



Human Interface Infrastructure Configuration Application

User Guide

IBM P/N: 81Y1001

NOTE: Before using this information and the product it supports, read the general information in [Appendix B: Notices](#)

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Human Interface Infrastructure Configuration Application User Guide

The Human Interface Infrastructure (HII) Configuration Application is used to configure controllers, physical disks, and virtual disks, and to perform other configuration tasks in a pre-boot environment. This document explains how to use the HII graphical user interface (GUI) to perform these tasks.



NOTE There are different versions of the HII Configuration Application firmware for Integrated RAID (IR) systems and Initiator-Target (IT) systems. The *Firmware Type* property on the View Controller Properties screen indicates which version is running.

The IR version of the HII Configuration Application, which is documented in Section 1 through Section 4 of this manual, supports viewing system information, creating virtual disks (RAID volumes), and performing other management tasks on controllers, physical disks, and virtual disks.

The IT version of the HII Configuration Application, which is documented in Section 5, supports a subset of the IR-version functionality. This functionality includes viewing and changing controller properties, viewing physical disk properties, and performing physical disk operations such as formatting a disk drive.

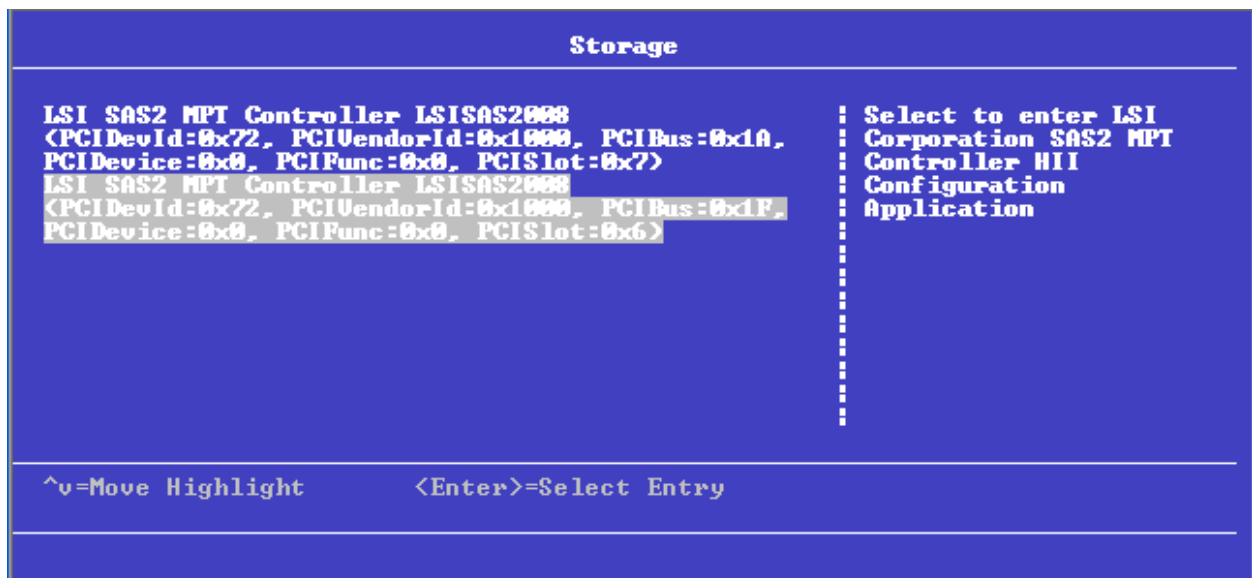
1 Starting the HII Configuration Application

Follow these steps to start the HII Configuration Application and access the main configuration menu.

1. Boot the computer and press F1 to start the setup utility during bootup.
2. Select **System Settings** from the setup utility menu.

The controller selection menu appears, as shown in the following figure.

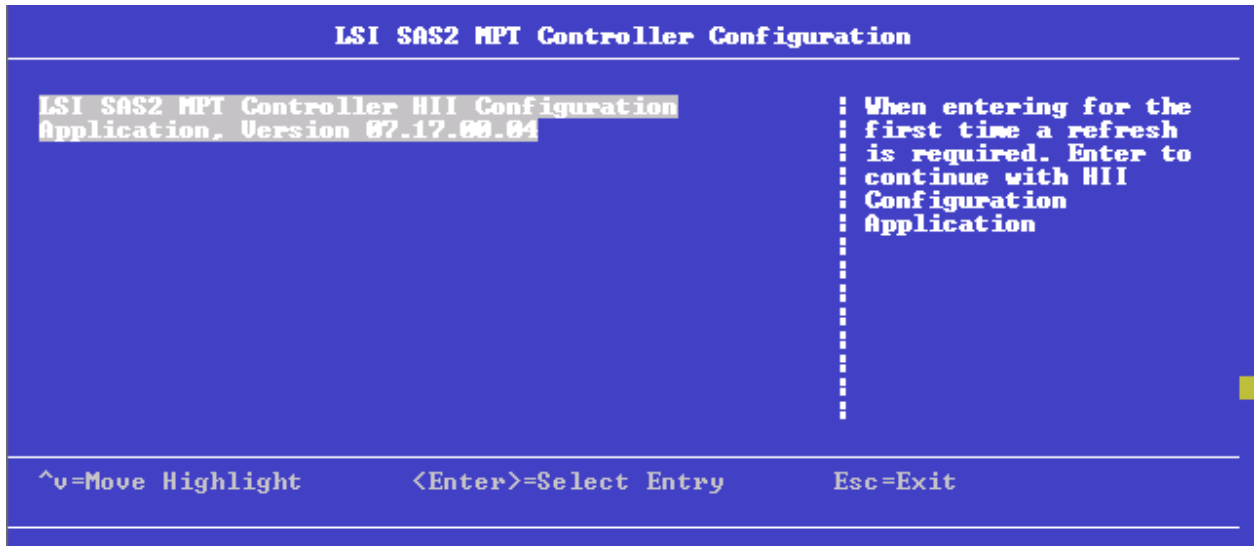
Figure 1 Controller Selection Menu



This screen displays a list of controllers installed in the computer. The slot number is used to distinguish controllers of the same type.

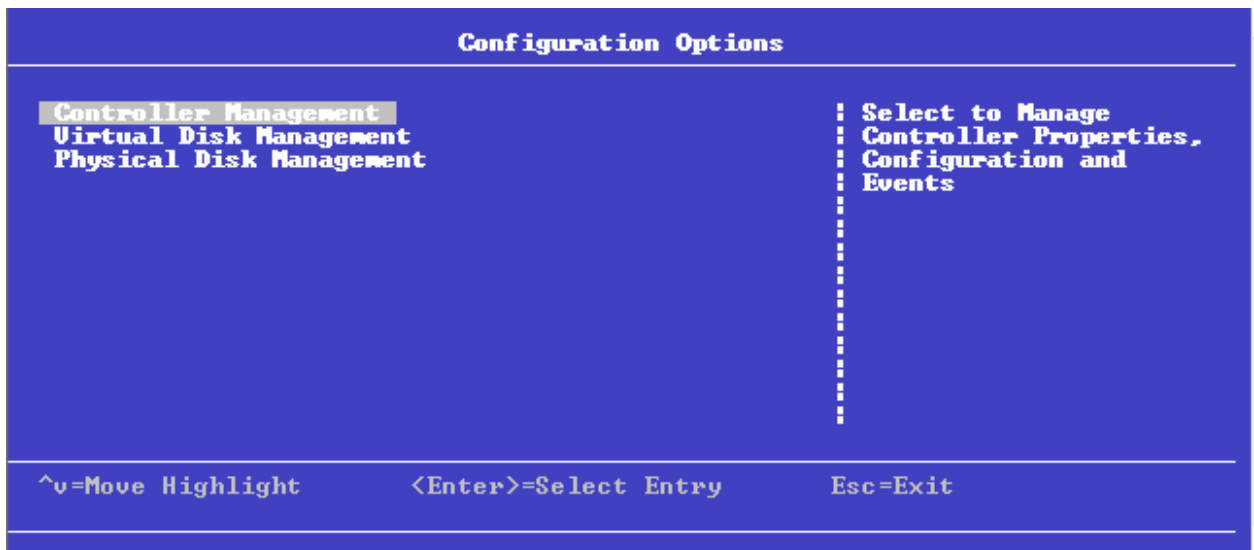
- Use the arrow keys to highlight the controller you want to configure and press **Enter**.
The refresh screen appears, as shown in the following figure.

Figure 2 Refresh Screen



- Press **Enter** to refresh the configuration information and to continue, or press **Esc** to return to the previous screen and select a different controller.
As explained in the screen text, a refresh is required when you enter the configuration screen for the first time. The Configuration Options menu appears, as shown in the following figure.

Figure 3 Configuration Options Menu



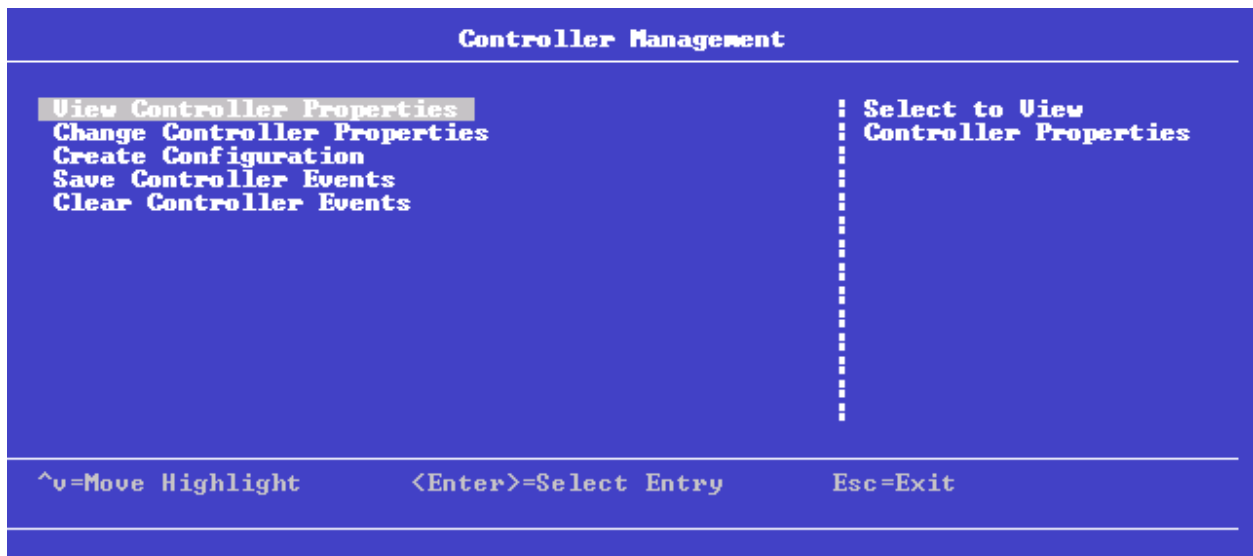
NOTE The Virtual Disk Management option appears only if virtual disks (RAID volumes) already exist on this controller. Otherwise, this option is hidden.

5. Select a menu option to continue with your management and configuration tasks.
 - Select **Controller Management** to view and manage controller properties, create volumes, import or delete foreign volumes, and save or clear controller events. See Section 2, [Managing Controllers](#).
 - Select **Virtual Disk Management** to manage, delete volumes and/or perform operations on Volumes. See Section 3, [Managing Virtual Disks](#).
 - Select **Physical Disk Management** to manage all disks, including bare disks, hot spares and disks in a volume (except foreign volumes that are not yet imported). See Section 4, [Managing Physical Disks](#).

2 Managing Controllers

When you select Controller Management on the Configuration Options menu, the Controller Management menu appears, as shown in the following figure.

Figure 4 Controller Management Menu



The Create Configuration option does not appear if the maximum number of volumes already exists on the controller or if there are not enough available drives to create a volume.

A Clear Configuration option appears if the HII Configuration Application detects active volumes on the controller.

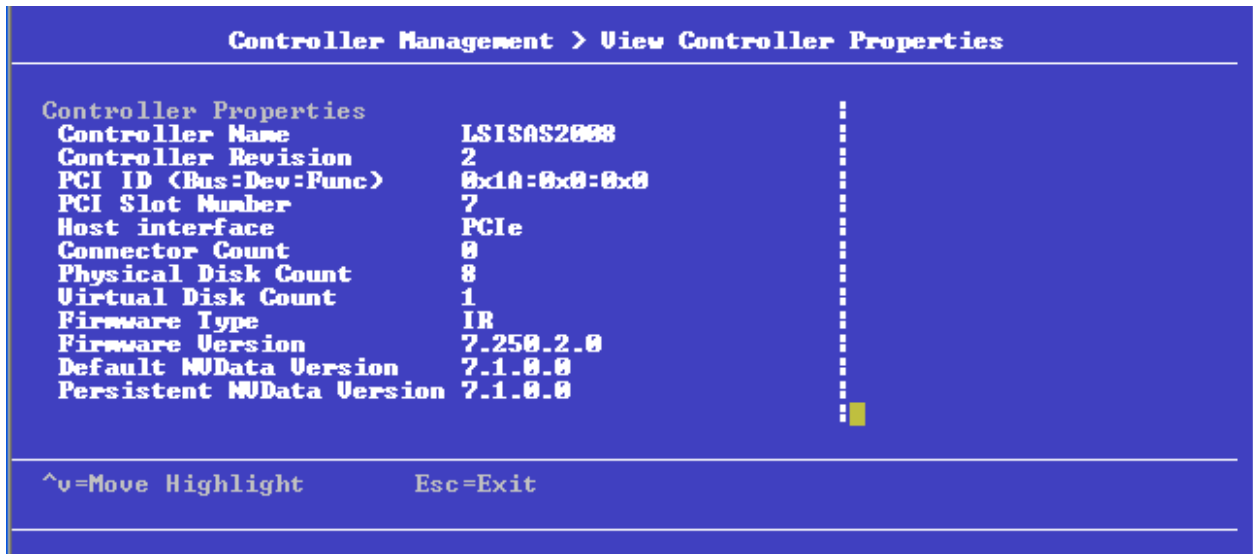
A Manage Foreign Configuration option appears if the HII Configuration Application detects foreign volumes or inactive volumes on the controller.

The following sections explain each menu option.

2.1 Viewing Controller Properties

Select **View Controller Properties** from the Controller Management menu to view information such as controller name and revision, firmware type and version, and number of disks and volumes. The following figure shows a sample controller properties screen. The actual information that appears on the screen is different for each type of controller.

Figure 5 View Controller Properties Screen



The following table explains the meaning of the controller properties.

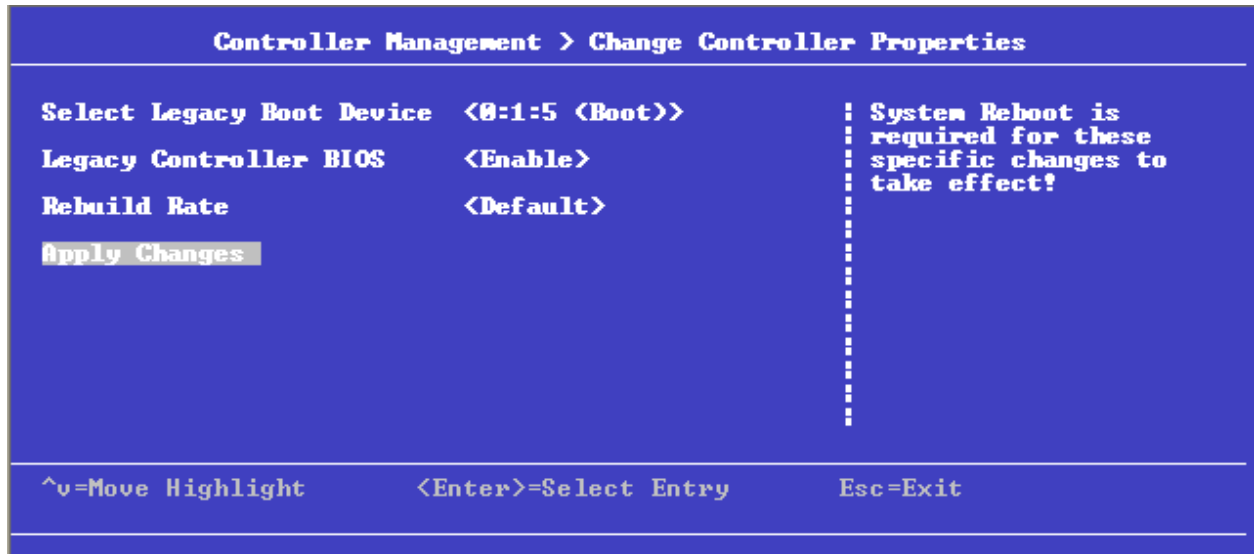
Table 1 Controller Properties

Property	Sample Data	Description
Controller Name	LSI SAS2008	Controller name.
Controller Revision	2	Internal controller revision number.
PCI ID	0x1A:0X0:0X0	Displayed in Bus:Device:Function format.
PCI Slot Number	7	PCIe slot number of the controller.
Host Interface	PCIe	Host interface type.
Connector Count	0	Fixed at 0 for LSI Controllers
Physical Disk count	8	Number of disks connected to the controller. Includes bare disks, hot spares, and disks in volumes.
Virtual Disk Count	2	Number of volumes on the controller.
Firmware Type	IR	IR Firmware – Can create and manage volumes. IT Firmware – Cannot create and manage volumes.
Firmware Version	7.258.2.0	Firmware version.
Default NVDATA Version	7.1.0.0	Firmware default NVDATA version.
Persistent NVDATA Version	7.1.0.0	Firmware persistent NVDATA version.

2.2 Changing Controller Properties

Select **Change Controller Properties** from the Controller Management menu to change the legacy boot device, enable or disable the legacy ROM BIOS, or change the resync/rebuild rate for volumes on the controller. The following figure shows the Change Controller Properties menu.

Figure 6 Change Controller Properties Menu



2.2.1 Select Legacy Boot Device

Follow these steps to select a different legacy boot device.

1. Highlight **Legacy Boot Device** and press **Enter**.
2. Use the up and down arrow keys to select a legacy boot device and press **Enter**.
3. Highlight **Apply Changes** and press **Enter**.
4. Reboot the system to enable the new boot device.

2.2.2 Legacy Controller BIOS

Follow these steps to enable or disable the legacy controller BIOS.

1. Highlight **Legacy Controller BIOS** and press **Enter**.
2. Use the up and down arrow keys to select **Enable** or **Disable** and press **Enter**.
3. Highlight **Apply Changes** and press **Enter**.
4. Reboot the system to enable the BIOS change.

2.2.3 Rebuild Rate

The rebuild rate is the percentage of the compute cycles dedicated to rebuilding failed drives in volumes on this controller. The rebuild rate can be configured between 0 percent and 100 percent. At 0 percent, the rebuild is done only if the firmware is not doing anything else. At 100 percent, the rebuild has a higher priority than any other firmware activity. Using 0 percent or 100 percent is not recommended. The default rebuild rate is 50 percent.

Follow these steps to change the Rebuild rate for volumes on this controller.

1. Highlight **Rebuild Rate** and press **Enter**.
2. Select the desired rebuild rate and press **Enter**.

3. Reboot the system to change the rebuild rate.

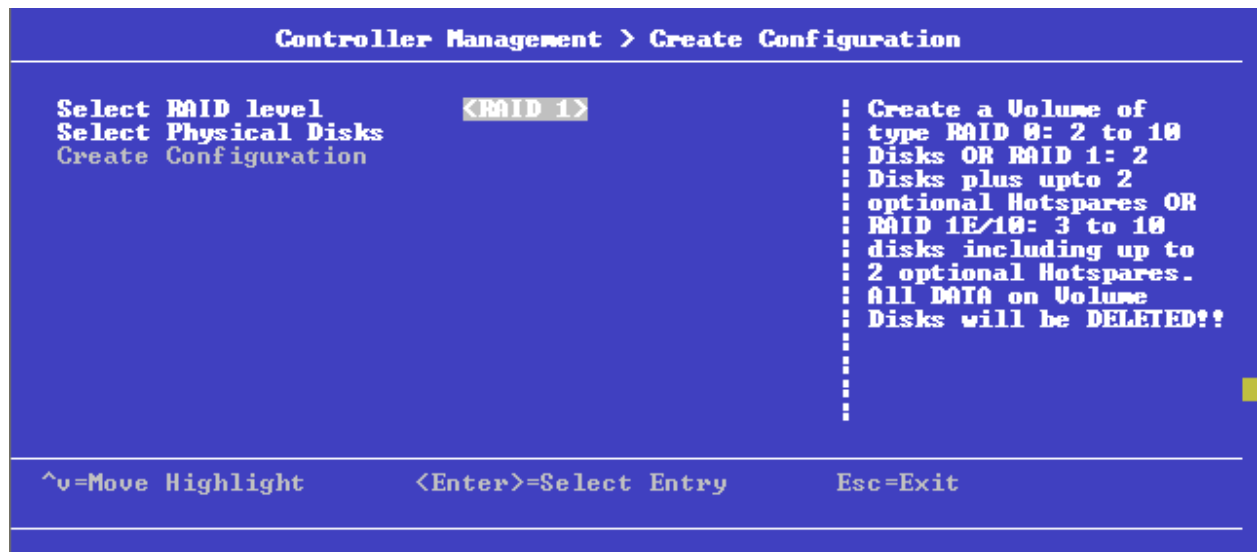
2.3 Creating a Configuration

Select **Create Configuration** from the Controller Management menu to create a RAID 0, RAID 1, RAID 1 Enhanced (RAID 1E), or RAID 10 volume on the selected controller.

- RAID 0 provides disk striping across all drives in the RAID volume. RAID 0 provides very high I/O performance but does not provide any data redundancy. RAID 0 volumes can have from 2 to 10 disk drives.
- RAID 1 volumes duplicate all data from one drive to another drive in the volume, providing data redundancy. RAID 1 volumes have two mirrored disk drives plus one or two optional hot spare drives.
- RAID 1E and RAID 10 volumes combine features of RAID 0 and RAID 1, providing data striping across sets of mirrored drives. The data striping increases I/O performance, and the mirroring provides data redundancy. RAID 1E volumes have from 3 to 10 disk drives, including 1 or two optional hot spare drives. RAID 10 volumes have from 4 to 10 disk drives.

The following figure shows the Create Configuration screen.

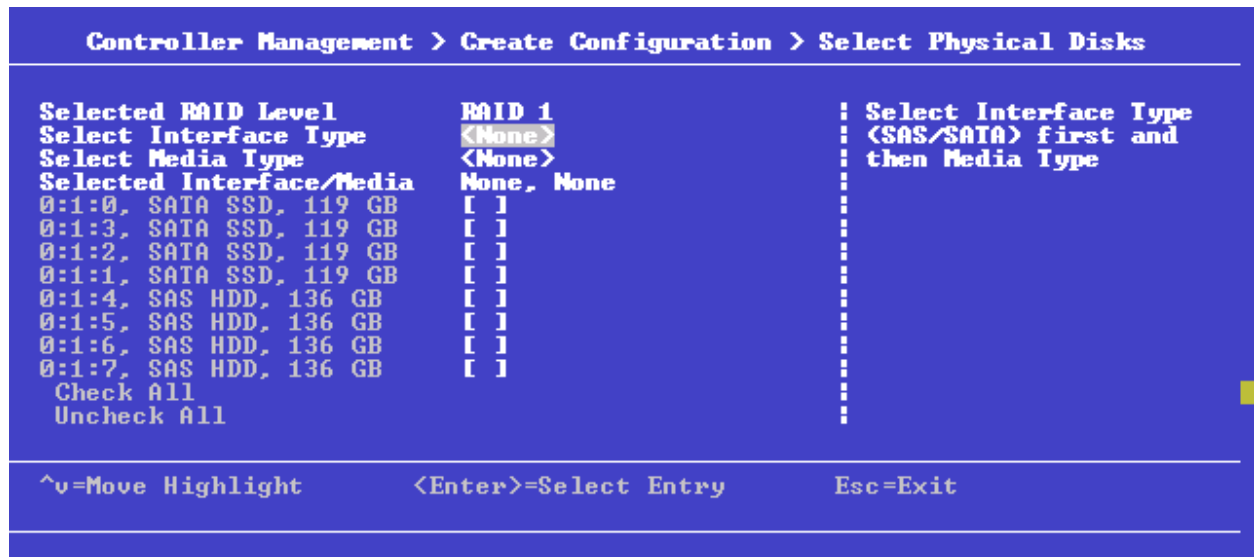
Figure 7 Create Configuration Screen



Follow these steps to create a configuration:

1. Highlight **Select RAID level** and press **Enter**.
2. Use the up and down arrow keys to select a RAID level and press **Enter**.
The Select Physical Disks menu option is enabled.
3. Highlight **Select Physical Disks** and press **Enter**.
The Select Physical Disks screen appears, as shown in the following figure.

Figure 8 Select Physical Disks Screen

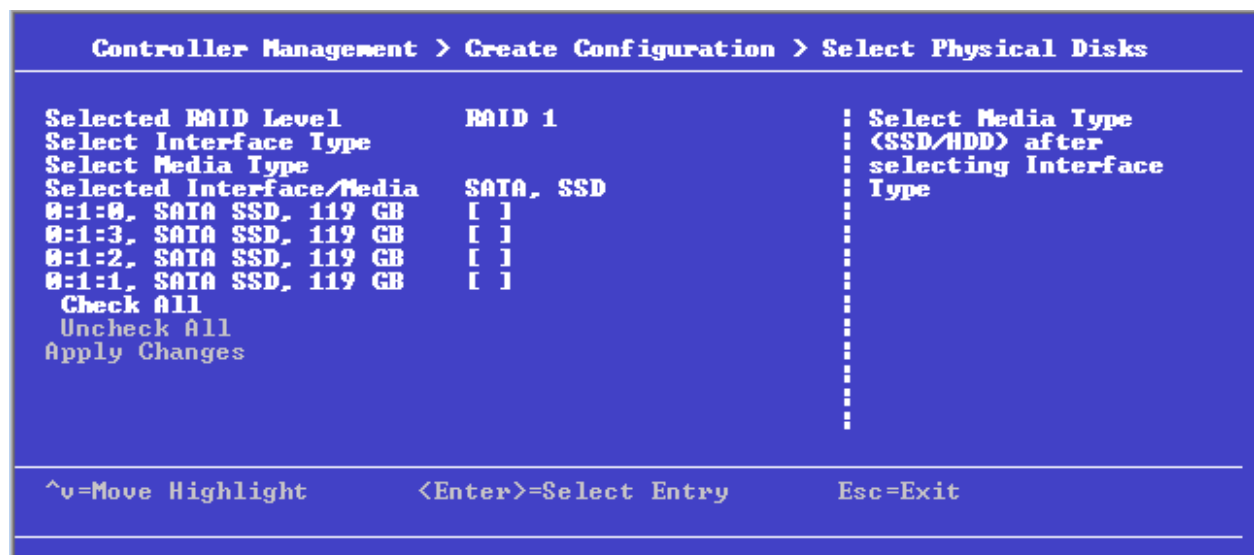


This screen lists all the drives available for the new configuration. In this example, the available drives include SATA solid-state drives (SSDs) and SAS hard disk drives.

4. Highlight **Select Interface Type** and press **Enter**.
5. Select **SAS** or **SATA** from the drop-down menu and press **Enter**.
6. Highlight **Select Media Type** and press **Enter**.
7. Select **SSD** or **HDD** from the drop-down menu and press **Enter**.

The list of available drives is now filtered to match the interface type and media type you selected, as shown in the following example screen shot.

Figure 9 Interface Type and Media Type Selection



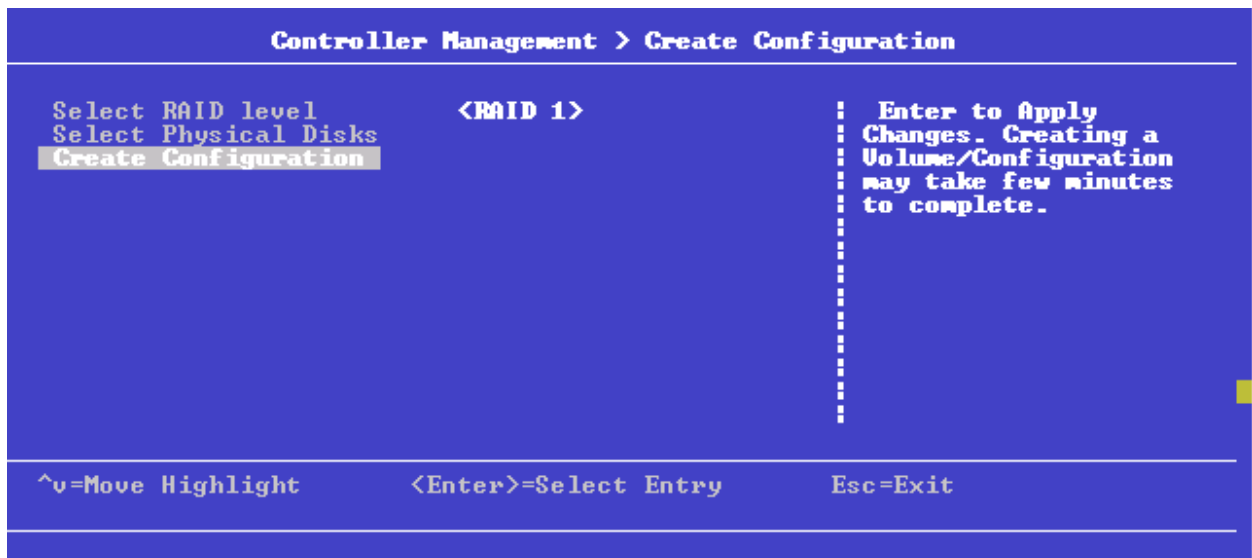
8. Select drives for the new RAID volume by highlighting a drive and pressing the space bar so a check mark appears in the brackets to the right of the drive name.

Alternatively, highlight **Check All** or **Uncheck All** and press **Enter** to select or deselect all available drives. The number of drives you can select is limited to the minimum and maximum drives that the RAID level supports, as listed earlier in this section.

9. When you have finished selecting drives, highlight **Apply Changes** and press **Enter**.

When you are returned to the previous screen, the Create Configuration option is enabled, as shown in the following figure.

Figure 10 Create Configuration Screen: Option Enabled



10. Highlight **Create Configuration** and press **Enter**.

A message screen appears.

11. Select **OK** and press **Enter**.

The new RAID volume is created.

If enough unused drives remain on the controller, you can create one additional RAID volume on the controller.

2.4 Clearing a Configuration

Select **Clear Configuration** from the Controller Management menu to delete all existing RAID volumes from the controller. The following figure shows the confirmation screen that appears when you select Clear Configuration.



ATTENTION When you clear a configuration, all data is deleted from the disks in the configuration. Back up all data that you want to keep before you use this command.

Figure 11 Clear Configuration Confirmation Screen



Follow these steps to clear a configuration.

1. Press the space bar to select the confirmation option in the brackets.
2. Highlight **Yes** and press **Enter**.
All existing configurations are cleared from the controller.

2.5 Managing a Foreign Configuration

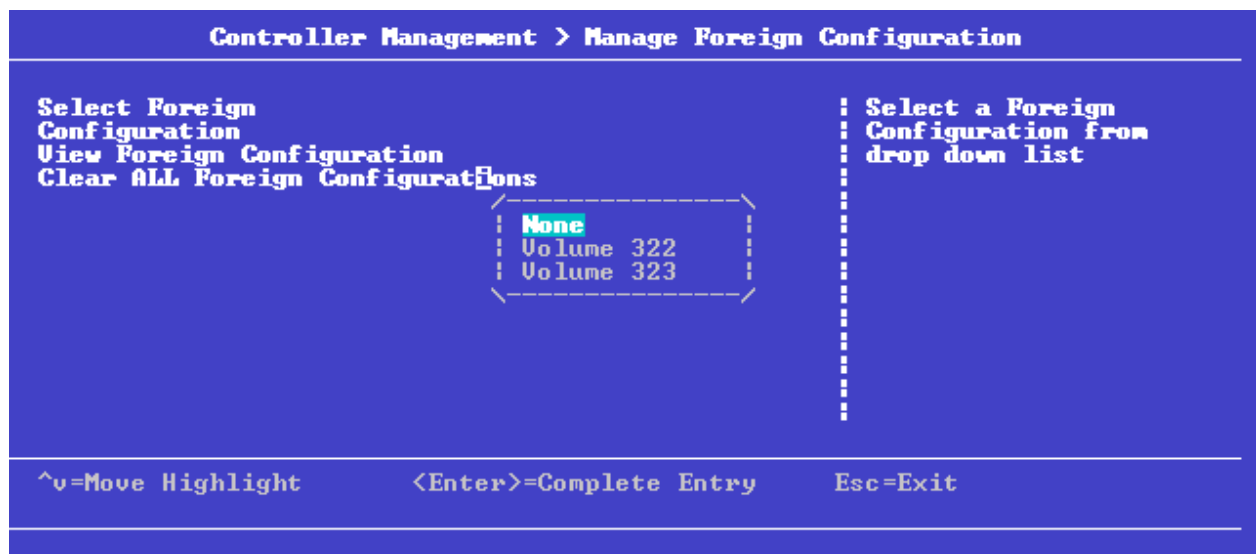
Select **Manage Foreign Configuration** from the Controller Management menu to import or delete a foreign (inactive) volume.



NOTE A foreign configuration is a RAID volume that was created on a different controller, and whose member drives have been moved to this controller. You can have up to two volumes on a single controller, including foreign configurations and configurations that you define on the controller using the HII Configuration Application.

The following menu appears when you select Manage Foreign Configuration.

Figure 12 Manage Foreign Configuration Menu



Follow these steps to select and view a foreign configuration.

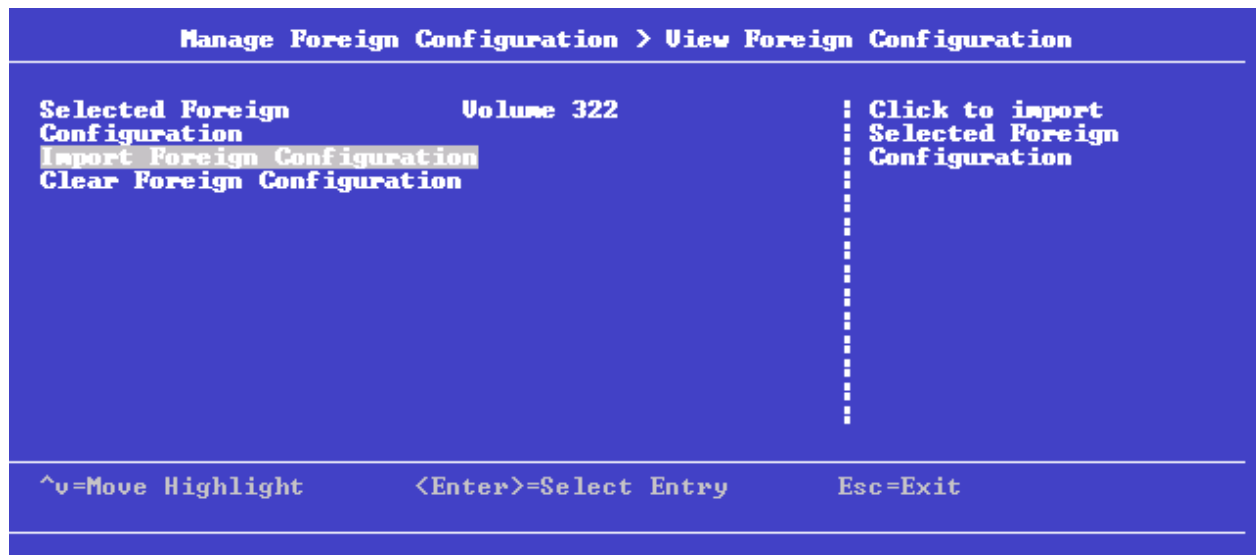


NOTE If you just want to clear all foreign configurations on the controller without selecting or viewing them, highlight **Clear ALL Foreign Configurations** and press **Enter**.

1. Highlight **Select Foreign Configuration** and press **Enter**.
2. Select the foreign volume from the drop-down menu and press **Enter**.
3. Highlight **View Foreign Configuration** and press **Enter**.

The View Foreign Configuration menu appears, as shown in the following figure.

Figure 13 View Foreign Configuration Menu



The volume number of the selected foreign configuration appears at the top of the screen.

4. Import the foreign configuration or delete it by following the instructions in the next two sections.

2.5.1 Importing a Foreign Configuration

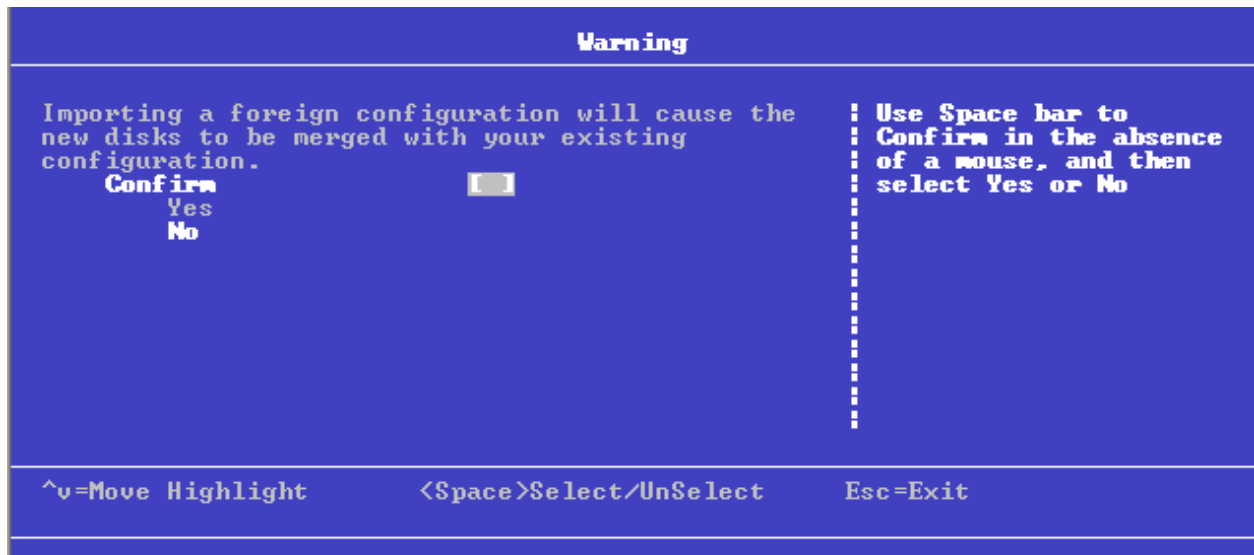
Importing a foreign configuration means activating an inactive volume that you physically transferred to the controller from another system. It is not always possible to import a foreign configuration. Here are some conditions that prevent an import operation from succeeding:

- The volume state is not INACTIVE.
- The volume state is either FAILED or MISSING.
- The volume uses incompatible Gen1 metadata.
- Two RAID volumes (the maximum) already exist on this controller.
- The maximum number of supported physical drives are already in use in active volumes on this controller. Global hot spares also count, because they need to be activated along with other drives in the foreign volume.

Follow these steps to import a foreign configuration:

1. Highlight **Import Foreign Configuration** on the View Foreign Configuration menu and press **Enter**.
The following confirmation screen appears.

Figure 14 Import Foreign Configuration Confirmation Screen



2. Press the space bar to select the confirmation option in the brackets.
3. Highlight **Yes** and press **Enter**.
The foreign or inactive configuration is imported (activated) on the controller.

2.5.2 Clearing a Foreign Configuration

Follow these steps to clear (delete) a foreign configuration or inactive volume.

1. Highlight **Clear Foreign Configuration** on the View Foreign Configuration menu and press **Enter**.
The following confirmation screen appears.

Figure 15 Clear Foreign Configuration Confirmation Screen



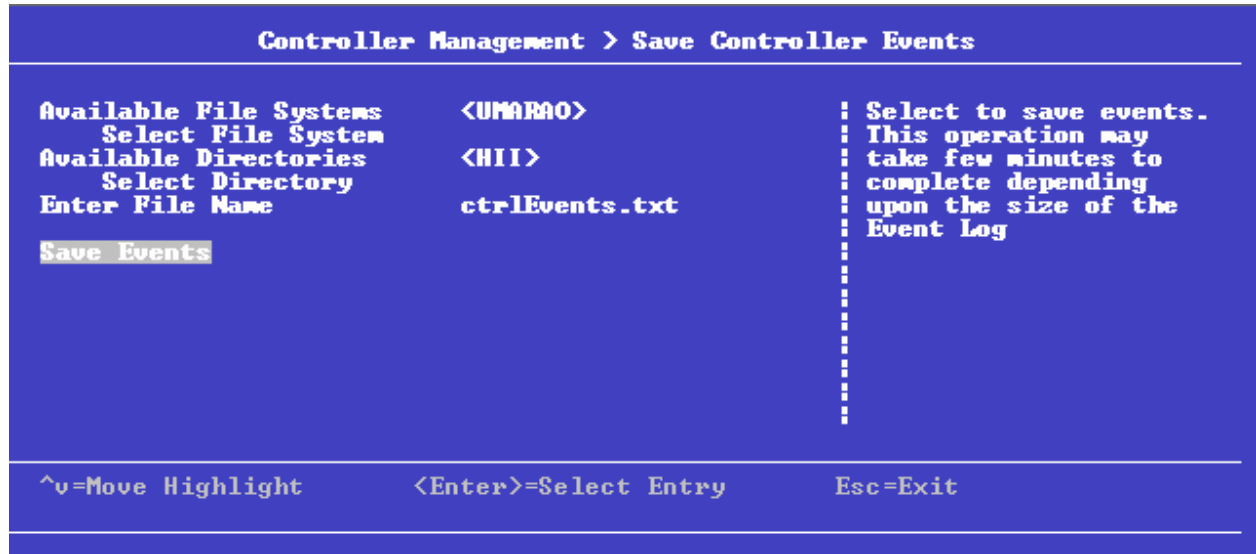
2. Press the space bar to select the confirmation option in the brackets.
3. Highlight **Yes** and press **Enter**.

The foreign configuration is cleared (deleted) from the controller. Clearing the foreign configuration allows the member drives that were part of the configuration to be used for creating new virtual drives.

2.6 Saving Controller Events

Select Save Controller Events from the Controller Management menu to save the controller events log to a file. The following figure shows the Save Controller Events screen.

Figure 16 Save Controller Events Screen



Follow these steps to save the controller events log to a file:

1. Highlight **Available File Systems** and press **Enter**.
2. Select the appropriate file system from the drop-down menu.
3. Highlight **Select File System** and press **Enter**.
4. Highlight **Available Directories** and press **Enter**.
5. Select the appropriate directory from the drop-down menu.
6. Highlight **Select Directory** and press **Enter**.
7. Highlight **Enter File Name** and press **Enter**.
8. Enter a file name to save the controller events.
9. Highlight **Save Events** and press **Enter**.

The controller events are saved to the selected file in the specified path.

This command saves raw data to the file in hexadecimal format. Do not attempt to read this data. Instead, contact IBM support.

2.7 Clearing Controller Events

Select **Clear Controller Events** from the Controller Management menu to clear the controller event log. The following figure shows the Clear Controller Events confirmation screen.

Figure 17 Clear Controller Events Confirmation Screen



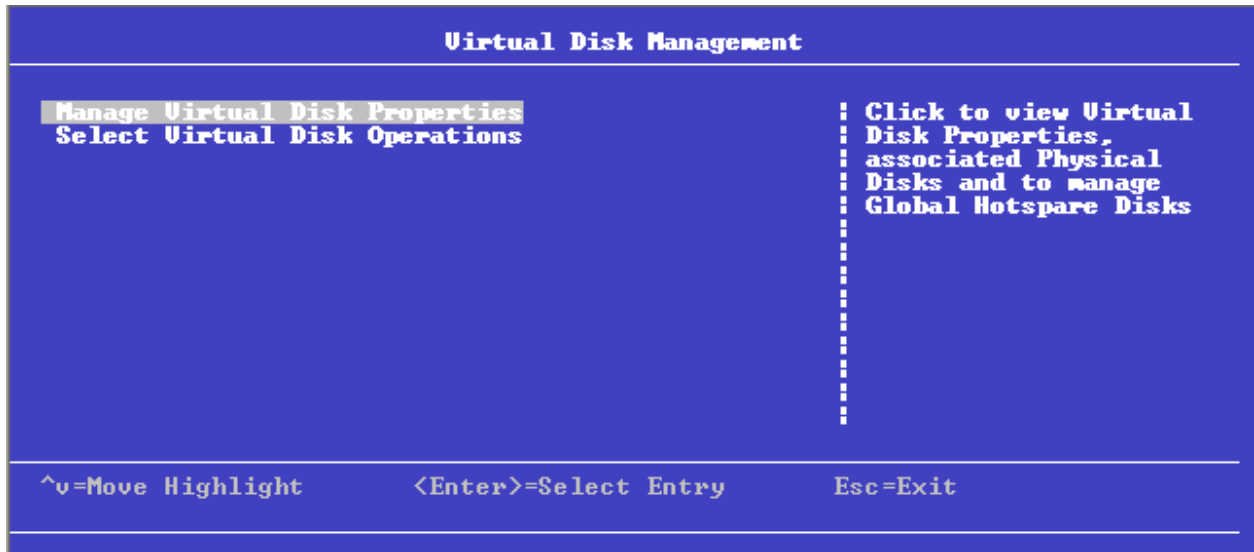
Follow these steps to clear the controller event log.

1. Press the space bar to select the confirmation option in the brackets.
2. Highlight **Yes** and press **Enter**.
The controller event log is cleared.

3 Managing Virtual Disks

When you select **Virtual Disk Management** on the Configuration Options menu, the following menu appears.

Figure 18 Virtual Disk Management Menu



Select **Manage Virtual Disk Properties** or **Select Virtual Disk Operations** to continue.

3.1 Managing Virtual Disk Properties

The following figure shows the screen that appears when you select **Manage Virtual Disk Properties**.

Figure 19 Manage Virtual Disk Properties Screen



The screen displays the target ID, RAID level, and other information for the first available virtual disk (RAID volume). Follow these steps if you want to see information for a second virtual disk that is defined on this controller.

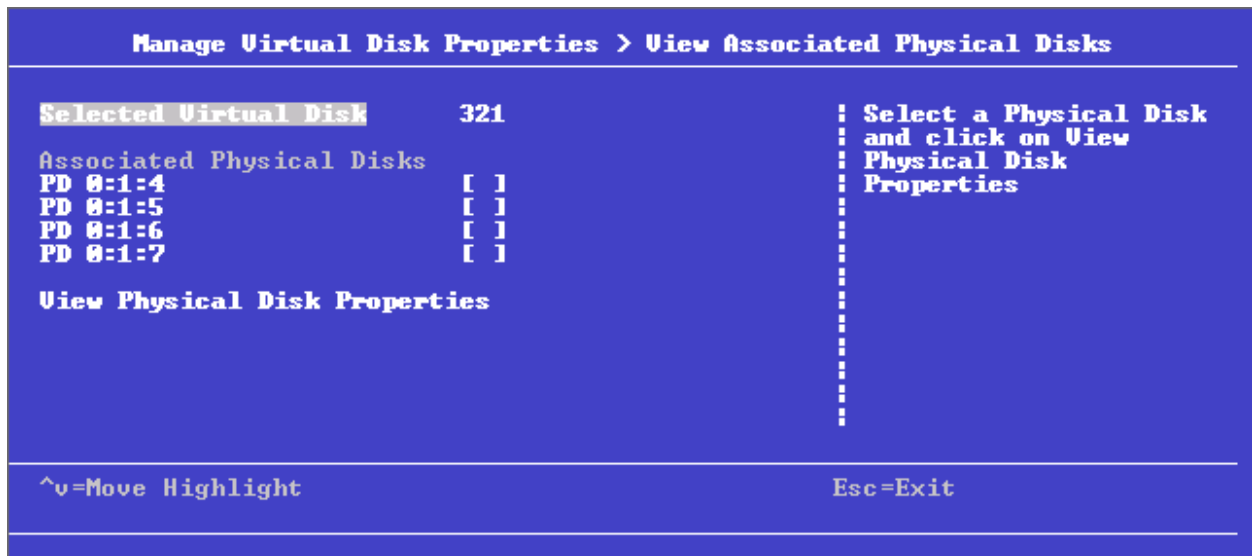
1. Highlight **Select Virtual Disk** and press **Enter**.
2. Select the other virtual disk from the drop-down menu.

Select the other menu options to view information about the physical disks associated with the virtual disk and to manage global hot spare disks.

3.1.1 Viewing Associated Physical Disks

The following figure shows the screen that appears when you select View Associated Physical Disks on the Manage Virtual Disk Properties screen.

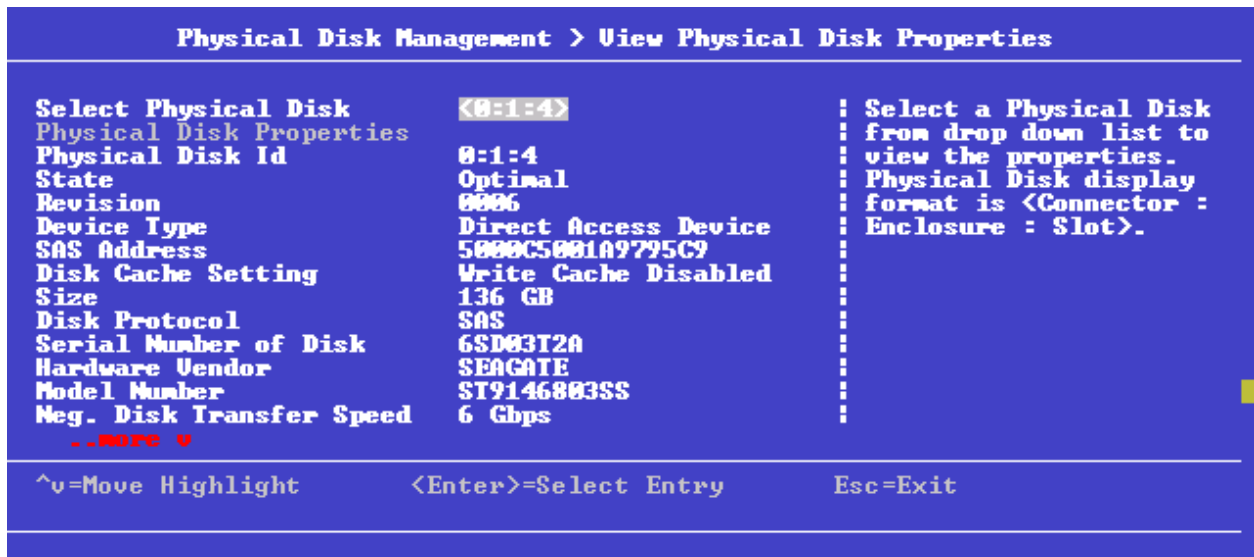
Figure 20 View Associated Physical Disks Screen



Follow these steps to view the properties of a physical disk in the selected virtual disk.

1. Highlight a physical disk and press the spacebar to select it.
You can only select one physical disk at a time.
2. Highlight **View Physical Disk Properties** and press **Enter**.
The View Physical Disk Properties screen appears, as shown in the sample screen shot in the following figure.

Figure 21 View Physical Disk Properties Screen

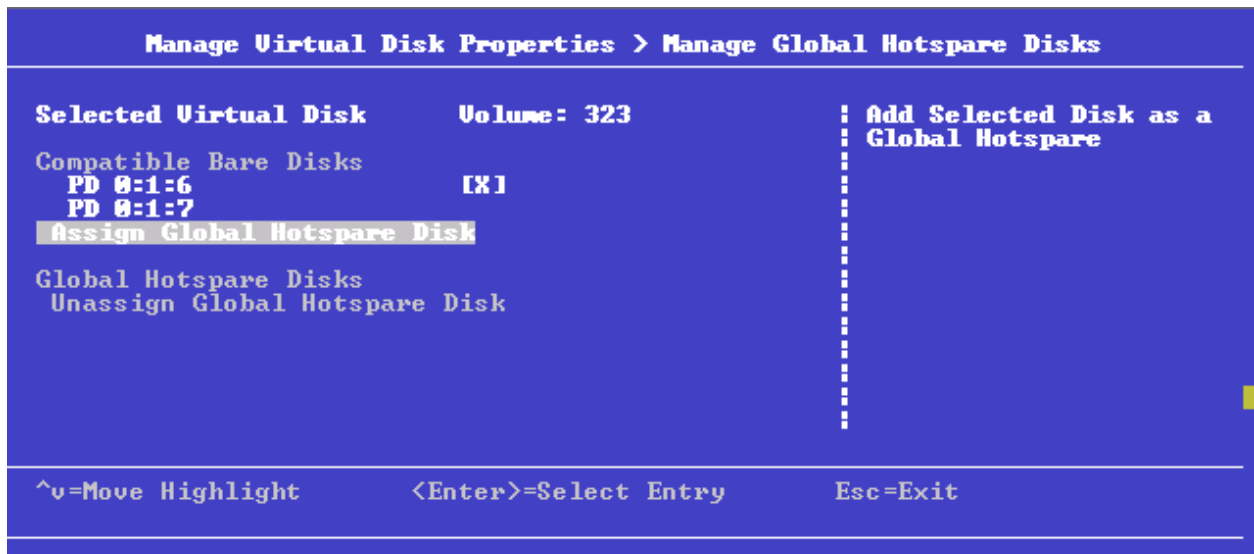


- View the information for the physical disk.
 To view more physical disk information, highlight the red text at the bottom left of the screen and press **Enter**. For more information about this screen, see Section 4.1, [Viewing Physical Disk Properties](#).
- When you are finished viewing properties, press **Esc** to return to the previous screen.
 If needed, deselect the physical disk and select a different physical disk to view its properties.

3.1.2 Managing Global Hot Spare Disks

The following figure shows the screen that appears when you select **Manage Global Hotspare Disks** on the Manage Virtual Disk Properties screen.

Figure 22 Manage Global Hotspare Disks Screen



On this screen you can add or delete global hot spare disks for the RAID volumes on the controller. This screen lists existing global hot spare disks and also compatible disks that you can use to create new global hot spares.

Follow these steps to add a global hot spare disk.

1. Highlight a compatible disk listed in the upper left of the screen and press the spacebar to select it, as shown in [Figure 22](#).

You can only select one disk at a time.

2. Highlight **Assign Global Hotspare Disk** and press **Enter**.

The new global hot spare disk is added to the screen, as shown in the following figure.

Figure 23 Manage Global Hotspare Disks Screen: New Hotspare Disk



Follow these steps to delete (unassign) a global hot spare disk.

1. Highlight an existing global hot spare disk and press the spacebar to select it, as shown in [Figure 23](#).
2. Highlight **Unassign Global Hotspare Disk** and press **Enter**.

The disk is removed from the list of global hot spare disks.

3.2 Selecting Virtual Disk Operations

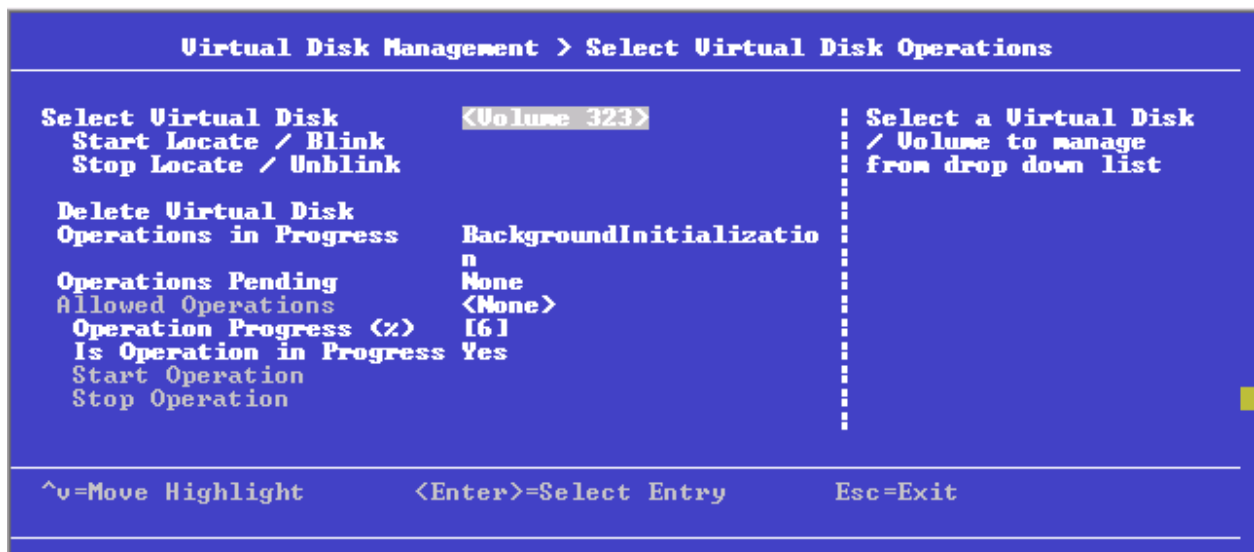
You use the Select Virtual Disk Operations screen to locate RAID volumes on the controller, delete a selected volume, view the operations in progress and pending operations, and perform a consistency check on the volumes.



NOTE The firmware performs background operations serially, based on internal firmware policies that cannot be modified by a user. If operations are pending, the operation in progress must complete before the pending operation is started.

The following screen appears when you select **Select Virtual Disk Operations** from the Virtual Disk Management menu.

Figure 24 Select Virtual Disk Operations Screen



The screen displays information about the operations pending or running on the virtual disk (RAID volume).



NOTE You might need to refresh the screen (exit by pressing Esc and reselecting the screen) to view updated operation progress information.

Follow these steps if you want to see information for a second virtual disk that is defined on this controller.

1. Highlight **Select Virtual Disk** and press **Enter**.
2. Select the other virtual disk from the drop-down menu.

Select the other menu options to view information about the physical disks associated with the virtual disk and to manage global hot spare disks.

3.2.1 Locating Physical Disks in a Virtual Disk

Follow these steps to locate and identify the physical disks that comprise a virtual disk.

1. Highlight **Start Locate/Blink** and press **Enter**.
The drive lights on the physical disks start blinking.
2. To stop the drive lights from blinking, highlight **Stop Locate/Unblink** and press **Enter**.

3.2.2 Deleting a Virtual Disk

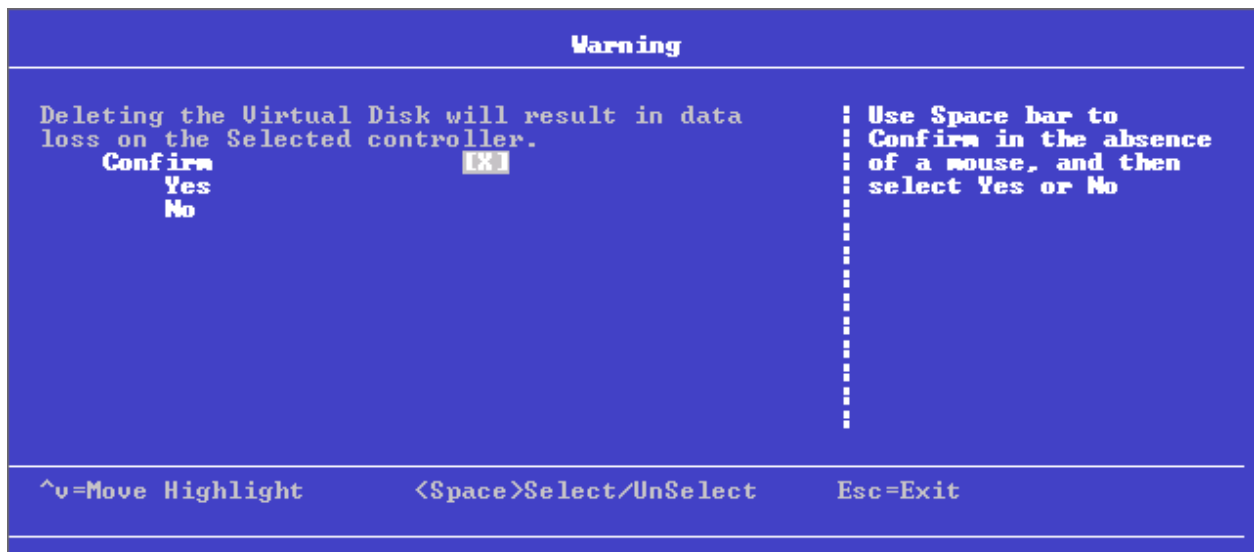
Follow these steps to delete a virtual disk from the controller.



ATTENTION All data is erased when you delete a virtual disk. Be sure to back up any data you want to keep before you perform this operation.

1. Highlight **Delete Virtual Disk** on the Select Virtual Disk Operations screen and press **Enter**.
The following confirmation screen appears.

Figure 25 Delete Virtual Disk Confirmation Screen



2. Press the space bar to select the confirmation option in the brackets.
3. Highlight **Yes** and press **Enter**.
The selected virtual disk is deleted.

3.2.3 Starting and Stopping Virtual Disk Operations

You can start and stop some kinds of virtual disk operations by using the Start Operation and Stop Operation commands on the Select Virtual Disk Operations screen. These commands are available if the operation can be stopped. Otherwise, they are grayed out, as shown in [Figure 24](#), where a background initialization is running.

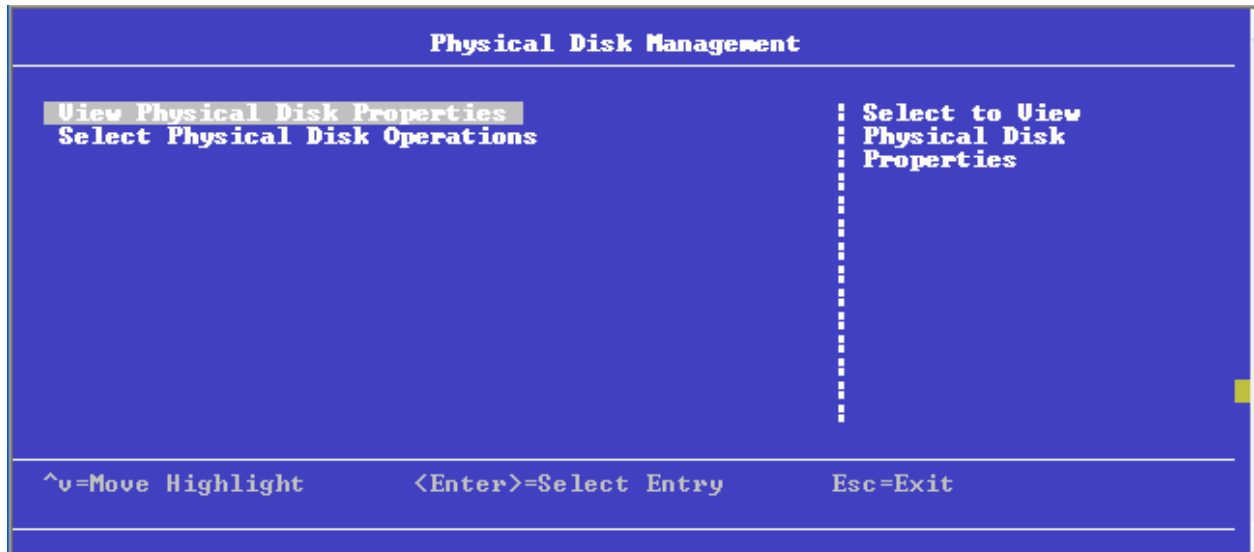
Follow these steps to stop or start a virtual disk operation.

1. Highlight **Stop Operation** and press **Enter**.
The status of the operation changes to indicate that it has stopped running. You might need to exit the screen (press the **Esc** key) and return to it to see the status change.
2. To restart the operation, highlight **Start Operation** and press **Enter**.

4 Managing Physical Disks

When you select **Physical Disk Management** on the Configuration Options menu, the following menu appears.

Figure 26 Physical Disk Management Menu

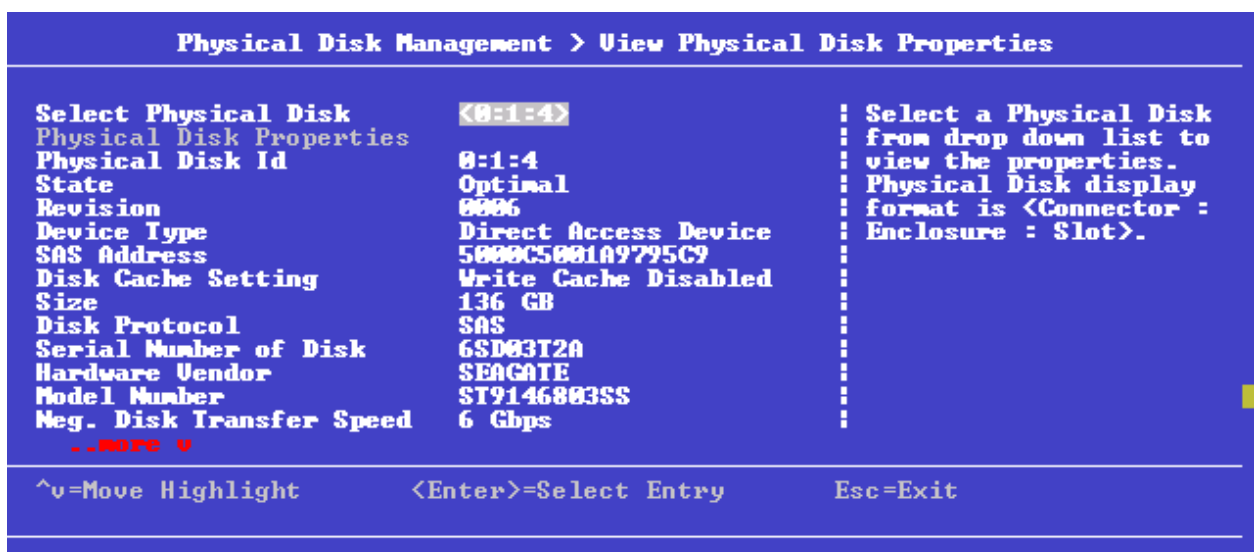


You use the Physical Disk Management screens to view the physical properties of physical disks and perform operations on them. You can view information for disks that are part of RAID volumes, hot spare disks, and unassigned disks that are not hot spares or part of a RAID volume.

4.1 Viewing Physical Disk Properties

The following screen appears when you select **View Physical Disk Properties** from the Physical Disk Management menu.

Figure 27 View Physical Disk Properties Screen



Follow these steps to view properties for a different physical disk.

1. Highlight **Select Physical Disk** and press **Enter**.
2. Select another physical disk from the drop-down menu.

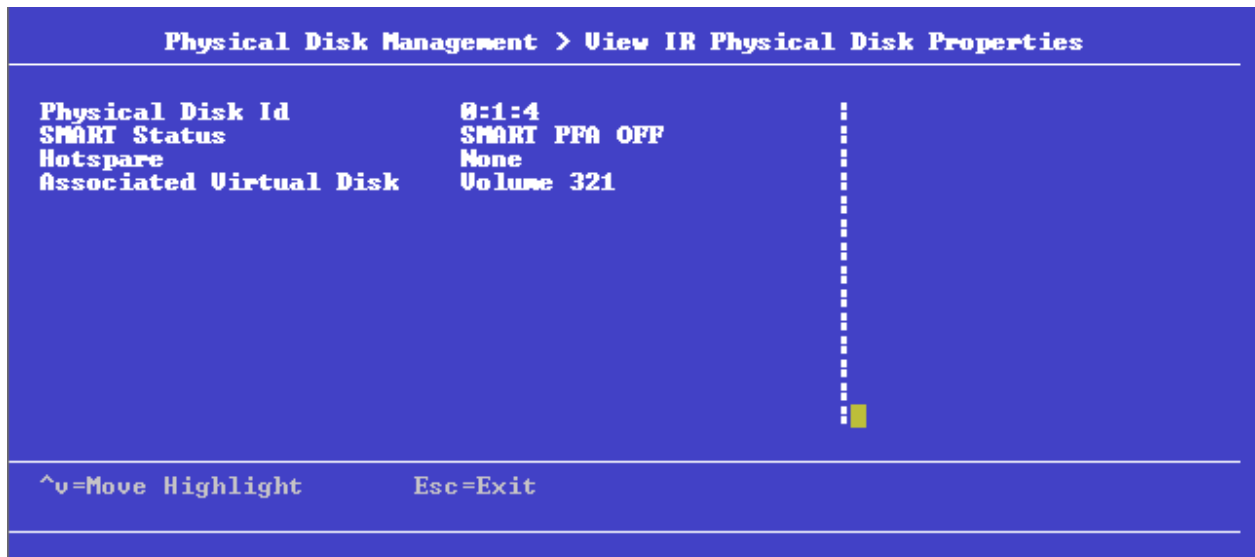
This screen displays information for all physical disks connected to this controller. The figure shows a sample screen for one model of physical disk. The following table explains the meaning of the physical disk properties.

Table 2 Physical Disk Properties

Property	Sample Data	Description
Physical Disk Id	0:1:6	The disk is identified in <i>Connector:Enclosure:Slot</i> format. The connector values is fixed at 0.
State	Ready	The current state of the selected disk. Possible values for this property include Not Configured, Not Compatible, Offline, Online, Hot Spare, Degraded, Rebuilding, Optimal, Unknown, and Ready.
Revision	5.1.2	Disk revision level.
Device Type	Direct Access Device	The type of device. Possible values for this property include Hard disk, Sequential access device, Printer, Processor device, Write-once device, CD-ROM, Scanner, Optical memory device, Medium changer, Communications device, Graphics arts pre-press device, Graphics arts pre-press device, Storage array controller, Enclosure services device, Simplified hard disk, Optical card reader/writer, Other, and Unknown.
SAS Address	1234567890ABCDEF	Unique disk SAS address.
Disk Cache Setting	Write Cache Enabled	Indicates whether the write cache is enabled or disabled.
Hard Disk Drive RPM	7500	RPM speed of the disk. This field is hidden for SSD drives.
Size	119 GB	Disk size, in GB or TB.
Disk Protocol	SAS	Disk protocol can be either <i>SAS</i> or <i>SATA</i> and either <i>HDD</i> or <i>SSD</i> .
Serial Number of Disk	6SD03T2A	Serial number of the disk.
Hardware Vendor	SEAGATE	Vendor-supplied information.
Model Number	ST9146803SS	Vendor-supplied information.
Negotiated Disk Transfer Speed	6 Gbps	Negotiated disk transfer speed of the drive.

To view additional physical disk properties, highlight the red text at the bottom left of the screen and press **Enter**. The following screen appears.

Figure 28 View IR Physical Disk Properties Screen



The figure shows a sample screen for one model of IR physical disk. The following table explains the meaning of the additional physical disk properties.

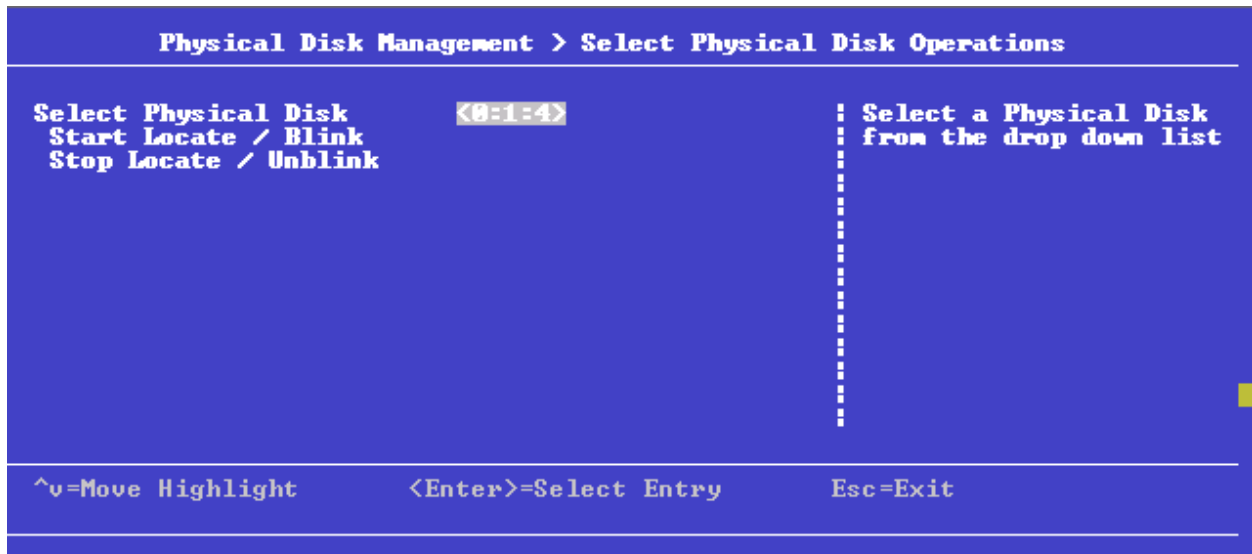
Table 3 IR Physical Disk Properties

Property	Sample Data	Description
Physical Disk Id	0:1:6	The disk is identified in <i>Connector:Enclosure:Slot</i> format. The connector values is fixed at 0.
SMART PFA Status	SMART PFA ON	SMART Predictive Failure Analysis ON or OFF.
Hotspare	None	Yes if the disk is a hot spare, or <i>None</i> .
Associated Virtual Disk	Volume 321	The volume ID of the virtual disk to which this disk belongs, or <i>None</i> .

4.2 Selecting Physical Disk Operations

The following screen appears when you select **Select Physical Disk Operations** from the Physical Disk Management menu.

Figure 29 Select Physical Disk Operations Menu



Follow these steps to select a different physical disk.

1. Highlight **Select Physical Disk** and press **Enter**.
2. Select another physical disk from the drop-down menu.

4.2.1 Locating a Physical Disk

Follow these steps to locate and identify a physical disk by blinking its drive light.

1. Highlight **Start Locate/Blink** and press **Enter**.
The drive light on the selected physical disk starts blinking.
2. To stop the drive light from blinking, highlight **Stop Locate/Unblink** and press **Enter**.
3. To locate a different physical drive, highlight **Select Physical Disk** and press **Enter**.
4. Select the disk from the drop-down menu.
5. Repeat steps 1 and 2 for this drive.

5 Using the Initiator-Target Version of the HII Configuration Application

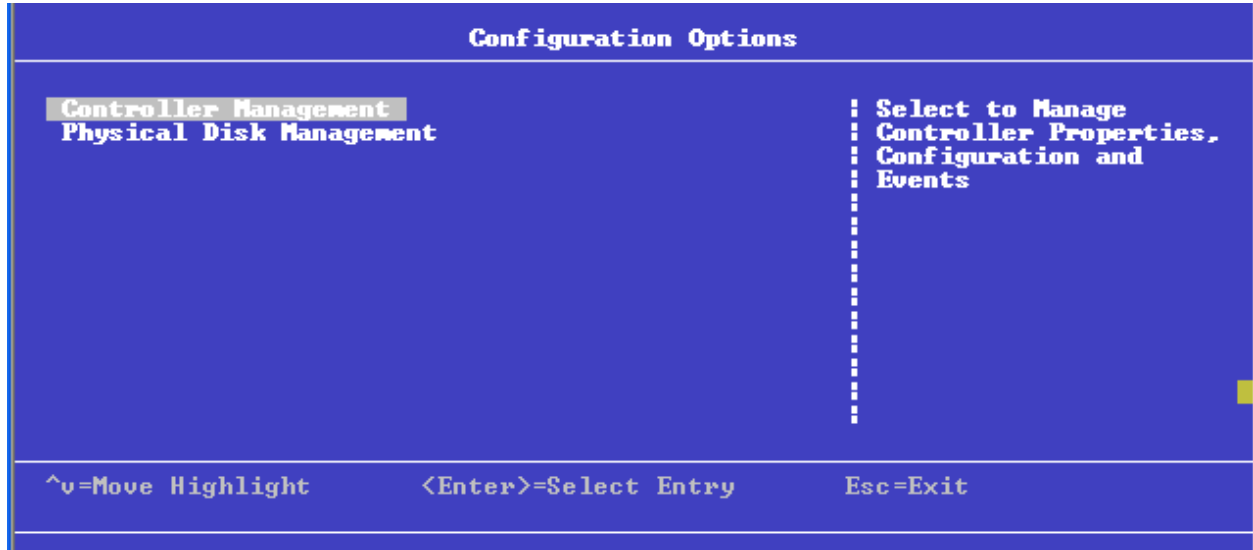
The Initiator-Target (IT) version of the HII Configuration Application enables you to view controller properties and physical disk properties and to perform selected operations on controllers and physical disks.



NOTE To determine which version of the HII Configuration Application is running, view the *Firmware Type* property on the View Controller Properties screen. The value is either *IT* or *IR* (for the Integrated RAID version).

To start the HII Configuration Application and access the main configuration menu, follow the steps listed in Section 1, [Starting the HII Configuration Application](#). When you complete these steps, the Configuration Options menu appears, as shown in the following figure.

Figure 30 Configuration Options Menu



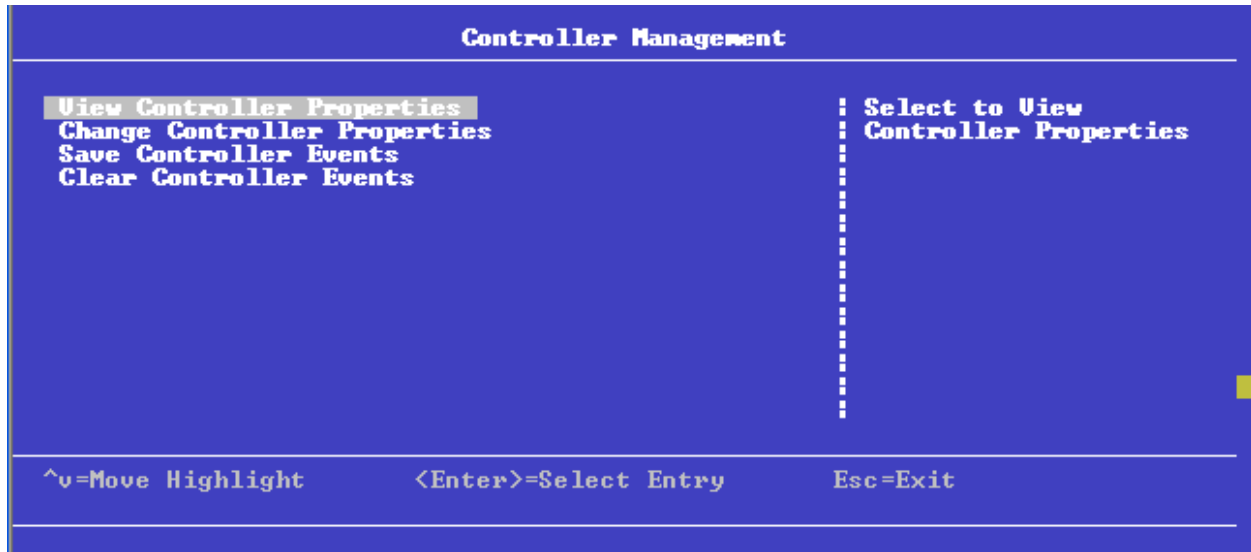
Select a menu option to continue with your management and configuration tasks.

- Select **Controller Management** to view and manage controller properties and to save or clear controller events. See Section 5.1, [Managing Controllers](#).
- Select **Physical Disk Management** to view physical disk properties and to perform selected physical disk operations. See Section 5.2, [Managing Physical Disks](#).

5.1 Managing Controllers

When you select Controller Management on the Configuration Options menu, the Controller Management menu appears, as shown in the following figure.

Figure 31 Controller Management Menu

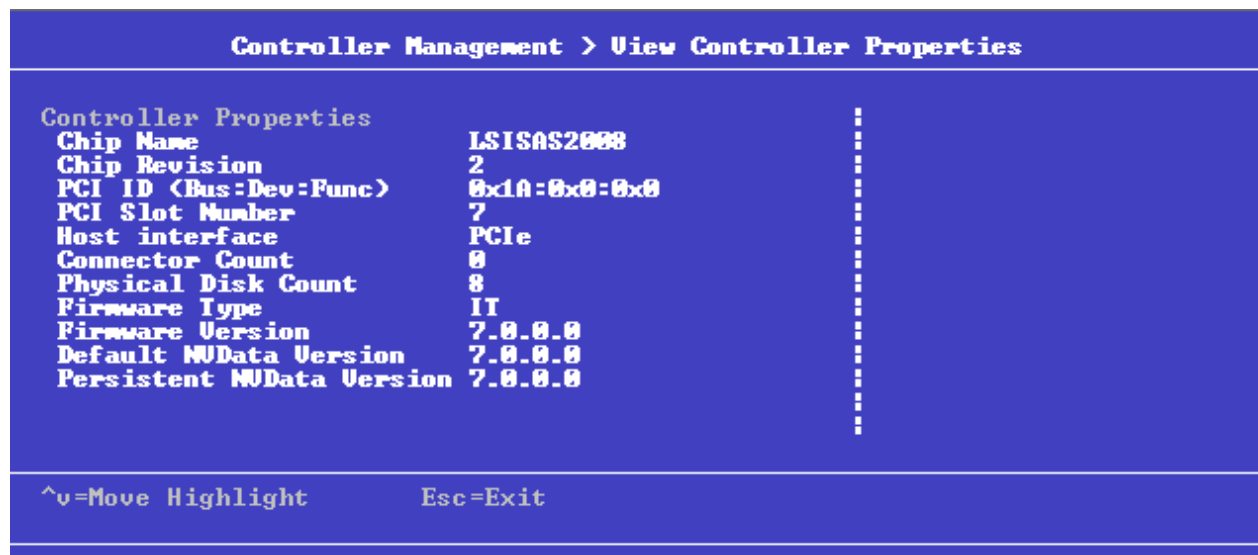


The following sections explain each menu option.

5.1.1 Viewing Controller Properties

Select **View Controller Properties** from the Controller Management menu to view information such as controller name and revision, firmware type and version, and physical disk count. The following figure shows a sample controller properties screen. The actual information that appears on the screen is different for each type of controller.

Figure 32 View Controller Properties Screen



The following table explains the meaning of the controller properties.

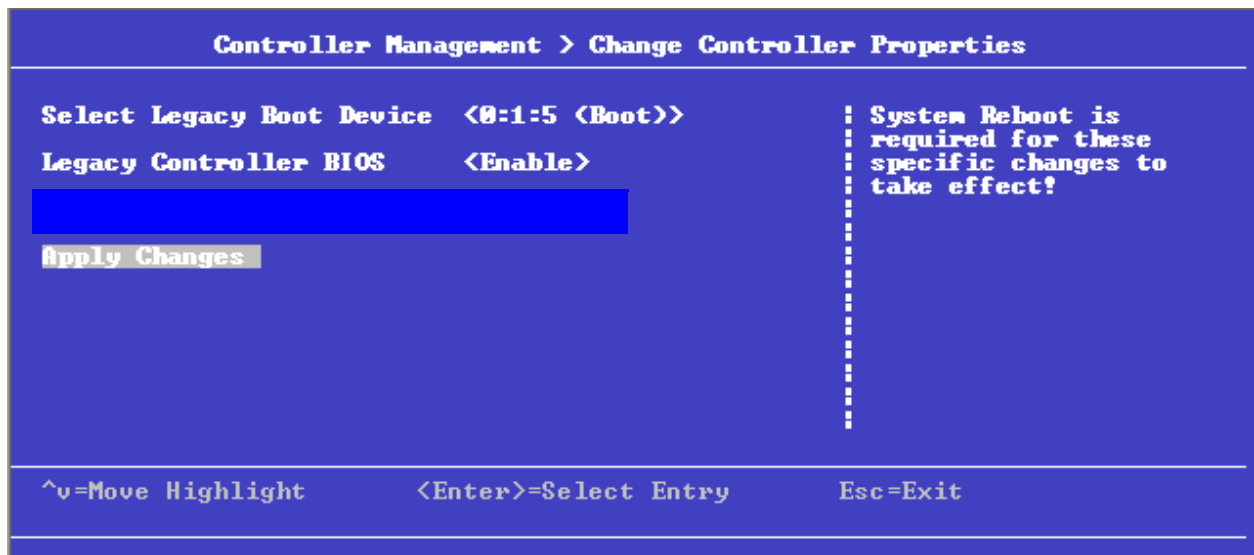
Table 4 Controller Properties

Property	Sample Data	Description
Chip Name	LSI SAS2008	Controller name.
Chip Revision	2	Internal revision number.
PCI ID	0x1A:0X0:0X0	Displayed in Bus:Device:Function format.
PCI Slot Number	7	PCIe slot number of the controller.
Host Interface	PCIe	Host interface type.
Connector Count	0	Fixed at 0 for LSI Controllers
Physical Disk count	8	Number of disks connected to the controller. Includes bare disks, hot spares, and disks in volumes.
Firmware Type	IT	IR Firmware – Can create and manage volumes. IT Firmware – Cannot create and manage volumes.
Firmware Version	7.0.0.0	Firmware version.
Default NVData Version	7.0.0.0	Firmware default NVData version.
Persistent NVData Version	7.0.0.0	Firmware persistent NVData version.

5.1.2 Changing Controller Properties

Select **Change Controller Properties** from the Controller Management menu to change the legacy boot device or to enable or disable the legacy ROM BIOS. The following figure shows the Change Controller Properties menu.

Figure 33 Change Controller Properties Menu



Follow these steps to select a different legacy boot device.

1. Highlight **Legacy Boot Device** and press **Enter**.
2. Use the up and down arrow keys to select a legacy boot device and press **Enter**.
3. Highlight **Apply Changes** and press **Enter**.
4. Reboot the system to enable the new boot device.

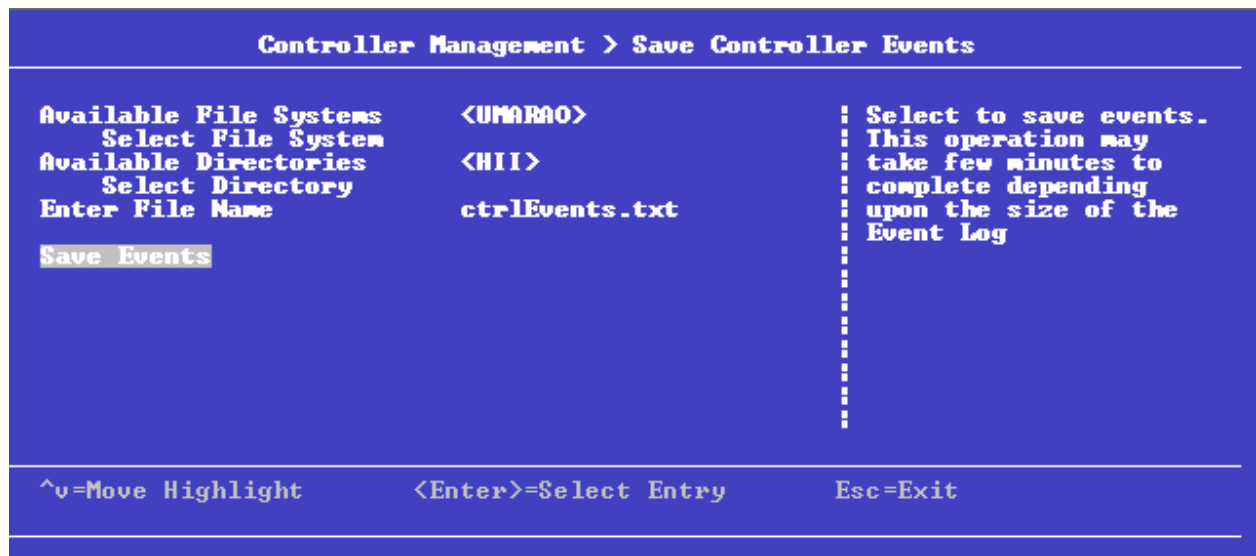
Follow these steps to enable or disable the legacy controller BIOS.

1. Highlight **Legacy Controller BIOS** and press **Enter**.
2. Use the up and down arrow keys to select **Enable** or **Disable** and press **Enter**.
3. Highlight **Apply Changes** and press **Enter**.
4. Reboot the system to enable the BIOS change.

5.1.3 Saving Controller Events

Select Save Controller Events from the Controller Management menu to save the controller events log to a file. The following figure shows the Save Controller Events screen.

Figure 34 Save Controller Events Screen



Follow these steps to save the controller events log to a file:

1. Highlight **Available File Systems** and press **Enter**.
2. Select the appropriate file system from the drop-down menu.
3. Highlight **Select File System** and press **Enter**.
4. Highlight **Available Directories** and press **Enter**.
5. Select the appropriate directory from the drop-down menu.
6. Highlight **Select Directory** and press **Enter**.
7. Highlight **Enter File Name** and press **Enter**.
8. Enter a file name to save the controller events.
9. Highlight **Save Events** and press **Enter**.

The controller events are saved to the selected file in the specified path.

This command saves raw data to the file in hexadecimal format. Do not attempt to read this data. Instead, contact IBM support.

5.1.4 Clearing Controller Events

Select **Clear Controller Events** from the Controller Management menu to clear the controller event log. The following figure shows the Clear Controller Events confirmation screen.

Figure 35 Clear Controller Events Confirmation Screen



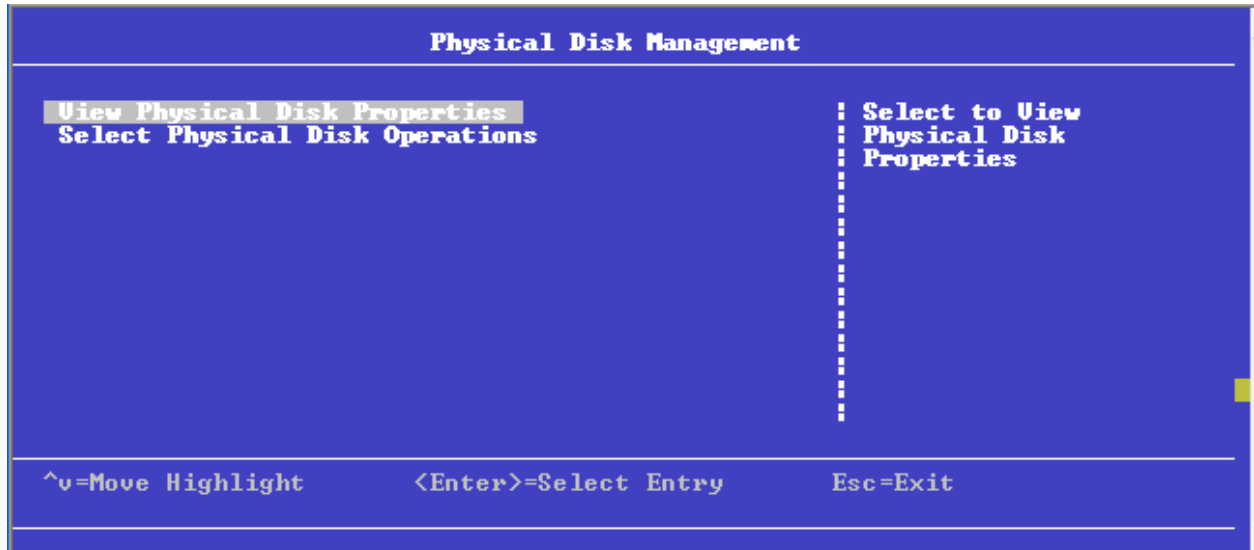
Follow these steps to clear the controller event log.

1. Press the space bar to select the confirmation option in the brackets.
2. Highlight **Yes** and press **Enter**.
The controller event log is cleared.

5.2 Managing Physical Disks

When you select **Physical Disk Management** on the Configuration Options menu, the following menu appears.

Figure 36 Physical Disk Management Menu

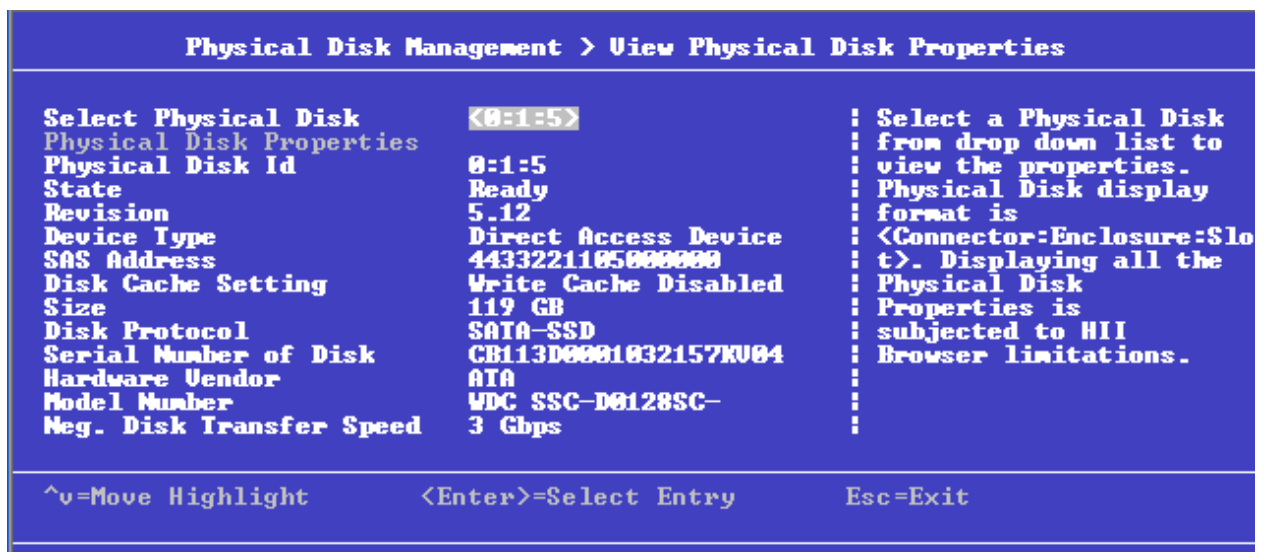


You use the Physical Disk Management screens to view the physical properties of physical disks and perform operations on them.

5.2.1 Viewing Physical Disk Properties

The following screen appears when you select **View Physical Disk Properties** from the Physical Disk Management menu.

Figure 37 View Physical Disk Properties Screen



Use this screen to view information for all physical disks connected to this controller. The figure shows a sample screen for one model of physical disk. The following table explains the meaning of the physical disk properties.

Table 5 Physical Disk Properties

Property	Sample Data	Description
Physical Disk Id	0:1:5	The disk is identified in <i>Connector:Enclosure:Slot</i> format. The connector values is fixed at 0.
State	Ready	The current state of the selected disk.
Revision	5.12	Disk revision
Device Type	Direct Access Device	Indicates whether the disk is a hard disk (direct access device), etc.
SAS Address	1234567890ABCD EF	Unique disk SAS address.
Disk Cache Setting	Write Cache Enabled	Indicates whether the write cache is enabled or disabled.
Hard Disk Drive RPM	7500	RPM speed of the disk. This field is hidden for SSD drives.
Size	119 GB	Disk size, in GB or TB.
Disk Protocol	SATA-SSD	Disk protocol can be either <i>SAS</i> or <i>SATA</i> and either <i>HDD</i> or <i>SSD</i> .
Serial Number of Disk	6SD03T2A	Serial number of the disk.
Hardware Vendor	SEAGATE	Vendor-supplied information.
Model Number	ST9146803SS	Vendor-supplied information.
Neg. Disk Transfer Speed	6 Gbps	Negotiated disk transfer speed.

Follow these steps to view information for a different physical disk.

1. Highlight **Select Physical Disk** and press **Enter**.
2. Select another physical disk from the drop-down menu.

5.2.2 Selecting Physical Disk Operations

The following screen appears when you select **Select Physical Disk Operations** from the Physical Disk Management menu.

Figure 38 Select Physical Disk Operations Menu



Follow these steps to enable or disable the write cache on a physical disk.

- To enable a disabled write cache, highlight **Enable Write Cache** and press **Enter**. The write cache setting changes to *Enabled*.
- To disable an enabled write cache, highlight **Disable Write Cache** and press **Enter**. The write cache setting changes to *Disabled*.



ATTENTION Your system is at risk of potential data loss if you disable the write cache.

Follow these steps to run a Format operation or a Verify operation on a physical disk.

1. Highlight **Select Operation** and press **Enter**.
2. Select **Format** or **Verify** from the drop-down menu.
3. Highlight **Start Operation** and press **Enter**.
4. To view the percentage progress of the operation, exit from the screen by pressing **Esc** and then re-enter the screen.

The progress data is updated whenever you refresh this screen.

Appendix A: Getting Help and Technical Assistance

If you need help, service, or technical assistance or just want more information about IBM products, you will find a wide variety of sources available from IBM to assist you. This section contains information about where to go for additional information about IBM and IBM products, what to do if you experience a problem with your system, and whom to call for service, if it is necessary.

A.1 Before you call

Before you call, make sure that you have taken these steps to try to solve the problem yourself:

- Check all cables to make sure that they are connected.
- Check the power switches to make sure that the system and any optional devices are turned on.
- Use the troubleshooting information in your system documentation, and use the diagnostic tools that come with your system. Information about diagnostic tools is in the *Problem Determination and Service Guide* on the IBM *Documentation* CD that comes with your system.
- Go to the IBM support website at <http://www.ibm.com/supportportal/> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

You can solve many problems without outside assistance by following the troubleshooting procedures that IBM provides in the online help or in the documentation that is provided with your IBM product. The documentation that comes with IBM systems also describes the diagnostic tests that you can perform. Most systems, operating systems, and programs come with documentation that contains troubleshooting procedures and explanations of error messages and error codes. If you suspect a software problem, see the documentation for the operating system or program.

A.2 Using the documentation

Information about your IBM system and preinstalled software, if any, or optional device is available in the documentation that comes with the product. That documentation can include printed documents, online documents, readme files, and help files. See the troubleshooting information in your system documentation for instructions for using the diagnostic programs. The troubleshooting information or the diagnostic programs might tell you that you need additional or updated device drivers or other software. IBM maintains pages on the World Wide Web where you can get the latest technical information and download device drivers and updates. To access these pages, go to <http://www.ibm.com/supportportal/> and follow the instructions. Also, some documents are available through the IBM Publications Center at <http://www.ibm.com/shop/publications/order/>.

A.3 Getting help and information from the World Wide Web

On the World Wide Web, the IBM website has up-to-date information about IBM systems, optional devices, services, and support. The address for IBM System x[®] and xSeries[®] information is <http://www.ibm.com/systems/x/>. The address for IBM BladeCenter[®] information is <http://www.ibm.com/systems/bladecenter/>. The address for IBM IntelliStation[®] information is <http://www.ibm.com/systems/intellistation/>.

You can find service information for IBM systems and optional devices at <http://www.ibm.com/supportportal/>.

A.4 Software service and support

Through IBM Support Line, you can get telephone assistance, for a fee, with usage, configuration, and software problems with System x and xSeries servers, BladeCenter products, IntelliStation workstations, and appliances. For information about which products are supported by Support Line in your country or region, see <http://www.ibm.com/services/supline/products/>.

For more information about Support Line and other IBM services, see <http://www.ibm.com/services/>, or see <http://www.ibm.com/planetwide/> for support telephone numbers. In the U.S. and Canada, call 1-800-IBM-SERV (1-800-426-7378).

A.5 Hardware service and support

You can receive hardware service through your IBM reseller or IBM Services. To locate a reseller authorized by IBM to provide warranty service, go to <http://www.ibm.com/partnerworld/> and click **Find Business Partners** on the right side of the page. For IBM support telephone numbers, see <http://www.ibm.com/planetwide/>. In the U.S. and Canada, call 1-800-IBM-SERV (1-800-426-7378).

In the U.S. and Canada, hardware service and support is available 24 hours a day, 7 days a week. In the U.K., these services are available Monday through Friday, from 9 a.m. to 6 p.m.

A.6 IBM Taiwan product service

台灣 IBM 產品服務聯絡方式：
台灣國際商業機器股份有限公司
台北市松仁路 7 號 3 樓
電話：0800-016-888

IBM Taiwan product service contact information:

IBM Taiwan Corporation
3F, No 7, Song Ren Rd.
Taipei, Taiwan
Telephone: 0800-016-888

Appendix B: Notices

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This product is not intended to be connected directly or indirectly by any means whatsoever to interfaces of public telecommunications networks, nor is it intended to be used in a public services network.

Processor speed indicates the internal clock speed of the microprocessor; other factors also affect application performance.

CD or DVD drive speed is the variable read rate. Actual speeds vary and are often less than the possible maximum.

When referring to processor storage, real and virtual storage, or channel volume, KB stands for 1024 bytes, MB stands for 1,048,576 bytes, and GB stands for 1,073,741,824 bytes.

When referring to hard disk drive capacity or communications volume, MB stands for 1,000,000 bytes, and GB stands for 1,000,000,000 bytes. Total user-accessible capacity can vary depending on operating environments.

Maximum internal hard disk drive capacities assume the replacement of any standard hard disk drives and population of all hard disk drive bays with the largest currently supported drives that are available from IBM.

Maximum memory might require replacement of the standard memory with an optional memory module.

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