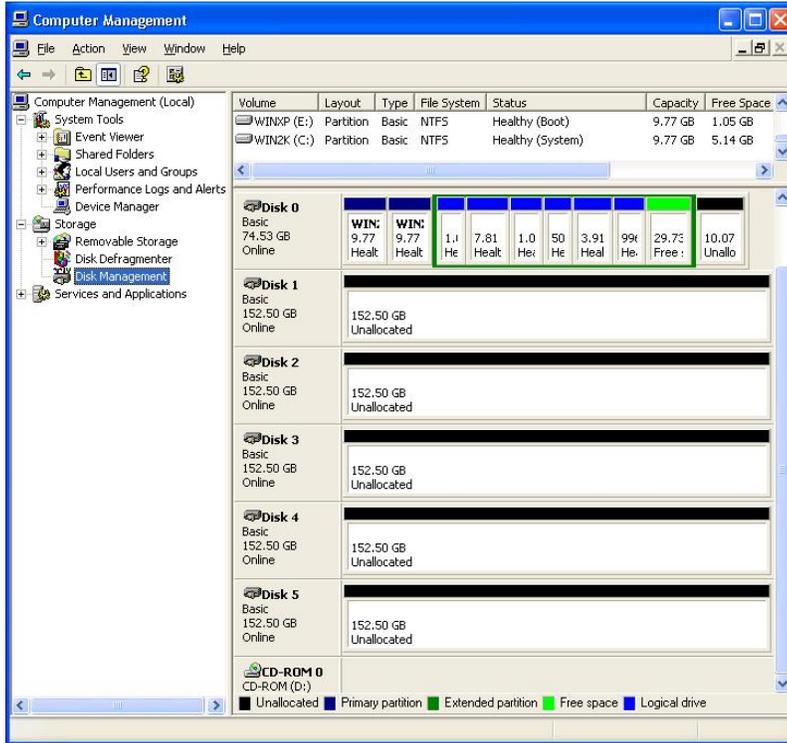
MS Windows

Important: Before reconfiguring a volume, back up the data and delete previously defined SiI 4726 partitions. Do not, however, delete the partition that represents the SteelVine processor (the "Not Initialized" disk with no capacity allocated to it). After the end-user configures and partitions the new volumes, S/he can restore the backed-up data to the new configuration.

1. Right-click the **My Computer** icon and select **Manage** from the pop-up window.

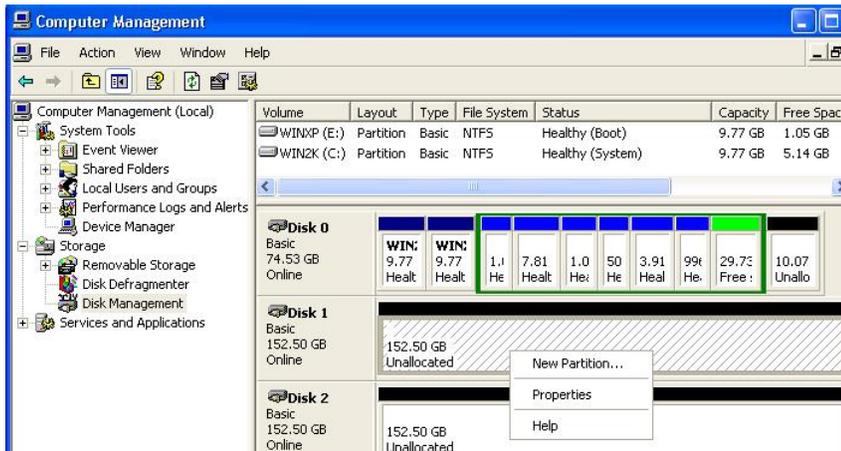


- From the Computer Management window select **Disk Management** under **Storage** to open Windows Disk Manager.



Note: The Disk numbers in the Windows Disk Manager may be different from the Volume numbers shown in the Sil 4726 Manager Status window, the Basic Configuration Wizard, and the Advanced Configuration Wizard. Be sure to select the correct disk based on the expected disk capacity to create a partition.

- Right-click on the configured disk's unallocated space and select **New Partition**. If the New Partition option is not available, select the disk and Initialize it first. To do this, right-click on the disk item and select "Initialize Disk".



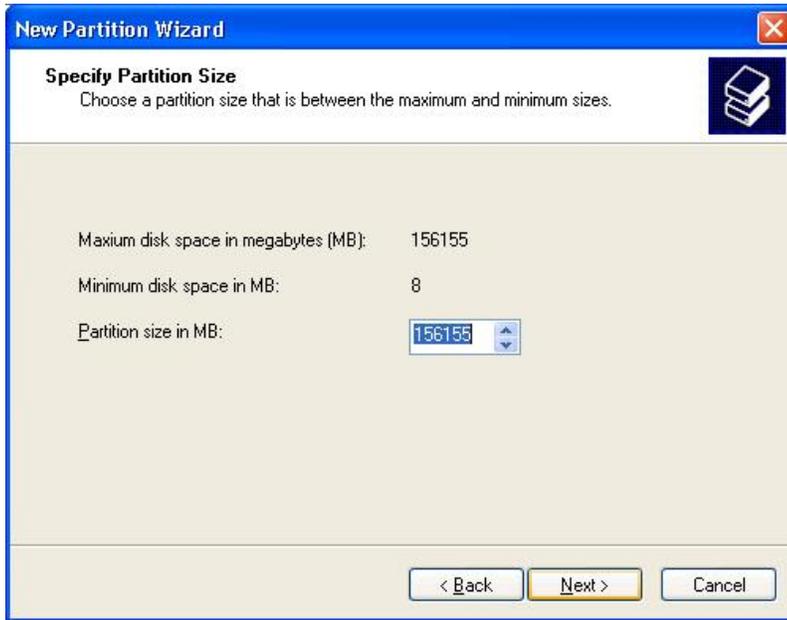
4. Click **Next** to start the Partition Wizard.



5. Select the Primary or Extended option and click **Next**.



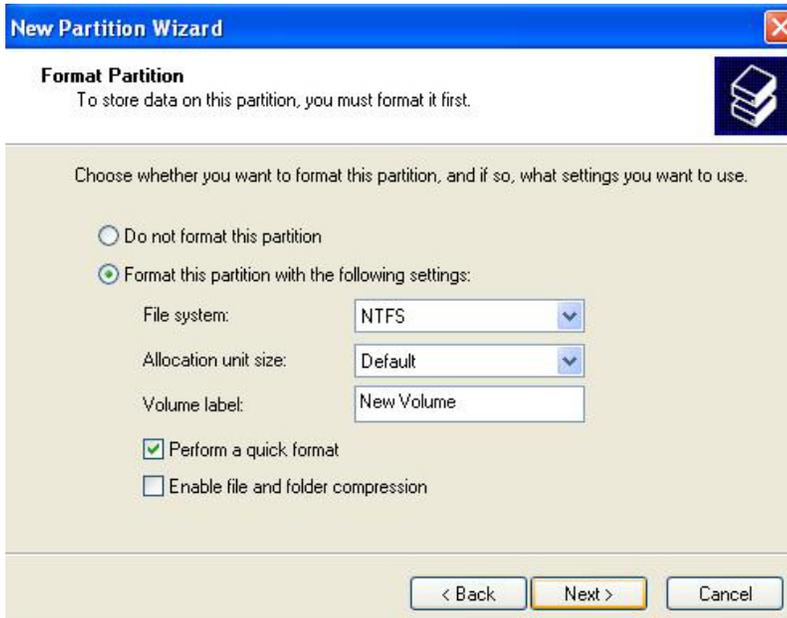
- Specify the partition size. By default, the partition occupies the entire volume. Click **Next**.



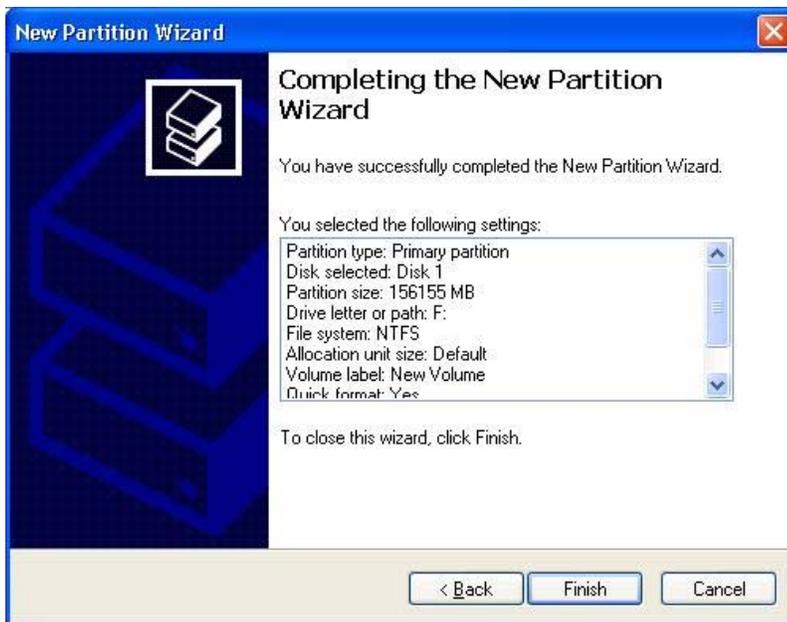
- Assign a drive letter or mount path and click **Next**.



8. Select file system and name the partition and click **Next**.



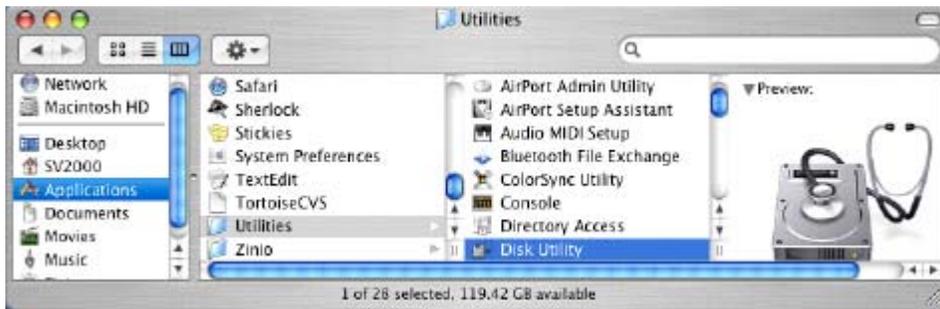
9. Review the file system settings and click **Finish** to create the logical partition.



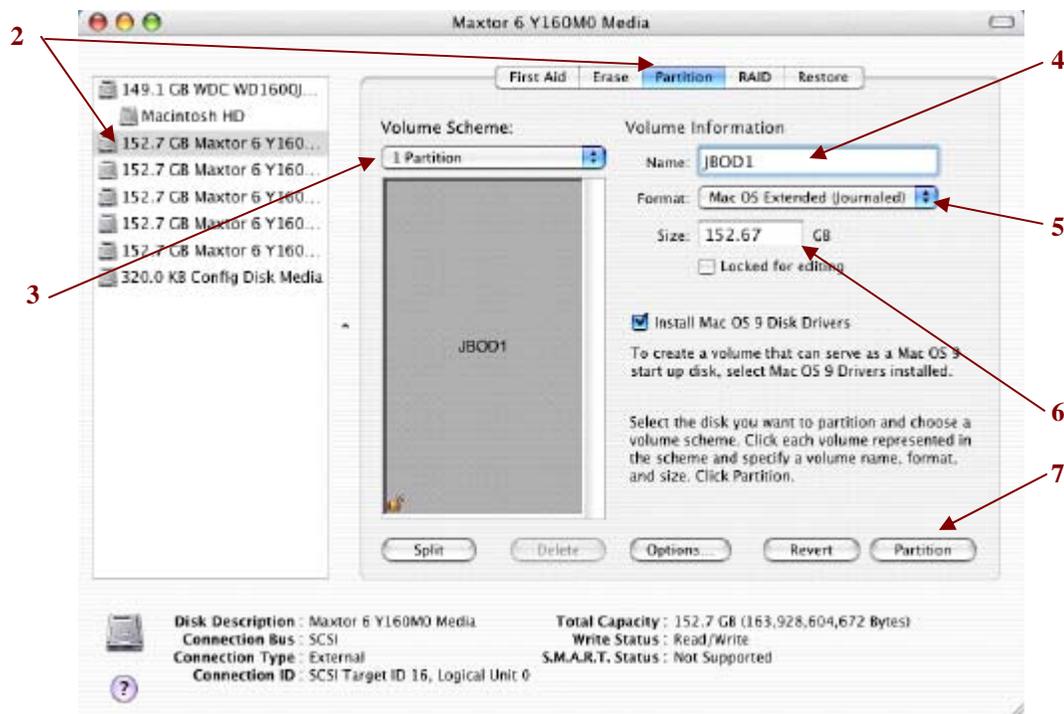
10. Repeat steps 1 through 9 to partition any remaining disks you configured in the SiI 4726 Manager. Remember, do not partition the disk that represents the SteelVine processor.

Mac OS X

1. Launch **Disk Utility** from **Application > Utilities** folder.

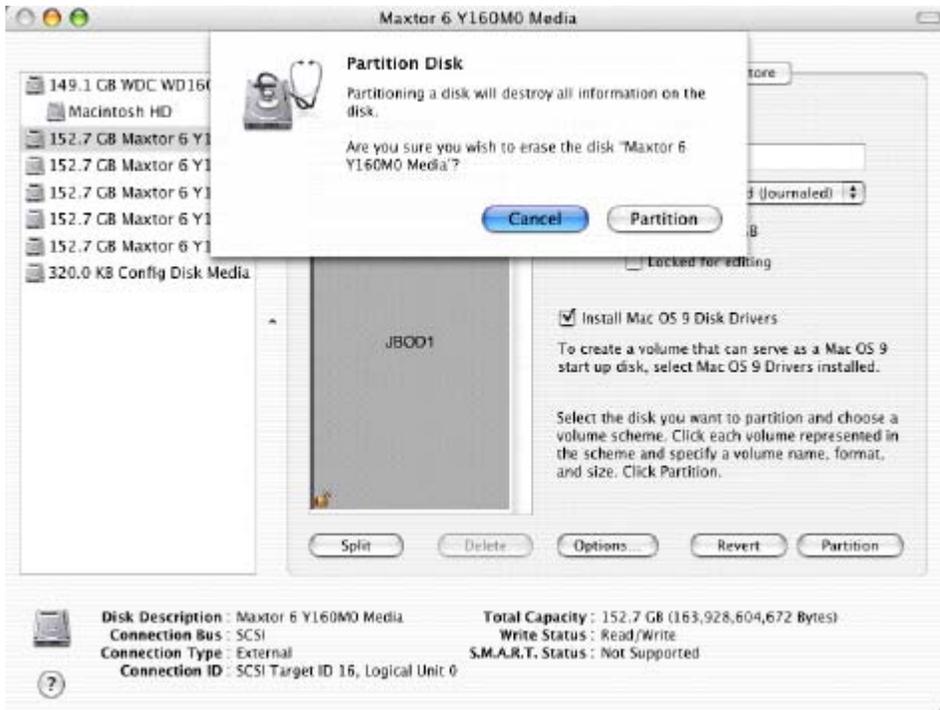


2. Select a configured disk and click the **Partition** tab.



3. Select **1 Partition** from the **Volume Scheme** drop-down list.
4. Enter a name for the volume in the **Name** field.
5. Select **Mac OS Extended (journaled)** from the **Format** drop-down list.
6. Specify the size of the partition in the **Size** field.
7. Click the **Partition** button.

8. Click **Partition** to acknowledge the warning.



Disk Utility mounts the created partition and represents it with an icon on the desktop. The icon is labeled with the partition name.

9. Repeat steps 1 through 8 to partition any remaining disks you configured in the Sil 4726 Manager. Remember, do not partition the 320.0 KB Config Disk that represents the SteelVine processor.

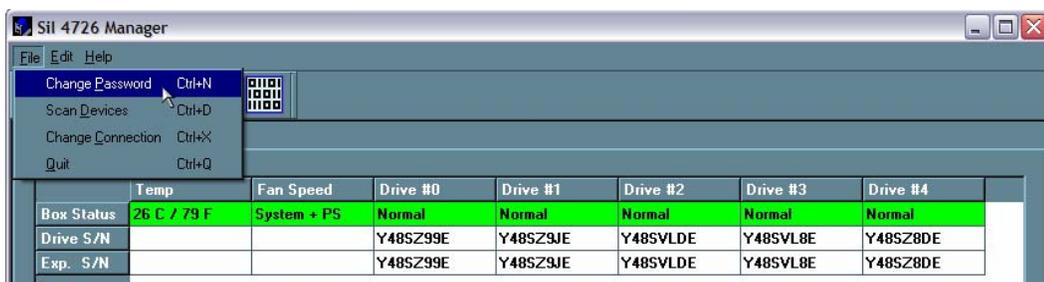
7 Administering the SiI 4726

This chapter explains how to perform administrative functions in the SiI 4726 Manager.

Change Password

The SiI 4726 Manager limits configuration access with a password prompt. The password information is stored locally on the server running the daemon. The default password is **admin**.

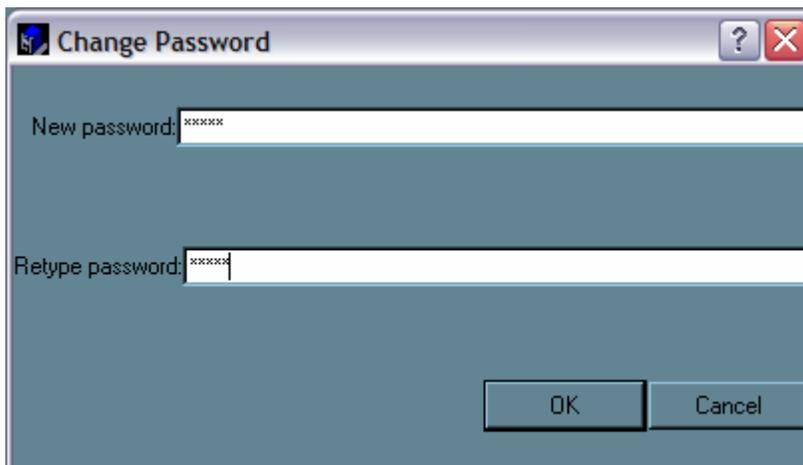
1. Select **Change Password** from the File menu.



2. Enter the current password (or use **'admin'** if the default password has not been changed).



3. Enter the new password of 5 or more characters in both fields.



4. Click **OK** to implement the new password.

Manage Client Connection to the Daemon

The SiI 4726 Manager consists of two modules:

- Daemon
- User interface

The *daemon* monitors the status of SiI 4726 Storage Appliances and performs **SAFE** volume rebuilds. By default, the user interface attaches to a daemon running on the same host to display the information gathered by the daemon. The end-user can configure the user interface to display information tracked by a daemon running on a remote host. Having the user interface remote to the daemon allows remote monitoring for system fan and hard disk drive failures. Identification of a failed part will allow the service provider to replace failed components before further complications arise.

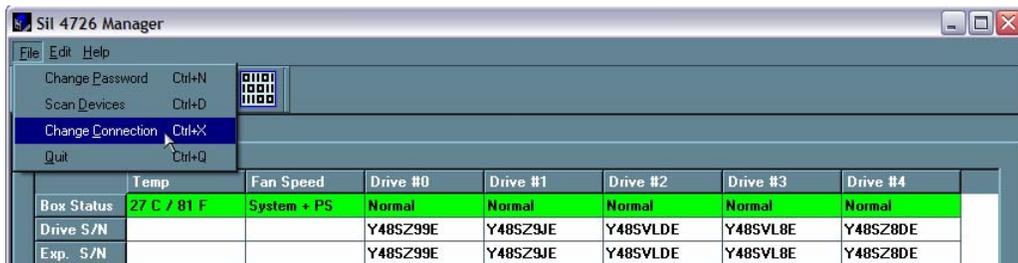
Prerequisites

The end-user should have the following before a remote connection can be established:

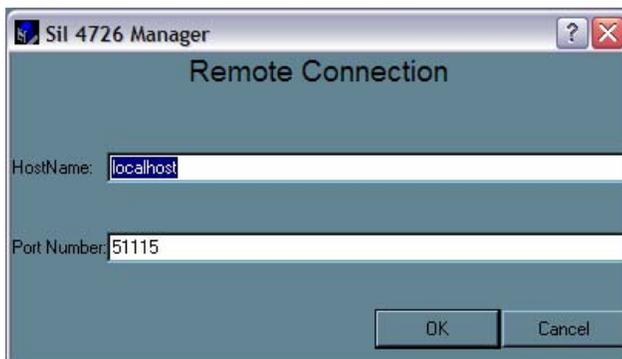
- The daemon is installed and running on a host computer connected to the SiI 4726 Storage Appliance.
- The user interface is installed and running on a remote host computer.
- A TCP/IP connection can be established between the daemon and the user interface. The daemon listens for connections on TCP port 51115. Do not change this port number.

Set up a remote connection

1. In the Status window, select **Change Connection** from the File menu.



2. Enter the hostname or IP address of the PC hosting the daemon. Click **OK**.



The user interface will establish the requested connection and will display the information gathered by the remote daemon in the Status window.

8 Configure SAFE Volume Rebuild Storage Policy

This SiI 4726 feature is provided to manage rebuilds of **SAFE** volumes.

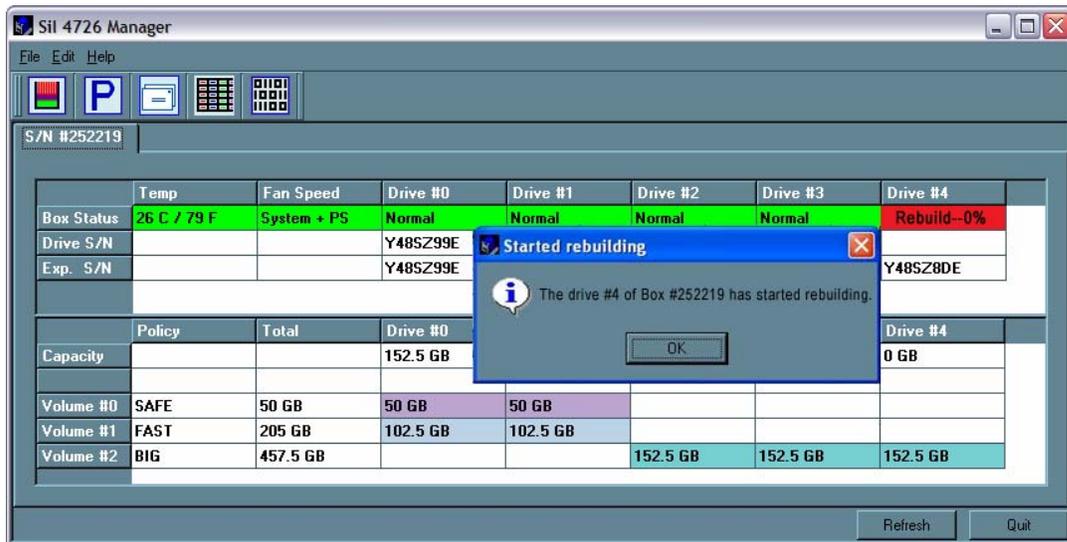
When is a rebuild necessary?

A *rebuild* is initiated to restore data redundancy for a **SAFE** volume that has entered a vulnerable state. In a *vulnerable* state, one of the two mirrored disks goes *offline* or is inaccessible. Although the **SAFE** volume remains available during the rebuild process, the volume is susceptible to data loss through damage of the remaining disk until data redundancy is restored through a rebuild. Host access takes precedence over the rebuild process. If continuing to use the **SAFE** volume during the rebuild, the rebuild process will take a longer time to complete.

*Note: The rebuild feature also applies to other **SAFE** policies such as **SAFE and BIG** and **SAFE and FAST**.*

What happens during a rebuild?

The rebuild process restores data redundancy by first utilizing space allocated for a Hot Spare. In case Hot Spare space does not exist or has already been rebuilt, the SteelVine processor rebuilds to empty space on a hard disk drive other than the one containing vulnerable data. Following a rebuild, it is not necessary to designate space to a Hot Spare for a subsequent rebuild to occur.



In this example, the daemon started a rebuild of Volume #1 after a failure of Disk #3. Once the end-user replaces Disk #3 with a new hard disk drive, the SteelVine processor will initiate a rebuild to Drive #3.

Note: Once the daemon rebuilds to a designated Hot Spare, a designated Hot Spare will not exist and the SteelVine processor will rebuild to empty space.

With **Automatic Rebuild** and **Immediate Rebuild** options selected, the daemon automatically initiates an immediate rebuild. If the end-user wants the daemon to delay the rebuild until after the first write to the **SAFE** volume, select the **Rebuild Only If Needed** option. The latter setup allows temporary removal of a hard disk drive without requiring a rebuild. To minimize the possibility of data loss, the rebuild process should be set up to start immediately.

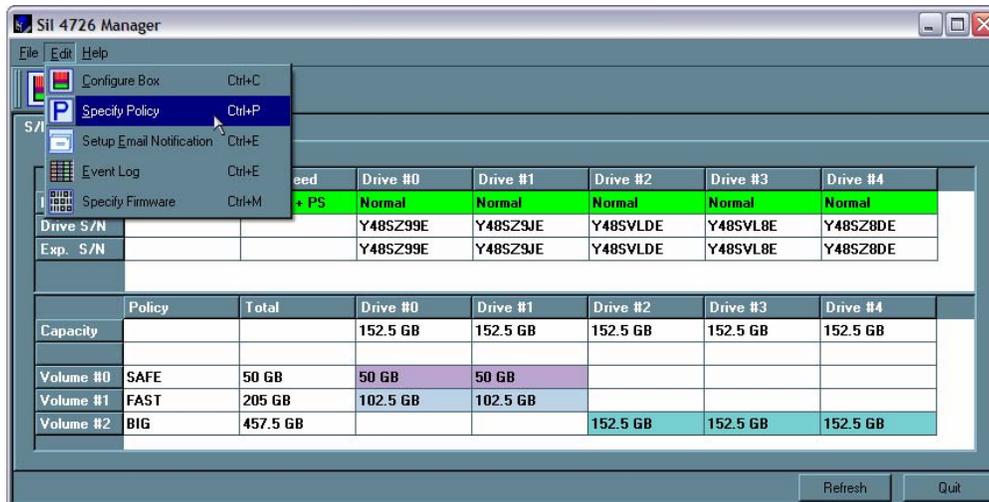
With **Manual Rebuild** selected, the end-user decides when to initiate rebuild following a rebuild prompt. Unless the SiI 4726 Manager is actively monitored, the **Automatic** rebuild should be set up to minimize the possibility of data loss.

*Note: In case the end-user selects **No** in response to a rebuild prompt, select **Scan Devices** from the **File** menu of the **Status** window to trigger a new prompt.*

If a power failure interrupts a rebuild, the daemon will restart the rebuild process.

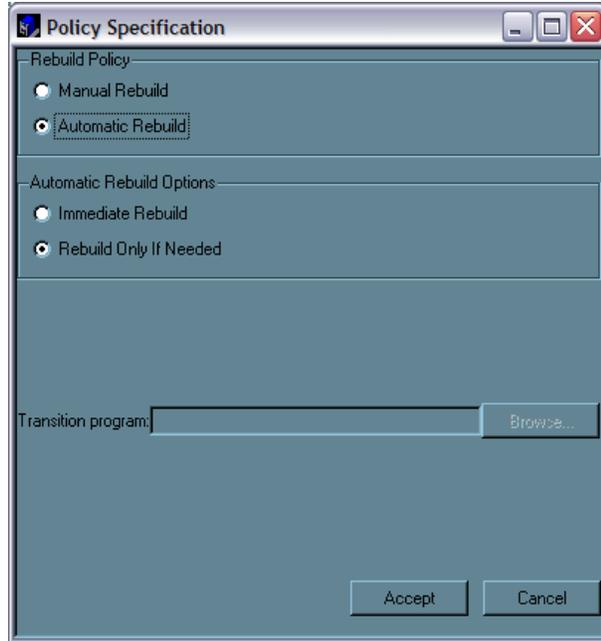
Configure a rebuild

1. Select **Specify Policy** from the Edit menu of the Status window.



2. Select one of the following policy options:

- The **Manual Rebuild** radio button requires a user to manually initiate a rebuild of the volume.
- The **Automatic Rebuild** option forces the daemon to initiate the rebuild process automatically and minimize the possibility of data loss.

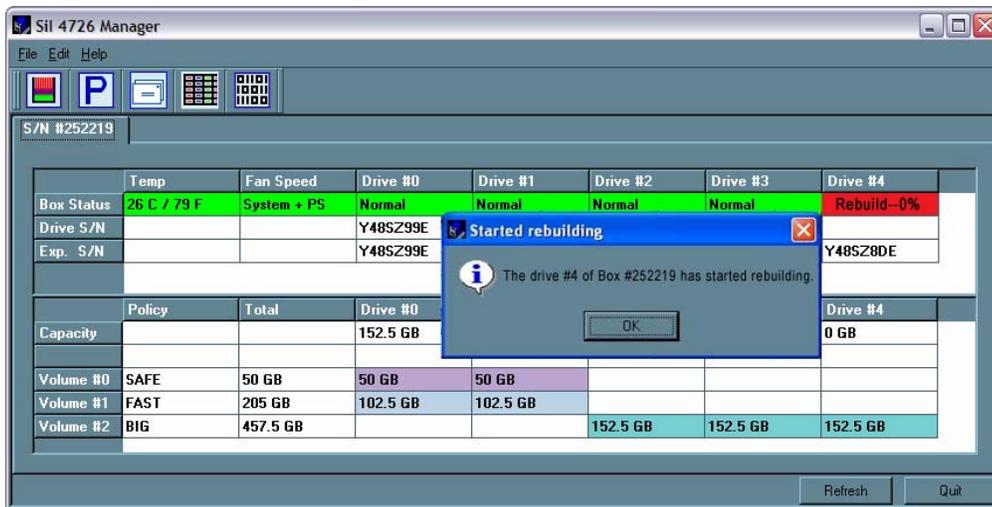


3. If the **Automatic Rebuild** option is selected, the end-user will have the following additional choices:

- **Immediate Rebuild** causes the daemon to rebuild immediately following detection of an offline hard disk drive.
- The **Rebuild Only If Needed** delays the rebuild for a SAFE volume with an offline hard disk drive until the write occurs to the SAFE volume.

4. Click the **Accept** button to commit the selected options.

The daemon uses the specified rebuild policy to maintain redundancy. The Status window displays a rebuild in progress.



9 Email Notification

The Email Notification feature allows the end-user to have the SiI 4726 Manager send an email if any of the following conditions/situations occur:

- Partition Rebuild Start
- Partition Verify Start
- Partition Rebuild Resume
- System Fan Too Slow
- No Boxes Found
- Drive Unplugged
- Partition Rebuild Complete
- Partition Verify Complete
- Temperature Too High
- Power supply Fan Too Slow
- Box Removed
- Drive Inserted

Each of the above conditions can be customized for sending options as well as the message that is sent. Below is an example of the Setup Email Notification screen.

	When to send	Edit Message
Partition Rebuild Start	<input type="radio"/> Never <input checked="" type="radio"/> Every time <input type="radio"/> Once Every <input type="text"/>	Message
Partition Rebuild Complete	<input type="radio"/> Never <input checked="" type="radio"/> Every time <input type="radio"/> Once Every <input type="text"/>	Message
Partition Verify Start	<input type="radio"/> Never <input checked="" type="radio"/> Every time <input type="radio"/> Once Every <input type="text"/>	Message
Partition Verify Complete	<input type="radio"/> Never <input checked="" type="radio"/> Every time <input type="radio"/> Once Every <input type="text"/>	Message
Partition Rebuild Resume	<input type="radio"/> Never <input checked="" type="radio"/> Every time <input type="radio"/> Once Every <input type="text"/>	Message
Temperature Too High	<input type="radio"/> Never <input type="radio"/> Every time <input checked="" type="radio"/> Once Every <input type="text" value="Minute"/>	Message
System Fan Too Slow	<input type="radio"/> Never <input type="radio"/> Every time <input checked="" type="radio"/> Once Every <input type="text" value="Hour"/>	Message
Power Supply Fan Too Slow	<input type="radio"/> Never <input type="radio"/> Every time <input checked="" type="radio"/> Once Every <input type="text" value="Hour"/>	Message
No boxes found.	<input checked="" type="radio"/> Never <input type="radio"/> Every time <input type="radio"/> Once Every <input type="text"/>	Message
Box Removed	<input type="radio"/> Never <input checked="" type="radio"/> Every time <input type="radio"/> Once Every <input type="text"/>	Message
Drive Unplugged	<input type="radio"/> Never <input checked="" type="radio"/> Every time <input type="radio"/> Once Every <input type="text"/>	Message
Drive Inserted	<input checked="" type="radio"/> Never <input type="radio"/> Every time <input type="radio"/> Once Every <input type="text"/>	Message

Setting-up Email Notification

1. The box available for the SMTP Server Name can be left blank. The SiI 4726 Manager will perform a DNS lookup and automatically find the correct address.

SMTP Server Name: [Use DNS lookup if blank]

2. The box available for the SMTP Server Port# uses Port 25 as a default.

SMTP Server Port #: [Use '25' if blank]

3. The From, To, and CC boxes are for specifying the intended receivers of the condition notifications.

From:

To:

CC:

Note: In the From: box, the end-user should type in his/her own email address.

4. Select 'Test Email' at the bottom of the screen to verify that you have correctly set-up the email portions of this feature.
5. The Email Notification feature also allows the end-user to customize a message for each of the line items (of which each has its own default message already built in). For instance, if the end-user wants to edit the message for 'Drive Unplugged'...
 - a. Click on the 'Message' box.

Drive Unplugged Never Every time Once Every [v] Message

- b. The following will appear:

Email Message for Drive Unplugged [?] [X]

\$I4726: \$B
 Drive: Slot # \$DN
 Temperature: \$T
 System Fan Speed: \$SF
 Power-Supply Fan Speed: \$PSF

The drive was unplugged.

Context-sensitive Message Codes

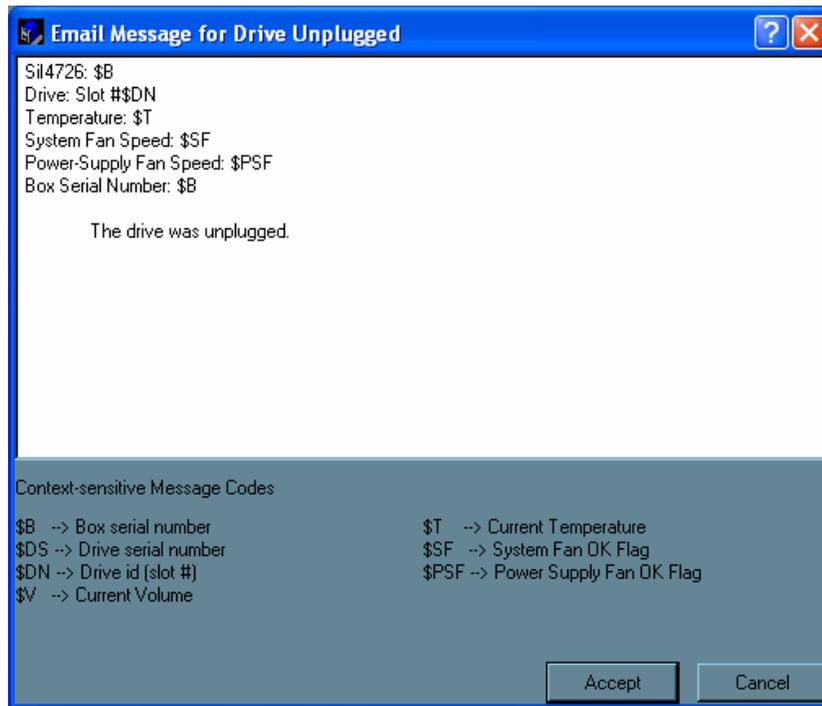
\$B --> Box serial number	\$T --> Current Temperature
\$DS --> Drive serial number	\$SF --> System Fan OK Flag
\$DN --> Drive id (slot #)	\$PSF --> Power Supply Fan OK Flag
\$V --> Current Volume	

Accept Cancel

- c. The message information can be customized to suit the end-user’s needs. The Daemon can extract the following data from the SiI 4726 hardware:

\$B →	Box serial number	\$T →	Current Temperature
\$DS →	Drive serial number	\$SF →	System Fan OK Flag
\$DN →	Drive id [slot #]	\$PSF →	Power Supply fan OK Flag
\$V →	Current volume		

- d. If there is information that the end-user would like included in the error message, s/he can enter it themselves by typing in a selected message code listed above. For instance: to put in the ‘Box Serial Number’, type in the descriptive text followed by the message code as demonstrated below.



- e. Click on ‘Accept’ to complete the change.

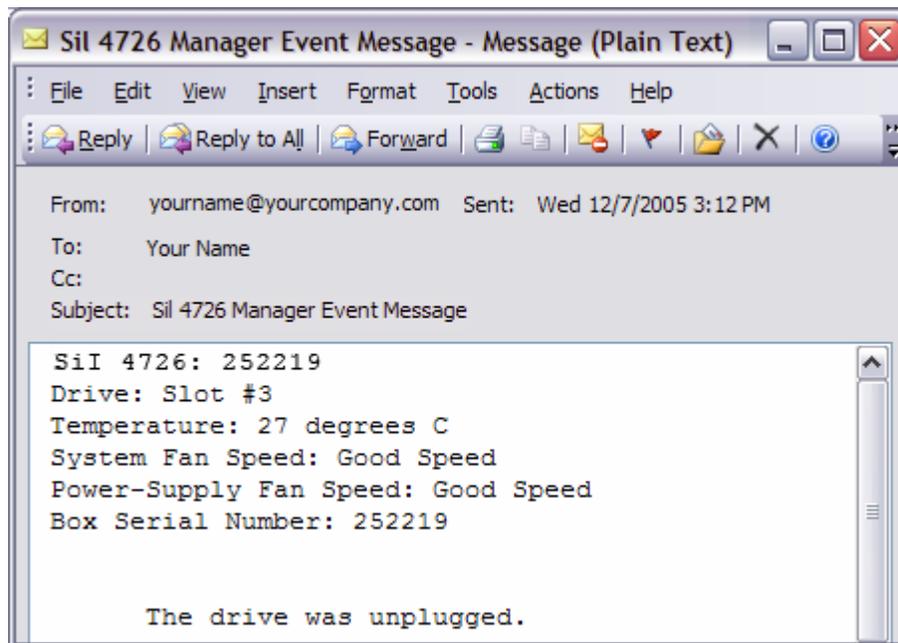
Receiving an Email Notification

When one of the conditions/situations occurs, a pop-up appears on the host computer stating that a email has been sent.



Note: The end-user must click 'OK' to remove the pop-up from the screen.

The email received from the SiI 4726 will look like the following:

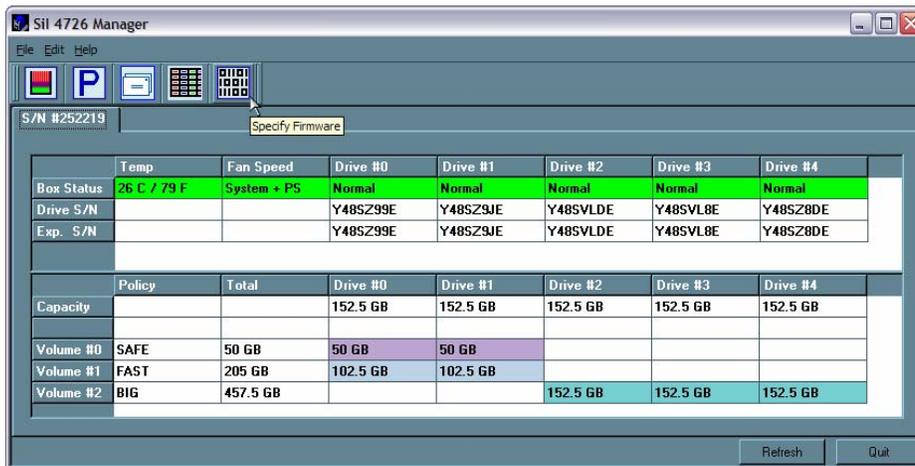


10 Install New Firmware & Software

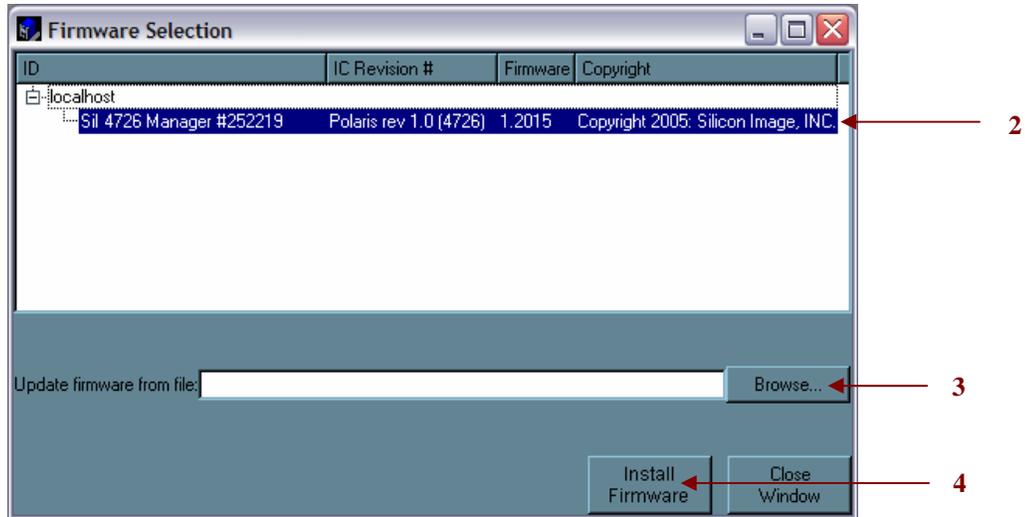
Firmware Update

Note: Do not power off or access the Sil 4726 Storage Appliance while upgrading firmware.

1. Click the **Specify Firmware** toolbar button or select **Specify Firmware** from the Edit menu of the Status window.



The Firmware Selection dialog shows all of the Sil 4726 Storage Appliances attached to the host, the integrated circuit (IC) revision, and the current firmware installed on each Storage Appliance.



2. Select the SiI 4726 Storage Appliance that requires a firmware upgrade.
3. Click the **Browse** button next to the **Update firmware from file** text box, navigate to the new firmware file you wish to load from a CD or hard disk drive, and select the .bin file.
4. Click **Install Firmware** to begin the upgrade.
5. Click **OK** to dismiss a message box that states the firmware was successfully downloaded.

Install New SiI 4726 Manager Software

Before the end-user installs new software, the current version will need to be un-installed. The un-installation process stops the daemon so it can be removed along with the user interface. The new version of the daemon starts automatically when the new software has been installed.

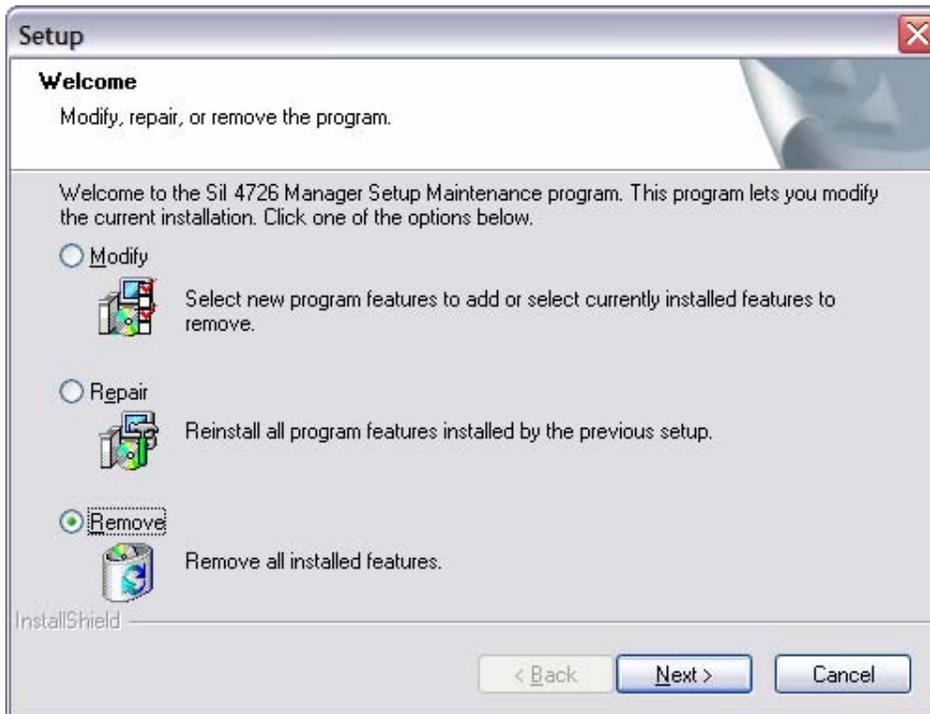
Uninstall Current Software

MS Windows

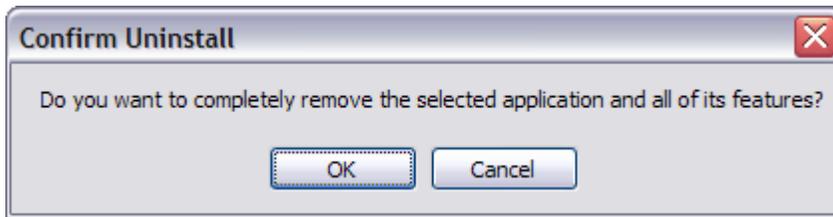
1. Exit the SiI 4726 Manager.
2. Select **Start > Control Panel > Add or Remove Programs** from the Windows taskbar.
3. Select the SiI 4726 Manager program and click **Remove**.



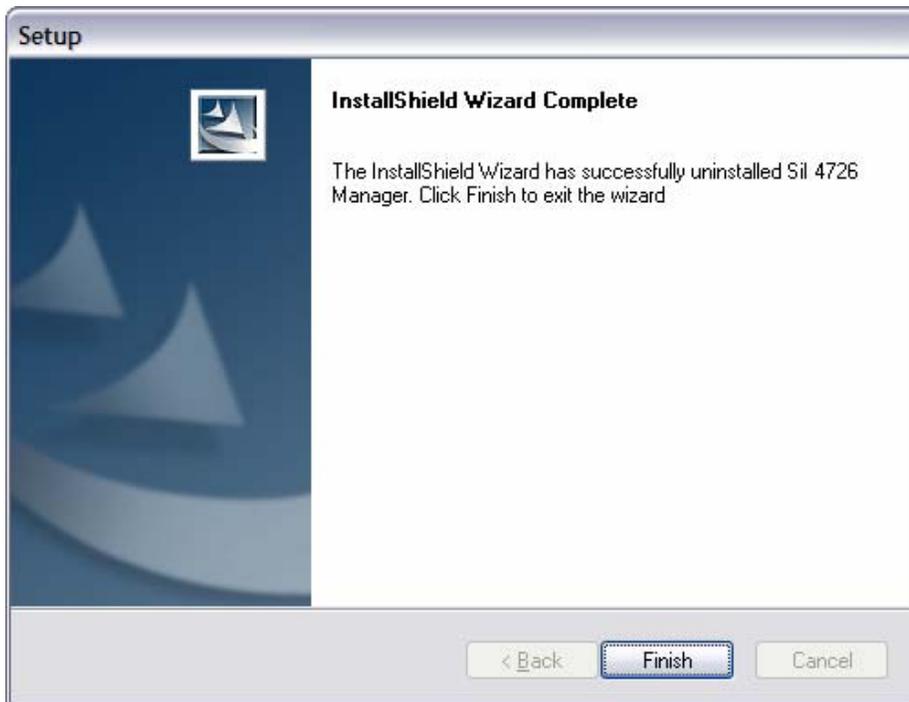
4. Select the **Remove** radio button and click **Next**.



5. Click **OK** to confirm the complete removal of the SiI 4726 Manager.



6. Click **Finish** to complete the un-installation process.



7. Optionally, move or delete the .xml configuration files that the InstallShield Wizard left in the installation directory (by default, C:\Program Files\SteelVine\SiI 4726 Manager).

Mac OS X

1. Optionally, move saved.xml configuration files from the **Applications > Utilities > SteelVine > SiI 4726 Manager Resources** folder to another location.
2. Drag the **Applications > Utilities > SteelVine** folder to the trash to remove the GUI modules and supporting files
3. Drag the **Library>StartupItems>SteelVineDaemon** folder to the trash to remove the daemon startup scripts.

Install new software

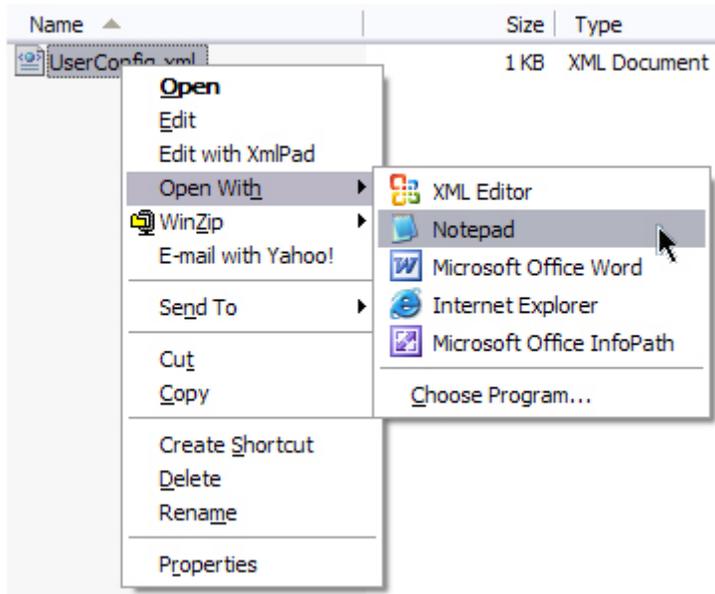
See the Quick Install Guide for install instructions.

11 Editing the UserConfig.xml

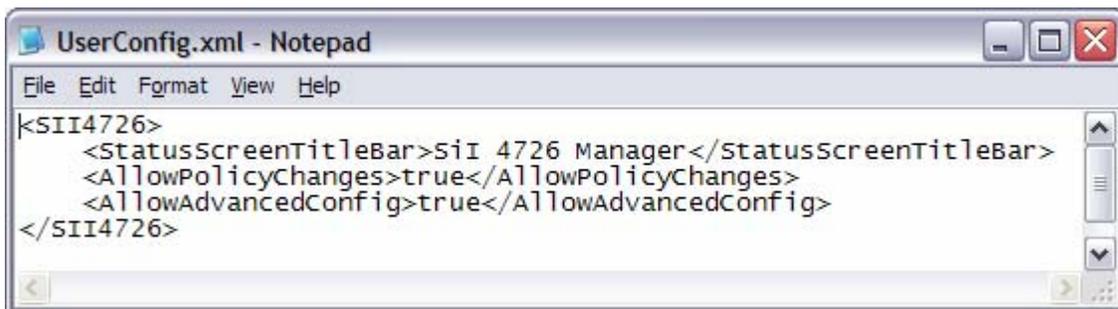
The UserConfig.xml file is used to define the Status Screen Title Bar and allow configuration of the Policy Change as well as the Advanced Configuration features.

The UserConfig.xml file can be found in the following location:
C:\Program Files\SiI4726\SiI 4726 Manager\SiI 4726 Config

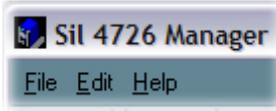
To edit this file, Right Click on the file name, move the mouse to Open With, and select Notepad.



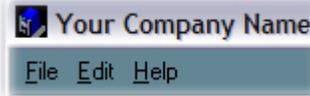
Once this file is open, the end-user will see the following:



The 'StatusScreenTitleBar' is where the end-user can change the Name seen at the top of the GUI. To edit this feature, change the XML tag text string that says 'Sil 4726 Manager'.



<StatusScreenTitleBar>
Sil 4726 Manager</StatusScreenTitleBar>

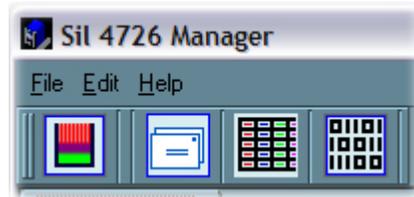


<StatusScreenTitleBar>
Your Company Name</StatusScreenTitleBar>

The 'AllowPolicyChages' – True – turns on the Policy feature. If the end-user changes the XML tag value to False, the Policy Icon will not appear in the GUI and the feature will not be available.



<AllowPolicyChages>True</AllowPolicyChages>



<AllowPolicyChages>False</AllowPolicyChages>

The 'AllowAdvancedConfig' – True – turns on the Advanced Config feature. If the end-user changes the XML tag value to False, the general Configure feature will still be available, but the Advanced button (inside the Configuration feature) will not be available.



<AllowAdvancedConfig>True</AllowAdvancedConfig>



<AllowAdvancedConfig>False</AllowAdvancedConfig>

Note: If the file is missing from the working directory, the GUI will allow both policy changes and advanced mode, as well as the status screen title to be set to "Sil4726". If there are any errors in the XML tag value, the Advanced Configuration button will not be available in the Configuration Setup.

If there is an error in the XML tag value, a pop-up window will appear notifying the end-user of the error and the tag where it can be found.



Creating a Splash Screen

The end-user can further customize the SiI 4726 Manager by creating a personalized splash screen.

1. Create the logo for your splash screen – there are no image size limitations
2. Save the logo as ‘UserLogo.xpm’

The .xpm file type is UNIX based

3. Put the UserLogo.xpm file in the following location:
C:\Program Files\SiI4726\SiI 4726 Manager\SiI 4726 Config

The splash screen will come up each time the end-user starts the SiI 4726 Manager. It will stay up for 2 seconds.

12 Monitor and Troubleshooting

This chapter describes Status window color codes, LED indicator states, and event log messages that are used to troubleshoot the SiI 4726 Storage Appliance.

Monitor the SiI 4726 Storage Appliance

Monitor drive status

The color of the drives in the Status window indicates the status of the hard disk drives.



Table 12 Drive Status

Color	State	Definition	Resolution
Green	Normal	Drive is active.	
Red	Needs Rebuild	Drive is in a failed state. That is, a write has occurred to a SAFE volume while the disk drive was offline.	Replace the failed hard disk drive.
Gray or Red	Unplugged	Drive is offline or unplugged. The background will appear red after a write to the volume.	Verify the disk is securely in the bay. Otherwise, replace as necessary.
Light Blue	New drive	New drive.	
Yellow	Rebuilding	Drive is being rebuilt.	
Purple	Wrong slot	There is a mismatch between the Serial # and Expected Serial # because a hard disk drive has been installed into the wrong bay.	Install the correct disk drive into the bay.

Monitor temperature

The SiI 4726 Storage Appliance uses the following colors to indicate temperature status.

Table 13 Temperature Status

Color	Definition	Resolution
Green	Temperature is normal.	
Yellow	Temperature is greater than 50° Celsius (122° Fahrenheit).	Remove object(s) that interfere with airflow around the SiI 4726 Storage Appliance.
Red	Temperature is greater than 53° Celsius (127° Fahrenheit).	Ensure constant airflow around the SiI 4726 Storage Appliance. If there is no airflow, replace the fan. Identify the drive causing the temperature increase and replace it.

Monitor fan status

The SiI 4726 uses the following colors and values to indicate fan status.

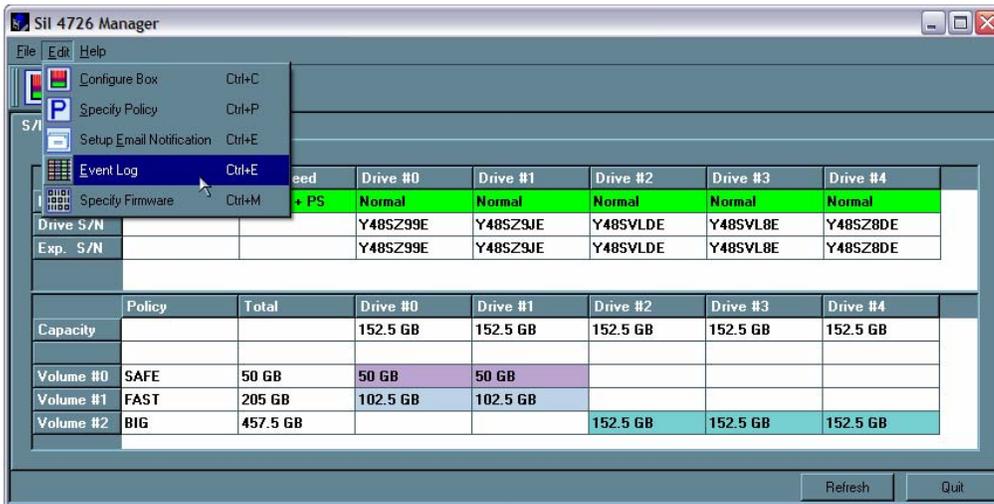
Table 14 Fan Status

Color	Value	Definition	Resolution
Green	System + PS	Both system and power supply fans are functioning within limits.	
Red	System	The system fan is not spinning or spinning slower than expected.	Contact point of sale for repair.
Red	PS	The power supply fan is not spinning or spinning slower than expected.	
Red	System + PS	Both system and power supply fans are not spinning or spinning slower than expected.	

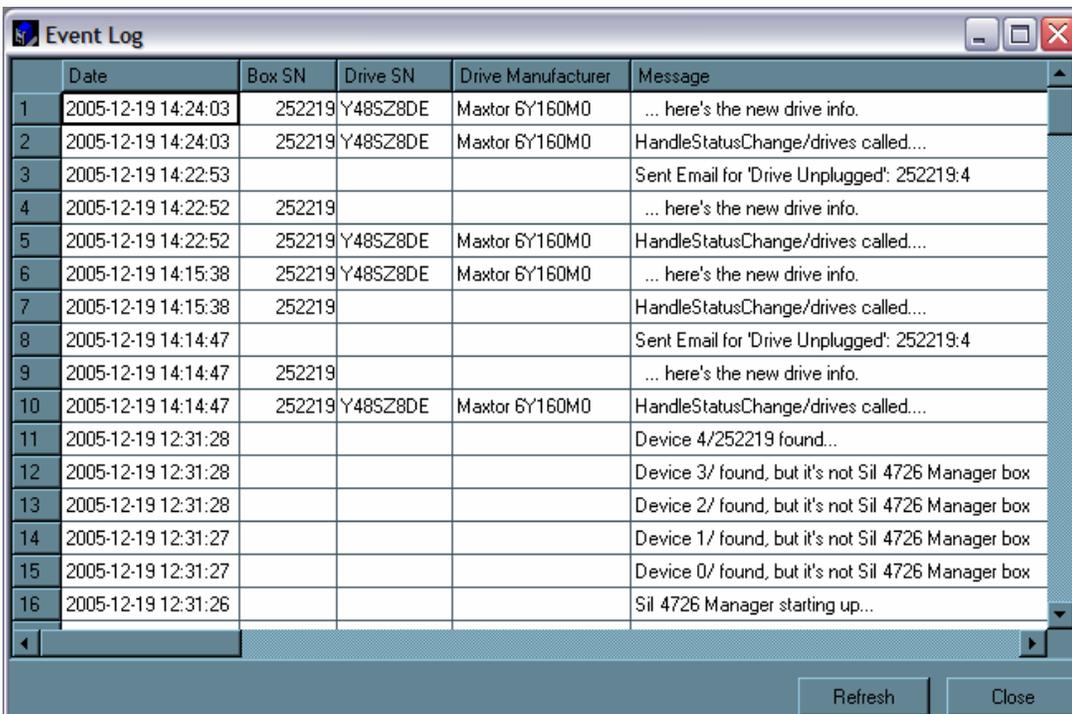
Review Event Logs

Event logs are helpful for troubleshooting and locating a system malfunction.

1. Select **Event Log** from the Edit menu in the Status window.



2. The Event Log screen displays a list of events in a tabular format. The **Date** column displays the date and time of the event. The **Box SN and Drive SN** columns display the respective serial numbers for the event. The **Drive Manufacturer** column displays vendor information. The **Message** column gives an event description.

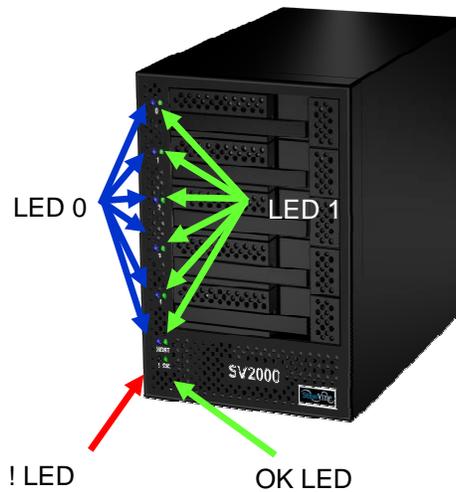


3. Click **Refresh** to update the log or click **Close** to close the log.

Front Panel LED Indicators

Each disk drive and the host connection have two LEDs to indicate drive status and/or host communication status. LED 0 is on the left and is typically blue; LED 1 is on the right and is typically green. In addition, there is one error-condition LEDs, labeled ‘!’ and the SiI 4726 power on indicator ‘OK’.

Figure 2: LEDs



When the SiI 4726 Storage Appliance is powered on, the host scans the disks in sequence, as indicated by a brief flash of lights on LED 1. Once the host scan is complete, LED 1 is lit for each drive present. During disk operations, LED 0 flashes as data is transferred to and from the drive and the host.

If a **SAFE** volume is being rebuilt, LED 1 blinks slowly on both mirrored disks.

Table 15 Status Indicators for 0 and 1 LEDs

LED 0	LED 1	Description
Off	Off	Power on, no device attached
Off	On	PHY communication established (Activity = LED0 On)
On	Blink	Rebuild
Blink	Blink	Error

Table 16 Status Indicators for ! and OK LEDs

!	OK	Description
Off	On	Startup or ON indication. OK LED will flash during reset and will remain green in all other cases.
On		ERROR. The ‘!’ LED will light as a result of an EEPROM error during boot or following a runtime error.

Troubleshooting

Problem	Resolution
LEDs	
Green “OK” LED does not light.	Confirm power at the outlet, verify power connection, and try an alternate power cable.
Red “!” LED is lit.	Power cycle the SiI 4726 Storage Appliance and to reload the firmware.
SiI 4726 HOST LED 1 is not lit.	See <i>HBA connection</i> below.
LED 1 continuously flashes for one or more drives.	LED1 flashes during a Safe volume rebuild. If the LED flashes while the SiI 4726 Storage Appliance is not rebuilding, verify the eSATA connection and try an alternate eSATA cable.
LED 1 remains off for one or more drives.	Swap drives to ensure that this is not a drive bay or LED problem. If the LED off state is specific to a drive, evaluate the drive for failure.
Fan	
Rear fan is not running.	Confirm the outlet is powered, verify power connections, and try an alternate power cable.
Power supply fan is not spinning.	
HBA connection	
SiI 4726 Storage Appliance is not recognized by HBA BIOS.	Verify the OK LED status to confirm power.
	Verify the eSATA connection and try an alternate eSATA cable.
	Verify HBA BIOS recognizes an empty SiI 4726 Storage Appliance.
	Turn off PCI bus power save mode in the host BIOS.
	Troubleshoot the HBA: <ul style="list-style-type: none"> • Connect to an alternate SATA port. • Connect an alternate device to the HBA. • Remove all other PCI peripherals to rule out interference. • Move the HBA to an alternate PCI-X slot. • Try the HBA in a PCI slot.
Operating system does not recognize one or more of the SiI 4726 volumes.	Verify HBA BIOS recognizes an empty SiI 4726 Storage Appliance.
	Before deleting or altering volumes with the Configuration Wizard, delete partitions residing on the volume. To delete partitions, use the operating system’s Disk Manager.
	Ensure the HBA driver is current. The SV-HBA3124 driver is available at www.steelvine.com .
	Troubleshoot driver: <ul style="list-style-type: none"> • Verify driver active status. For Windows, Device Manager should show the SCSI  icon next to the HBA. For Mac OS X, Disk Utility should show a SCSI Connection ID for the virtual disks on the physical drives. Error messages during the driver installation would have indicated issues. • Resolve resource conflicts (IRQ, DMA, or I/O).
	Identify maximum SATA disk drive capacity supported by the operating system and ensure the volume size meets the limits.
Verify port multiplier support in the HBA.	
Review <i>SiI 4726 Release Notes</i> available at www.steelvine.com for additional troubleshooting information.	