

Intel ESB2 SATA RAID Setup Guidelines

After all the hardware has been installed, you must first configure Intel ESB2 SATA RAID Settings before you install the Windows Operating System and other software drivers.

Important Notes to the User:



Note 1: If you do not wish to configure onboard SATA RAID functions, please go directly to Section 2 for OS Installation.



Note 2: This chapter describes RAID Configuration Instructions for the Intel ESB2 RAID Controller designed for the Windows OS.

1 Introduction to Serial ATA and Parallel ATA

To configure the SATA RAID functions, you must first use the Intel ESB2 SATA RAID Utility program to configure the RAID Level that you choose before installing the Windows XP/2000/2003 operating system and other software drivers. (The necessary drivers are all included on the Supermicro CD that came packaged with your motherboard.) The current version of the ESB2 SATA RAID Utility can only support Windows XP/2000/2003 Operating Systems.

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 up to 3.0 Gbps. Because the serial cables used in SATA are thinner than the traditional cables used in Parallel ATA (PATA), SATA systems have better airflow and can be installed in smaller chassis than PATA systems. In addition, the cables used in 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.

Introduction to the Intel ESB2 Serial RAID Controller Hub

Located in the South Bridge of an Intel chipset, the I/O Controller Hub (ESB2) provides the I/O subsystem with access to the rest of the system. It supports an 1-channel Ultra ATA/100 Bus Master IDE controller (PATA) and six Serial ATA (SATA) ports. The ESB2 supports the following PATA and SATA device configurations: the Legacy mode and the Native mode.

Intel HostRAID Configurations

The following types of Intel HostRAID configurations are supported:

RAID 0 (Data Striping): this writes data in parallel, interleaved ("striped") sections of two hard drives. Data transfer rate is doubled if a single disk is used.

RAID1 (Data Mirroring): identical data from one drive is copied to another drive. The second drive must be the same size or larger than the first drive.

RAID 10 (Striping & Mirroring): RAID 0 and 1 schemes are combined (without parity information) to get the benefits of both.

RAID 5: both data and parity information are striped and mirrored across three or more hard drives.

Intel Matrix Storage

Intel Matrix Storage, supported by the ESB2, allows the user to create RAID 0, RAID 1, RAID 10 and RAID 5 sets by using only six identical hard disk drives. The Intel Matrix Storage Technology creates two partitions on each hard disk drive, and generate a virtual RAID 0, RAID 1, RAID 10 and RAID 5 sets. It also allows you the change the HDD partition size without any data.

Configuring BIOS settings for SATA RAID Functions (-the Native Mode)

1. Press the key at system boot to enter the BIOS Setup Utility.



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

2. Use the arrow keys to select the Exit Settings. Once in the Exit settings, Scroll down to select "Load Optimized Default Settings", and press the <Enter> key. Select OK to confirm the selection. Press the <Enter> key to load the default settings for the BIOS.

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

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

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

6. Scroll down to Exit. Select "Exit Saving Changes" from the Exit menu. Press the <Enter> key to save the changes and exit the BIOS.

7. Once you've exited the BIOS Utility, the system will reboot.

8. At system boot, 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.



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.

Using the Intel ESB2 SATA RAID Utility Program

Creating, Deleting and Resetting RAID Volumes

1. After the system exits from the BIOS Setup Utility, the system will automatically reboot. The following screen appears after Power-On Self Test (POST) routines.

```
RAID Volumes:
None defined.

Physical Disks:
Port Drive Model      Serial #              Size   Type/Status(Vol ID)
0   HDC WD2500SD-01K  WD-HMAL72034971      232.9GB Non-RAID Disk
1   HDC WD2500SD-01K  WD-HMAL72034599      232.9GB Non-RAID Disk
2   HDC WD2500JD-00F  WD-HMAEH1376109      232.9GB Non-RAID Disk
3   HDC WD2500JD-00F  WD-HMAEH1449527      232.9GB Non-RAID Disk

Press <CTRL-I> to enter Configuration Utility...

Adaptec SCSI BIOS v4.30.0
Copyright 2003 Adaptec, Inc. All Rights Reserved.

<<< Press <Ctrl><A> for SCSISelect(TM) Utility! >>>

Slot Ch ID LUN  Vendor      Product              Size  Bus Status
--
04  A  10  0
```

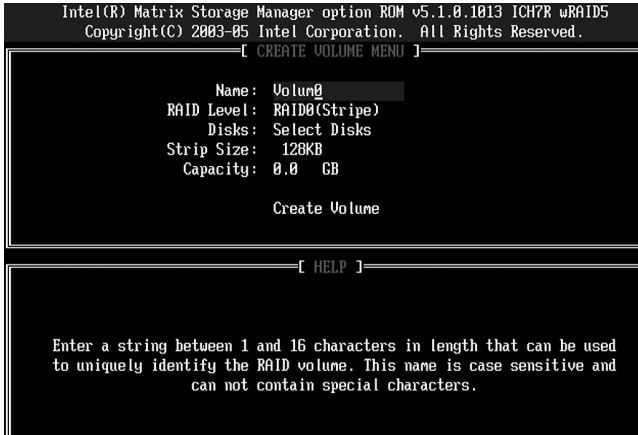
2. When you see the above screen, press the <Ctrl> and the <I> keys simultaneously to have the main menu of the SATA RAID Utility appear:



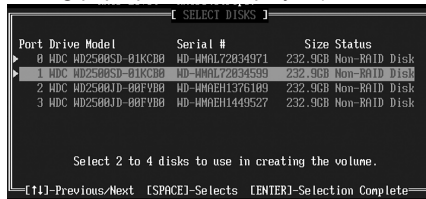
Note: All graphics and screen shots shown in the manual are for reference only. The screen shots shown in the manual do not imply Supernicro's endorsement or non-endorsement on any 3rd party product. Your screen may or many not look exactly the same as the graphics shown in this manual.

Creating a RAID 0 Volume

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



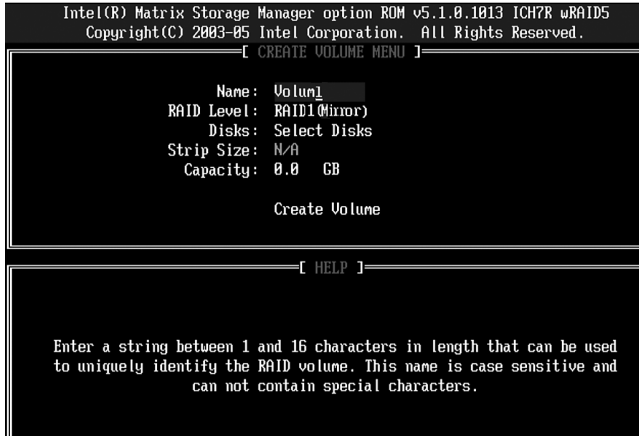
2. Specify a name for the RAID 0 set and press the <Tab> key or the <Enter> key to go to the next field. (You can use the <Esc> key to select the previous menu.)
3. When RAID Level item is highlighted, press the <Up Arrow> and <Down Arrow> keys to select RAID 0 (Stripe) and hit <Enter>.
4. When the Disks item is highlighted, press <Enter> to select the HDD to configure as RAID. The following pop-up screen displays: (See the note on Page 3)



5. Use the <Up Arrow>, <Down Arrow> keys to highlight a drive and press <Space> to select it. A triangle appears to confirm the selection of the drive.
6. Use the <Up Arrow>, <Down Arrow> keys to select the stripe size, ranging from 4 KB to 128 KB for the RAID 0 array, and hit <Enter>. **Note:** For a server, please use a lower stripe size, and for a multimedia system, use a higher stripe size. The default stripe size is 128 KB.
7. Press <Enter> when "Create Volume" is highlighted. A warning message displays.
8. When asked "Are you sure you want to create this volume (Y/N)", type "Y" to create the RAID volume, or type "N" to go back to the Create Volume menu.

Creating a RAID 1 Volume

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



```
Intel(R) Matrix Storage Manager option ROM v5.1.0.1013 ICH7R wRAID5
Copyright(C) 2003-05 Intel Corporation. All Rights Reserved.
[ CREATE VOLUME MENU ]

Name: Volun1
RAID Level: RAID1(Mirror)
Disks: Select Disks
Strip Size: N/A
Capacity: 0.0 GB

Create Volume

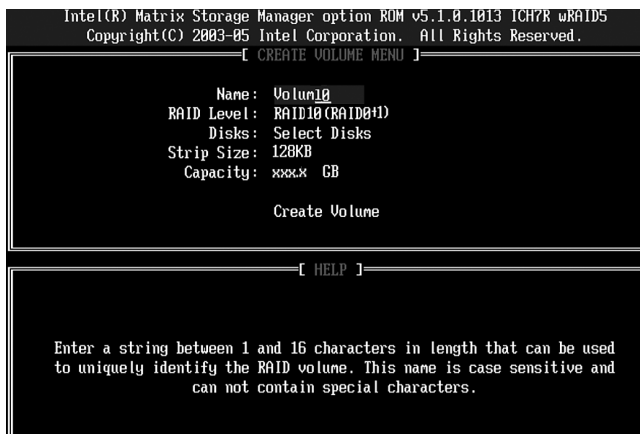
[ HELP ]

Enter a string between 1 and 16 characters in length that can be used
to uniquely identify the RAID volume. This name is case sensitive and
can not contain special characters.
```

2. Specify a name for the RAID 1 set and press the <Tab> key or the <Enter> key to go to the next field. (You can use the <Esc> key to select the previous menu.)
3. When RAID Level item is highlighted, press the <Up Arrow>, <Down Arrow> keys to select RAID 1 (Mirror) and hit <Enter>.
4. When the Capacity item is highlighted, enter your RAID volume capacity and hit <Enter>. The default setting is the maximum capacity allowed.
5. Press <Enter> when the Create Volume item is highlighted. A warning message displays.
6. When asked "Are you sure you want to create this volume (Y/N), type "Y" to create the RAID volume, or type "N" to go back to the Create Volume menu.

Creating a RAID 10 (RAID 1+ RAID 0)

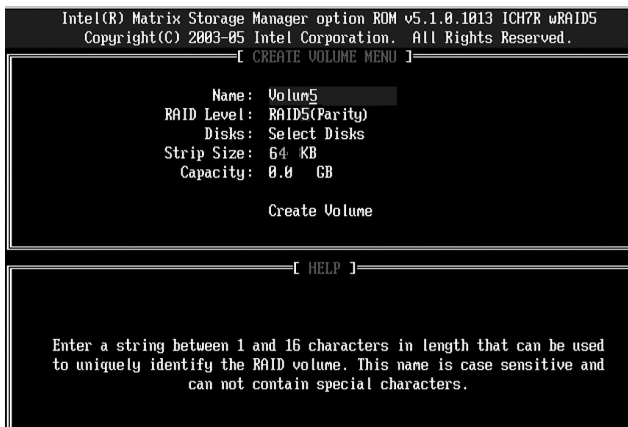
1. Select "Create RAID Volume" from the main menu and press the <Enter> key. The following screen will appear:



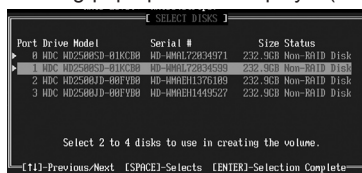
2. Specify a name for the RAID 10 set and press <Enter>.
3. When RAID Level item is highlighted, use the <Up Arrow>, <Down Arrow> keys to select RAID 10 (RAID1 + RAID0) and hit <Enter>.
4. When the Stripe Size is highlighted, use the <Up Arrow>, <Down Arrow> keys to select the stripe size from 4 KB to 128 KB for your RAID 10 and hit <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.)
5. When the RAID Volume Capacity item is highlighted, enter your RAID volume capacity and hit <Enter>. The default setting is the maximum capacity allowed.
6. Press <Enter> when the Create Volume item is highlighted. A warning message displays.
7. When asked "Are you sure you want to create this volume (Y/N)", press "Y" to create the RAID volume, or type "N" to go back to the Create Volume menu.

Creating a RAID 5 Set (Parity):

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



2. Specify a name for the RAID 5 set and press <Enter>.
3. When the RAID Level is highlighted, use the <Up Arrow>, <Down Arrow> keys to select RAID 5 (Parity) and hit <Enter>.
4. When the Disk item is highlighted, press <Enter> to select the HDD to configure as RAID. The following pop-up screen displays: (See the note on Page 3.)



5. Use the <Up Arrow>, <Down Arrow> keys to highlight a drive and press <Space> to select it. A triangle appears to confirm the selection of the drive.
6. Use the <Up Arrow>, <Down Arrow> keys to select the stripe size, ranging from 4 KB to 128 KB for the RAID 5 array, 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 volume 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.
9. When asked "Are you sure you want to create this volume (Y/N), type "Y" to create the RAID volume, or type "N" to go back to the Create Volume menu.

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.)

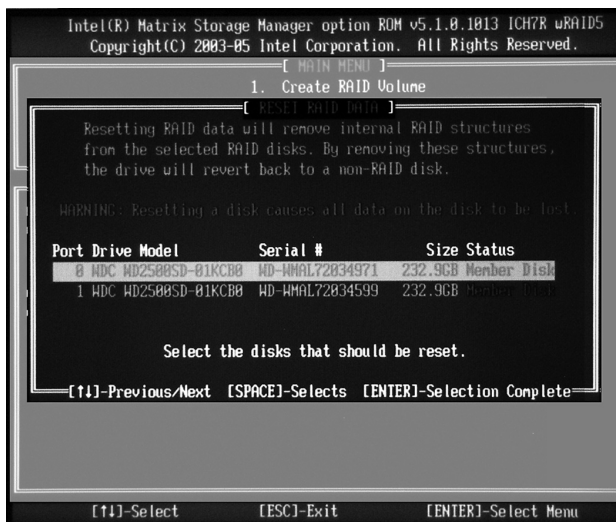
1. From the Main menu, select item2-Delete RAID Volume, and press <Enter>.
2. Use the <Up Arrow>, <Down Arrow> keys to select the RAID set you want to delete and press . A Warning message displays.
3. When asked "Are you sure you want to delete this volume (Y/N), press "Y" to delete the RAID volume, or type "N" to go back to the Delete Volume menu.

Resetting to a Non-RAID Setting or Resetting a RAID HDD



Warning: Be cautious when you reset a RAID volume HDD to non-RAID or Resetting a RAID HDD. Resetting a RAID volume or a RAID HDD will reformat the HDD, and delete the internal RAID structure on the drive.

1. From the main menu, select item3-Reset Disks to Non- RAID, and press <Enter>. The following screen will appear:



2. Use the <Up Arrow>, <Down Arrow> keys to highlight the RAID set drive to reset and press <Space> to select.
3. Press <Enter> to reset the RAID set drive. A Warning message displays.
4. Press "Y" to reset the drive, or type "N" to go back to the main menu.

Exiting the Intel Matrix Storage Manager Utility

1. From the main menu, select item4-Exit, and press <Enter>. A warning message will appear.
2. Press "Y" to reset the drive, or type "N" to go back to the main menu.

2 Installing the Windows XP/2000/2003 OS with RAID Functions

Installing a New Operating System-the Windows XP/2000/2003 OS

1. Insert Microsoft's Windows XP/2000/2003 Setup CD in the CD Driver, 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) you want to select.
4. Insert the driver diskette-"Intel AA RAID XP/2000/2003 Driver for ESB2 into Drive A: and press the <Enter> key.
5. Choose the Intel(R) ESB2 SATA RAID Controller from the list indicated on the XP/2000/2003 Setup screen, and press the <Enter> key.
6. Press the <Enter> key to continue the installation process. (If you need to specify any additional devices to be installed, do it at this time.) Once all devices are specified, press the <Enter> key 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 the Windows XP/2000/2003 installation.
8. After Windows XP/2000/2003 Installation is completed, the system will automatically reboot.



Note: the current version of the ESB2 SATA RAID Utility can only support the Windows XP/2000/2003 Operating System.