Intel ICH7R/ICH9R/ICH10R HostRAID Setup Guidelines

After all hardware has been installed, you must first configure the Intel SATA HostRAID settings before you install the Windows Operating System and other software drivers.

Important Notes to the User

1. If you do not wish to configure the onboard SATA RAID settings, please go directly to Section 4 (Page 15) for OS installation instructions.

2. This chapter describes RAID Configuration Instructions for the Intel ICH7R/ ICH9R/ICH10R Host RAID Controller designed for the Windows OS. To configure the Adaptec HostRAID settings for your motherboard, please refer to the Adaptec folder on the CD that came with your board or the Adaptec HostRAID User Guide posted on our web site at http://www.supermicro.com.

3. The current version of the ICH7R SATA RAID utility supports Windows XP/2000/2003 Operating Systems. However, the ICH9R and ICH10R SATA RAID can only support Windows XP, 2003, 2008, and Vista Operating Systems.

4. The Windows 2000 OS is not supported by ICH9R/ICH10R.

5. If media devices are used, please install them on SATA Port 4 and Port 5. When SATA RAID is enabled, media device support will be enabled as well.

6. When SATA RAID is enabled, only two arrays can be created. Each array supports up to six drives.

I. Introduction to Serial ATA and Parallel ATA

To configure the SATA RAID settings, you must first use the Intel ICH7R/ICH9R/ ICH10R SATA RAID Utility to configure the RAID Level you desire before installing the Windows operating system and other software drivers. The necessary drivers are all included in the Supermicro CD that came with your motherboard.

Serial ATA (SATA)

Serial ATA (SATA) is a physical storage interface that uses a single cable with a minimum of four wires to create a point, to point connection between devices. It is a serial link, which supports transfer rates of up to 3.0 Gbps. Because the serial cables used in the SATA are thinner than the traditional cables used in the Paral-

lel ATA (PATA), SATA systems have better airflow and can be installed in smaller chassis. In addition, the cables used in the PATA are limited to a length of 40cm, while Serial ATA cables can be up to one meter in length. Overall, SATA provides better functionality than PATA.

II. Introduction to the Intel ICH7R/ICH9R/ICH10R Serial RAID

Located in the South Bridge of an Intel chipset, the I/O Controller Hub (ICH7R/ICH9R/ICH10R) provides the I/O subsystem with access to the rest of the system. It supports one 1-channel Ultra ATA/100 Bus Master IDE controller (PATA) and six Serial ATA (SATA) ports. The ICH7R/ICH9R/ICH10R supports the following PATA and SATA device configuration settings: the Legacy mode and the Native mode.

The Intel HostRAID Configurations

The following types of Intel's HostRAID configurations are supported:

- **RAID 0 (Data Striping)**: RAID 0 writes data in parallel, interleaved ("striped") sections between two hard drives. RAID 0 is used to double data transfer rate (over a single hard drive) in order to enhance system performance. To use RAID 0, a minimum of two hard drive disks are required.

- **RAID 1 (Data Mirroring)**: RAID 1 allows identical data to be copied from one disk drive to another. By doing so, a "mirror" of source data is created in order to enhance data security. To use RAID 1, a minimum of two hard drive disks are required, and the second drive must be the same size or larger than the first drive.

- **RAID 10 (Striping & Mirroring)**: RAID 0 and 1 modes are combined (without parity information) to maximize system performance and data security. To use RAID 10, a minimum of four hard drive disks are required.

- **RAID 5**: Both data and parity information are striped and mirrored across three or more hard drives. To use RAID 5, a minimum of three hard drive disks are required.

Intel Matrix Storage

The Intel Matrix Storage Technology allows the user to create RAID 0, RAID 1, RAID 10, and RAID 5 by using only six identical hard disk drives. The Intel Matrix Storage Technology creates two partitions on each hard disk drive, generating virtual RAID 0, RAID 1, RAID 10, and RAID 5 sets. It also allows you to change the HDD partition size without losing any data.

Configuring the Phoenix BIOS for SATA RAID Settings (-the Native Mode)

Press the <Del> key during system bootup to enter the BIOS Setup Utility.

1. Use the arrow keys to select "Exit" in the BIOS Menu bar at the top of the screen. Once in the "Exit" submenu, scroll down to select "Load Optimized Default Settings" and press <Enter>. Select "OK" to confirm the selection.

   Note: If this is the first time you power on the system, we recommend that you load the Optimized Default Settings. If you have already done so, please skip to Step 3.

2. Once "Load Optimized Default Settings" is highlighted, press <Enter> to load the default settings for the BIOS.

3. Use the arrow keys to select the Main menu in the BIOS.

4. Scroll down to "SATA Controller Mode" and press <Enter> to select "Enhanced."

5. Scroll down to "SATA RAID Enabled" and press <Enter> to select this item. Then select "Enabled."

6. On the next item, "ICH Code Base," select "Intel" to configure Intel ICH RAID settings. (If you select Adaptec, please refer to the Adaptec HostRAID User Guide posted on our website at http://www.supermicro.com for instructions.)

7. Press <ESC> to return to the previous menu. Use the arrow keys to select "Exit" from the menu bar on the top and press <Enter> to enter the Exit submenu.

8. From the Exit submenu, select "Save and Exit" and press <Enter> to save the changes and exit the BIOS. The system will reboot.

9. During the system bootup, press the <Ctrl> and <I> keys simultaneously to run the Intel RAID Configuration Utility when prompted by the following message: "Press <Ctrl> <I> for the Intel RAID Configuration Utility." The screen shown on the top of Page 5 will display.

   Note: The Intel RAID Configuration Utility is only available for systems with two or more drives installed. The Intel RAID Utility screen will not display in systems with one drive installed.

Configuring the AMI BIOS for SATA RAID Settings

Press the <Del> key during system bootup to enter the BIOS Setup Utility.

1. Use the arrow keys to select "Exit" in the BIOS Menu bar at the top of the screen. Once in the "Exit" submenu, scroll down to "Load Optimized Default Settings" to select it.

   Note: If this is the first time you power on the system, we recommend that you load the Optimized Default Settings. If you have already done so, please skip to Step 3.

2. Once "Load Optimized Default Settings" is highlighted, press <Enter> to load the default settings for the BIOS.

3. Use the arrow keys to select the Advanced menu from the menu bar and press <Enter> to enter the Advanced menu.

4. Once in the Advanced menu, scroll down to "IDE/SATA Configuration" and press <Enter> to enter the IDE/SATA Configuration submenu.

5. Once in the IDE/SATA Configuration submenu, scroll down to the second item "Configure SATA#1 as", and press <Enter>. The Options window displays.

6. From the Options window, select "RAID" and press <Enter>. The item "ICH RAID CodeBase" will display.

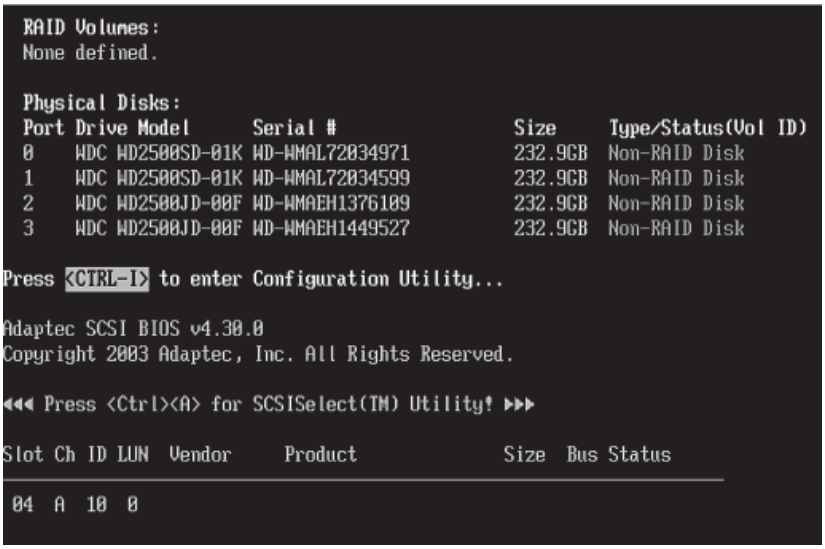
7. On the "ICH Code Base," select Intel and press <Enter> to configure the Intel ICH SATA RAID settings. (If you select Adaptec, please refer to the Adaptec HostRAID User Guide" on our website at http://www.supermicro.com for instructions.)

8. Press <ESC> to return to the previous menu. Use the arrow keys to select "Exit" from the menu bar at the top and press <Enter> to enter the Exit submenu.

9. From the Exit submenu, select "Save Changes and Exit" and press <Enter> to save the changes and exit the BIOS. The system will reboot.

10. During the system bootup, press the <Ctrl> and <I> keys simultaneously to run the Intel RAID Configuration Utility when prompted by the following message: "Press <Ctrl> <I> for the Intel RAID Configuration Utility." The screen shown on the top of Page 5 will display.

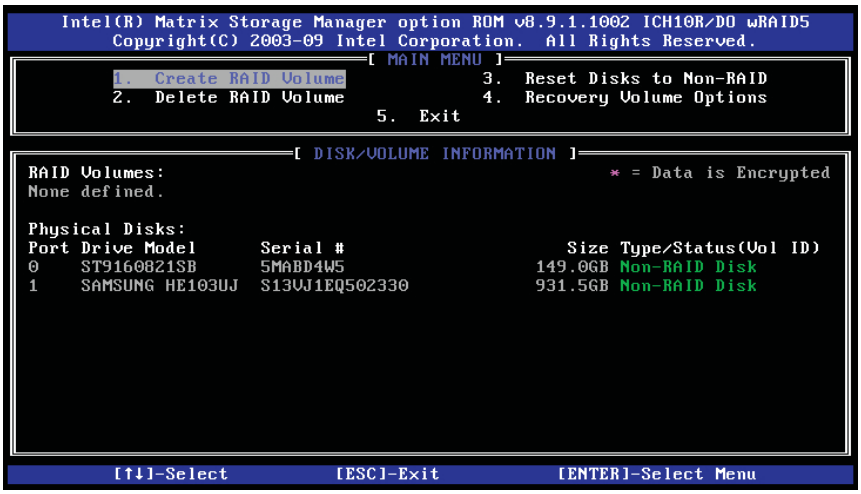
    Note: The Intel RAID Configuration Utility is only available for systems with two or more drives installed. The Intel RAID Utility screen will not display in systems with one drive installed.



III. Using the Intel ICH7R/ICH9R/ICH10R SATA RAID Utility

1. After the system exits from the BIOS Setup Utility, the system will automatically reboot. When the system is rebooting, press <Ctrl> and <I> simultaneously to enter the Intel HostRAID utility. The main menu of the SATA RAID Utility will appear as shown below.

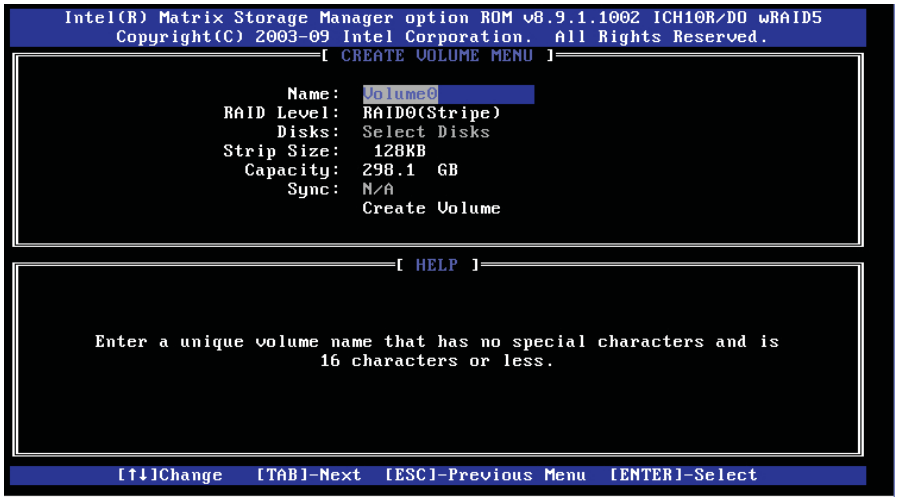
Note: All graphics and screen shots shown in the manual are for reference only. The screen shots shown in the manual do not imply Supermicro's endorsement or non-endorsement on any third-party products. Your screen may or may not look exactly the same as the graphics shown in this manual.



1. Creating RAID Volume

Creating a RAID 0 Volume

1. Select "Create RAID Volume" from the main menu as shown in the previous screen and press <Enter>. The following screen will appear:



2. Specify a name for the RAID 0 set, and press the <Tab> key or the <Enter> key to go to the next field. (To select the previous menu, press <Esc>.)

3. When "RAID Level" is highlighted, use the Up/Down Arrow keys to select RAID 0 (Stripe) and press <Enter>.

4. When "Disks" is highlighted, press <Enter> to select the HDD you want to configure for RAID.

5. Use the Up/Down Arrow keys to highlight a drive and press <Space> to select it. A triangle appears to confirm the selection of the drive.

6. When "Stripe Size" is highlighted, use the Up/Down Arrow keys to select the Stripe Size for your RAID 0, and press <Enter>.

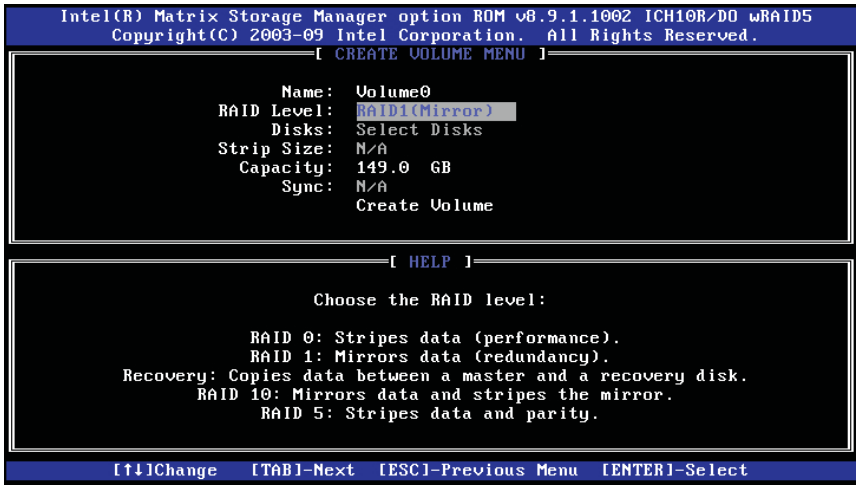
Note: Stripe Size ranges from 4 KB to 128 KB for RAID 0. For a server, please use a lower stripe size; for a multimedia system, use a higher stripe size. The default stripe size is 128 KB.

7. Press <Enter> when the "Create Volume" item is highlighted. A warning message displays, indicating that all data on the selected disks will be lost.

8. At the prompt, "Are you sure you want to create this volume (Y/N)," press <Y> to create the RAID volume, or press <N> to return to the "Create Volume" menu.

Creating a RAID 1 Volume

1. Select "Create RAID Volume" from the main menu (shown on Page 5), and press <Enter>. The following screen will appear:



2. Specify a name for the RAID 1 set, and press the <Tab> key or <Enter> to go to the next field. (To select the previous menu, press <Esc>.)

3. When "RAID Level" is highlighted, use the Up/Down Arrow keys to select RAID 1 (Mirror) and press <Enter>.

4. When "Disks" is highlighted, press <Enter> to select the HDD you want to configure for RAID.

5. Use the Up/Down Arrow keys to highlight a drive and press <Space> to select it. A triangle appears to confirm the selection of the drive.

6. When "Capacity" is highlighted, press <Enter> to specify the disk capacity you want to configure for RAID1.

7. Press <Enter> when the "Create Volume" item is highlighted. A warning message displays, indicating that all data on the selected disks will be lost.

8. At the prompt, "Are you sure you want to create this volume (Y/N)," press <Y> to create the RAID volume, or press <N> to return to the "Create Volume" menu.

Creating a RAID 10 (RAID 1+ RAID 0)

1. Select "Create RAID Volume" from the main menu (shown on Page 5), and press <Enter>. The "Create Volume" Menu screen (shown on Page 5) will appear.

2. Specify a name for the RAID 10 set and press <Enter>.

3. When "RAID Level" is highlighted, use the Up/Down Arrow keys to select RAID 10 (RAID1 + RAID0) and press <Enter>.

4. When "Disk" is highlighted, press <Enter> to select the HDD to configure as RAID.

5. On the pop-up screen, use the Up/Down Arrow keys to highlight a drive and press <Space> to select it. A triangle appears to confirm the selection of the drive.

6. When "Stripe Size" is highlighted, use the Up/Down Arrow keys to select the stripe size from 4 KB to 128 KB for your RAID 10, and press <Enter>. The default setting is 64 KB. (**Note**: For a server, please use a lower stripe size; for a multimedia system, use a higher stripe size.)

7. When "RAID Capacity" is highlighted, enter your RAID volume capacity and press <Enter>. The default setting is the maximum capacity allowed.

8. Press <Enter> when the "Create Volume" item is highlighted. A warning message displays, indicating that all data on the selected disks will be lost.

9. At the prompt, "Are you sure you want to create this volume (Y/N)," press <Y> to create the RAID volume, or press <N> to return to the "Create Volume " menu.

Creating a RAID 5 Set (Parity)

1. Select "Create RAID Volume" from the main menu shown on Page 5 and press <Enter>. The "Create Volume" Menu screen (shown on Page 5) will appear.

2. Specify a name for the RAID 5 set, and press <Enter>.

3. When "RAID Level" is highlighted, use the Up/Down Arrow keys to select RAID 5 (Parity) and press <Enter>.

4. When "Disk" is highlighted, press <Enter> to select the HDD to configure as RAID.

5. On the pop-up screen, use the Up/Down Arrow keys to highlight a drive and press <Space> to select it. A triangle appears to confirm the selection.

6. Use the Up/Down Arrow keys to select the stripe size, ranging from 4 KB to 128 KB for RAID 5, and hit <Enter>.

Note: For a server, please use a lower stripe size; for a multimedia system, use a higher stripe size. The default stripe size is 128 KB.

7. Enter your desired RAID capacity, and press <Enter> when the capacity item is highlighted. The default setting is the maximum capacity allowed.

8. Press <Enter> when the "Create Volume" item is highlighted. A warning message displays, indicating that all data on the selected disks will be lost.

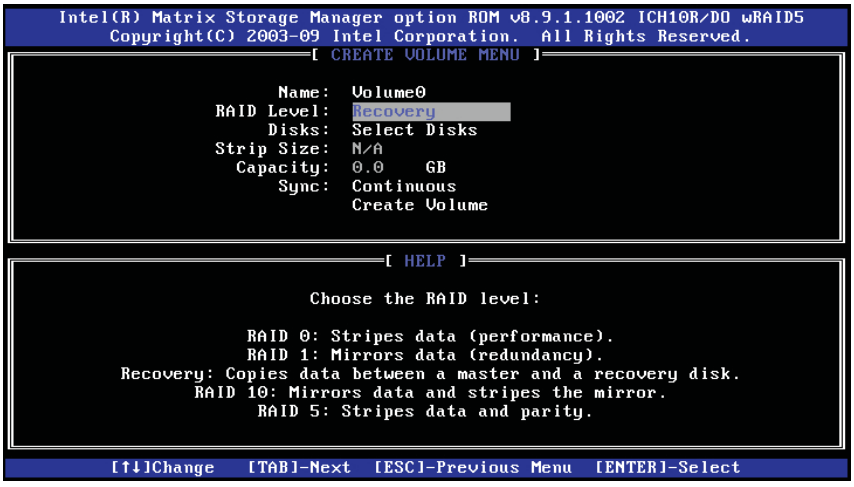
9. At the prompt, "Are you sure you want to create this volume (Y/N), press <Y> to create the RAID volume, or press <N> to return to the "Create Volume" menu.

Recovery

This feature allows the user to create the Recovery Volume by copying data from a designated master drive to a designated recovery drive.

Note: A Recovery disk drive is used as a backup disk drive to store data copied from the original ("master") drive. A Master drive is the original disk that contains the source files to be copied to the recovery drive.

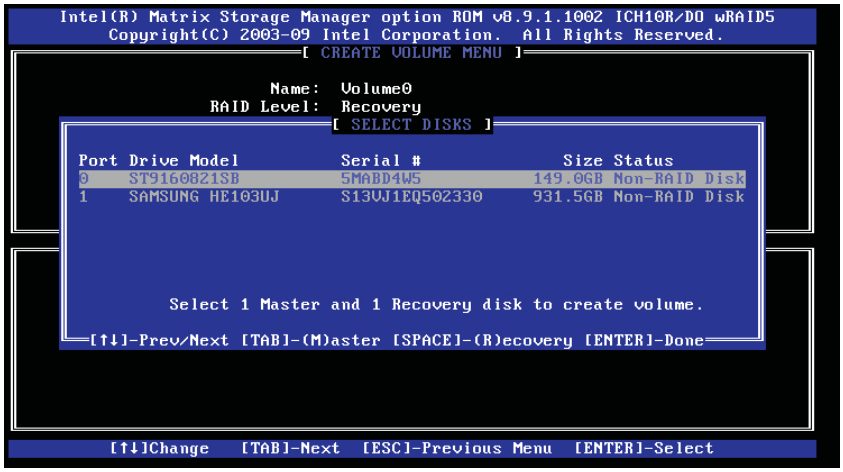
1. Select "Create RAID Volume" from the main menu (shown on Page 5) and press <Enter>. The "Create Volume" Menu screen as shown below will appear.



2. Specify a name for the Recovery disk drive and press <Enter>.

3. When "RAID Level" is highlighted, use the Up/Down Arrow keys to select Recovery and press <Enter>.

4. When "Select Disks" is highlighted, press <Enter> to select the HDD to create the Recovery Volume. The following screen will display.



5. On the "Select Disks" screen, use the Up/Down Arrow keys to select a drive that you want to use as your "Master Drive" and press <Tab> to configure it as your Master Drive. Use the Arrow keys to select your "Recovery Drive" and press <Space> to configure it. Press <Enter> to complete the Disk Selection.

6. When "RAID Capacity" is highlighted, enter your RAID volume capacity and press <Enter>. The default setting is the maximum capacity allowed.

7. When "Sync" is highlighted, use the <up> and <down> arrow keys to select the "Continuous" or "On Request" Update Policy. If "Continuous" is selected, data on the master drive is copied to the recovery drive automatically as long as both drives are connected to the system. If "On Request" is selected, data on the master drive is copied to the recovery drive when you request it.

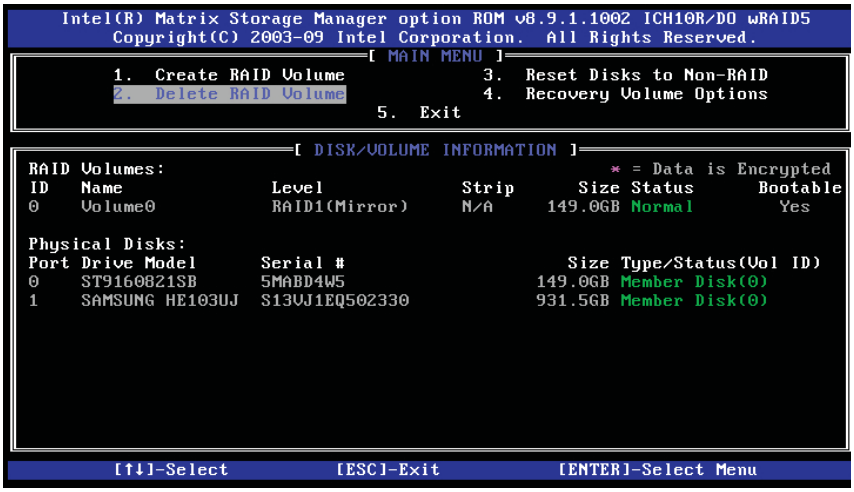
8. Press <Enter> when the "Create Volume" item is highlighted. A warning message displays, indicating that all data on the selected disks will be lost.

9. At the prompt, "Are you sure you want to create this volume (Y/N), press <Y> to create the RAID volume, or press <N> to return to the "Create Volume" menu without making changes.

2. Deleting RAID Volume

Warning: Be sure to back up your data before deleting a RAID set. You will lose all data on the disk drives when deleting a RAID set.

1. From the main menu (shown on Page 4), select item 2, "Delete RAID Volume" as shown below and press <Enter>.



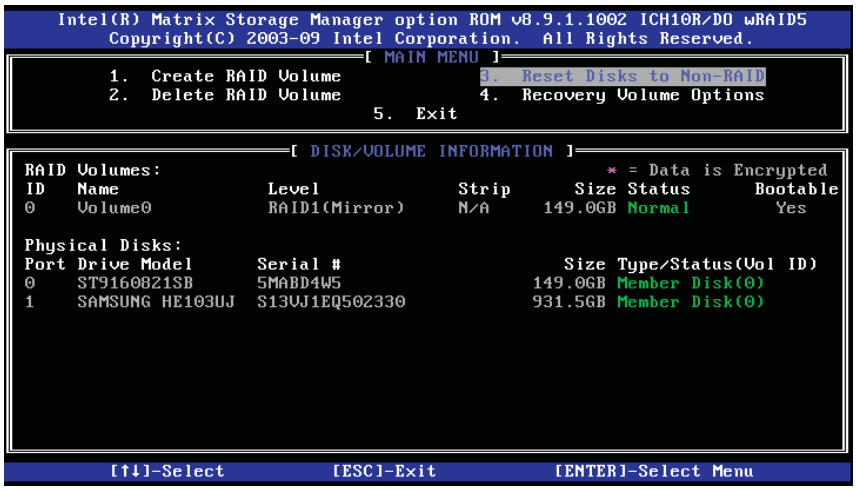
2. Use the Up/Down Arrow keys to select the RAID set you want to delete and press <Del>. A warning message displays.

3. At the prompt, "Are you sure you want to delete this volume (Y/N)," press <Y> to delete the RAID volume, or press <N> to return to the Delete Volume menu.

3. Resetting to Non-RAID

Warning: Be cautious when you reset a RAID volume HDD to a non-RAID HDD. Resetting a RAID HDD or resetting a RAID volume will reformat the disk drive. The internal RAID structure and contents will be deleted.

1. From the main menu (shown on Page 5), select item 3,"Reset Disks to Non-RAID," and press <Enter> as shown in the screen below.



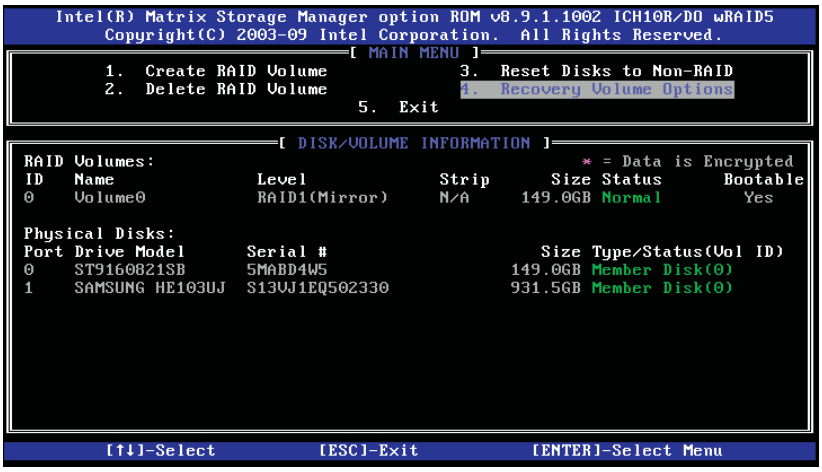
2. Use the Up/Down Arrow keys to highlight the RAID set drive to reset, and press <Space> to select it.

3. Press <Enter> to reset the RAID set drive. A warning message displays.

4. Press <Y> to reset the drive, or press <N> to return to the main menu.

4. Recovery Volume Options

1. From the main menu (shown on Page 5), select item 4, "Recovery Volume Options" as shown in the screen below.



2. Once "Recovery Volume Options" is highlighted, press <Enter>. The following screen will display.

3. To boot from a Recovery disk only, select "Enable Only Recovery disk," and press <Enter>. (**Note**: If a Recovery disk is available, its RAID volume recovery support is enabled, and the Master disk will be disabled.)

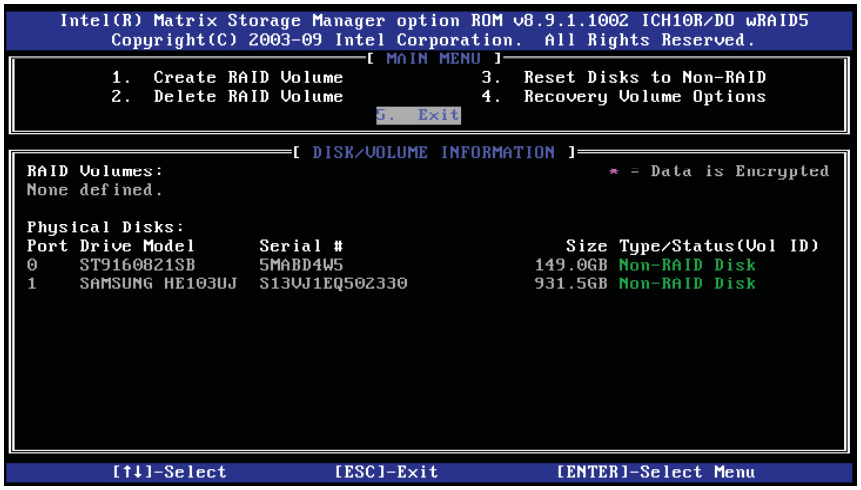
4. To boot from the Master disk that contains the original data sources only, select "Enable Only Master disk," and press <Enter>. (**Note**: If a Master disk is available, its RAID volume recovery support is enabled, and the Recovery disk will be disabled. Any change to Step 3 or Step 4 will stop automatic synchronization between the master and the recovery drives.

5. Press <Esc> to return to the main menu.

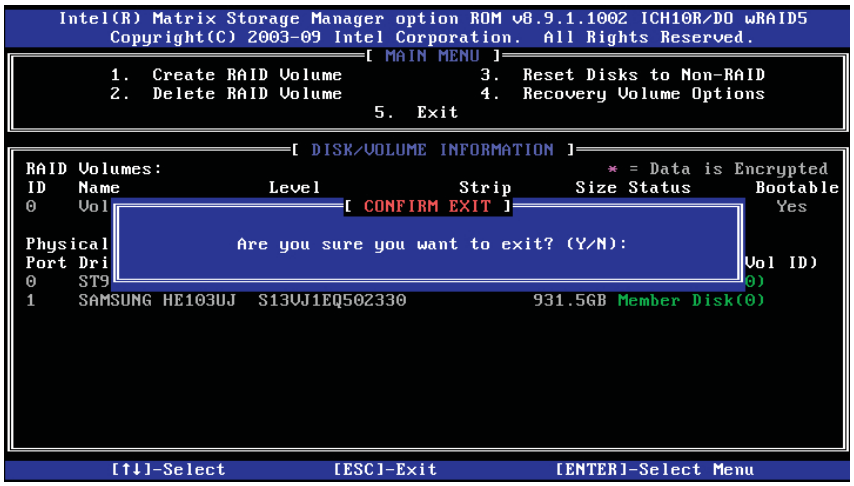
Note: A Recovery disk drive is used as a backup disk drive to store data copied from the original ("master") drive. A Master drive is the original disk that contains the source files to be copied to the recovery drive.

5. Exiting the Intel Matrix Storage Manager Utility

1. From the main menu (shown on Page 5), select item 5,"Exit," and press <Enter>. The following screen will display.



2. A warning message will appear as shown below.



3. At the prompt, press <Y> to delete the drive, or press <N> to return to the main menu.

IV. Installing a New Windows XP/2000/2003 OS

After all hardware components have been installed, you must first configure the Intel ICH South Bridge RAID Settings before you install the Windows OS and other software drivers.

Note: The following OS installation instructions are written for the Windows XP/2003 OS only. If you have the Windows 2008 or Windows Vista OS, please follow the instructions displayed on your screen to install the OS.

1. Insert the Microsoft Windows XP/2000/2003 Setup CD in the CD Drive, and the system will start booting up from CD.

2. Press the <F6> key when the message, " Press F6 if you need to install a third-party SCSI or RAID driver" displays.

3. When the Windows XP/2000/2003 Setup screen appears, press <S> to specify additional device(s).

4. Insert the driver diskette, "Intel AA RAID XP/2000/2003 Driver for ICH7R, ICH9R or ICH10R into Drive A:," and press <Enter>.

5. Choose the Intel® ICH7R, ICH9R or ICH10R SATA RAID Controller from the list indicated in the XP/2000/2003 Setup Screen, and press <Enter>.

6. Press the <Enter> key to continue with installation. (If you need to specify any additional devices to be installed, do so at this time.) Once all devices are specified, press <Enter> to continue with the installation.

7. From the Windows XP/2000/2003 Setup screen, press the <Enter> key. The XP/2000/2003 Setup will automatically load all device files and then continue with the Windows XP/2000/2003 installation.

8. After the Windows XP/2000/2003 OS Installation is complete, the system will automatically reboot.

Note: The current version of the ICH7R/ICH9R/ICH10R SATA RAID Utility can only support the Windows XP/2000/2003/2008/Vista Operating System.

Notes