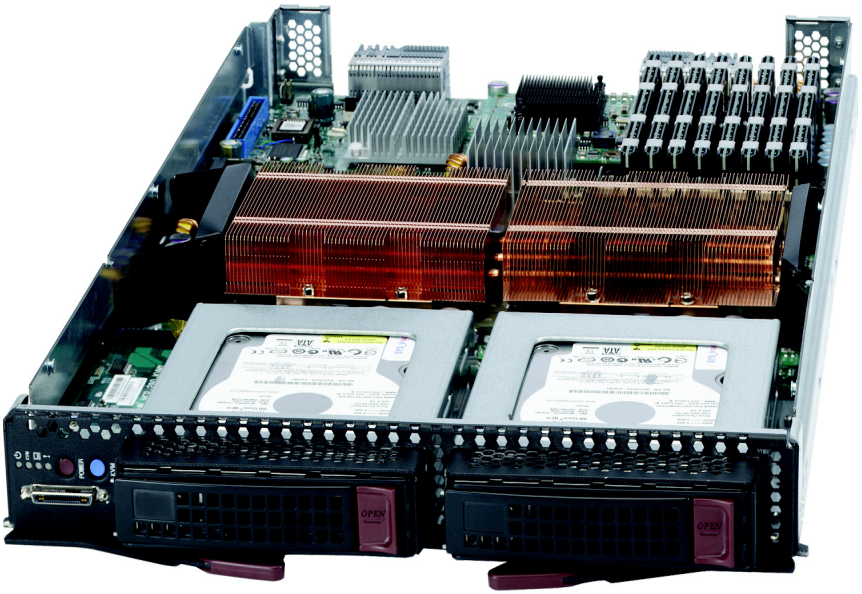
SUPERMICRO®

SBI-7125B-T1 Blade Module



RAID Setup Procedure

Revison 1.0

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Manual Revison 1.0

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SBI-7125B-T1
RAID Setup Procedure

1. Installing the Operating System

An operating system (OS) must be installed on each blade module. Unlike most blade systems, blades with Microsoft Windows OS and blades with Linux OS can both occupy and operate within the same blade enclosure. Refer to the Supermicro web site for a complete list of supported operating systems.

NOTE: If you want to have a RAID array on a blade module, **you must install the ESB2 driver when you install the OS** (not after installing the OS).

See Section 3: Installing RAID in the SBI-7125B-T1 Blade Module on page 2 for further details.

There are several methods of installing an OS to the blade modules.

Installing with an External USB CD-ROM Drive

The most common method of installing the OS is with an external USB CD-ROM drive. Take the following steps to install the OS to a blade module:

WARNING: Installing the OS from an external CD-ROM drive may take several hours to complete.

1. Connect an SUV cable (Serial port/USB port/Video port cable) to the KVM connector on the front of the blade module. You will then need to attach a USB hub to the USB port on this cable to provide multiple USB ports.
2. Connect the external CD-ROM drive, a USB keyboard and a mouse to the USB hub. You will also need to connect a monitor to the video connector on the SUV cable. Turn on the blade module.
3. Insert the CD containing the OS into the CD-ROM drive.
4. Follow the prompts to begin the installation.

Installing via PXE Boot

PXE (Preboot Execution Environment) is used to boot a computer over a network. To install the OS via PXE, the following conditions must be met:

1. The PXE Boot option in BIOS must be enabled.
2. A PXE server has been configured (this can be another blade in the system).
3. The PXE server must be connected over a network to the blade to be booted.

4. The blade has only non-partitioned/unformatted hard drives installed and no bootable devices attached to it.

Once these conditions are met, make sure the PXE server is running then turn on the blade you wish to boot and/or install the OS to. The BIOS in the blade will look at all bootable devices and finding none will connect to the PXE server to begin the boot/ install.

Installing via Virtual Media (Drive Redirection)

You can install the OS via Virtual Media through either the IPMI or the Web-based Management utility. With this method, the OS is installed from an ISO image that resides on another system/blade. Refer to the appropriate Appendix in the *SuperBlade User's Guide* for the Virtual Media (CD-ROM or Drive Redirection) sections in either of the two utility programs.

2. Management Software

System management may be performed with either of two software packages: IPMI or a Web-based Management utility. Both are designed to provide an administrator with a comprehensive set of functions and monitored data to keep tabs on the system and perform management activites.

Refer to *Chapter 8, SuperBlade User's Guide* for details on the various functions provided by these management programs.

3. Installing RAID in the SBI-7125B-T1 Blade Module

Each SBI-7125B-T1 blade module supports two hard drives, which may be used to create a RAID 0 or RAID 1 array. For the blade's B7DBE mainboard, you may use either the Intel or Adaptec RAID controller and utility: use the Intel driver for Windows and the Adaptec driver for Linux - both are included on the CD that ships with the system. In either case, the ESB2 driver must be loaded when you install the operating system.

Preparing for Setup

Before you begin the installation, verify the following:

1. The SBI-7125B-T1 blade module has two or more hard drives installed.
2. These drives must not have an OS installed and must be non-partitioned (formatted is ok).
3. The installation procedure is done via KVM, so have a KVM cable (CBL-0218L) connected to the KVM connector on the blade module with a keyboard, mouse and monitor attached.

NOTE: You may also instead use IPMI or the Web-based Management utility to access the blade.

4. Connect a USB floppy drive to a USB port on the KVM cable, which is attached to the blade module on the front of the blade.
5. On another computer, use the Supermicro CD-ROM that came with the system to load the ESB2 driver it contains onto a floppy disk.

Changing BIOS Settings

1. Boot the SBI-7125B-T1 blade and hit the <DELETE> key to enter the BIOS setup utility.
2. In the MAIN Menu, highlight the SATA CONTROLLER MODE setting and hit <ENTER>.
3. Highlight the ENHANCED MODE setting and hit <ENTER> to enable it.
4. Two additional settings will appear: SATA RAID ENABLE and ICH RAID CODE BASE. Enable the SATA RAID setting, then choose either ICH (for Intel RAID) or ESB2 (for Adaptec RAID) in the ICH RAID CODE BASE setting.
5. Go to the EXIT Menu, highlight SAVE CHANGES AND EXIT and hit <ENTER>.

Installation

1. After exiting the BIOS utility, the blade will begin to boot up. At this time you will need to hit either the <CTRL> + <A> keys if you chose to use Adaptec RAID or the <CTRL> + <I> keys if you chose to use Intel RAID. (Both keys must be hit simultaneously.)
2. You will now enter the RAID setup utility (*ACU* for Adaptec, *Intel Matrix Storage Manager* for Intel). Refer to the appropriate utility in Section 4 to create and build a RAID array.
3. After building the RAID array, save and exit the RAID utility and the OS installation will begin. At some point, you will see a prompt asking you to hit the <F6> key if you have drives to install. When you see the prompt, hit the <F6> key.
4. When prompted, insert the floppy containing the ESB2 driver into the USB floppy drive, then hit <ENTER>.
5. When the driver installation is complete, the system will reboot.

4. RAID Utility Programs

Two RAID utilities are availble for use with the SuperBlade: the *Intel Matrix Storage Manager* (for Intel-based RAID) and the *Adaptec RAID Configuration Utility* (ACU). When you install the OS to a system you must decide which of the two you wish to use, then refer to the relevant utility in this section for details on its use.

RAID Configurations

With two or hard drives per blade, the following RAID configurations are supported:

- RAID 0 (Data Striping): this writes data in parallel, interleaved ("striped") sections on two hard drives. Data transfer rate is doubled over using a single disk.
- RAID1 (Data Mirroring): an identical data image from one drive is copied to another drive. The second drive must be the same size or larger than the first drive.
- Enhanced RAID1 (Data Mirroring): as RAID1 with data mirrored from one or more disks to one or more disks of a second, larger size. You can couple the disks from the source to create a virtual volume and use one or more disks of a second, larger size to provide a single larger volume (or multiple larger volumes) that serve as the mirroring drive or drives for the array.

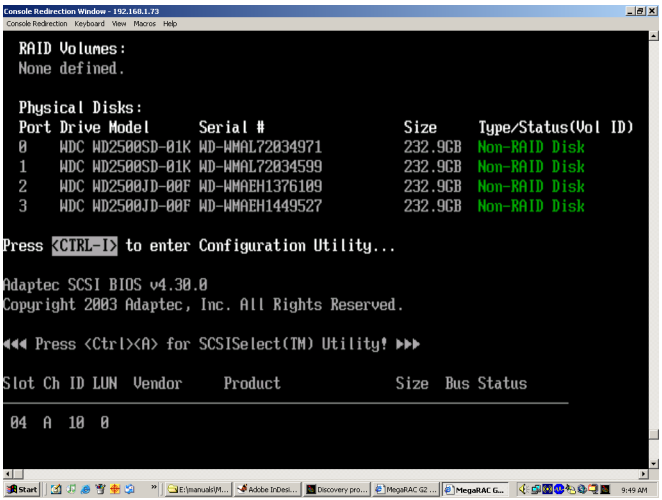
Intel Matrix Storage Manager

The *Intel Matrix Storage Manager* is supported by the ESB2. Use the manager to create a RAID array when installing the OS (see previous section) and to manage your existing RAID arrays.

Creating, Deleting and Resetting RAID Volumes

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

Figure 1. RAID Volumes

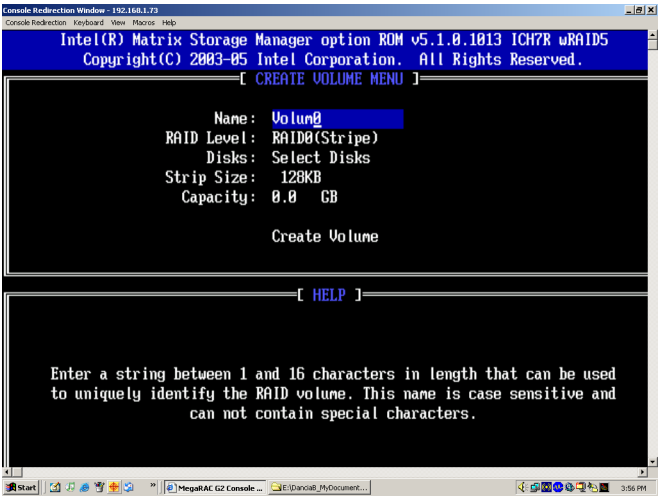


When you see this screen, press the <CTRL> and the <I> keys simultaneously to enter the main menu of the Intel RAID utility.

Creating a RAID 0 Volume

1. Select CREATE RAID VOLUME from the MAIN menu and press the <ENTER> key. The following screen will appear:

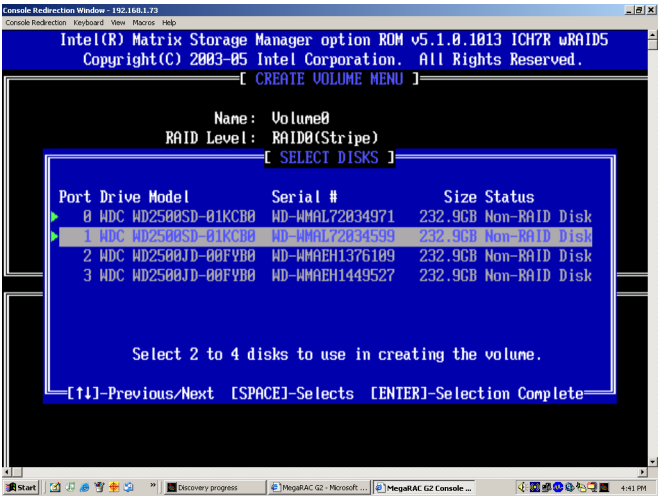
Figure 2. RAID 0 Volume



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 the RAID LEVEL field is highlighted, press the <UP ARROW> and <DOWN ARROW> keys to select RAID 0 (STRIPE) and hit <ENTER>.
4. When the DISKS field is highlighted, press <ENTER> to select the HDD to configure as RAID. The SELECT DISK screen appears (Figure 3).[1]

1. All graphics and screen shots shown in the manual are for reference purposes only, and do not imply Supermicro's endorsement or non-endorsement of any third party product. Your screens may or many not look the same as the screenshots shown in this manual.

Figure 3. Select Disk

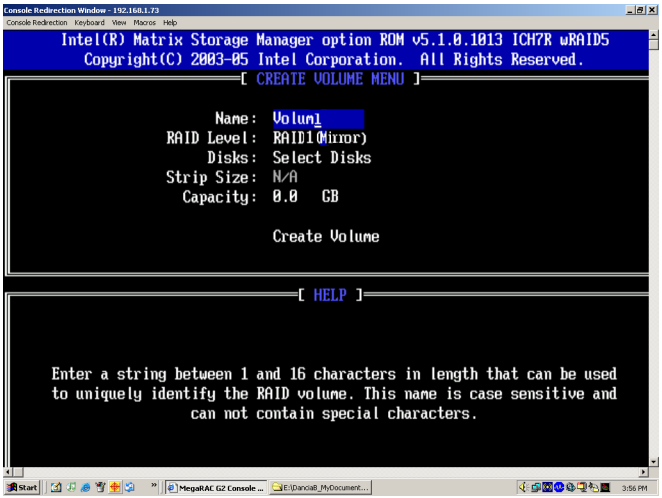


5. Use the <UP ARROW> and <DOWN ARROW> keys to highlight a drive and press <SPACE> to select it. A triangle will appear to confirm the selection of the drive.
6. Use the <UP ARROW> and <DOWN ARROW> keys to select the stripe size and hit <ENTER>.
7. Press <ENTER> when the CREATE VOLUME item is highlighted. This displays a warning message.
8. 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 1 Volume

1. Select CREATE RAID VOLUME from the main menu and press the <ENTER> key. The RAID Volume 1 screen appears (Figure 4).

Figure 4. RAID Volume 1



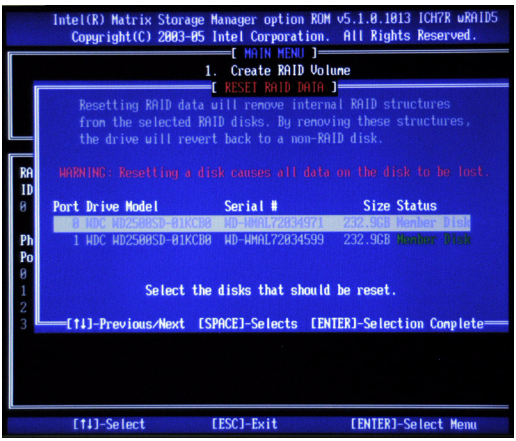
2. Specify a name for the RAID 1 set and press the <TAB> key or the <ENTER> key to go to the next field. (You can use the <ESC> key to select the previous menu.)
3. When RAID LEVEL item is highlighted, press the <UP ARROW>, <DOWN ARROW> keys to select RAID 1 (MIRROR) and hit <ENTER>.
4. When the CAPACITY 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)?, press **Y** to create the RAID volume or **N** to go back to the CREATE VOLUME menu.

Resetting to Non-RAID and Resetting a RAID HDD

WARNING: Use caution when resetting a RAID HDD to non-RAID or when resetting a RAID HDD. This process will reformat the HDD and delete the internal RAID structure on the drive.

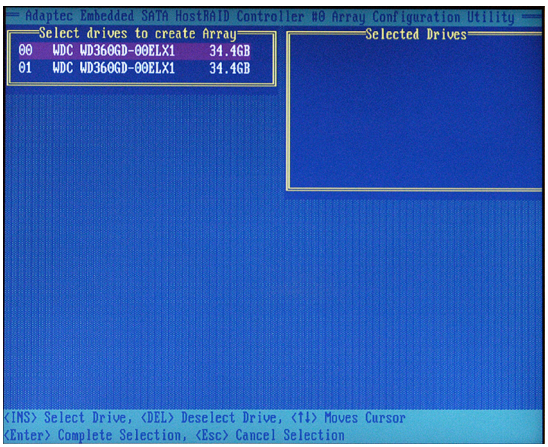
1. From the MAIN menu, select RESET DISKS TO NON- RAID and press <ENTER>. The RAID RESET screen appears (Figure 5).

Figure 5. RAID Reset



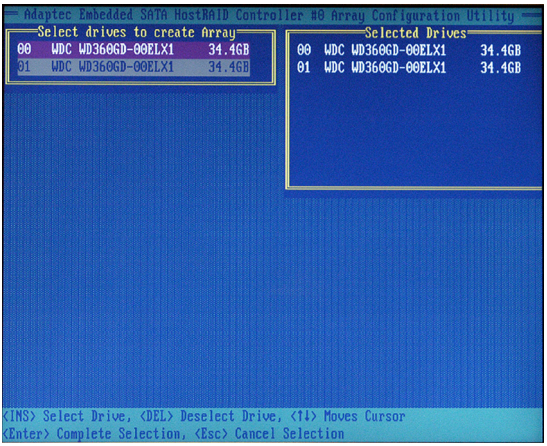
2. Select the disks for the new array (Figure 6) and press <INSERT>. To deselect any disk, highlight the disk and press <DELETE>.

Figure 6. Select Drives for Array Creation



3. Press <ENTER> when both disks for the new array are selected. This displays the ARRAY PROPERTIES menu (Figure 7).

Figure 7. Array Creation



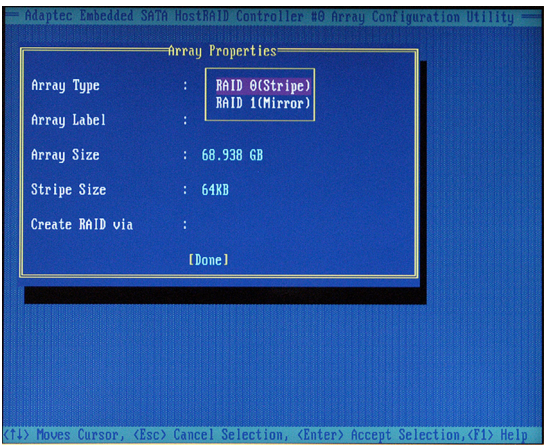
Assigning Array Properties

Once you've create a new array, you are ready to assign its properties.

NOTE: Once the array is created and its properties are assigned, you cannot change the array properties using the *ACU*. You will need to use the *Adaptec Storage Manager: Browser Edition*.

1. In the ARRAY PROPERTIES menu (Figure 8), select an array type and press <ENTER>. Note that only the available array types (RAID 0 and RAID1) are displayed on the screen.

Figure 8. Array Assignment



2. Under ARRAYS LABEL, type in a label and press <ENTER>.

NOTE: The label cannot be more than 15 characters.

3. For RAID 0, select the desired stripe size. Available stripe sizes are 16, 32, and 64 KB-default. It is recommended that you do not change the default setting.
4. The item CREATE RAID VIA allows you to select between the different methods of creating RAID 0 and RAID 1 arrays. Table 1 gives examples of when each is appropriate.

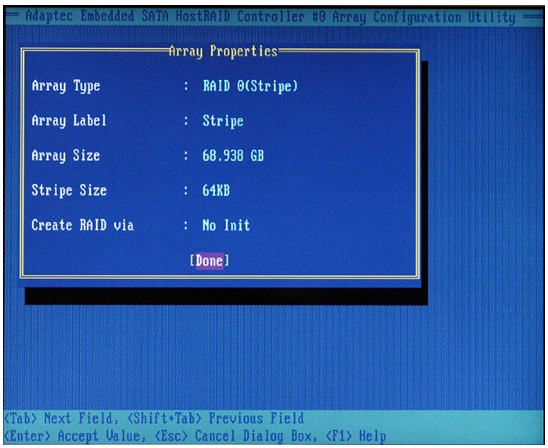
Table 1. RAID Levels

RAID Level	Create Via	When Appropriate
RAID 0	No Init.	Creating a RAID 0 on new drives
RAID 0	Migrate[a]	Creating a RAID 0 from one new drive and from one drive with data you wish to preserve
RAID 1	Build 1	For any RAID 1 but especially if you have data on one drive you wish to preserve
RAID 1	Clear	Creating a RAID 1 on new drives or to ensure that the array contains no data after creating it
RAID 1	Quick	Fastest way to create a RAID 1
RAID 1	Init	When using new drives

a. If you select MIGRATE FOR RAID 0, or BUILD FOR RAID 1, you will be asked to select the source drive. The contents of the source drive will be preserved, however, the data on the new drive will be lost.

5. When you are finished, press DONE (as shown in Figure 9).

Figure 9. Array Properties



Notes

1. Before adding a new drive to an array, back up any data contained on the new drive. Otherwise, all data will be lost.
2. If you stop the BUILD or CLEAR process on a RAID 1 from the *ACU*, you can restart it by pressing <CTRL> + <R>.
3. A RAID 1 created using the QUICK INIT option may return some data miscompares if you later run a consistency check. This is normal and is not a cause for concern.

4. The *ACU* allows you to use drives of different sizes in an array. However, during a build operation, only the smaller drive can be selected as the source or first drive.
5. When migrating from single volume to RAID 0, migrating from a larger drive to a smaller drive is allowed. However, the destination drive must be at least half the capacity of the source drive.

Adaptec does not recommend that you migrate or build an array on Windows dynamic disks (volumes), as it will result in data loss.

WARNING: Do not interrupt the creation of a RAID 0 using the MIGRATE option. If you do, you will not be able to restart or to recover the data that was on the source drive.