RocketRAID 1810A

User's Manual

HighPoint

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HighPoint Technologies, Inc.

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Notice

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Chapter 1
Introduction

This chapter discusses RAID-related Serial ATA background information, and the RocketRAID 1810A Serial ATA RAID solution.

Contents of this chapter:

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1.1 HPT601 Powered XOR Engine

Making sure that data is protected – while remaining instantly accessible – requires faster, smarter solutions. HighPoint offers such a solution with an Optimized XOR technique with advanced Intelligent Cache Algorithm powered by HighPoint's HPT601. The HPT601 uses a sophisticated algorithm to automatically do XOR operations on the parity drive without needing a large amount of memory on the adapter card. This solution provides a significant performance enhancement and it is ideal for RAID implementations. This will be the preferred choice of OEMs, ODMs, system integrators and resellers worldwide for its superior performance and ease of use.

1.2 PCI-X Overview

The 64-bit PCI-X architecture supports transfer rates above 1 gigabyte per second, and operates at speeds up to 133 MHz. In addition, it is backward compatible with the existing standard PCI bus. The bandwidth provided by PCI-X is ideal for industry standard servers running enterprise applications.

1.3 RAID Basics

RAID (Redundant Array of Independent Disks) is a method of combining several hard disks (physical disks) into one logical unit (logical disk). Such combinations can offer either fault tolerance or higher data throughput than a single hard disk system.

There are usually a few methods through which hard disks can be combined. The different methods refer to different RAID Levels, and different RAID levels represent different performance levels, security levels and implementation costs.

The most frequently used RAID levels include RAID 0, 1 and 5. RAID 10 is the combination of RAID 0 and RAID 1. The following is a brief table of these popular RAID types:

	Description	Minimum # of Drives	Benefits
RAID 0	Data Striping	2	Highest Performance without data protection
RAID 1	Disk Mirroring	2	Data protection through 100% data duplication
RAID 10	Data Striping and Mirroring	4	Highest Performance with data protection
RAID 5	Data Striping and parity	3	Highest Performaance and with data protection
JBOD	Disk Spanning	2	No data protection and Performance improving but full usage of disk capacity

1.4 RocketRAID 1810A

With 4 Serial ATA channels, the RocketRAID 1810A provides advanced RAID functionality at an affordable price. It can support up to four hard disks and utilizes a 64bit, 133MHz PCI-X bridge. The RocketRAID 1810A solution is aimed at enterprise storage, NAS, workgroup and web severs, video streaming, back up and security systems.

The RocketRAID 1810A's low profile design makes it an ideal storage solution for 1U Rack mount servers.

The following are some highlight features:

- Supports 64bit, 133MHz PCI-X.
- Backwards compatible with standard PCI slots.
- Supports a maximum of 4 hard disks.
- IDE hard disk compatible when used with RocketHead 100 converters (Optional).
- Supports RAID 0, 1, 5, 10, and JBOD.
- Supports hot-spare for automatic rebuild.
- Bootable disk or disk array support.
- RAID configuration & management software tool (GUI- Graphic User Interface version and CLI- Command Line Interface version) .
- Support system memory larger than 4GB (Bigmen support under Linux , PAE support under Microsoft Windows).
- Support Intel EM64T and AMD 64.
- Real-time monitoring of device status and error alarm with popup message box and beeping.
- Event log for easy troubleshooting.
- Large LBA supports drive capacity exceeding 300GB.
- Low profile.
- Active and Failed LED's for system chassis.

SATA RAID Function Utility for RAID Configuration/Management

The RocketRAID 1810A Serial ATA provides multi level RAID support including RAID 0, 1, 5, 10, and JBOD, as well as powerful software management functions. In addition to the BIOS configuration utility, the RocketRAID 1810A includes graphical OS-based RAID configuration software. CLI (Command Line Interface) software is available for Linux Operating Systems.

Thin Cable Is Easy To Configure And Improves Cooling Conditions Inside A Computer Chassis

The Serial ATA architecture replaces the wide ATA ribbon cable with a thin, flexible cable that is up to 1 meter in length. The serial cable is smaller and easier to route inside the

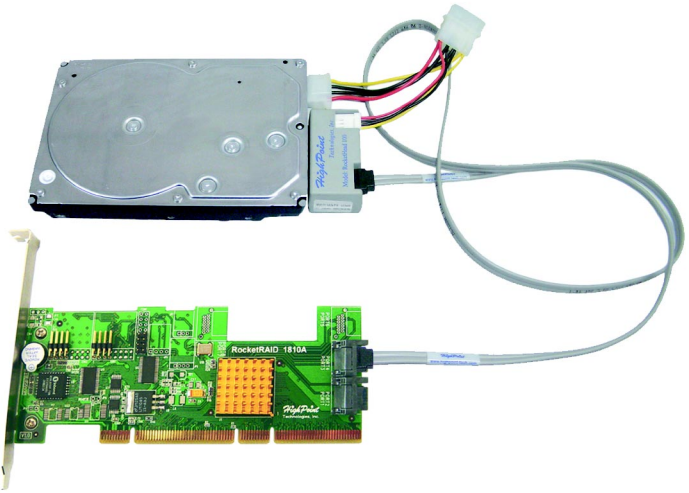
computer chassis. The small diameter cable can help to improve airflow inside the computer system chassis, in such a way to reduce the thermal in the computer.

An Ideal SATA RAID Solution

As a high-performance, affordable RAID solution, the RocketRAID 1810A makes sense for nearly any Server, critical business data storage, gaming, Audio/Video editing, security system, and high-end personal storage.

IDE Hard Disk Compatible

RocketRAID 1810A Serial ATA RAID host adapter can support up to four hard disk drives. It not only is compatible with Serial ATA hard disks, but also supports all standard IDE hard disks through RocketHead 100 (RH100, sold separately) internal converter. See the picture as shown below:



Note:

IDE hard disks attached to the RocketRAID 1810A via RocketHead 100 converters, must have their jumpers set to the master position. Some hard disks, such as WD models, may require "single master" or "master with no slave present" settings - this may call for the the jumper to be removed entirely. Consult the manufacturer's documentation for specific settings.

Chapter 2
Adapter Installation

This chapter will describe how to install the RocketRAID 1810A host adapter into a computer system, and how to properly attach hard drives to the adapter. Please make sure to read through this chapter carefully before installing the adapter.

Contents of this chapter:

If you have any questions about the installation procedure, please contact our Customer Support Department. Please refer to Appendix B: How to contact Customer Support Department.

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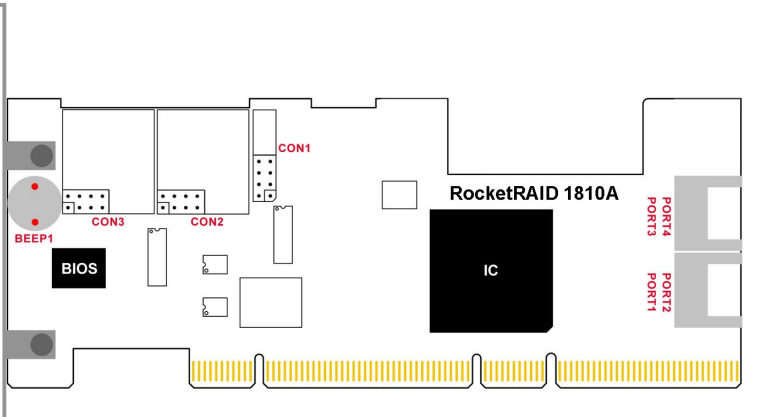
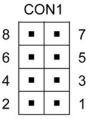
2.1 Adapter Layout



LEDs Connection:

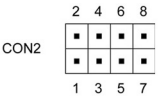
The 8 pins of each connector are for use with LED's.
These LED's represent SATA channels S-ATA1, S-ATA2, S-ATA3 and S-ATA4, respectively. The following diagram describes the connector pin definitions.

a) CON1: From D1 to D8 are HDD present signals.



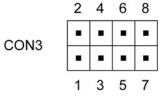
PIN	SIGNAL	PIN	SIGNAL	DESCRIPTION
1	D1	2	VCC	+3.3V
3	D2	4	VCC	+3.3V
5	D3	6	VCC	+3.3V
7	D4	8	NC	No Connection

b) CON2: From D1 to D8 are HDD active signals.



PIN	SIGNAL	PIN	SIGNAL	DESCRIPTION
1	D1	2	VCC	+3.3V
3	D2	4	VCC	+3.3V
5	D3	6	VCC	+3.3V
7	D4	8	NC	No Connection

c) CON3: From D1 to D8 are HDD failure signals.



PIN	SIGNAL	PIN	SIGNAL	DESCRIPTION
1	D1	2	VCC	+3.3V
3	D2	4	VCC	+3.3V
5	D3	6	VCC	+3.3V
7	D4	8	NC	No Connection

Buzzer:

The buzzer will emit warning alarms if one or more hard disks is not responding. This function is dependent upon the RAID Management software (see chapter 4). The alarm feature will not function properly unless this software has been installed.

The warning sound will be accompanied by a visual warning message. Confirming this message (clicking the **OK** button), will stop the alarm.

2.2 Adapter Installation

Configure and Install the Drives

To install the Serial ATA drives you will use with your RocketRAID 1810A controller.

Note:

1. If you are installing more than one drive, your system may not have enough power connectors for each drive. If this is the case, you may need to use a power extension cable that provides additional connectors and power supply.
2. If you are using ATA hard disks, you may need to use a RocketHead 100 converter.

Install the Controller Card

Follow these steps to install and connect hard disks to the host adapter:

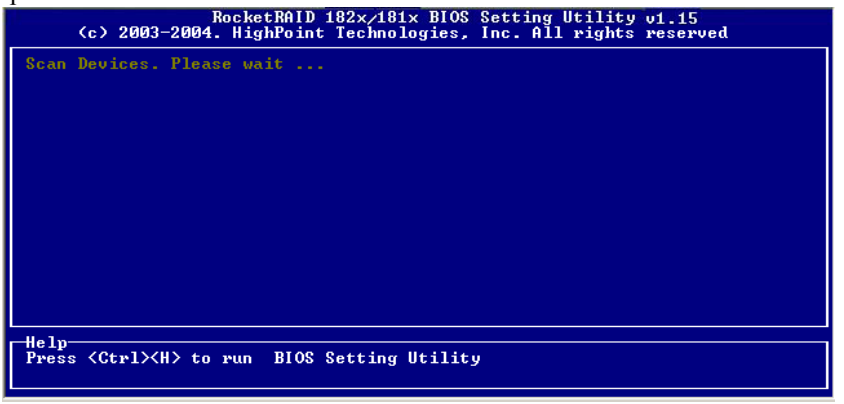
1. Shut down the computer and unplug the power supply.
2. Please discharge static electricity from your body by touching a conductor.
3. Remove the corresponding card bracket from the back of the computer chassis.
4. Insert the RocketRAID 1810A adapter steadily into a PCI slot or a PCI-X slot on the motherboard and then settle with a screw.
5. Connect each Serial ATA hard disk to the RocketRAID 1810A adapter using a Serial ATA cable. If IDE hard disks are used, set the jumpers of each IDE hard disk to the master position (please consult the manufacturer's recommended settings for correct jumper positions), and then connect the hard disks to the RocketRAID 1810A by using RocketHead 100 converters (sold separately).
6. Connect all power supply cables to the hard disks.
7. Replace the cover of the computer chassis.

Note:

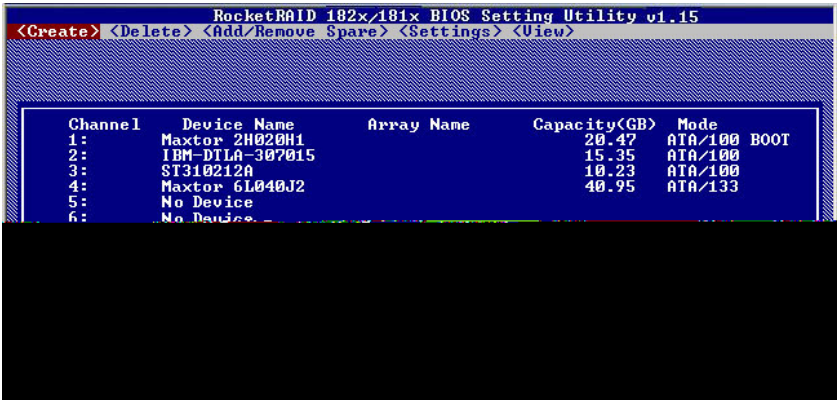
1. If the adapter or hard disk is not recognized, please refer to the Trouble Shooting chapter for assistance.

2.3 Adapter's Installation Verification

After installing the RocketRAID 1810A adapter, and connecting the hard disks as described above, turn on the computer. Please pay close attention to the screen display while starting your computer. If the following information appears, this indicates that the RocketRAID 1810A adapter has been successfully installed and recognized by the computer.



Next, the RocketRAID 1810A adapter's BIOS will scan the connected hard disks. Press **Ctrl+ H** to enter BIOS setup, then select **View->Device**. Please pay attention to the screen display (See the following screen shot). If all connected hard disks are displayed correctly, this indicates that all the hard disks have been correctly installed and recognized by the computer.



2.4 Driver Installation

After the RocketRAID 1810A adapter has been installed and recognized by the computer, the device driver must be installed.

• Windows 2000

Installing the RocketRAID 1810A driver during Windows 2000 installation

1. Booting from the CD-ROM - when the **Windows 2000 Setup** blue screen appears, look towards the bottom of the screen. Windows will prompt you to **press F6 if you want to install a third part SCSI or RAID driver**. Please press the **F6** key at this time.

2. The setup procedure will continue, and will later instruct you to press the "**S**" key to specify additional adapters. Please press the "**S**" key at that time.
3. Then the setup program will prompt you to insert the driver diskette. Please insert the driver diskette, and then press **ENTER** to continue.
4. The following window will display several driver options.

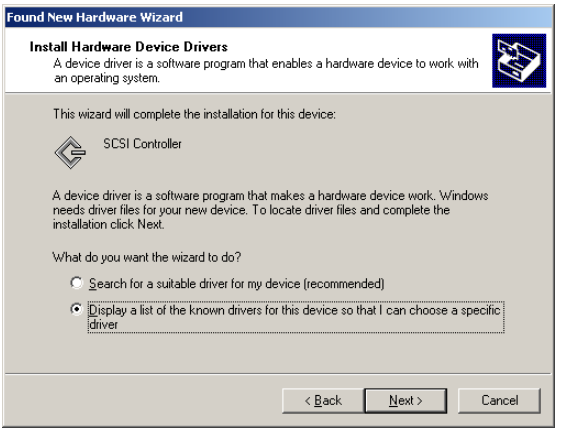
5. Please select the **RocketRAID 182x/181x SATA Controller for Windows 2000** option, and press **ENTER** to continue Windows 2000 setup.

Installing the RocketRAID 1810A driver for an existing Windows 2000 system

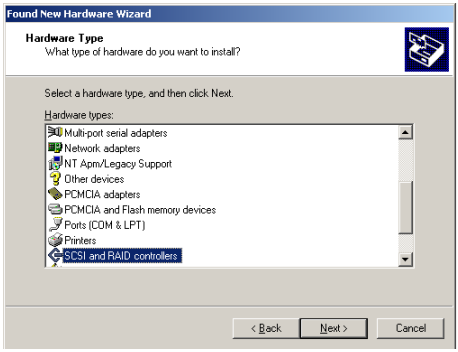
After Windows 2000 has started, the system will automatically find the newly installed adapter and ask you to install its driver. Please follow these steps to install the driver:

1. When the **Found New Hardware Wizard** window appears, click **Next** to continue.

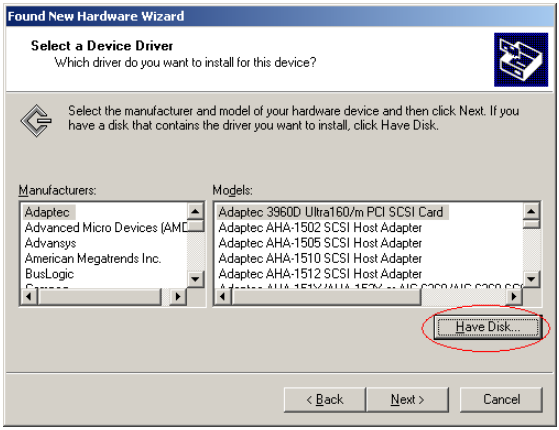
2. In the follow-up window, select **Display a list. . .** and then click **Next** to continue.



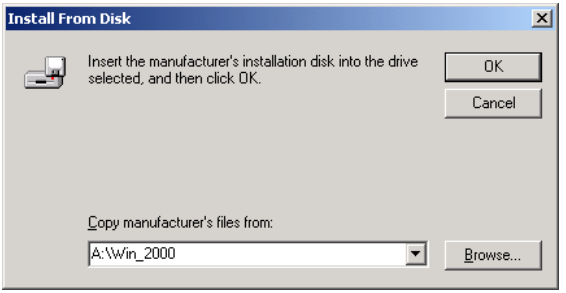
3. Select **SCSI and RAID controllers** in the hardware type list, and then click **Next** to continue.



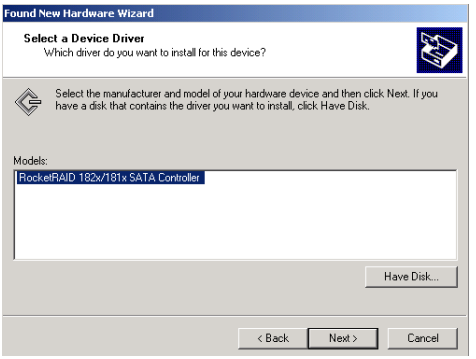
4. In the following window, click **Have Disk...** to continue.



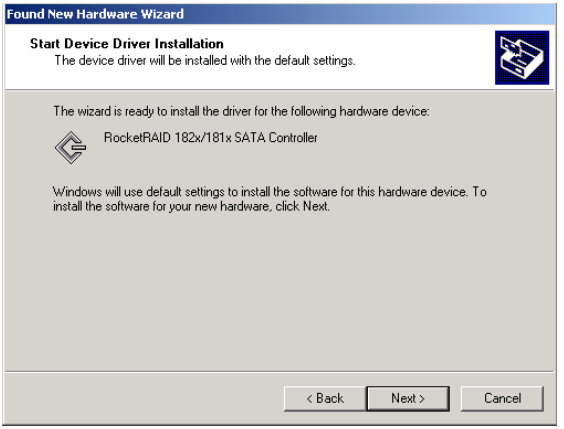
5. Insert the RocketRAID 1810A installation disk into the drive selected, then click **Browse** to find the driver under the installation folder (A:\Win_2000). Click **OK** to continue.



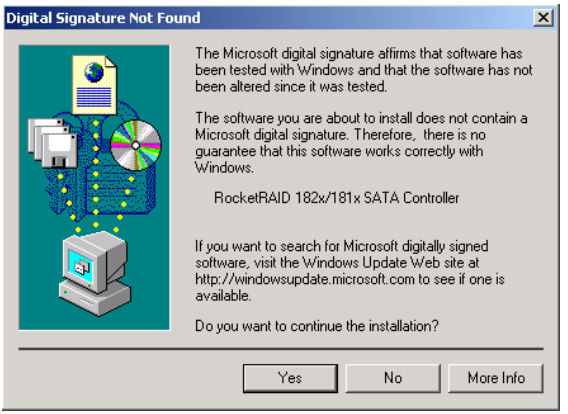
6. Select **RocketRAID 182x/181x SATA Controller**. Click **Next** to continue.



7. Click **Next** to continue.

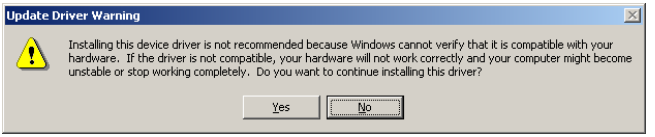


8. Click **Yes** to confirm the **Digital Signature Not Found** window when it appears.

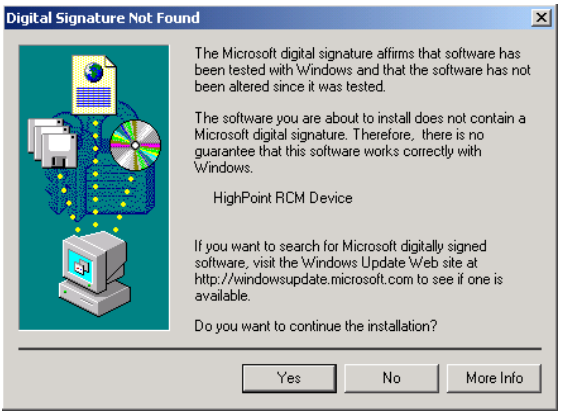


9. The Windows will find the **HighPoint RCM device**. Click **Finish** to continue.

10. Click **Yes** to restart the system to make the new settings take effect.



11. After rebooting, windows should detect the **HighPoint RCM Device**, click **Yes** to finish the installation.



Installation Verification

After the driver has been installed, and the computer has been restarted:

1. Right-click the **My Computer** icon, then select the **Properties** item from the menu.
2. In the pop-up window, select the **Hardware** item, and then click on the **Device Manager** button.

Double click the **SCSI and RAID controllers** item from this window. Two items as shown above should be displayed under the SCSI section-one for the **HighPoint RCM Device**, and another for the **RocketRAID 182x/181x SATA Controller**. If these items are not displayed, or there is "?" or "!" mark beside either of the entry, the driver has not

been properly installed. Delete these entries and reinstall the driver.

• Windows XP/2003

Installing the RocketRAID 1810A driver during Windows XP/2003 installation

1. Booting from the CD-ROM - when the **Windows XP/2003 Setup** blue screen appears, look towards the bottom of the screen. Windows will prompt you to press the **F6** key if you want to install a third part SCSI or RAID driver. Please press the **F6** key at this time.

2. The setup procedure will continue, and will later instruct you to press the "**S**" key to specify additional adapters. Please press the "**S**" key at that time.
3. Then the setup program will prompt you to insert the driver diskette. Please insert the driver diskette, and then press **ENTER** to continue.
4. The next window will display several driver options.

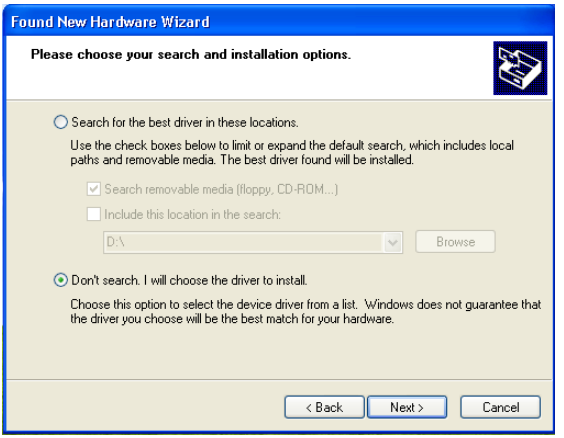
5. Please select the **RocketRAID 182x/181x SATA Controller for Windows XP/2003** option, and press **ENTER** to continue the installation of Windows XP/2003.

Installing the RocketRAID 1810A driver for an existing Windows XP/2003 system

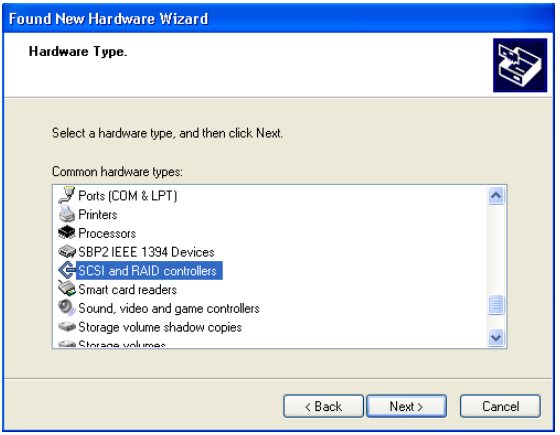
After the operating system has booted, Windows XP/2003 will automatically detect the newly installed adapter, and prompt you to install it's driver. Follow these steps to install the driver.

1. When the **Found New Hardware Wizard** window appears, select **Install from a list or specific location (Advanced)**, and click **Next** to continue.

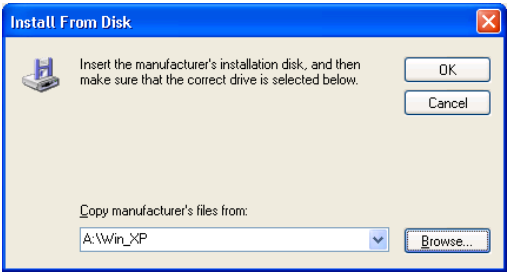
2. Click **Don't search...**, then click **Next** to continue.



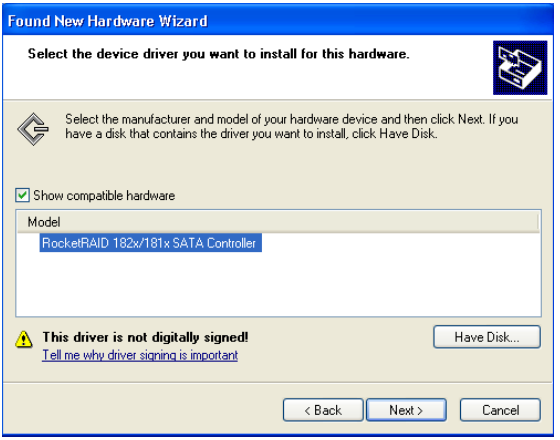
3. Select **SCSI and RAID controllers**, and click **Next** to continue.



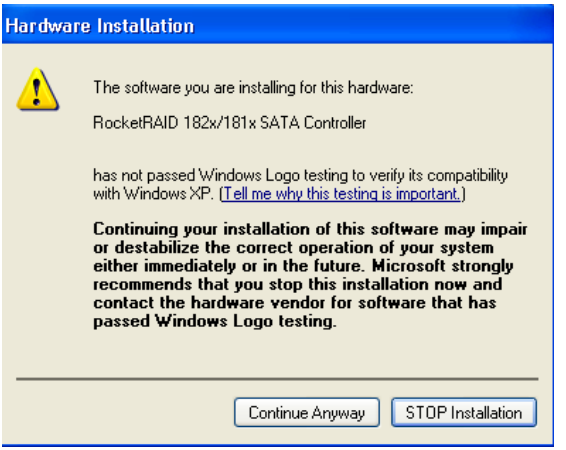
4. Insert the RocketRAID 1810A installation disk, then click **Have Disk** to find the driver under the installation path (A:\Win_XP). Click **OK** to continue.



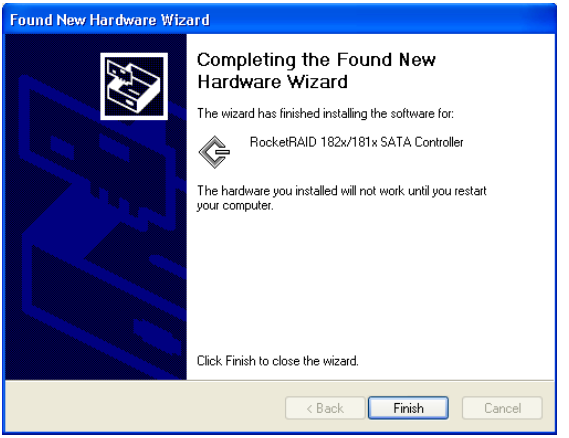
5. Select **RocketRAID 182x/181x SATA Controller**, then click **Next** to continue.



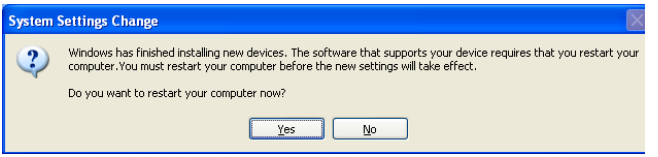
6. Click **Continue Anyway** to continue.



7. Click **Finish** to continue.



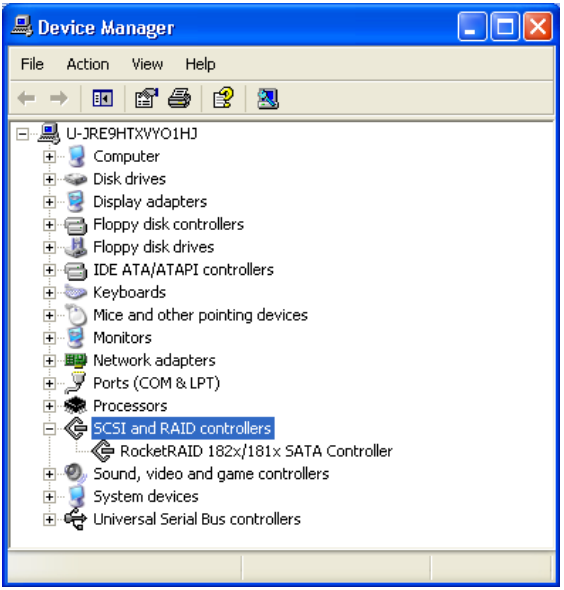
8. Click **Yes** to restart the computer to make the new settings take effect.



Installation Verification

After the driver has been installed, and the computer has been restarted:

1. Click the **Start** button, then right-click **My Computer** icon. Select **Properties** item from the pop-up menu.
2. In the pop-up window, select the **Hardware** tab and then click the **Device Manager** button.



Double click the **SCSI and RAID controllers** item. Make sure the item displayed above is listed under the SCSI section. If the device item is not displayed, or there is "?" or "!" mark near the entry, the driver has not been installed properly. Delete the item and reinstall the driver.

• Windows NT4.0

Installing the RocketRAID 1810A driver during Windows NT4.0 installation

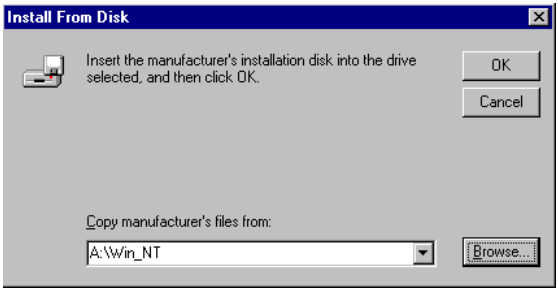
1. Press **F6** when the installation program prompts **Setup is inspecting your computer's hardware configuration**.
2. The setup procedure will continue, and will later instruct you to press the "**S**" key to specify additional adapters. Please press the "**S**" key at that time.
3. In the following window, select **Other**, then press the **ENTER** key to confirm.
4. Setup will then prompt you to insert the driver diskette. Insert the driver diskette, and press **ENTER** to continue.
5. In the following window, select **RocketRAID 182x/181x SATA Controller for Win-**

dows NT4.0, then press **ENTER**.

6. Press **ENTER** to confirm the devices to be installed and continue the installation of Windows NT4.0.

Installing the RocketRAID 1810A driver for an existing Windows NT 4.0 system:

1. Click **Start --> Settings --> Control Panel**, and then double-click on the **SCSI Adapters** icon.
2. A new window should be displayed - click on the **Driver** tab, then click the **Add** button.
3. In the next window, click the **Have Disk**... button. The following window will appear:

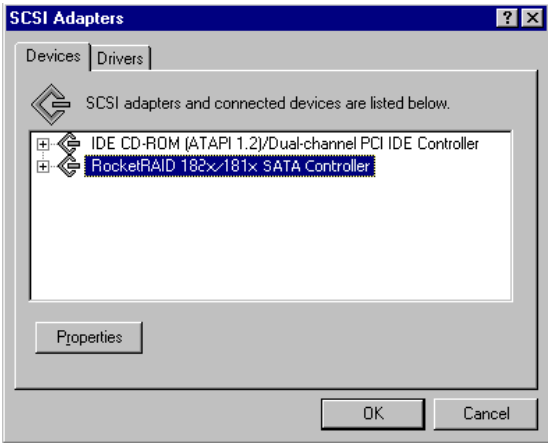


4. Insert the driver diskette, and type in the path of driver location: **A :\Win_NT** in the above window, then click **OK**.
5. In the following window, select the **RocketRAID 182x/181x SATA Controller** item, and then click **OK**.
6. Confirm the following system prompts to finish the driver installation. And then restart the computer.

Installation Verification

After the driver has been installed and the computer has been restarted:

1. Click **Start->Settings->Control Panel**, and then double-click on the **SCSI Adapters** icon.



2. Make sure the **RocketRAID 182x/181x SATA Controller** entry is displayed as shown above. This indicates that the driver has been successfully installed. If the entry is not displayed, or any "?" or "!" marks is displayed near the device entries, the driver has not been correctly installed. Delete these items, and reinstall the driver.

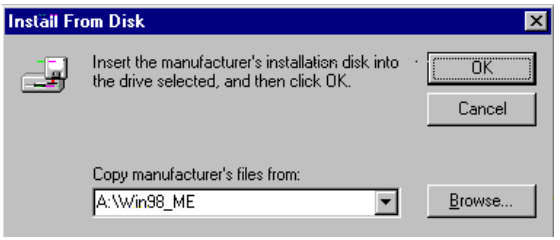
• Windows 9x/ME

Windows 9x/ME operating systems (Win95, 98, and ME) cannot be installed to hard disks or disk arrays attached to the RocketRAID 1810A host adapter. The RocketRAID 1810A can be used to add disk or array support to an existing Win9x/ME system, but the card's BIOS must be skipped when booting the system (Press the END key to skip the BIOS when the RocketRAID 1810A starts to Post).

After the operating system has booted, Windows will automatically detect the newly installed adapter, and prompt you to install its driver. Follow these steps to install the driver.

1. After the **Add New Hardware Wizard** window appears, press the **Next** button to continue.
2. In the follow-up window, select **Display a list. . .** and then click **Next** to continue.

3. Select **SCSI controllers** in the hardware type list, and then click **Next** to continue.
4. In the following window, click **Have Disk...** to continue.
5. Insert the RocketRAID 1810A installation disk into the drive selected, then click **Browse** to find the driver under the installation folder (A:\Win98_ME). Click **OK** to continue.

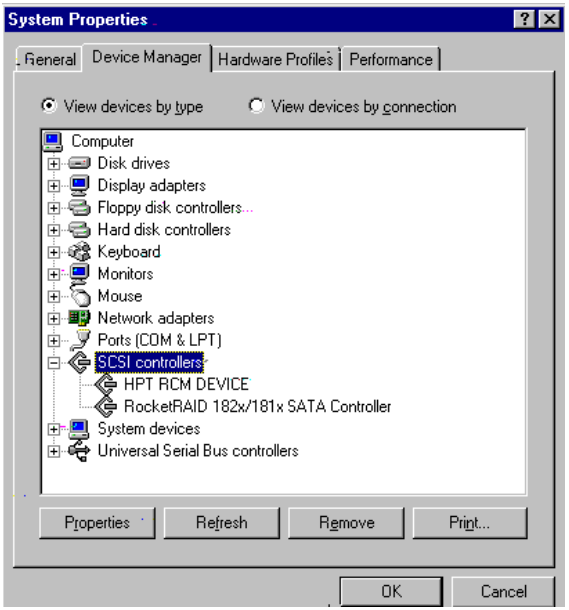


6. Select **RocketRAID 182x/181x SATA Controller**. Click **Next** to continue.
7. In the following window, click **Next** to continue.
8. Click **Finish** to continue.
9. Windows will display a prompt to restart the system. Click **Yes** to restart Windows.
10. After rebooting, Windows will automatically find the **HighPoint RCM device** and install its drivers.

Installation Verification

After the driver has been installed, and the system has been restarted:

1. Right-click on the **My Computer** icon on the desktop, and then select **Properties** from the menu.
2. From the pop-up window, click the **Device Manager** tab, as shown next page:



Double click the **SCSI controllers** entry. Two items should be displayed - one for the **RocketRAID 182x/181x SATA Controller**, and the other for the **HPT RCM DEVICE**. If any of these items is not displayed, or any "?" or "!" mark is displayed near the device icons, the driver had not been correctly installed. Delete these items, and reinstall the driver.
If both items are properly displayed, the driver has been installed correctly.

Note:
If the system is not restarted after driver installation, yellow "!" marks may displayed for the RocketRAID 1810A entries under Device Manager. Reboot the system and allow Windows to refresh these entries.

Chapter 3
BIOS Configuration Utility

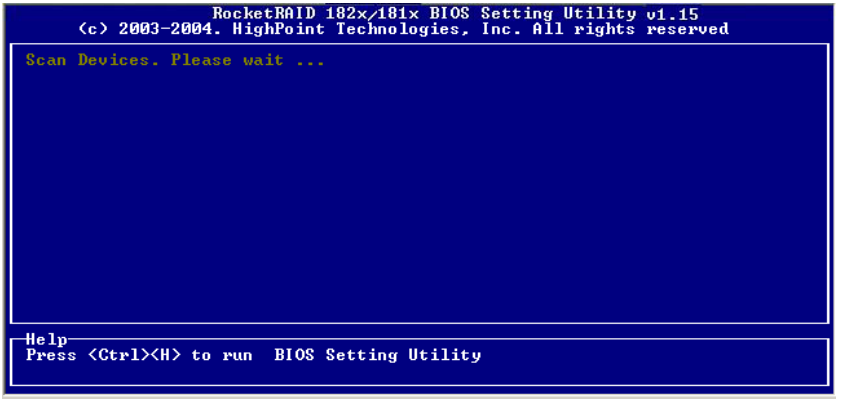
The RocketRAID 1810A includes a built-in BIOS configuration utility. This utility provides options to configure and manage hard disks or disk arrays connected to the RocketRAID 1810A host adapter. The BIOS configuration utility is especially useful when arrays must be created before an OS is installed.

Contents of this chapter:

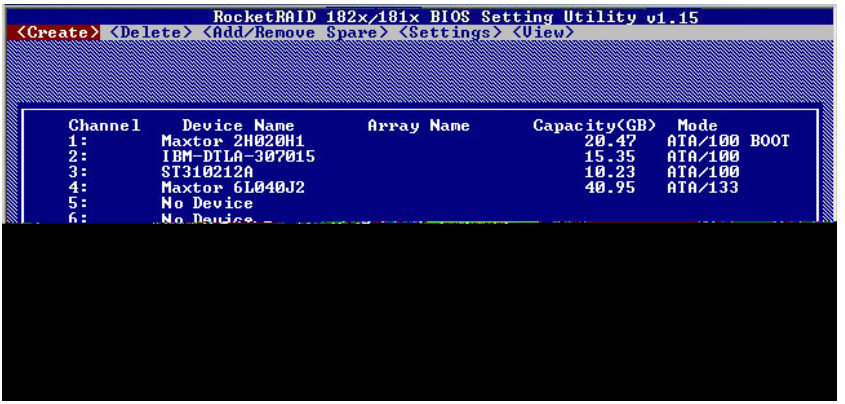
HighPoint

3.1 Enter BIOS Configuration Utility

When the following information appears on screen during boot up, press **CTRL+H** to enter BIOS configuration utility.



The main interface of the BIOS configuration utility is shown below:



Selecting the options in the main menu:

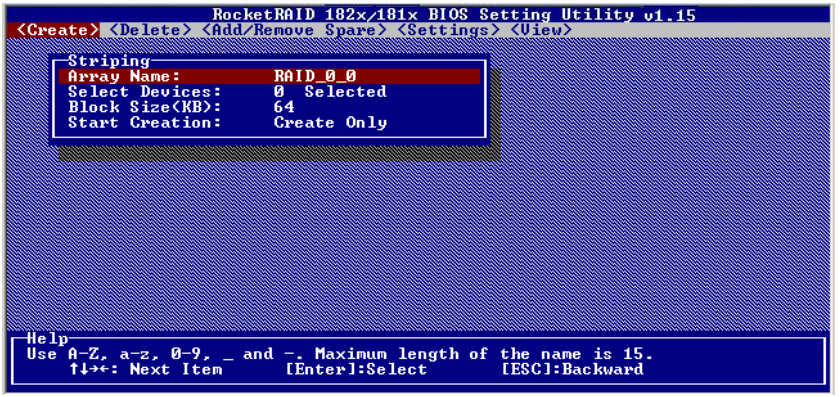
- Press **up**, **down**, **right**, **left** arrow to choose the item
- Press **Enter** to confirm your selection
- Press **ESC** to return to the previous menu. Press **ESC** at the main menu to exit the BIOS configuration utility.

3.2 Create Disk Array

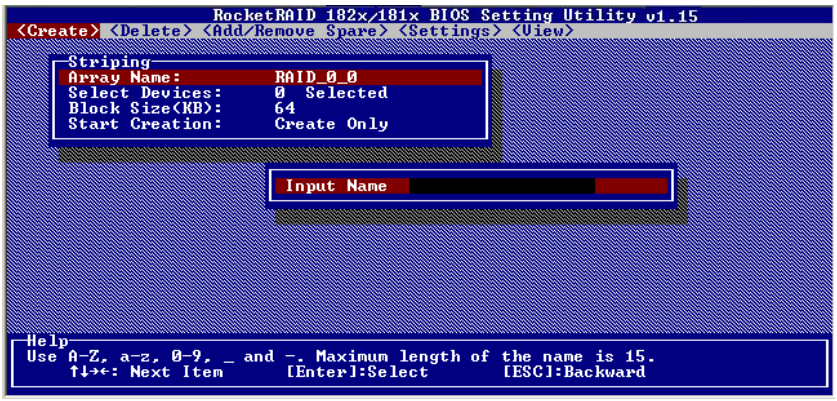
Follow these steps to create a disk array:

i. Within the main interface, use the arrow key to highlight the **Create** menu item and press **ENTER**, or the up and down arrow keys to display a list of available RAID levels.

ii. Use the arrow keys to highlight the target array mode that you want to create, and then press **ENTER** to confirm the selections, as shown below.



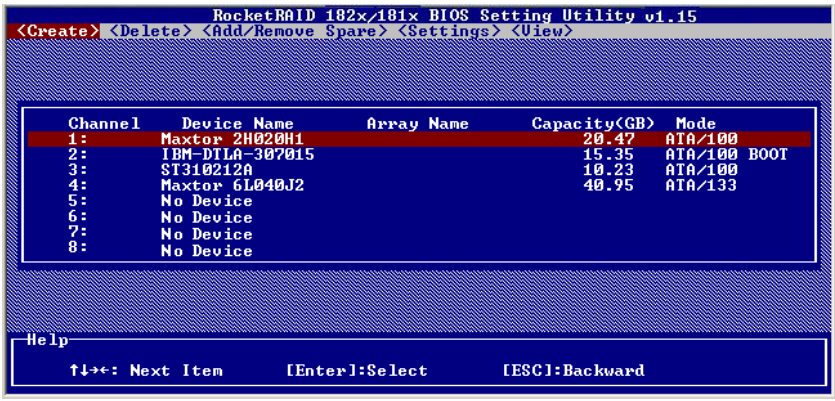
iii. On the **Create** menu, use the arrow key to highlight the **Array Name** option and press **ENTER**. The array name dialogue box will appear, as shown next page:



iv. Type a new name in the **Input Name** section, and press **ENTER** .

Note:
This feature is purely optional. If you decide not to name the array, the BIOS will use the default entry.

v. On the **Create** menu, use the arrow key to highlight the **Select Devices** item and press **ENTER**. The device list will appear, as shown below:

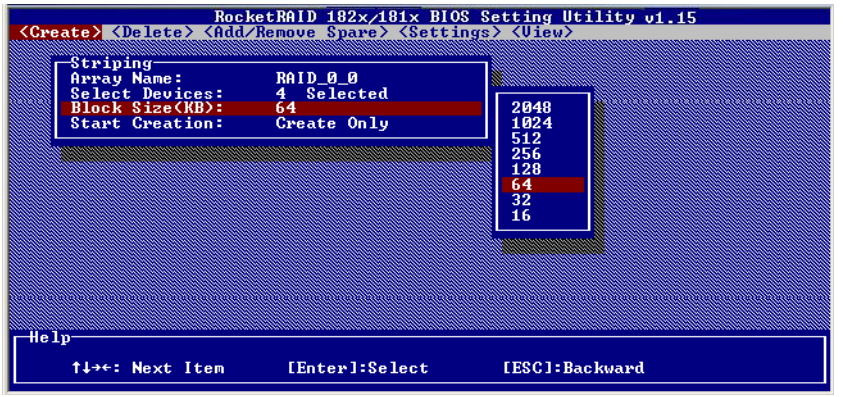


vi. Highlight the target disks that you want to use and press **ENTER** to select them. After all of the disks have been selected, press the **ESC** key to return to the **Create** menu.

vii. When creating a RAID 0,5 or 10 array in step 2, a block size must be specified. The default block size is 64K-a balanced setting suitable for most applications.

Note:

On the **Create** menu, use the arrow key to highlight the **Block Size** and press **ENTER**. Select a block size from the pop-up list. See the picture as shown below:



If you choose to create a RAID 1 array, the block size will be displayed as N/A. The block size option only applies to RAID 0, 5 and 10 arrays.

viii. On the **Create** menu, use the arrow key to highlight **Start Creation**, then press **ENTER**. A warning message will be displayed. See the picture as shown below:

ix. Pay close attention to the warning message. Press **Y** to finish the creation, or press **N** to cancel.

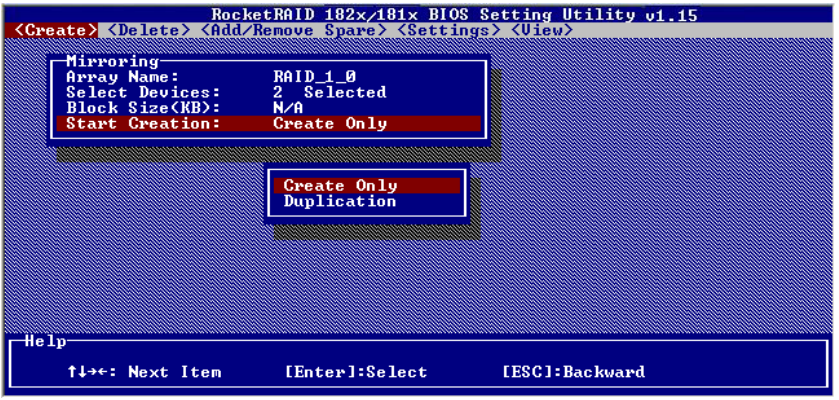
Note:

The warning message may vary depending on which type of array is created.

- Creation steps are different depending on the array mode: For RAID 0, RAID 10 and JBOD arrays, the only available creation option is **Create Only**, which will delete all

data on the selected disks.

- For a RAID 1 array, on the **Create** menu, use the arrow key to highlight **Start Creation** and press **ENTER**. A new submenu will appear, and display two options: **Create Only** and **Duplication**. See the picture as shown below:



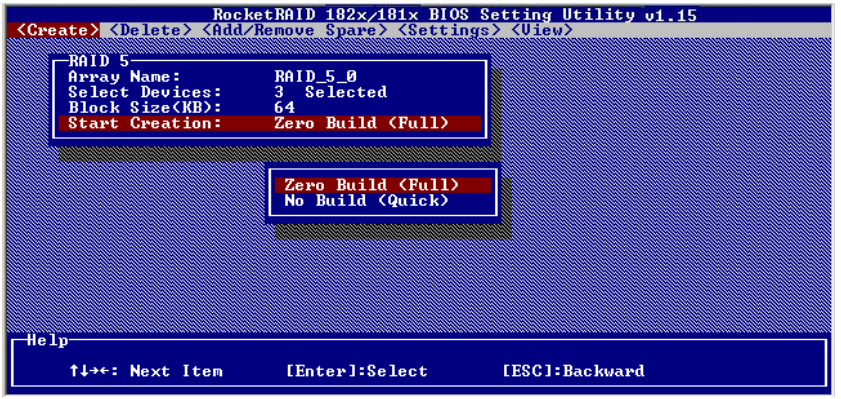
Create Only. The BIOS will destroy all data on the selected disks, and create a clean RAID 1 array.

Duplication. The BIOS will copy the data on the source disk (the first selected disk) onto the target disk (the second selected disk) when creating the RAID 1 array. When you select this item, the capacity of the target disk must be equal to or larger than that of the source disk.

Note:

1. If choose "Create Only", will quicken the creation, while choose "Duplication" must spend time to duplicate HDD from the first HDD to the second HDD.
2. You is suggested to choose "Duplication" to make sure the data can be match.

- For a RAID 5 array: on the **Create** menu, use the arrow key to highlight **Start Creation** and press **ENTER**. An option list will appear, displaying two creation options: **Zero Build**, and **No Build**. See the picture as shown next page:



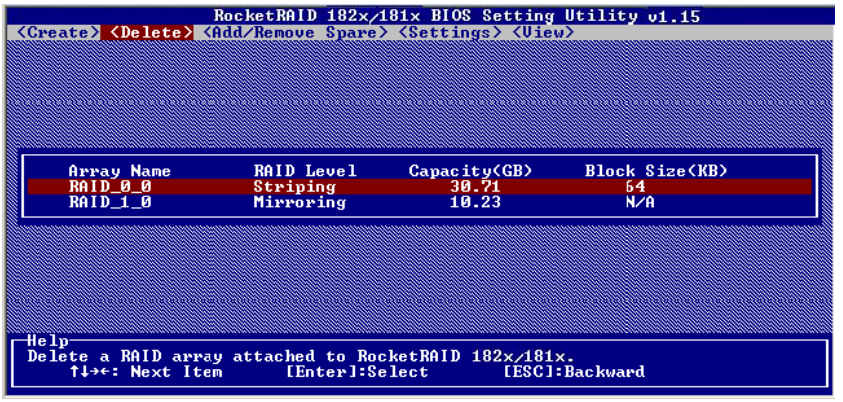
Zero Build (Full). This method requires every stripe in the RAID 5 array to be zeroed out. Note that, the result of an XOR on a set of zeros is also zero. Consequently this method of initialization permits parity to be determined and written to disks during the regular operation of the array (in response to write operations) using the “read-modify-write” method. This method owns fully security, but you will spend more time (It depends on total capacity of all RAID member disks).

No Build (Quick). This method assumes that a RAID 5 array is already in a consistent state with respect to the parity information contained in it. This is an initialization method that is typically employed in scenarios where the data and parity in the disks comprising an array are in a consistent state. For instance, all drives may be zeroed out already by the manufacturer, and are suitable for initialization by the means of no build (such as new, unused factory hard disks). This method is unsuitable for use when data in the disks used for building the array cannot be relied upon to be in a consistent state, i.e., the parity data is comprised of invalid values. This method is quicker than "Zero Build (Full)". But it owns low security. We suggest you must run "Very an array" under the HighPoint RAD management software for OS. If you choose "No Build (Quick)" and not runs "Verify an array" under the HighPoint RAID management software for OS, this RAID 5 array has NONE security.

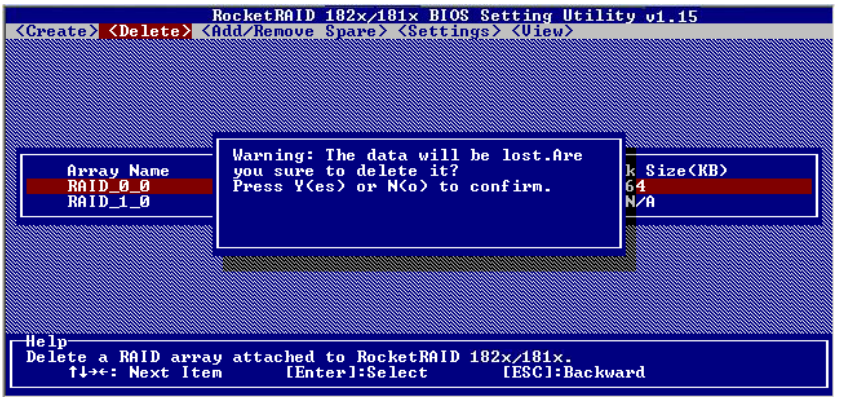
3.3 Delete Disk Array

Follow these steps to delete a disk array:

Within the main interface, use the arrow key to highlight the **Delete** menu item and press **ENTER**, or up and down arrow to display a list of available arrays. See the picture as shown below:

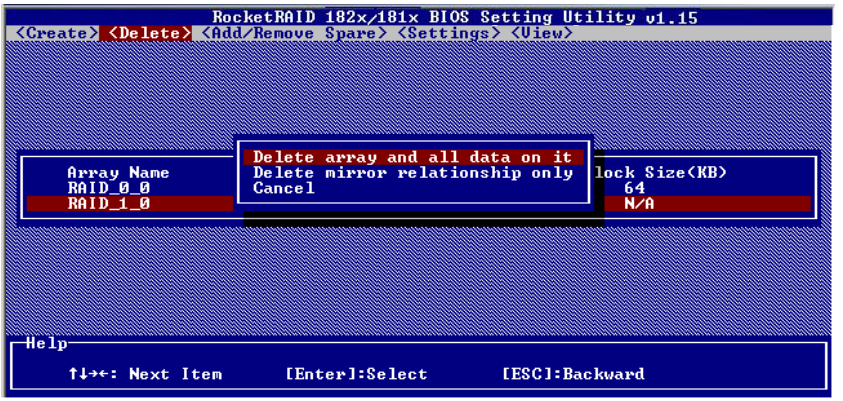


i. Highlight the target array and press **ENTER**. A warning message will appear. See the picture as shown below:



Pay close attention to the warning message. Press **Y** to delete the selected array, or press **N** to cancel. After you have confirmed this selection, all data on the array will be lost.

Note:
When you want to delete a RAID 1 array, highlight the target array and press **ENTER**. An option list will appear, displaying 3 options. See the picture as shown below:



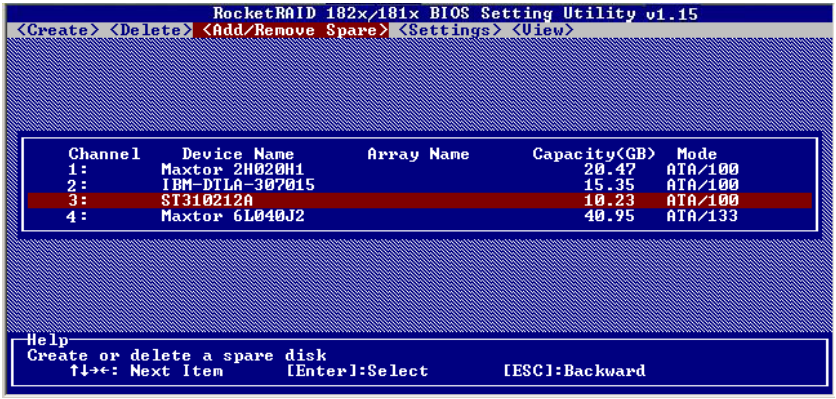
Delete array and all data on it: The array and all data on it will be deleted.
Delete mirror relationship only: The array relationship will be deleted - the disks will now be listed as single drives. The data on each of the disks will be left intact.
Cancel: Cancel the deletion and return to the previous window.

3.4 Add/Remove Spare Disk

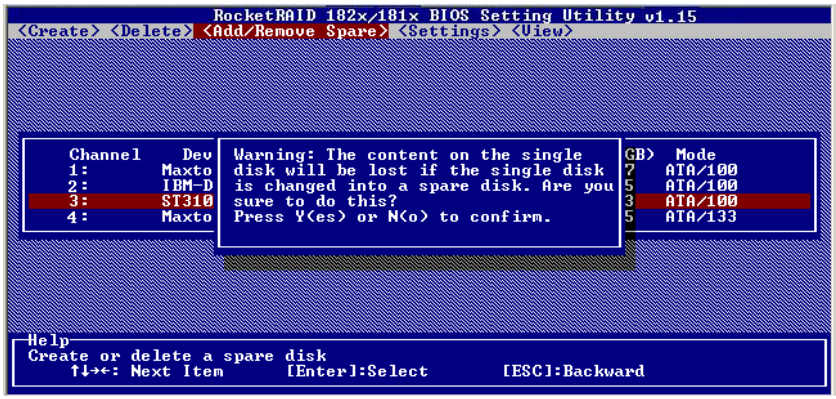
A spare disk is available to substitute for any failed disk in a broken array. RAID 1, RAID 10 and RAID 5 provide different methods to reconstruct a broken array. If a RAID 1 or a RAID 10 array is broken, data is reconstructed by simply copying data of the surviving disks into the spare disk. If a RAID 5 array is broken, the surviving disks have the parity information needed to reconstruct the data onto the replacement disk. You can specify one or more hard disks to act as spare disks.

Follow these steps to add or delete a spare disk from the spare pool:

i. Within the main interface, use the arrow key to highlight the **Add/Remove Spare** menu and press **ENTER**, or the up and down arrows to display a list of available singe disks. See the picture as shown next page:



ii. Use the arrow key to highlight the target disk and press **ENTER** to add it to the spare pool. A warning message will appear:



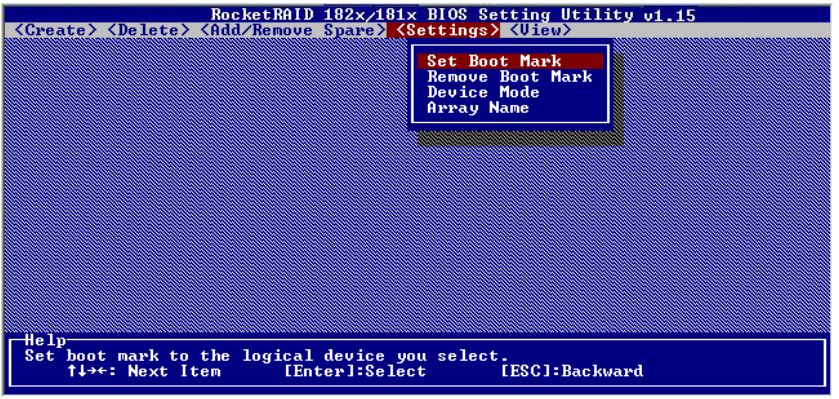
Pay close attention to the warning message. Press **Y** to add spare, or press **N** to cancel. After you have confirmed this selection, all data on the disk you selected will be lost.

iii. Use the arrow key to highlight the target spare disk and press **ENTER** to remove it from the spare pool.

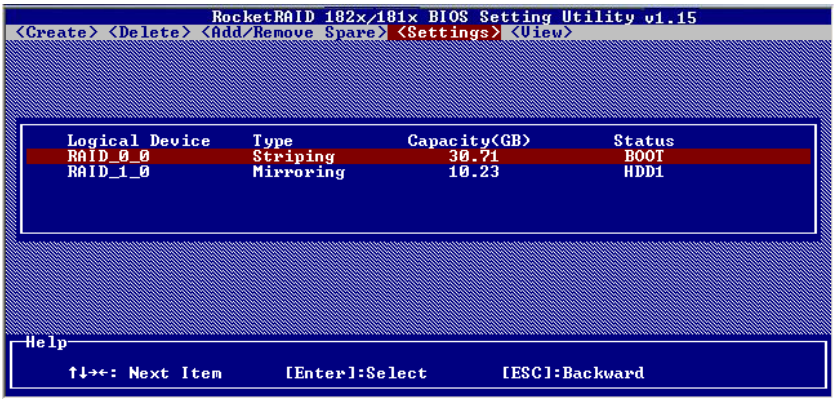
3.5 Set/Remove Boot Mark

Follow these steps to set a disk or a disk array as a boot device or remove the boot mark:

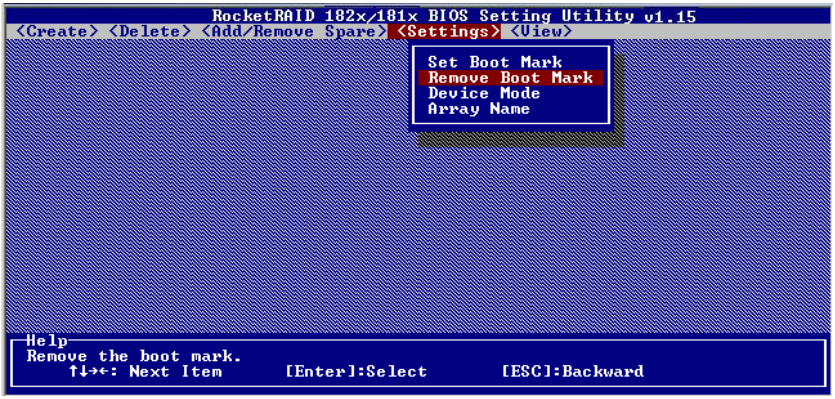
Within the main interface, use the arrow key to highlight the **Settings** menu and press **ENTER**, or the up and down arrows to open the **Settings** menu. See the picture as shown below:



i. On the **Settings** menu, use the arrow key to highlight the **Set Boot Mark** option and press **ENTER** to display the list of logical devices. Use the arrow key to highlight the target logical disk, and press **ENTER** to set it as the boot device. See the picture as shown below:



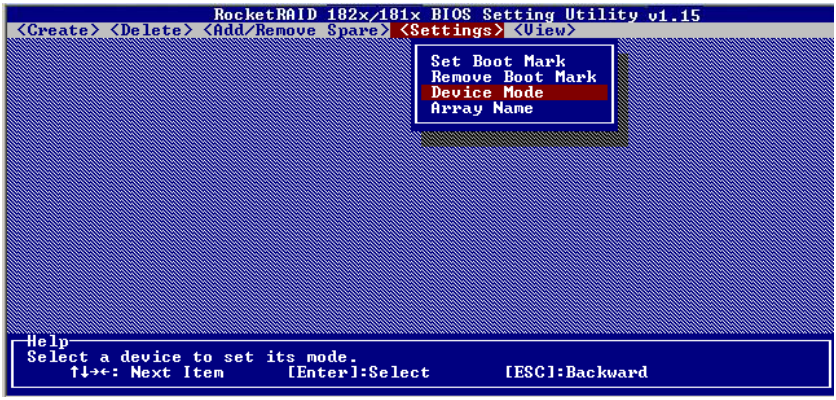
ii. On the **Settings** menu, use the arrow key to highlight the **Remove Boot Mark** option. See the picture as shown next page:



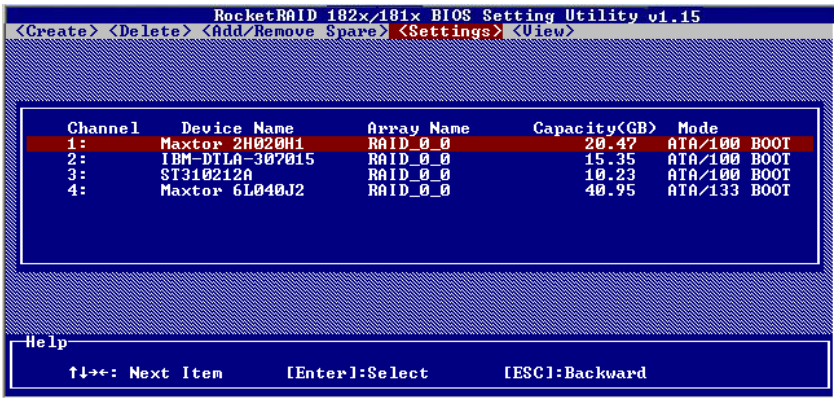
Press **ENTER,** then the boot mark will be cancelled.

3.6 Set Device Mode

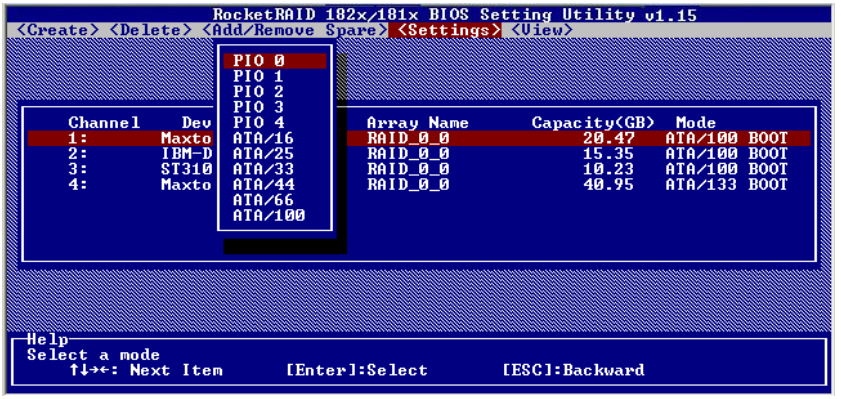
i. On the **Settings** menu, use the arrow key to highlight the **Device Mode** option, as shown below.



ii. Press **ENTER** to display the list of physical devices.



iii. Use the arrow key to highlight the target disk and press **ENTER**, then select the **Device Mode** option on the **Settings** menu.

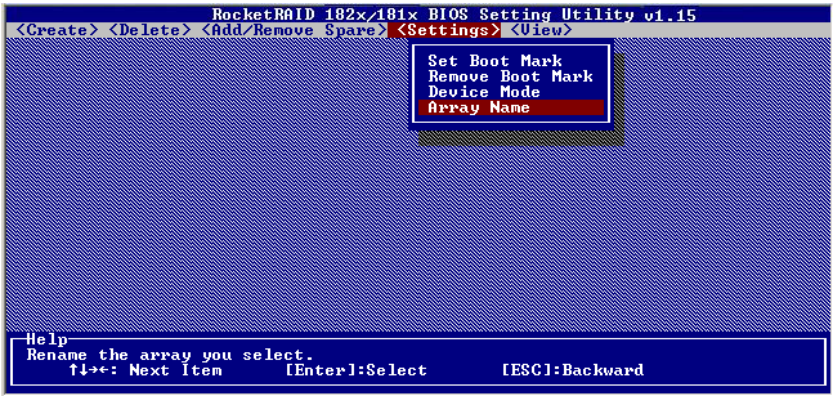


Note:

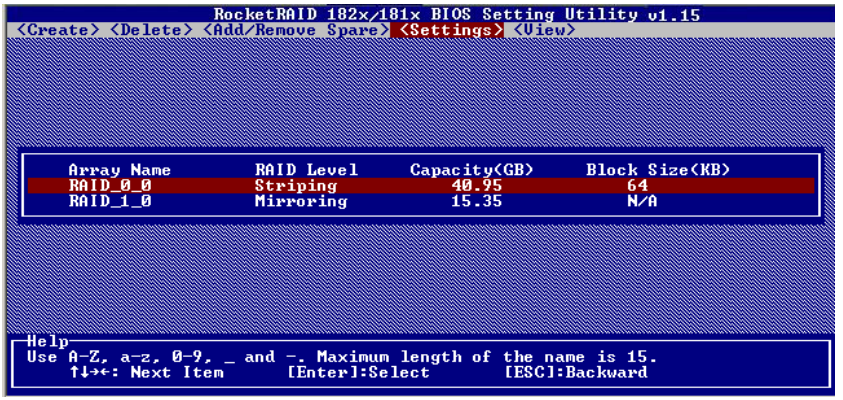
The RocketRAID 1810A automatically detects and assigns the correct hard disk mode setting-we do not recommend changing the default value.

3.7 Rename Array

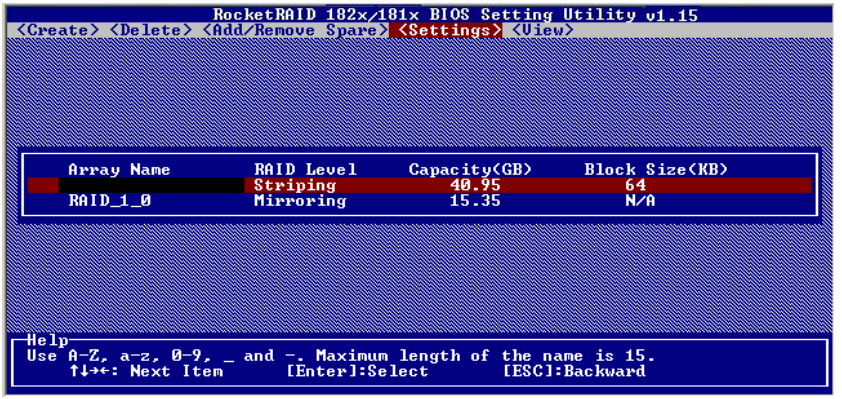
i. On the **Settings** menu, use the arrow key to highlight the **Array Name** option.



ii. Press **ENTER** to display the list of arrays.

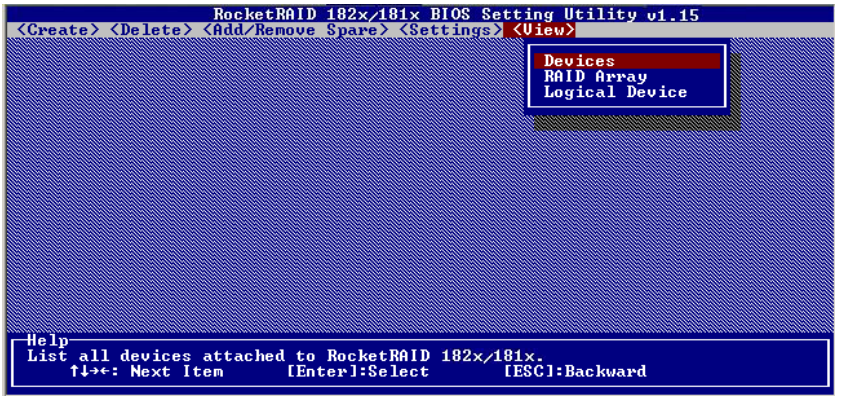


iii. Use the arrow key to highlight the target array and press **ENTER**. Type a new name for the array in the black textbox, then press **ENTER** to confirm.



3.8 View Information

i. Within the main interface, use the arrow key to highlight the **View** menu, then press **ENTER** or the up and down arrows to open the menu. This menu displays three options: **Devices**, **RAID Array** and **Logical Device**.



ii. Select an option, then press **Enter** to display the corresponding information.

Devices: Displays information about all the physical devices attached to the RocketRAID 1810A adapter.

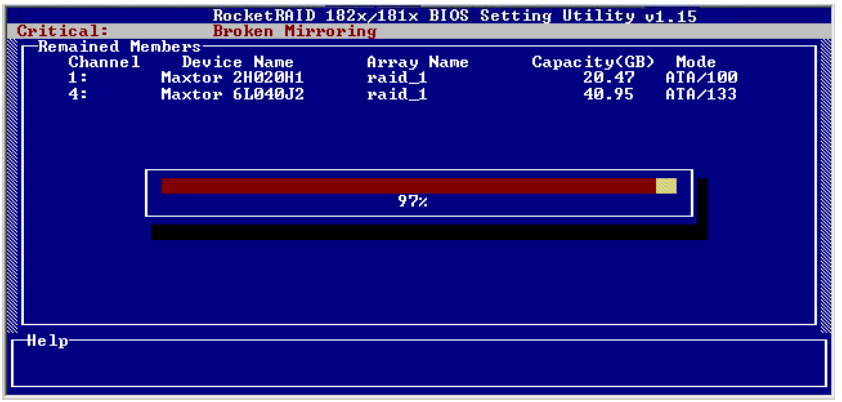
RAID Array: Displays information about all arrays.

Logical Device: Displays information about the logical devices, which are visible under the OS.

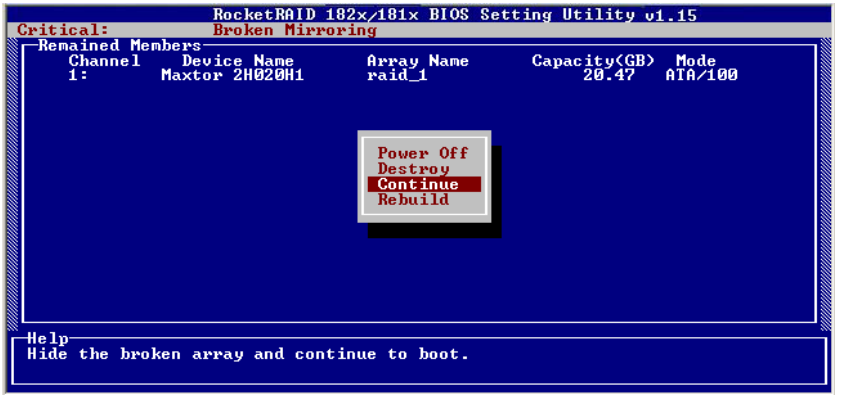
3.9 Rebuild Broken RAID 1, RAID 10 and RAID 5 Array

An array is broken when it loses one or more members. When the BIOS detects a broken RAID 1, 10 or RAID 5 array, it will do the following:

i. If one spare disk is available, the BIOS will automatically use it to rebuild the broken array. If multiple hard disks are available, the BIOS will automatically select the closest match to the original disk. During the process of rebuilding, the following window will be displayed:



ii. If no suitable spare disk can be used to rebuild when the BIOS has detected that a RAID 1, 10 or 5 array is broken, the BIOS will provide several options to solve the problem. See the picture as shown below:



1. Power off
This option enables you to power off the computer and replace the failed disk with a replacement disk.

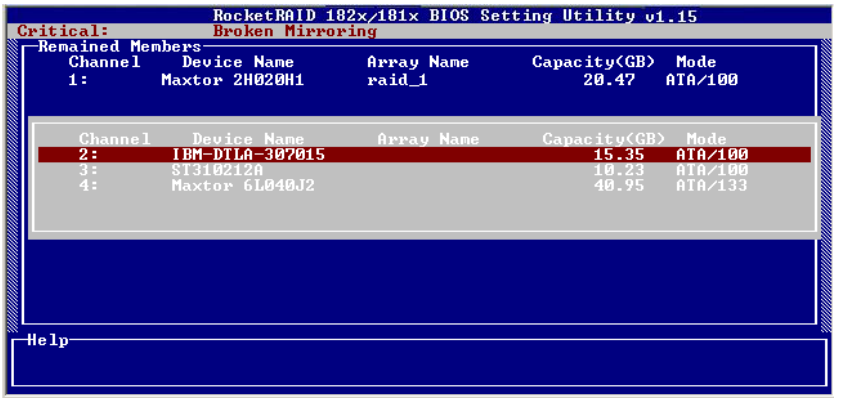
Note:
If your computer does not support APM, you must turn off your computer manually.

2. Destroy
This option allows you to delete the broken array. For broken RAID 1 arrays, the data on the surviving disk will be preserved after the destroy operation (see section 3.3). If you select this option for broken RAID 10 , RAID 5, JBOD, or RAID 0 array, all data on the array will be lost.

3. Continue
This option allows you to skip the problem, and boot into the OS.

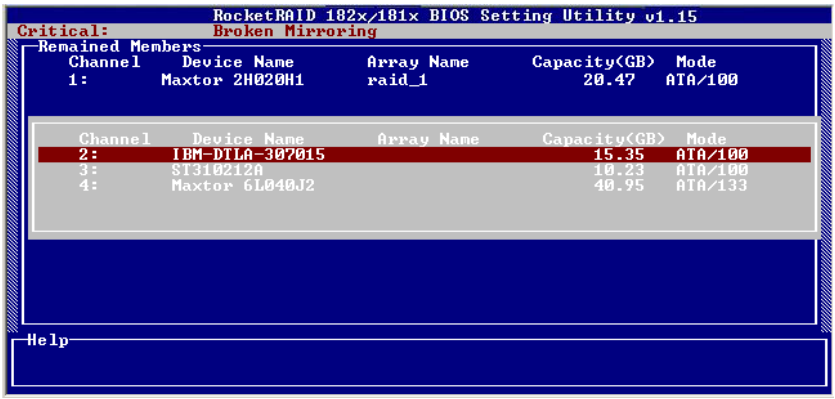
4. Rebuild
This option allows you to select another single disk attached to the controller to rebuild the broken array.

i. After selecting this menu item, a list of single disks will be displayed. See the image below:



ii. Choose the target disk and press **ENTER** to rebuild the array.

Warning: All data on the selected disk will be destroyed, then the BIOS will start the rebuild process. See the picture as shown next page:



Note:

If possible, we recommend that you boot the system, and use our RAID Management software to rebuild the array. The software can rebuild arrays many times faster than the BIOS utility.

Please refer to chapter 4 for detailed instructions.

Chapter 4
HighPoint ATA RAID Software

This chapter describes how to use HighPoint RAID Management (H.R.M.) software in detail.

Contents of this chapter:

HighPoint

4.1 Introduction

The HighPoint RAID Management Software is composed of two separate utilities: HighPoint RAID Management Console and HighPoint RAID Management Service.

To simplify this guide, we will refer to the **Management Console** and **Service Manager**, and the HighPoint RAID Management Service as the **Management Service**.

Additionally, the system that hosts the Management Console may be referred to as the **administrative system**, and the system that hosts the Service Manager may be referred to as the **remote system.**

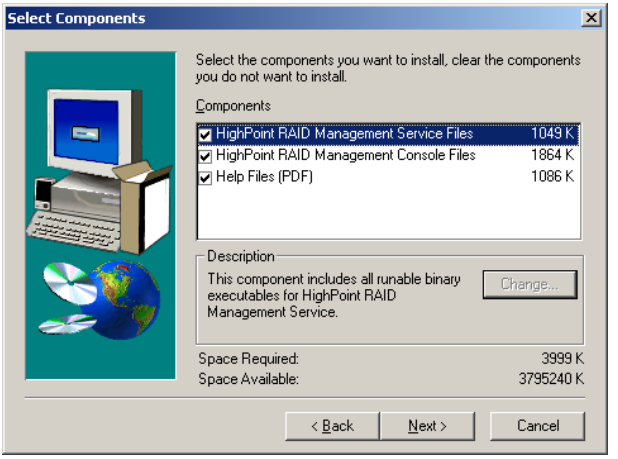
The Management Console can be installed to any computer, and is used to monitor and control RAID configurations utilized by other computers (remote systems). From the Management Console, you can monitor one or more of these remote systems. The software can be used to create, monitor, delete, or modify various types of RAID arrays, including RAID 0, RAID 1, RAID 10, RAID 5 and JBOD.

The Service Manager is designed to run continually on computers that utilize one or more HighPoint ATA RAID controller. It is designed to receive and carry out commands issued by the Management Console: logging events, executing scheduled tasks, and creating or rebuilding RAID arrays.

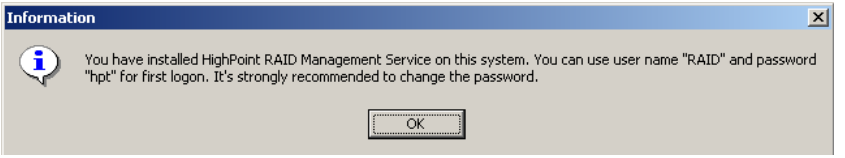
4.2 Installation

Follow these steps to install the Serial ATA RAID software under Windows:

1. Insert the HighPoint Serial ATA RAID Management Software setup floppy diskette 1# into your floppy drive, and double click the setup.exe icon to start the installation procedure. When prompted, insert the remaining disks, and follow the instructions displayed by the setup program.
2. Confirm the follow-up dialogue windows to finish the installation.
3. You can install both the Management Console and the Service Manager to a single computer, or install the Management Console to one computer, and the Service Manager to another (or several others). You can access the Service Manager through the Management Console software. See the picture as shown next page:



Click **Next** to continue.



Click **OK** to continue.

Click **Finish** to complete setup.

Note:
It is strongly recommended to exit all windows programs before running this setup program.

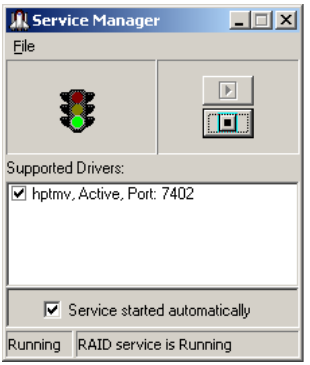
4.3 Get Started

With the default option selected, the setup program will create a program group. Click **Start->Programs->HighPoint RAID Management Software**, the following items should be displayed:

Management Console	For the remote systems (or any system using a HighPoint RAID controller)
Service Manager	For the administrative system
Uninstall...	Uninstall the program

1. Starting the management service

When you click the **Service Manager** option, the  icon will appear at the bottom right-hand corner of the system's desktop. Double-click the icon to open the main interface of the Service Manager:

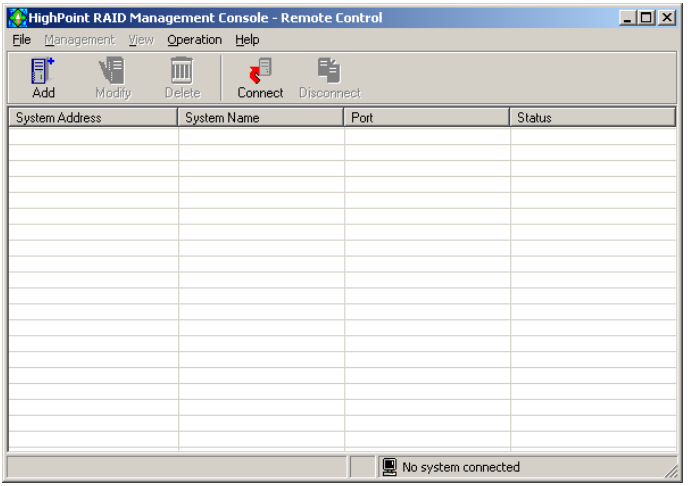


The colored traffic lights represent the Service's status. The () button can be used to activate or disable the Server Side software. A green light indicates RAID service is started. A red light indicates RAID service is disabled. Check the **Service started automatically** option, so that each time the system is launched, the RAID service will be started.

2. Starting the management console

When you click the **Management Console** option, the icon will appear at the bottom right-hand corner of the system's desktop. At the same time, the main interface of the Management Console software appears on the desktop.

The main interface has five menus: **File**, **Management**, **View**, **Operation** and **Help**. Click on the different menu to activate the different commands. See the picture as shown below:



File: This menu includes five submenus: **Remote Control**, **System Configuration**, **User Management**, **Password** and **Exit**. Click the **Exit** button to exit Serial ATA RAID software.

Management: This menu includes six submenus: **Array Management**, **Device Management**, **Spare Management**, **Event Notification**, **Task Schedule Management** and **Refresh**.

View: This menu includes two submenus: **Event View** and **Icon View**. The system will display the connection status of all the attached disks or disk arrays. The Event View window will display all of the events recorded while the software is running. The Icon View window explains the functions of the various icons used by the software.

Operation: This menu includes seven submenus: **Create**, **Delete**, **Rename**, **Add Disk**, **Verify**, **Rebuild**, and **Abort**.

Help: Click this menu to view the **Help Topics** or the version information **About** this HighPoint RAID Management software.
The help feature summarizes the functions of this software, and includes a topic search option.

4.4 Use the Software

• The File menu

This software allows you to connect to remote computers that utilize HighPoint RAID controllers over the Internet connection. After verifying the system's name and password, the software can be used to monitor, repair or modify existing RAID arrays utilized by the remote system. The software can also be used to modify user information and the Management Service's configuration.

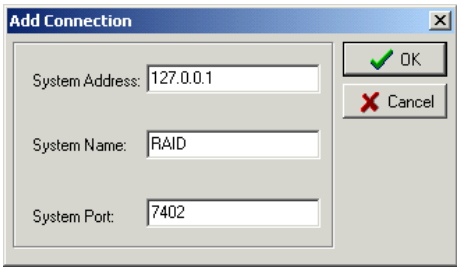
1. Remote Control

Click on the **File** menu, select the **Remote Control** option and press **Enter** to open the **Remote Control** Window.

a) Add a connection

This option is used to add a new system to the **Remote Control** window. Systems added to the **Remote Control** window automatically appear each time the program is launched.

Click the **Add** button on the toolbar in the **Remote Control** window to add a new system. See the picture as shown below:



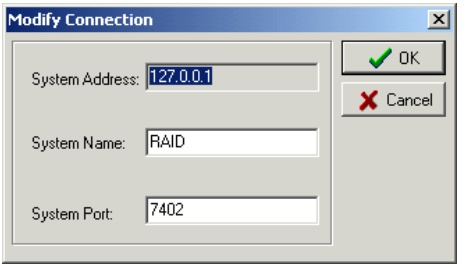
Enter the remote system's address, name and port information into the appropriate fields, then click **OK**. Make sure the Address and Port information are correct - the software will be unable to connect to the remote system if any information is left out.

Note:
If you do not need to connect to a remote system, and only need to operate the arrays attached to the local system, choose to add a new system, and enter the following information into the appropriate fields:

System Address: 127.0.0.1
System Name: RAID (must be capitalized)
System Port: 7402

b) Modify a connection

This option is used to modify the connection information (the name and port). First, select one connection from the connection list, and then click the **Modify** button on the toolbar, or click on the **Operation** menu and select the **Modify** option to open a **Modify Connection** window. See the picture as shown below:



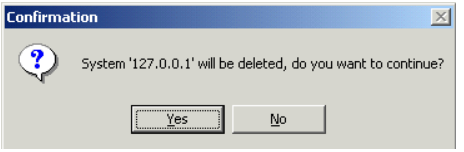
After modifying the system name and system port information, click **OK**.

Note:

1. The **System Address** information is grayed and cannot be modified. In order to modify this item, the connection must be deleted and recreated.
2. Make sure the connection is inactive. It must be disconnected before it can be modified.

c) Delete a connection

This option is used to delete a connection. First, select one connection from the connection list, and then click the **Delete** button on the toolbar, or click on the **Operation** menu and select the **Delete** option. A confirmation window will be displayed. See the picture as shown below:



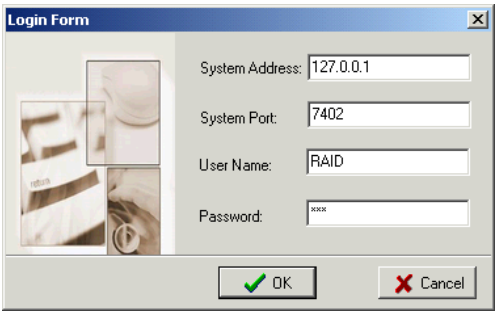
Click **Yes** to delete the selected connection, or **No** to cancel.

Note:

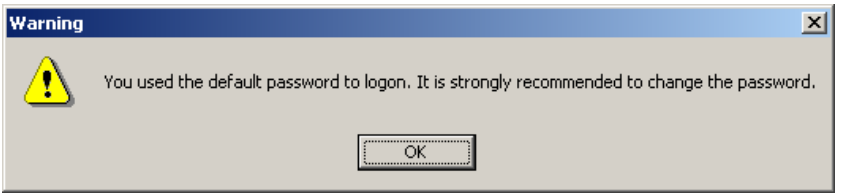
Make sure the connection is inactive - it must be disconnected before it can be deleted from the connection list.

d) Connect to a remote system

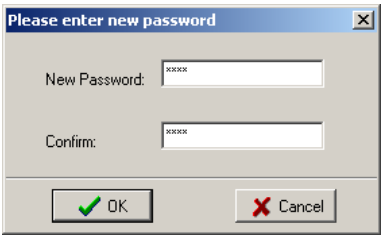
Click the **Connect** button on the tool bar, or click on the **Operation** menu and select the **Connect** option. You can also double-click the desired connection from the connection list to start this operation. A new window will be displayed. See the picture as shown below:



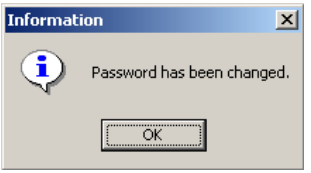
Enter the different values in the above fields, and then click **OK** to display the warning message, or **Cancel** to cancel this operation. See the picture as shown below:



Click **OK** to change the default password. See the picture as shown below:



Click **OK** to display the information. See the picture as shown next page:



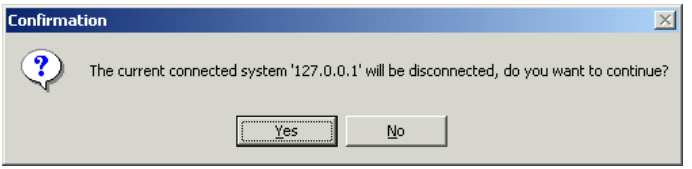
Click OK to connect to the selected system.

System Address: 127.0.0.1 (this value can also be changed to the address you want to connect to)
System Port: 7402
User Name: "RAID" (must be capitalized)
Password: "hpt" (must be lowercase)

1. You can only connect to one remote system at a time. Be sure to break the previous connection before attempting to connect to another system.

e) Disconnecting a remote system

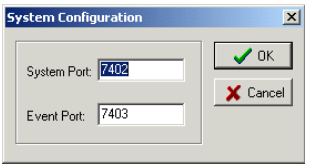
To disconnect a remote system, click the **Remote Control** command on the **File** menu, then click the **Disconnect** button on the toolbar to display a new window. See the picture as shown below:



Click **Yes** to disconnect the remote system, or **No** to cancel.

2. Remote System Configuration

Click on the **File** menu, and select the **System Configuration** option to display the following window.



You can modify the values in the **System Port** and **Event Port** fields.

a) System Port

When connecting to the remote system, make sure the port value is correct. The default value is 7402 - this may be changed.

b) Event Port

The Management Console software retrieves event information through this port. The default value is 7403 - make sure this value is not the same as the system port value.

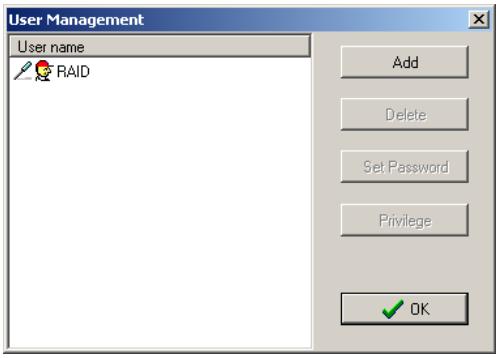
After setting up the system configuration, you must exit and restart the software to make the changes take effect.

Note:

1. If some firewall has been installed to your system, when you connect to a remote system, the system port may be disabled so that the connection may be failed. In this case, please open your system port manually in the firewall.
2. If the system is only used under the intranet, please check the port 7402 and 7403 to ensure these ports have been closed by the firewall.

3. User Management

Click on the **File** menu, and select **User Management** option to open the following window.

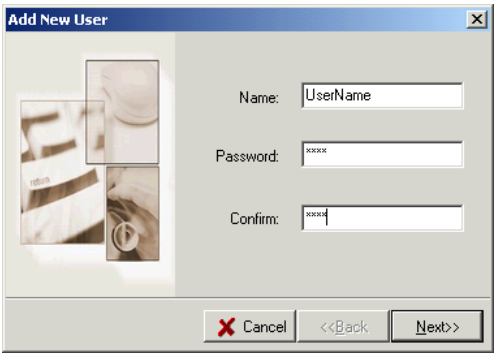


The **User Management** window displays information about all valid user accounts, and provides options to add, delete or modify user information.

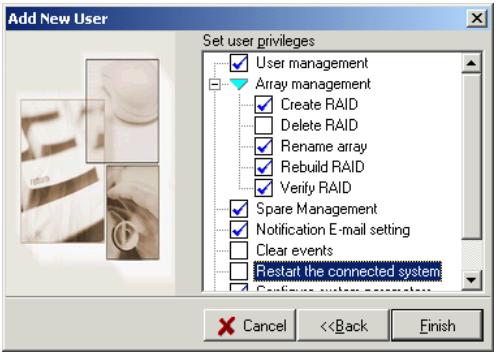
a) Add a user

Follow these steps to add a new user:

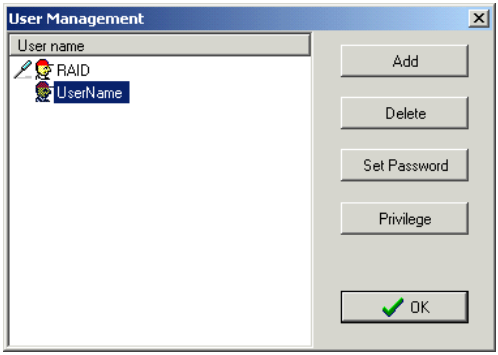
1) Click the **Add** button and enter a user name and password. Confirm this password, and then the **Next** . See the picture as shown next page:



2) Click the **Privilege** button, and select the appropriate security privileges. Click **Finish**. See the picture as shown below:

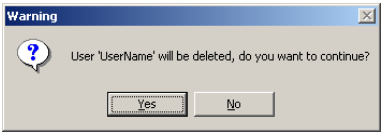


3) Once a new user has been successfully added, the user's entry will appear in the **User Management** window.



b) Delete a user

Select a user entry from the **User Management** window, and click the **Delete** button. Then the selected user will be deleted.



Click **Yes** to delete the selected user.

Note:

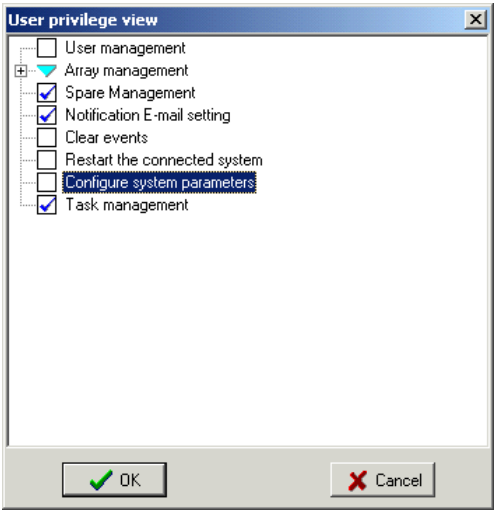
Make sure the selected user is not connected to the remote computer - the **Delete** option will be disabled if you are connected to the system.

c) Changing a user's password

Select a user entry from the **User Management** window, and click the **Set Password** button. You can also click on the **File** menu, and then select the **Password** option. Enter the new password and click **OK** to confirm or **Cancel** to cancel this operation.

d) Change a user's privilege level

Select a user entry from the **User Management** window, and click the **Privilege** button to display the following window:



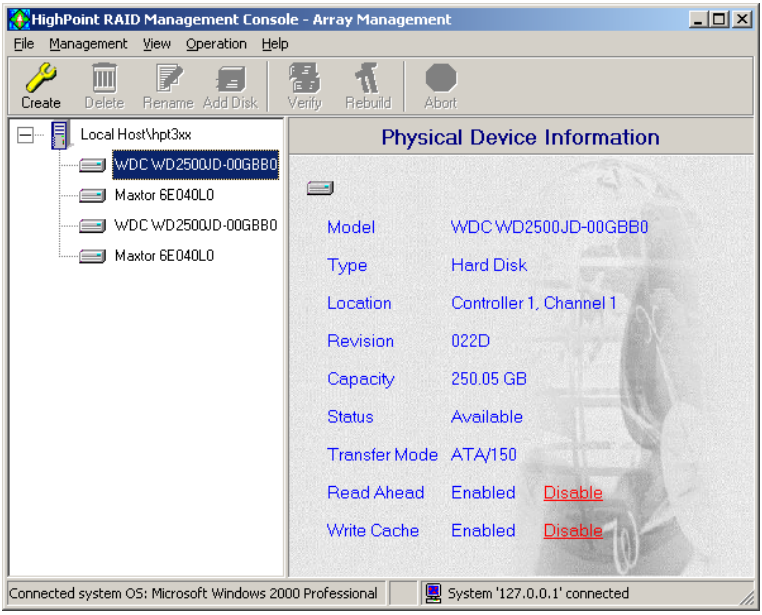
Make appropriate changes and click **OK** to confirm or **Cancel** to cancel this operation.

- **The Management menu**

The **HighPoint RAID Management Console** software supports a variety of RAID management features, which are listed on the **Management** menu. You can also use these features by clicking the buttons in the main interface.

1. Array Management

Click on the **Management** menu and select the **Array Management** option. This will open a new window, which displays all of the logical drives attached to the RAID controller. The logical drives are grouped according to the physical disks. See the picture as shown next page:



Click on a drive icon to display information about this disk - the right side of the screen will provide information about the physical disk, including the model, type, location, revision, capacity, status and transfer mode. Click on an array icon to provide information about the selected array, including the name, RAID type or level, and capacity.

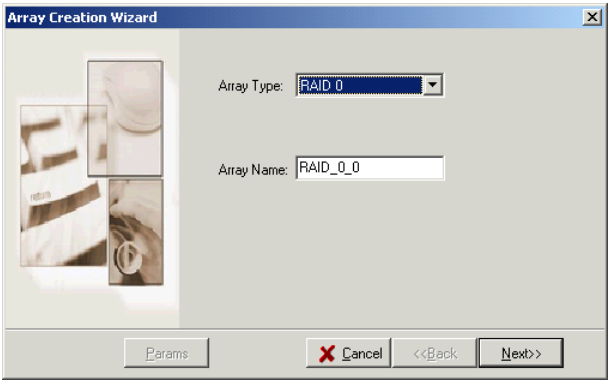
a) Create an array

If the Create Array option has been enabled under the Privilege settings, and enough disks are available to create an array, click the **Create** button on the toolbar. You can also click on the **Operation** menu, and select the **Create** option to open the **Array Creation Wizard** window.

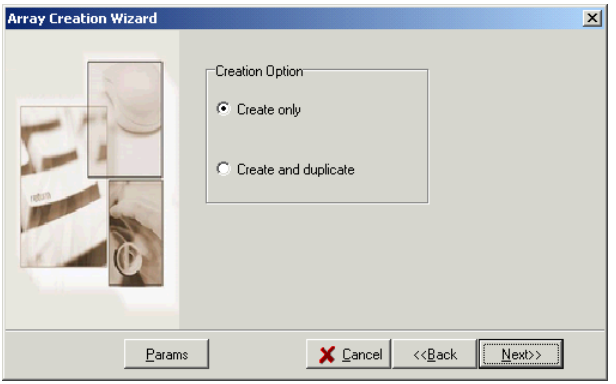
Step 1: Select the type of array

Select the type of array you wish to create from the drop-down menu. If JBOD was selected, you can jump directly to Step 3.

If any other type of array is selected, enter an array name, and click the **Next** button. If you do not wish to name the array, leave the default name in the Array Name field and click Next.
If RAID 0, 10, or 5 is selected, proceed to step 2.



If RAID 1 is selected, select from the following array options. See the picture as shown below.



1) Create Only

This option will create a RAID 1 array between the selected disks, but the data on both disks will be lost.

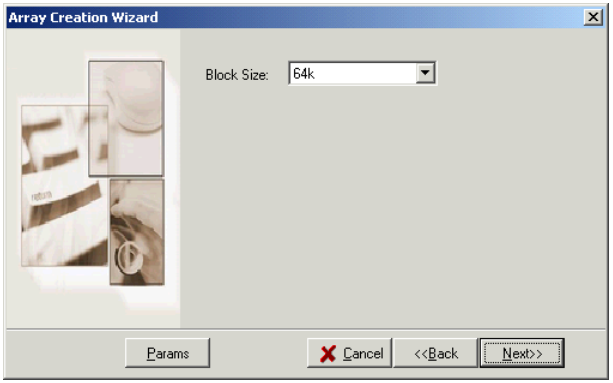
2) Create and Duplicate

This option will create a RAID 1 array between the selected disks, and will copy data from the source disk to the mirror (also referred to as the target) disk. All data that was originally stored on the Mirror disk will be lost.

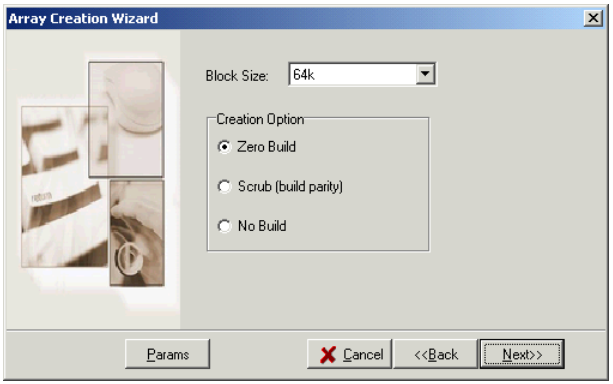
Step 2: Specify the block size

When creating a RAID 0 or 10 array, select the **Block Size** from the drop-down menu,

and click the **Next** button. See the picture as shown below:



When creating a RAID 5 array, select the block size from the drop-down menu, and the appropriate **Creation** Option. See the picture as shown below:



1) Zero Build

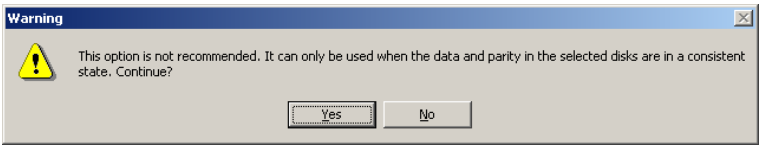
Create and initialize data blocks with zero build-this will create the array and initialize parity, but delete all data of each hard disks. Use this option when starting from scratch.

2) Scrub (build parity)

This will create an array and initialize parity using the existing data on the hard disks. This method requires the parity of every stripe to be evaluated and written to the appropriate location on the RAID array. A "scrub" may be performed on an un-initialized array (i.e., an array with un-initialized disks) so that parity can be determined and written to disks during the regular operation of the array (in response to write operations) using the "read-modify-write" method.

3) No Build

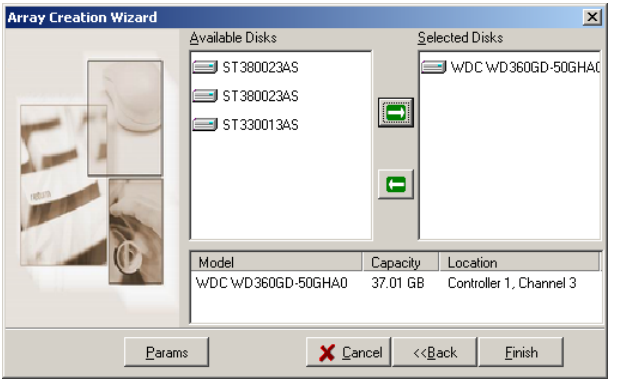
Create only - the parity function will not become active until the array is first used. When you select this option, you will see a warning message.



Click **Yes** to continue the creation.

Step 3: Select the array disks

Select the single disks from the **Available Disks** list, and add them to the **Selected Disks** list using the ( ) button.



If you are creating a RAID 1 array, and have selected the **Create and duplicate** option, the disk that you select first will be the source disk, and the second will be the mirror disk. Please make sure the capacity of the mirror disk is larger than that of the source disk.

If you are creating a RAID 1 array, and have selected the **Create Only** option, the source disk will be automatically selected.

After selecting the required disks, please click the **Finish** button to create the array.

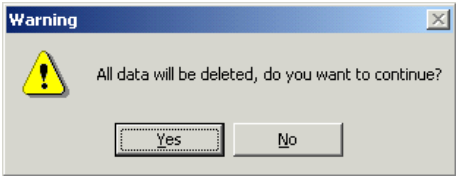
b) Rename an array

Click on the **Management** menu, and then select the **Array Management** option . Select the array you want to rename from the tree display, and click the **Rename** button on the toolbar. You can also click on the **Operation** menu, and select the **Rename** option. See the picture as shown next page:

Enter a new name for the desired array, and then click **OK** to confirm or **Cancel** to cancel this operation.

Note:
You cannot rename arrays that are in the process of being duplicated, initialized, rebuilt or verified.

c) Delete an array
Click on the **Management** menu, and then select the **Array Management** option. Select the array you want to delete from the tree display, and click **Delete** button on the toolbar. You can also click on the **Operation** menu, and select the **Delete** option to display a warning message. See the picture as shown below:



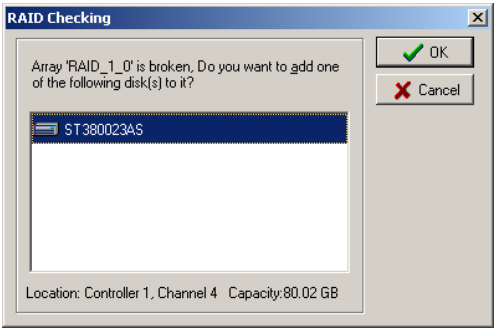
Click **Yes** to delete the selected array, or **No** to cancel.

Note:
You cannot delete arrays that are bootable or in the process of being duplicated, initialized, rebuilt or verified.

d) Add a disk to an array
Click on the **Management** menu, and then select the **Array Management** option. If an array is broken, you will have to add a new single disk to proceed rebuild. Select the broken array, and then click the **Add Disk** button on the toolbar. You can also click on the **Operation** menu, and select the **Add Disk** option.

If this menu option is disabled, then the disks cannot be added to this particular array, or the **Add Disk Privilege** has not been enabled.

When booting the computer, if one member disk of RAID 1, RAID 10 or RAID 5 array is broken, and there is a spare disk can be used to rebuild the broken array, system will automatically use the spare disk to rebuild the broken array and then replace data to the target disk. See the picture as shown below:



Select the array you want to rebuild, press the **OK** button to rebuild the broken array, or press **Cancel** to cancel this operation.

If you press the **OK** button, the following window will appear. See the picture as shown below:

Click **Yes** to start the rebuild process. See the picture as shown next page:

Note:

1. In the process of rebuilding, the **Management Console** will display the remaining time.
2. During the system reboot, the **Management Console** can save rebuilding progress automatically instead of rebuilding from the beginning.

When the system detects a physical disk, a dialogue box will appear. Select a single disk from the list, and add it to the broken array. Continue to add disks to the broken array until the broken status changes. Once the status changes, the system will begin the auto-rebuild process. When the rebuild procedure is complete, please restart the computer.

e) Verify an array

Click on the **Management** menu, and then select the **Array Management** option. Select the array you want to verify, and click the **Verify** button. You can also click on the **Operation** menu, and select the **verify** option. Once the verify command has been executed, refresh the software interface - a progress bar should appear.

If this menu option is disabled, then the array cannot be verified, or the **Verify Disk Privilege** has not been enabled.

To abort the procedure, click on the **Operation** menu, and select the **Abort** option. This will cancel the **Verify** procedure.

f) Rebuild an array

Click on the **Management** menu, and then select the **Device Management** option. Highlight the array that needs rebuilding, and click the **Rebuild Array** button. The broken RAID 5, RAID 1, or sub-RAID 1 of RAID 10 array can use this feature.

If this menu option is disabled, then the array cannot be rebuilt, or the **Rebuild Array Privilege** has not been enabled.

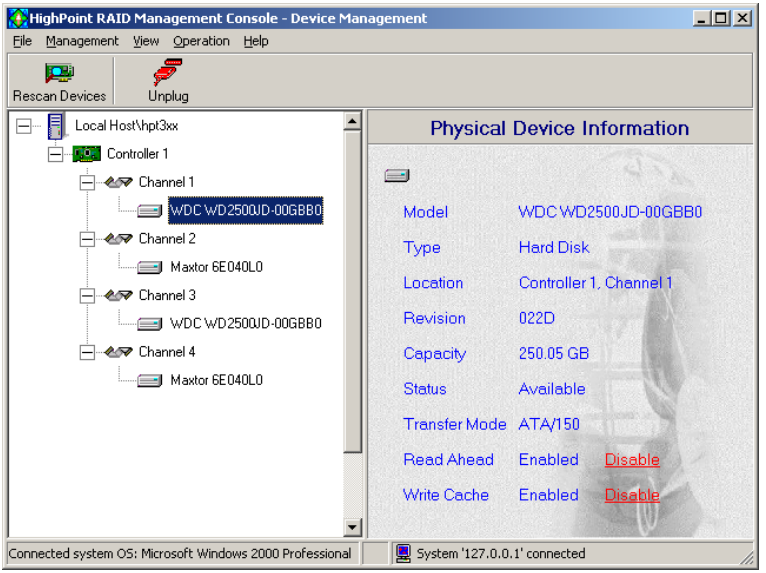
To abort the procedure, click on the **Operation** menu, and select the **Abort** option. This will cancel the rebuild procedure.

g) Rescan the devices

Click on the **Management** menu, and then select the **Device Management** option. Click the **Rescan Device** button, or click on the **Operation** menu, and select the **Rescan Devices** option. This will scan all of the physical devices attached to the RAID controller.

2. Device Management

Click on the **Management** menu, and then select the **Device Management** option. This will open a new window, which displays all of the physical drives attached to the RAID controller. The physical drives are attached to the individual channel of RAID controller. See the picture as shown next page:

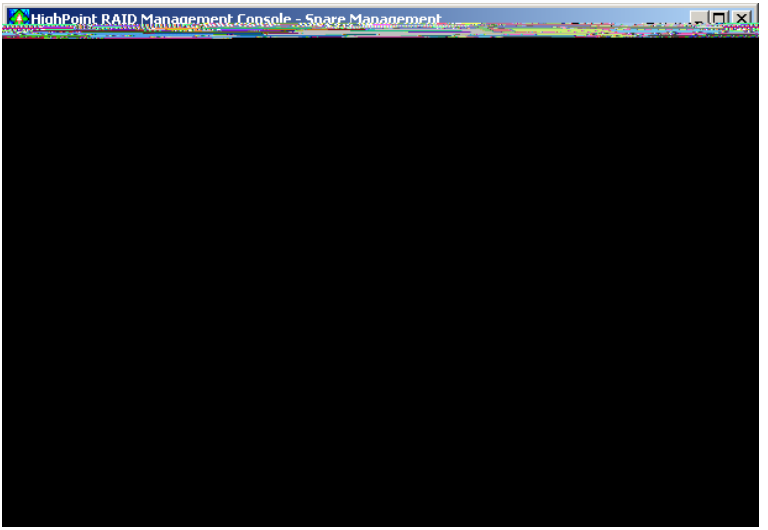


Clicking on a drive icon to display information about this disk - the right side of the screen will provide information about the physical disk, including the model, type, location, revision, capacity, status and transfer mode. If you want to unplug the hard drive, you can close all the operation on this hard drive, and highlight the hard drive, click the **Unplug** button. You can also click on the **Operation** menu, and select the **Unplug** option. Once the unplug command is executed, the physical drive will be off-line.

Clicking on a channel icon to display information of this channel; click the RAID Controller icon to display information of this RAID controller.

3. Spare Management

Click on the **Management** menu and then select the **Spare Management** option. This will open a new window. See the picture as shown next page:



a) Assign a disk to the spare pool

To assign a spare disk to an important array, select the **Assign to a dedicated array** option. Disk arrays that can utilize the spare feature will then be displayed, and listed on the drop-down menu towards the right side of the array list. When an array is selected, the **Available Disk** section will list all the single, physical disks attached to the RAID controller. The **Spare Pool** section will list the physical disks that have already been set to spare disks.

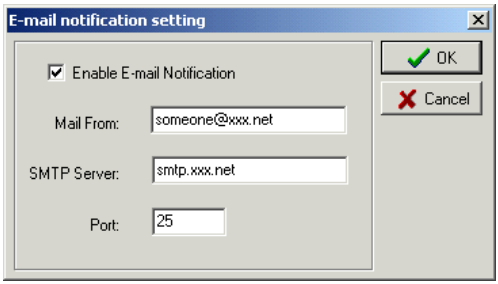
The procedure can be repeated to add or remove additional spare disks.

4. Event Notification

Click on the **Management** menu and then the **Event Notification** option to set **E-mail notification** so that the system will send an E-mail to the mailbox when an event occurs.

a) Set an E-mail notification

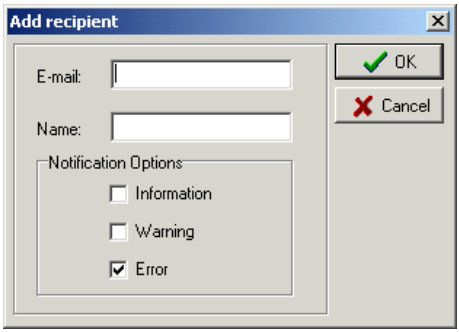
In order to send and receive E-mail, you must first configure the **SMTP server**. Click the **Settings** button on the toolbar, or click on the **Operation** menu and select the **Settings** option. The **E-mail notification setting** window will be displayed. See the picture as shown next page:



Check the **Enable E-mail Notification** option, and fill the **Mail From**, **SMTP Server**, and **Port** fields with the appropriate information. Click **OK** to complete this process or click **Cancel** to cancel this operation. The system does not support user-validated SMTP server.

b) Add a recipient

Click the **Add** button on the toolbar, or click on the **Operation** menu and select the **Add recipient** option. This will open the **Add Recipient** window.
See the picture as shown below:



Enter an E-mail address, the recipient's name, and the notification options. Three types of E-mail notification options are available: **Information**, **Warning**, and **Error**. You can check them by his requirement and then click **OK** to confirm the selection.

c) Modify a recipient

Click the **Modify** button on the toolbar, or click on the **Operation** menu and select the **Modify Recipien**t option. This will open the **Modify Recipient** window. Modify the desired fields, and click **OK** to confirm.

d) Delete a recipient

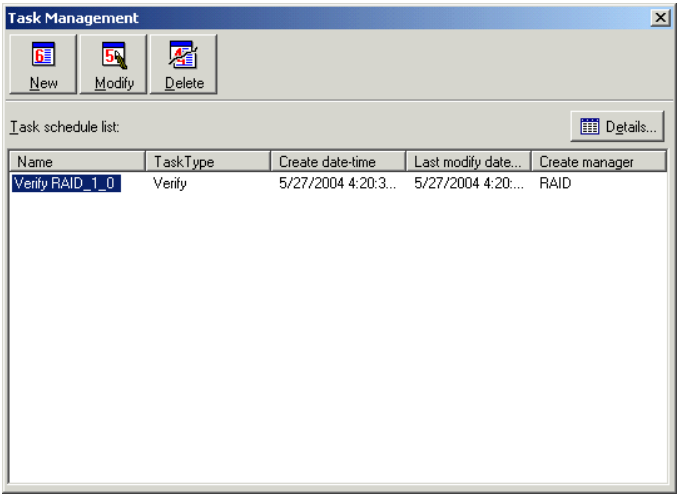
Highlight a recipient, and click the **Delete** button on the toolbar, or click on the **Operation** menu and select the **Delete Recipient** option. This will open the **Delete Recipient** window. A warning message will be displayed. Click **OK** to delete the recipient.

e) Test to notify

Highlight a recipient, and click the **Test** button on the toolbar, or click on the **Operation** menu and select the **Test to notify** option. This will send a testing mail to the recipient. If you fail to send this mail, you will get a pop-up error message.

5. Task Management

Click on the **Management** menu, and then select the **Task Schedule Management** option. The following window will be displayed:



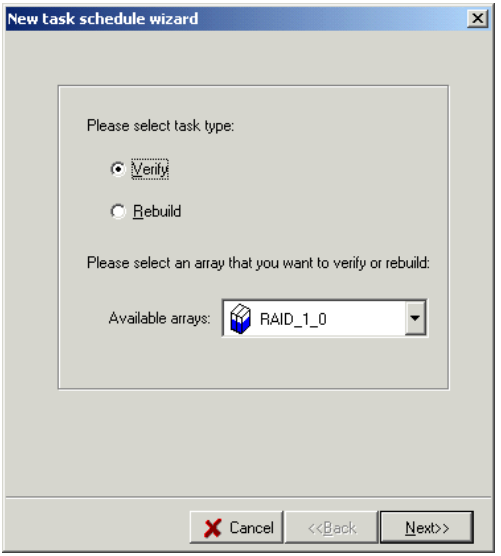
When an array needs to be regularly verified or rebuilt, you can create a new scheduled task to automatically manage this procedure.

The **Task Schedule list** displays information about all added tasks. Double click one of the task entries, or select one and click on the **Details** button to display detailed information about the selected task. If the appropriate Privileges have been enabled, you can add new tasks, modify or delete the existing tasks.

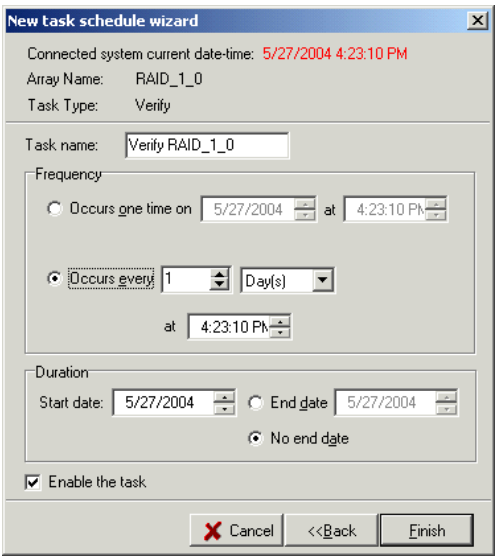
a) Adding a task schedule

There are two types of tasks that can be scheduled: **Verify Array** or **Rebuild Array**. If any arrays can be rebuilt in the current system, click the **New** button on the toolbar to

open the **New Task Schedule Wizard**. See the picture as shown below:



Select the task type, and the target array from the drop-down menu. Then, click **Next** to continue.



The above window is used to configure the frequency a particular task should be run. The current time of the connected remote system is displayed on the top.

b) Add a new task:

1. Enter a name for the task. You can also use the default task name.
2. Set frequency. To add a task to rebuild an array, you can select the **Occur one time** option. To add a task to verify an array, you can specify the detailed occur time by daily, weekly or monthly.
3. Set the effective date for a task in the **Duration** option.
4. Check the **Enable the task** option to activate this task. If this option is unchecked, then the system will never execute this scheduled task.
5. Click the **Finish** button. When a task has been added successfully, it will appear to the task schedule list in the main window.

c) Modify a task schedule

Select a task that you want to modify from the **Task schedule list** in the main window, and then click the **Modify** button on the toolbar. In the pop-up window you can modify the task name and the frequency the task occurs.

d) Delete a task schedule

Select a task that you want to delete from the **Task Schedule list** displayed in the main window, and click the **Delete** button on the toolbar.

Note:

If an array is deleted, all tasks assigned to the array will be deleted as well.

6. Refresh

Click on the **Management** menu, and then select the **Refresh** option. This command will rescan all the devices attached on the RAID controller.

• The View menu

1. Event View

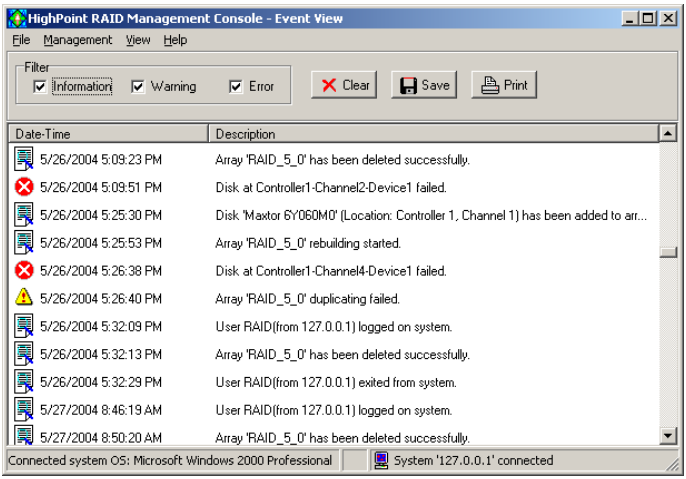
Click the **View** menu, and select the **Event View** option. This will display a list of all the logged events of the remote system.

There are three types of logged events: **Information**, **Warning**, and **Error**.

1. Selecting one of the **Filter** options will display all the selected type of events in the following **Event View** window.
2. Clicking the **Clear** button will clear all the events listed in the Event View window and those stored on the remote system.
3. Clicking the **Save** button will save all the events listed in the Event View window as a

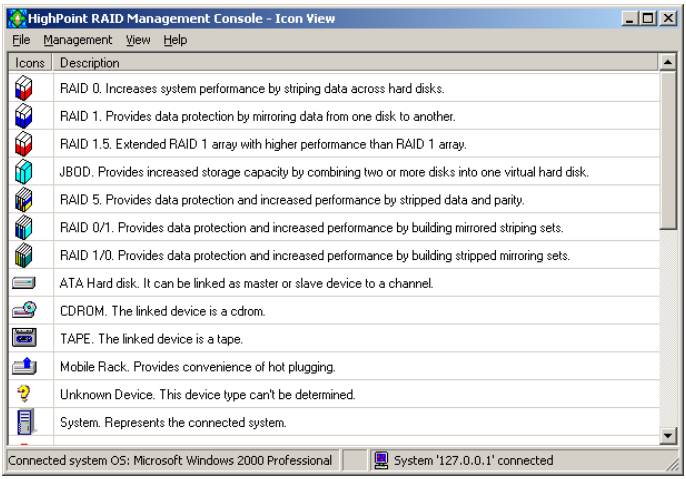
plain text file.

4. Clicking the **Print** button will print all the events listed in the Event View window.



2. Icon View

Click the **View** menu, and select the **Icon View** option. A new window will be displayed showing the various event icons and their descriptions.



Chapter 5
Trouble Shooting

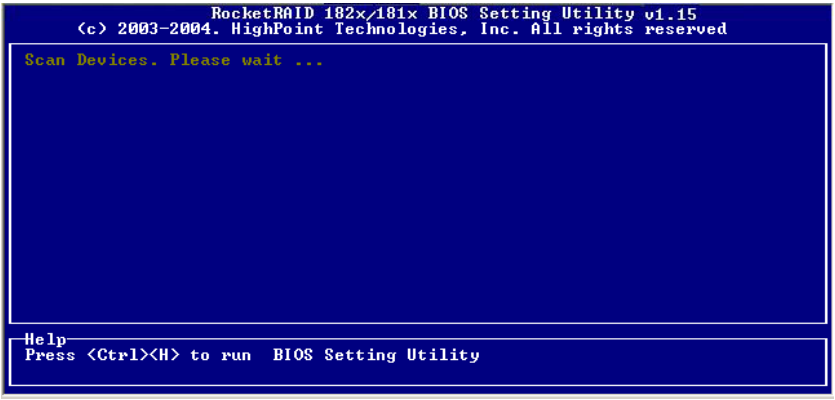
Please refer to this chapter if you encounter any problems while using the RocketRAID 1810A.

It provides answers to the most frequently asked questions, and solutions to some of the more common problems associated with the host adapter.

HighPoint

1. The RocketRAID 1810A host adapter is not recognized by the system after it has been installed into a PCI slot or a PCI-X slot.

If the card is detected by the system, the following screen will be displayed when the computer is starting up:



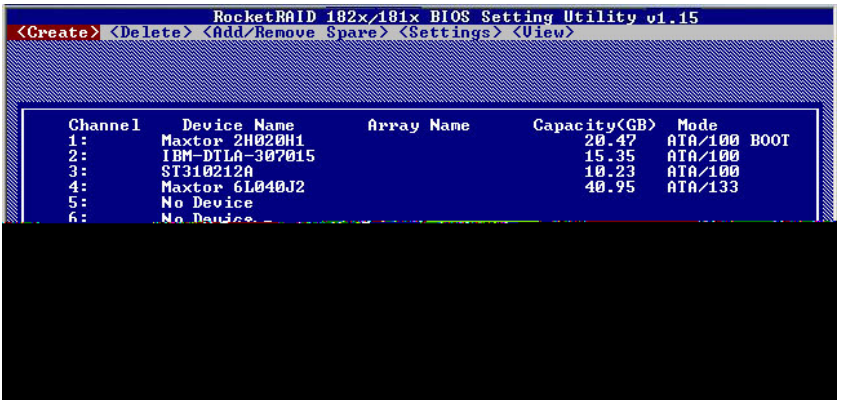
If the above screen does not appear, the adapter is not recognized by the system. Then, please open the computer's chassis, and check the following:

1) Whether or not the adapter has been securely installed into the PCI slot or a PCI-X slot.
2) If necessary, try using another PCI slot or a PCI-X slot.

After securing the adapter, replace the computer case and power on the system.

2. The hard disk connected to the host adapter is not detected.

After the RocketRAID 1810A adapter is recognized by the system, the adapter's BIOS will start to scan for hard disk drives. If drives are detected, the following information will be displayed:



Please pay close attention to the information displayed by the BIOS - make sure all of the hard disks attached to the controller are recognized by the BIOS.

If one or more of the hard disks are not recognized, open the computer's chassis and check the following:

1) Make sure the power cable for the hard drive is securely attached. If necessary, try using another power cable.
2) Make sure the SATA cable is securely attached to the hard disk and the host adapter. If necessary, try using another SATA cable.
3) If IDE hard disks are attached to the RocketRAID 1810A via RocketHead 100 converters, make sure the hard disk jumper is set to the Single position. Check the hard disk documentation for the manufacturer's recommended jumper settings - some drives may have to be set to single or master, or master with no slave present instead of the conventional master setting.

After checking these items, replace the computer's chassis and power on the computer.

3. The operating system will not boot when the boot drive is attached to the host adapter.

In order to boot from a disk or disk array attached to the RocketRAID 1810A, certain BIOS settings are required:

1) Make sure the motherboard's BIOS setup has set the host adapter as the first boot device.
   If the motherboard's BIOS setup does not list the host adapter as a boot option, use the SCSI option.
2) Set the proper boot disk or disk array using the host adapter's BIOS (see Chapter 3 for more information).

4. Win9x/ME operating systems will not boot when a disk drive is attached to the RocketRAID 1810A.

The RocketRAID 1810A does not allow Win9x/ME operating system to be installed to, or booted from any disk or array attached to the SATA channels. If you wish to boot Win9x/ME from another device attached to the motherboard, make sure to press the **END** key to skip the BIOS when the RocketRAID 1810A starts posting during bootup.

5. What should I do if an array is reported as broken?

If an array is reported as broken, shut down the system and make sure the power and S-ATA cables are securely attached to the hard disks. If necessary, change the cables, then power on the system. If the problem is related to a connection issue, this may restore the array.

If this method is ineffective, the broken array was likely the result of a failed disk or hardware malfunction. You need to determine which hard disk has failed in a broken array.

After that, you should rebuild the broken array. Refer to the "3.9 Rebuild Broken RAID1, RAID10 and RAID5 Array" section on page 3-15 for the details.

6. Why does the alarm "buzzer" continuously beep?

The alarm will sound if one or more hard disks is not responding.
To stop this alarm:

1. Replace the faulty disk with a functional hard disk.
2. Click on the **Management** menu, and then select the **Device Management** option from the menu. Click on the **Rescan Device** button, or click on the **Operation** menu, and select the **Rescan Devices** option to rescan all of the physical devices attached to the RAID controller.
3. Reboot the system.

7. The RAID management software does not seem to recognize the RocketRAID 1810A installed into my system. What is causing this problem?

An account must be created in order for the software to recognize any host adapter. Choose to add a new account, and use the following values:

System Address: 127.0.0.1
System Port: 7402
System Name: RAID (must be capitalized)
Password: hpt (must be lowercase)
These values must be used if the software and host adapter are installed into the same system.

8. Why can't I connect to a remote system when using the RAID management software?

Please check the following:

1. You have installed HighPoint RAID Management Service on the remote system.
2. The HighPoint RAID Management Service on the remote system is started. On the remote system, click **Start->Programs->HighPoint RAID Management Software-> Service Manager** to view the service status.
3. You can access the remote system via TCP/IP connection.
4. If there is firewall configured on your network, TCP port 7402/7403 should not be blocked.

Appendix A
Glossary

Array
Also known as Disk Array-two or more hard disks combined together to appear as a single device to the host computer.

Broken Array
A disk array with one or more members failed. Broken RAID 1, 10, or 5 arrays can still function (by utilizing the remaining disks), but broken RAID 0 or JBOD arrays will no longer function.

Duplicate
Also known as Synchronize, the operation of duplicating user data to generate backup data within a RAID 1 array.

Hot Swap
The ability to add or remove a drive without powering off the computer or interrupting the user's work.

JBOD
JBOD is an acronym for Just a Bunch of Disks. It is used to refer to hard disks that aren't configured according to RAID a subsystem of disk drives that improves performance and fault tolerance. JBOD provides much more capacity (the sum of all the disks). If there is more than a single physical disk (not member of an array and not an ATAPI device or a removable disk), you can create a JBOD array. The RocketRAID 1810A host adapter supports two up to four hard disks to create a JBOD array.

Mirroring
Known as RAID 1, which provides data protection by real-time and automatic duplicating all data from a source disk to a mirror disk.

PCI-X

The 64-bit PCI-X architecture supports transfer rates above 1 gigabyte per second, and operates at speeds up to 133 MHz. In addition, it is backward compatible with existing standard PCI bus technology.

RAID

Redundant Array of Independent Disks- a method of combining several hard disks (physical disks) into one logical unit (logical disk), thus providing higher performance and data redundancy.

RAID Levels

RAID levels refer to different array architectures (or methods of organizing a disk array). Different RAID levels represent different performance levels, security levels and cost.

RAID 1

Known as RAID 1, this RAID level provides data protection by implementing real-time and automatic duplication of data from a source disk to a mirror disk. The RocketRAID 1810A host adapter supports two hard disks to create a RAID 1 array.

RAID 10

It is the combination of RAID 1 and RAID 0. The RocketRAID 1810A host adapter supports four hard disks to create a RAID10 array.

RAID 5

RAID 5 includes a rotating parity array, thus, all read and write operations can be overlapped. RAID 5 stores parity information but not redundant data. It requires at least three disks to provide the most economic way to maximize data capacity with faster transfer rate. The RocketRAID 1810A host adapter supports three up to four hard disks to create a RAID 5 array.

Rebuild

The ability to use a new disk to replace a failed disk in a redundant disk array (RAID 1, 10 and RAID 5 arrays), then repair the broken disk array and recover all the data on that failed disk.

Striping

Known as RAID 0, data is spread over multiple disks to improve performance. It does not provide data protection. The RocketRAID 1810A host adapter supports two up to four hard disks to create a RAID 0 array.

Serial ATA

Serial ATA is an evolutionary replacement for the IDE ATA physical storage interface. Serial ATA is scalable and will allow future enhancements to the computing platform.

Spare Disk

A free hard disk that can be used to replace the failed member of a redundant disk array, then automatically recover the redundant disk array without user intervention.

Spare Pool

A collection or grouping of the spare disks. When a disk is added into the spare pool, it will become a spare disk.

Synchronize

Same as Duplicate.

Appendix B
Customer Support

If you encounter any problems or have any questions about the product, please make sure to read through the manual.

Additional information about HighPoint products is available from our web site:
http://www.highpoint-tech.com

If the information provided by the manual and our web site are unable to answer your questions or solve the problems, please contact our Customer Support department.
E-mail address:
support@highpoint-tech.com

Thank you for choosing our products!

FCC Part 15 Class B Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, you are encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment under FCC rules.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

European Union Compliance Statement

This Information Technologies Equipment has been tested and found to comply with the following European directives:

- European Standard EN55022 (1998) Class B
- European Standard EN55024 (1998)

HighPoint Technologies, Inc.
http://www.highpoint-tech.com
support@highpoint-tech.com