



# Server systems and motherboards

## *RAID configuration and driver installation guide*

For

- AP130-E1 5U Rackmount Server
- AP1720-E2 5U Rackmount Server
- NCCH-DL Motherboard
- PSCH-L Motherboard

**E1600**

**First edition V1  
November 2004**

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# 1. RAID configurations

The server system/motherboard comes with the following RAID solutions:

- **Adaptec® HostRAID™** technology embedded in the Intel® 6300ESB Southbridge supports up to two SATA hard disk drives and RAID 0, 1, and JBOD configurations.
- **Promise® PDC20319 SATA RAID** controller supports up to four SATA hard disk drives and RAID 0, 1, and 0+1 configurations.

Refer to the RAID definitions below.

## 1.1 RAID definitions

**RAID 0** (*Data striping*) optimizes two identical hard disk drives to read and write data in parallel, interleaved stacks. Two hard disks perform the same work as a single drive but at a sustained data transfer rate, double that of a single disk alone, thus improving data access and storage. Use of two new identical hard disk drives is required for this setup.

**RAID 1** (*Data mirroring*) copies and maintains an identical image of data from one drive to a second drive. If one drive fails, the disk array management software directs all applications to the surviving drive as it contains a complete copy of the data in the other drive. This RAID configuration provides data protection and increases fault tolerance to the entire system. Use two new drives or use an existing drive and a new drive for this setup. The new drive must be of the same size or larger than the existing drive.

**RAID 0+1** is *data striping* and *data mirroring* combined without parity (redundancy data) having to be calculated and written. With the RAID 0+1 configuration you get all the benefits of both RAID 0 and RAID 1 configurations. Use four new hard disk drives or use an existing drive and three new drives for this setup.

**JBOD** (*Spanning*) stands for **Just a Bunch of Disks** and refers to hard disk drives that are not yet configured as a RAID set. This configuration stores the same data redundantly on multiple disks that appear as a single disk on the operating system. Spanning does not deliver any advantage over using separate disks independently and does not provide fault tolerance or other RAID performance benefits.



---

If you want to boot the system from a hard disk drive included in a created RAID set, copy first the RAID driver from the support CD to a floppy disk before you install an operating system to the selected hard disk drive. Refer to section “2. RAID driver installation” for details.

---

## 1.2 Installing hard disk drives

The motherboard supports Serial ATA hard disk drives for RAID set configuration. For optimal performance, install identical drives of the same model and capacity when creating a disk array.

To install the SATA hard disks for RAID configuration:

1. Install the SATA hard disks into the drive bays following the instructions in the system user guide.
2. Connect a SATA signal cable to the signal connector at the back of each drive and to the SATA connector on the motherboard.
3. Connect a SATA power cable to the power connector on each drive.

## 1.3 Setting the RAID item in BIOS

You must set the RAID item in the BIOS Setup before you can create a RAID set(s). To do this:

1. Enter the BIOS Setup during POST.
2. Go to the **Advanced Menu**, select **IDE Configuration**, then press <Enter>.
3. Select the item **Configure SATA as RAID**, then press <Enter> to display the configuration options.
4. Select **Yes** from the options, then press <Enter>.
5. Save your changes, then exit the BIOS Setup.



---

Refer to the system or the motherboard user guide for details on entering and navigating through the BIOS Setup.

---

## 1.4 RAID configuration utilities

Depending on the SATA RAID connectors that you use, you can create a RAID set using the utilities embedded in each RAID controller. For example, use the **Adaptec RAID Configuration Utility** if you installed SATA hard disk drives on the SATA connectors supported by the Intel® ESB6300 Southbridge. Refer to the succeeding sections for details on how to enter each RAID configuration utility.

## 1.5 Adaptec RAID Configuration Utility

The Adaptec RAID Configuration Utility allows you to create RAID 0 and RAID 1 set(s) from SATA hard disk drives connected to the SATA connectors supported by the motherboard Southbridge chip.

To enter the Adaptec RAID Configuration Utility:

1. Turn on the system after installing all the SATA hard disk drives.
2. During POST, the Adaptec HostRAID™ technology automatically detects the installed SATA hard disk drives and displays any existing RAID set(s). Press <Ctrl> <A> to enter the utility.

```
Adaptec Embedded SATA HostRAID BIOS V2.2-1 1237
(c) 1998-2004 Adaptec, Inc. All Rights Reserved.

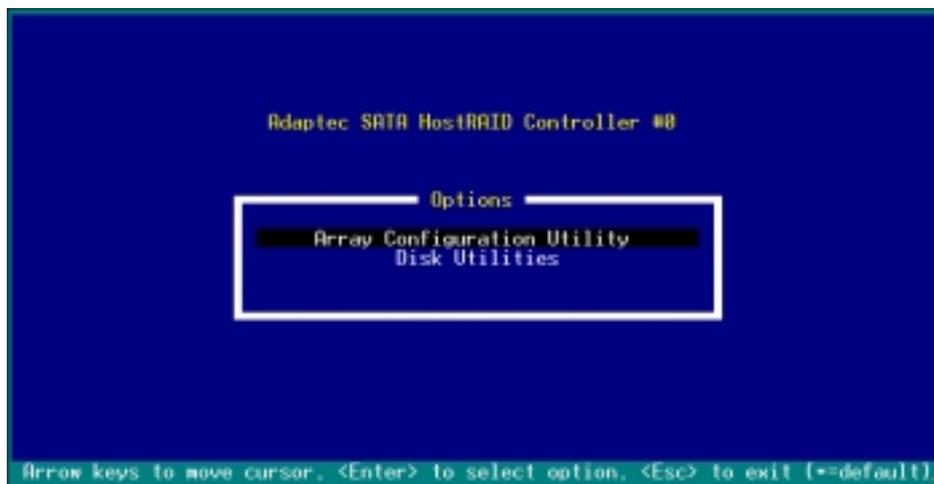
*** Press <Ctrl><A> for Adaptec RAID Configuration Utility! ***

Controller #00: HostRAID-ICH8 at PCI Bus:00, Dev:1F, Func:02
Loading Configuration...Done.
Port#00 ST380023AS      3.01      74.53 GB Healthy
Port#01 ST380023AS      3.01      74.53 GB Healthy

SATA JBOD- PORT-0 ST380023AS      74.53 GB
SATA JBOD- PORT-1 ST380023AS      74.53 GB

2 JBOD Device(s) Found.
```

3. Use the arrow keys to highlight an option.



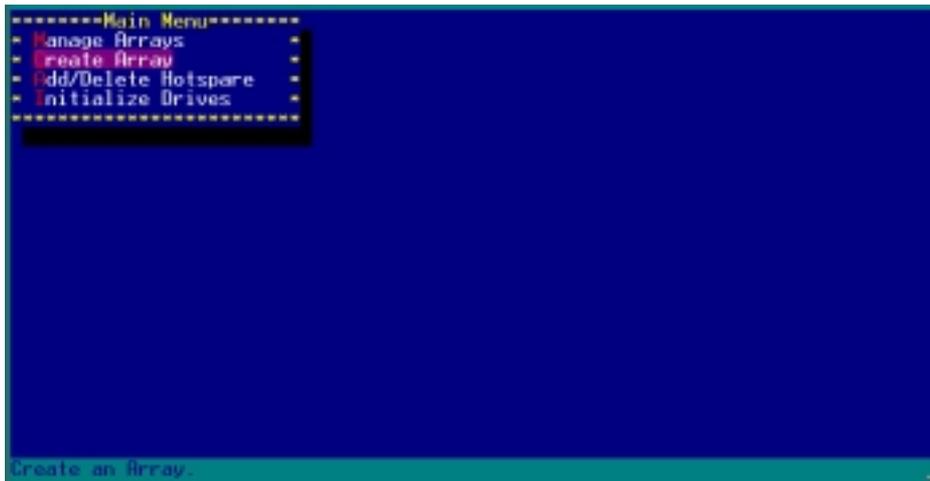
The **Array Configuration Utility** menu lets you create and manage RAID sets. The **Disk Utilities** allows you to check and verify SATA hard disk drives.

At the bottom of the screen is the legend box. The keys on the legend box allow you to navigate through the setup menu options or execute commands. The keys on the legend box vary according to the menu level.

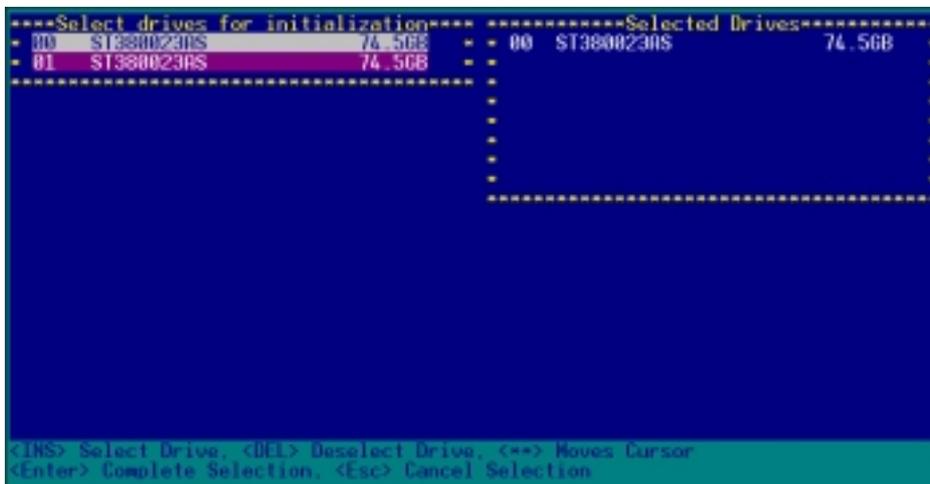
## 1.5.1 Creating a RAID 0 set (Striped)

To create a RAID 0 set:

1. From the Adaptec RAID Configuration Utility initial menu, highlight **Array Configuration Utility**, then press <Enter>.
2. From the Main Menu, select **Create Array**, then press <Enter>.



3. Select the first drive you want to add to the array, then press <Insert>. The selected drive appears in the **Selected Drives** section.



---

A RAID 0 set requires two identical hard disk drives.

---

- When all the drives required for a RAID 0 set appear in the **Selected Drives** field, press <Enter>.

```
-----Select drives to create Array-----
- 00 ST3800230S 74.5GB -
- 01 ST3800230S 74.5GB -
-----Selected Drives-----
- 00 ST3800230S 74.5GB
- 01 ST3800230S 74.5GB
-----
<INS> Select Drive, <DEL> Deselect Drive, <+> Moves Cursor
<Enter> Complete Selection, <Esc> Cancel Selection
```

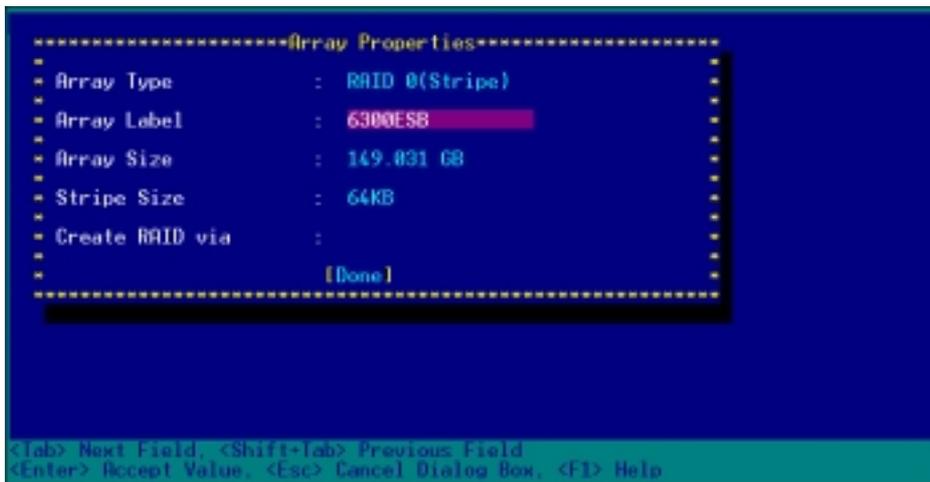
- A message appears on screen, warning users that initialization will erase all array information on the drives. Press <Y> to proceed or press <N> to abort creating the RAID 0 set.

```
- Warning: Initialization will erase all Array information
- from the selected drives. Any Array using any of these drives
- as members will be affected. Do you want to continue?(Yes/No):
```

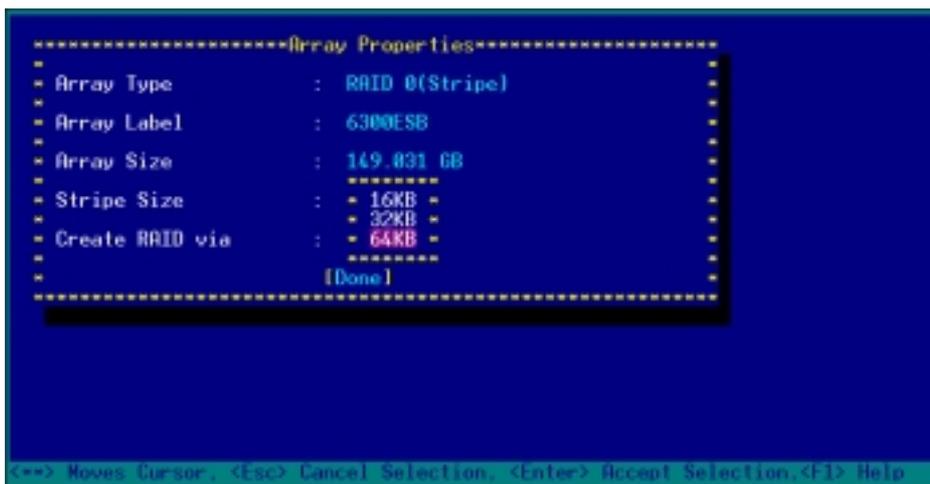
- After disk initialization, the utility displays the **Array Properties** menu. Select **Array Type > RAID 0 (Stripe)**, then press <Enter>.

```
-----Array Properties-----
- Array Type      : - RAID 0(Stripe)-
- Array Label     : -----
- Array Size      : 149.031 GB
- Stripe Size     : 64KB
- Create RAID via :
-                [Done]
-----
<+> Moves Cursor, <Esc> Cancel Selection, <Enter> Accept Selection, <F1> Help
```

7. Move the cursor to the **Array Label** option, then type a name for the RAID 0 set. Press <Enter> when done.



8. Move the cursor to the **Stripe Size** option, select **64KB** from the menu, then press <Enter> to select.



---

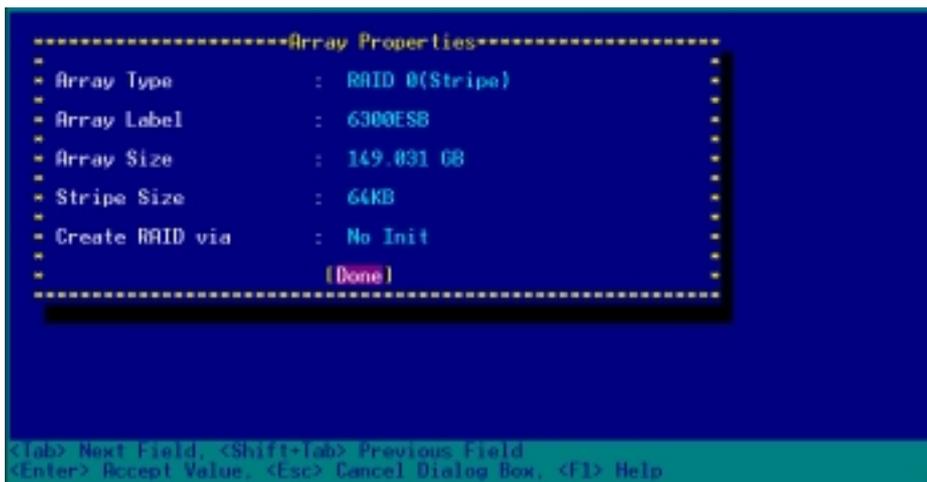
For server systems, we recommend that you use a lower array block size. For multimedia computer systems used mainly for audio and video editing, we recommend a higher array block size for optimum performance.

---

9. Move the cursor to the **Create RAID via** option, select **No Init** from the menu, then press <Enter> to select.



10. When you have finished setting the array properties, move the cursor to **Done**, then press <Enter> to create the RAID 0 set.



11. After you have created the RAID 0 set, the utility main menu appears. Select **Manage Arrays** to display the array, then press <Enter> to view the array properties.

```
-----Main Menu-----
- Manage Arrays
- Create Array
- Add/Delete Hotspare
- Initialize Drives
-----
-----List of Arrays-----
-- 00 6300ESB RAID 0 149GB --
-----
Symbol (*) indicates this array is bootable, <Del> Delete Array
<Enter> Display Array properties and members, <Ctrl-S> Verify Array
<Ctrl-R> Rebuild Array, <Ctrl-B> Mark/Unmark Bootable Array <*> Moves Cursor
```

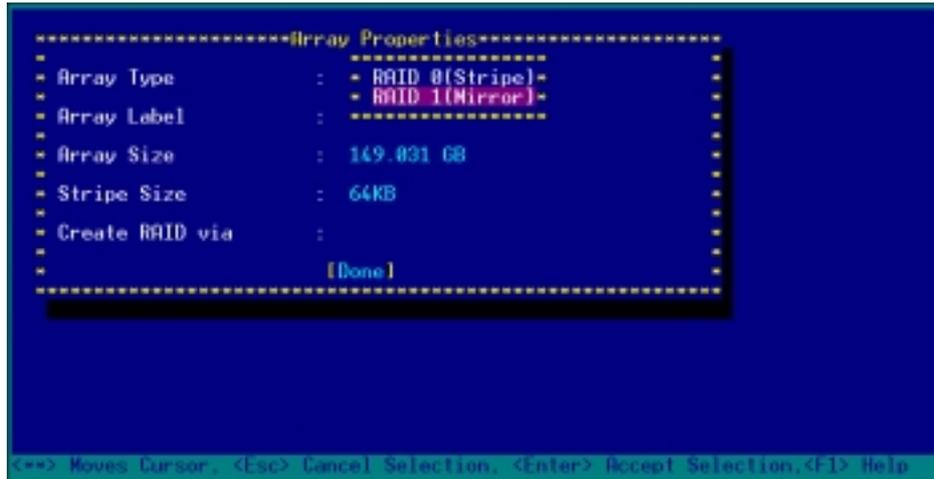
12. The screen displays the array properties. Press <Esc> to return to the previous menu.

```
-----Main Menu-----
- Manage Arrays
- Create Array
- Add/Delete Hotspare
- Initialize Drives
-----
-----List of Arrays-----
-- 00 6300ESB RAID 0 149GB --
-----
-----Array Properties-----
- Array #00 : 6300ESB Type : RAID 0
- Array Size : 149GB Stripe Size: 64KB
- Array Status : OPTIMAL
-----
-----Array Members-----
- 00 ST380023AS 74.5GB
- 01 ST380023AS 74.5GB
-----
<Esc> Previous Menu
```

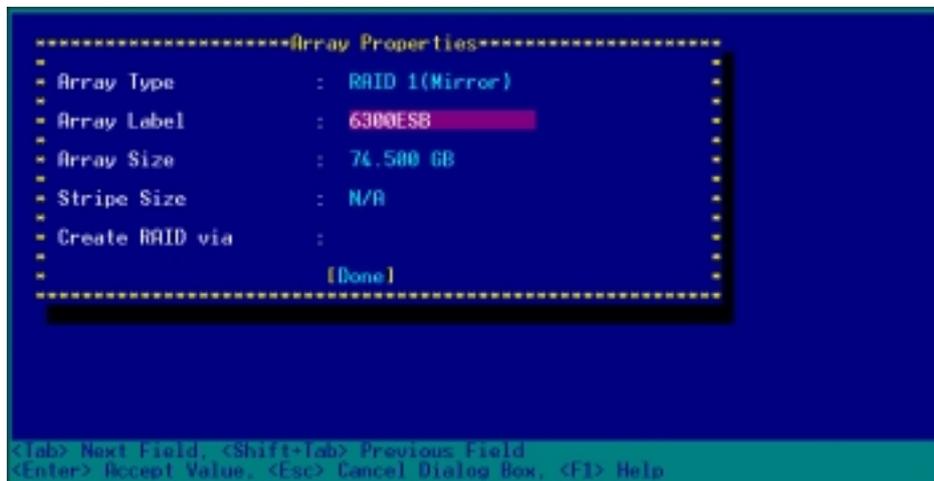
## 1.5.2 Creating a RAID 1 set (Mirrored)

To create a RAID 1 set:

1. Follow instructions 1 to 5 of the section “Creating a RAID 0 set (Stripe).”
2. From the **Array Properties** menu, select **Array Type > RAID 1 (Mirror)**, then press <Enter>.



3. Move the cursor to the **Array Label** option, then type a name for the RAID 1 set. Press <Enter> when finished.



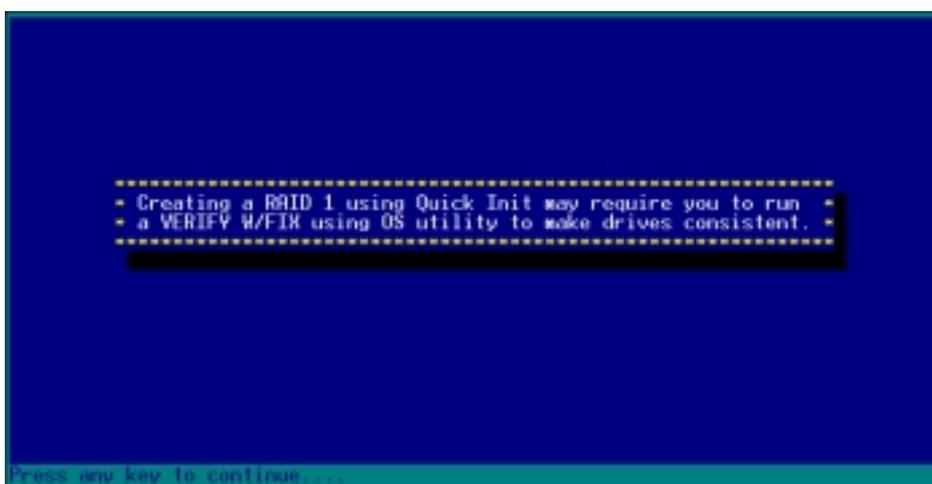
4. Move the cursor to the **Create RAID via** option, select **Quick Init** from the menu, then press <Enter> to select.



5. When you have finished setting the array properties, move the cursor to **Done**, then press <Enter> to create the RAID 1 set.



6. A message appears on screen informing you that a RAID 1 array created with Quick Init requires you to run a Verify W/FIX on the drives for consistency. Press any key to continue.



- After you have created the RAID 1 set, the utility main menu appears. Select **Manage Array** to display the created set. Press <Enter> to view the array properties.

```

*****Main Menu*****
- Manage Arrays
- Create Array
- Add/Delete Hotspare
- Initialize Drives

*****List of Arrays*****
- 00 6300ESB RAID 1 74.5GB -

Symbol [*] indicates this array is bootable. <Del> Delete Array
<Enter> Display Array properties and members. <Ctrl+S> Verify Array
<Ctrl+R> Rebuild Array. <Ctrl+B> Mark/Unmark Bootable Array <*> Moves Cursor

```

- The screen displays the array properties. Press <Esc> to return to the previous menu.

```

*****Main Menu*****
- Manage Arrays
- Create Array
- Add/Delete Hotspare
- Initialize Drives

*****List of Arrays*****
- 00 6300ESB RAID 1 74.5GB -

*****Array Properties*****
- Array #00 : 6300ESB Type : RAID 1
- Array Size : 74.5GB
- Array Status : OPTIMAL

*****Array Members*****
- 00 ST380023AS 74.5GB
- 01 ST380023AS 74.5GB

<Esc> Previous Menu

```

- To exit the utility, press <Esc>, highlight **Yes**, then press <Enter>.

```

*** Exit Utility? ***
- Yes
- No

Arrow keys to move cursor. <Enter> to select option. <Esc> to exit (*=default)

```

### 1.5.3 Creating a bootable RAID set

To create a bootable RAID set:

1. From the main menu, select **Manage Arrays**, then select the RAID set you want to make as bootable.

```
*****Main Menu*****
- Manage Arrays          *****List of Arrays*****
- Create Array           == 00 6300ESB RAID 0 149GB ==
- Add/Delete Hotspare   *****
- Initialize Drives     *****
*****

Symbol (*) indicates this array is bootable. <Del> Delete Array
<Enter> Display Array properties and members. <Ctrl-S> Verify Array
<Ctrl-R> Rebuild Array. <Ctrl-B> Mark/Unmark Bootable Array <+> Moves Cursor
```

2. Press <Ctrl> + <B>. A message appears on screen informing you that all other arrays (if available) will become non-bootable. Press <Y> to continue.

```
*****Main Menu*****
- Manage Arrays          *****List of Arrays*****
- Create Array           == 00 6300ESB RAID 0 149GB ==
- Add/Delete Hotspare   *****
- Initialize Drives     *****
*****

- This will make all other existing bootable array Non-bootable.
- Do you want to make this array bootable? (Yes/No):
*****

Y - Yes, N - No.
```

The RAID 0 array becomes bootable. An asterisk precedes a bootable array for easy identification.

```

*****Main Menu*****
* Manage Arrays          *****List of Arrays*****
* Create Array           == * 00 6300ESB          RAID 0          149GB ==
* Add/Delete Hotspare   *
* Initialize Drives     *
*
Symbol (-) indicates this array is bootable, <Del> Delete Array
<Enter> Display Array properties and members, <Ctrl+S> Verify Array
<Ctrl+R> Rebuild Array, <Ctrl+B> Mark/Unmark Bootable Array <=> Moves Cursor

```

3. Press <Esc> to return to the previous menu.
4. Exit the utility, then reboot the system.
5. During POST, press <Esc> to select the boot device.

```

_ Main Processor(s): Genuine Intel(R) CPU 3.20GHz
-----
* Math Processor      : Built-In          Base Memory Size : 640KB
* Floppy Drive A:    : 1.44 MB 3.5"         Ext'd Memory Size : 1023MB
* Floppy Drive B:    : None              Serial Port(s)   : 3F8,2F8
* Display Type       : VGA/EGA           Parallel Port(s) : 378
* BIOS Build Date    : 05/12/04          PS/2 Mouse       : Present
* ACPI 1.0 Support   : Enabled
-----
* ATA(PI) Device(s) Type      Size      LBA   Block SMART 32Bit DMA  PIO
*                               Mode      Mode Info Mode Mode
* Secondary Master : ATAPI CDROM
*                               UDMA2  4
-----
* PCI Devices:
* PCI Onboard PCI Bridge      PCI Onboard PCI Bridge
* PCI Onboard USB Controller, IRQ11 PCI Onboard System Device
* PCI Onboard System Device    PCI Onboard USB Controller, IRQ10
* PCI Onboard USB Controller, IRQ9 PCI Onboard PCI Bridge
* PCI Onboard SerialBus Cntrl, IRQ9 PCI Onboard RAID, IRQ5
* PCI Onboard IDE              PCI Bridge Ethernet, IRQ5
* PCI Bridge RAID, IRQ9        PCI Bridge VGA
-----
Press <ESC> to boot...2

```

6. Use the up or down arrow to highlight the bootable RAID set (HostRAID#0-#0 6300ESB), then press <Enter> to select. The system boots from the RAID set.

```

*****
* Please select boot device:
*****
* 1st FLOPPY DRIVE
* SM-BUSUS DVD-ROM 1:616
* HostRAID#0-#0 6300ESB
*****
* and * to move selection
* ENTER to select boot device
* ESC to boot using defaults
*****

```

## 1.5.4 Deleting a RAID 0 set

To delete a RAID 0 set:

1. From the array list, select the RAID set you want to delete, then press <Del>. The Array Properties dialog box appears.

```
*****Main Menu*****
- Manage Arrays
- Create Array
- Add/Delete Hotspare
- Initialize Drives
-

*****List of Arrays*****
- = 00 6300ESB RAID 0 149GB =
-

Symbol (*) indicates this array is bootable, <Del> Delete Array
<Enter> Display Array properties and members, <Ctrl-S> Verify Array
<Ctrl-R> Rebuild Array, <Ctrl-B> Mark/Unmark Bootable Array <*> Moves Cursor
```

2. Move the cursor to **Delete**, then press <Enter> to delete the selected RAID set; otherwise, move the cursor to **Cancel** to close the dialog box.

```
*****Main Menu*****
- Manage Arrays
- Create Array
- Add/Delete Hotspare
- Initialize Drives
-

*****List of Arrays*****
- = 00 6300ESB RAID 0 149GB =
-

*****Array Properties*****
- Array 000 : 6300ESB Type : RAID 0
- Array Size : 149GB Stripe Size: 64KB
-
- [Delete] [Cancel]
-

<Tab> Next Field, <Shift+Tab> Previous Field
<Enter> Accept Value, <Esc> Cancel Dialog Box
```

- When prompted, press <Y> to delete the RAID set or press <N> to abort the operation.

```
-----Main Menu-----
- Manage Arrays          -----List of Arrays-----
- Create Array          == 00 6300E58   RAID 0   149GB ==
- Add/Delete Hotspare  -----
- Initialize Drives    -----
-----

- WARNING: Deleting the array will result in data loss! -
- Do you want to delete the Array?(Yes/No):              -
-----

Y - Yes, N - No
```

- To verify if the array was deleted, select **Manage Arrays** from the main menu. A **No Arrays Present** message pops up on the screen if no array is detected.

```
-----Main Menu-----
- Manage Arrays          -----
- Create Array          -----
- Add/Delete Hotspare  -----
- Initialize Drives    -----
-----

- No Arrays present. -
-----

Press any key to continue....
```

## 1.5.5 Deleting a RAID 1 set

To delete a RAID 1 set:

1. From the array list, select the RAID set you want to delete, then press <Del>. The Array Properties dialog box appears.

```
-----Main Menu-----
- Manage Arrays
- Create Array
- Add/Delete Hotspare
- Initialize Drives
-----

-----List of Arrays-----
-- 00 RAID 1 RAID 1 74.5GB --
-----

Symbol (*) indicates this array is bootable, <Del> Delete Array
<Enter> Display Array properties and members, <Ctrl-S> Verify Array
<Ctrl-R> Rebuild Array, <Ctrl-B> Mark/Unmark Bootable Array <--> Moves Cursor
```

2. Move the cursor to **Delete**, then press <Enter> to delete the selected RAID set; otherwise, move the cursor to **Cancel** to close the dialog box.

```
-----Main Menu-----
- Manage Arrays
- Create Array
- Add/Delete Hotspare
- Initialize Drives
-----

-----List of Arrays-----
-- 00 RAID 1 RAID 1 74.5GB --
-----

-----Array Properties-----
- Array #00 : RAID 1 Type : RAID 1
- Array Size : 74.5GB
-
- [Delete] [Cancel]
-

<Tab> Next Field, <Shift+Tab> Previous Field
<Enter> Accept Value, <Esc> Cancel Dialog Box
```

- When prompted, press <Y> to delete the RAID set or press <N> to abort the operation.

```

-----Main Menu-----
- Manage Arrays
- Create Array
- Add/Delete Hotspare
- Initialize Drives
-----
-----List of Arrays-----
== 00 RAID 1 RAID 1 74.5GB ==
-----
WARNING: Deleting the array will render array unusable.
Do you want to delete the Array? (Yes/No):
-----
V - Yes, N - No

```

- When prompted, use the arrow keys to select either **Member#0** or **Member#1** to delete a RAID 1 set member. Select **[None]** or **[Both]** if you want to delete the entire array.

```

-----Main Menu-----
- Manage Arrays
- Create Array
- Add/Delete Hotspare
- Initialize Drives
-----
-----List of Arrays-----
== 00 RAID 1 RAID 1 74.5GB ==
-----
-----Deleting Information-----
- Member#0: port#00 Member#1: port#01
- To delete the partition table, choose which member:
-
- [None] [Member#0] [Member#1] [Both]
-----
<Tab> Next Field, <Shift+Tab> Previous Field
<Enter> Accept Value, <Esc> Cancel Dialog Box

```

- To verify if the array was deleted, select **Manage Arrays** from the main menu. A **No Arrays Present** message pops up on the screen if no array is detected.

```

-----Main Menu-----
- Manage Arrays
- Create Array
- Add/Delete Hotspare
- Initialize Drives
-----
No Arrays present.
-----
Press any key to continue...

```

## 1.5.6 Rebuilding a RAID set

The utility displays the condition of the RAID set during the POST. When a RAID set is degraded, you can use the utility to rebuild it.



Check the physical connections of the SATA hard disk drives before you rebuild a degraded RAID set. Check the system and motherboard user guide for additional information.

To rebuild a RAID array:

1. Enter the Adaptec RAID Configuration Utility following the instructions in the section “Creating a RAID 0 (Stripe).”
2. Select **Array Configuration Utility** from the initial menu, then press <Enter>.



3. From the main menu, highlight Manage Arrays, then press <Enter> to display the installed RAID sets.
4. Highlight the degraded RAID set, then press <Enter> to display the array properties. The **Array Status** shows DEGRADED.



5. Press <Ctrl> + <R> to rebuild the RAID set. The **Array Status** shows the rebuilding progress.

```
-----Main Menu-----
- Manage Arrays -----
- Create Array
- Add/Delete Hotspare
- Initialize Drives
-----

-----List of Arrays-----
- * 00 6300ESB RAID 1 74.5GB -
-----

-----Array Properties-----
- Array #00 : 6300ESB Type : RAID 1
- Array Size : 74.5GB
- Array Status : BUILDING 2% Block #: 3328000
-----

-----Array Members-----
- 00 ST380023RS 74.5GB
- 01 ST380023RS 74.5GB
-----

[Esc] Previous Menu
```

To rebuild the RAID set using the RAID management application in the operating system, press <Esc> while the RAID set is being rebuilt to exit the application. A message pops up for confirmation. Press <Y> to exit.

```
-----Main Menu-----
- Manage Arrays -----
- Create Array
- Add/Delete Hotspare
- Initialize Drives
-----

-----List of Arrays-----
- * 00 6300ESB RAID 1 74.5GB -
-----

-----Array Properties-----
- Array #00 : 6300ESB Type : RAID 1
- Arr- Initiated process in progress. Exiting now will not complete
- the initiated process unless RAID management application is
- installed under Operating System.
- Do you want to stop array building process ? (Yes/No)
-----

Y - Yes, N - No
```

## 1.6 FastBuild™ Utility

The FastBuild™ Utility allows you to create RAID 0, 1, and 0+1 set(s) from SATA hard disk drives connected to the SATA connectors supported by the Promise® PDC20319 RAID controller.

To enter the FastBuild™ Utility:

1. Turn on the system after installing all the SATA hard disk drives.
2. If this is the first time you restart the system with the new hard disk drives installed and connected to the SATA connectors, the FastTrak S150 TX4™ BIOS displays the following:

```
FastTrak S150 TX4 (tm) BIOS Version 1.00.0.37
(c) 2003 Promise Technology, Inc. All rights reserved.

No Array is defined.....

Press <Ctrl-F> to enter FastBuild (tm) Utility or
Press <ESC> to continue booting...
```

3. Press <Ctrl+F> to display the FastBuild™ Utility main menu.

```
-----[ Main Menu ]-----

Auto Setup.....[ 1 ]
View Drive Assignments.....[ 2 ]
Define Array.....[ 3 ]
Delete Array.....[ 4 ]
Rebuild Array.....[ 5 ]

-----[ Keys Available ]-----
Press 1..5 to Select Option                                [ESC] Exit
```

4. To make sure that the SATA hard disk drives are properly installed, press <2> to view the drive assignments. When finished, press <Esc> to return to the main menu.

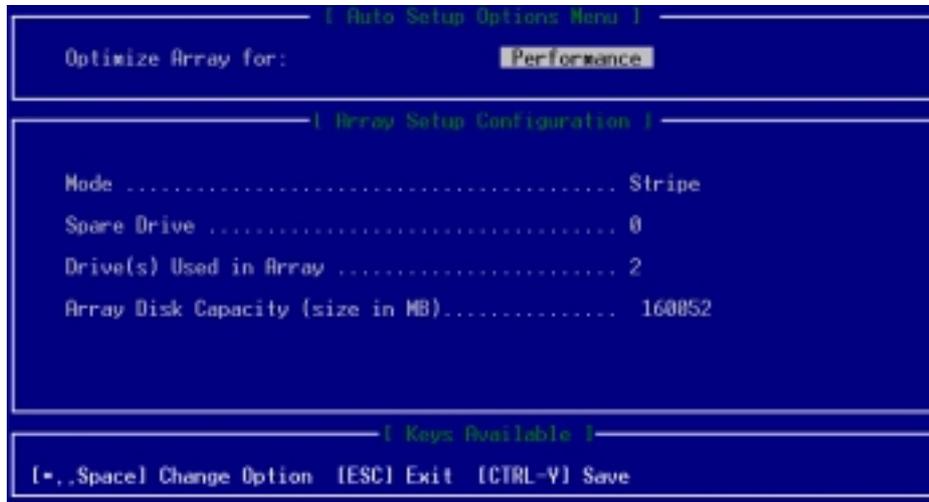
```
-----[ View Drives Assignments ]-----

Channel:ID      Drive Model      Capacity (MB)  Assignment  Mode
1:SATA ST380023RS  80026           Free          U6
2:SATA ST380023RS  80026           Free          U6

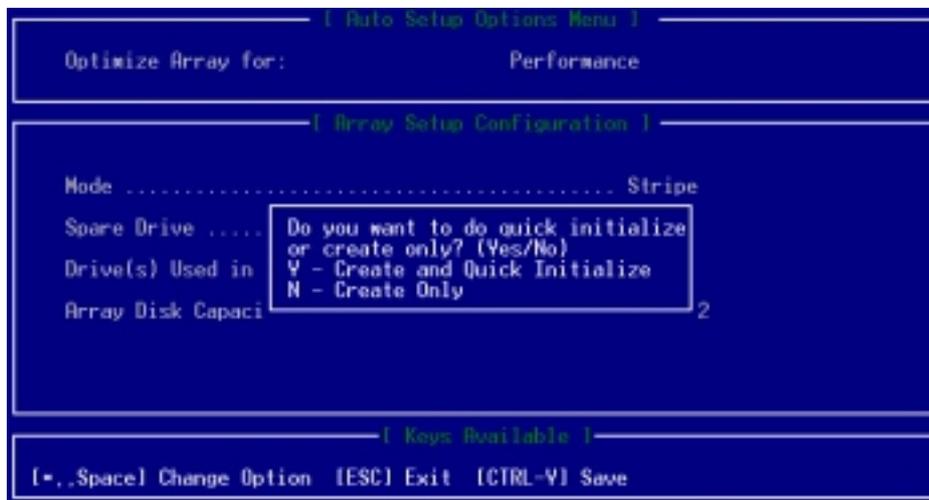
-----[ Keys Available ]-----
[ESC] Exit                                Mode (D = DMA, U = UDMA)
```

### 1.6.1 Creating a RAID 0 set (Performance)

1. In the FastBuild™ Utility main menu, press <1> to display the **Auto Setup Options Menu**.



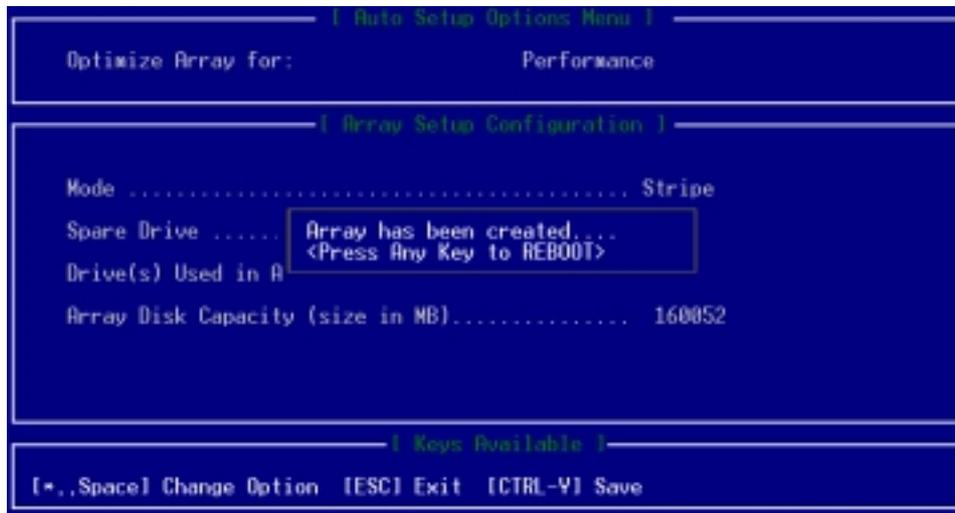
2. Use the arrow keys to go to the **Optimize Array for** field, then select **Performance** using the space bar. The **Mode** field displays **Stripe**.
3. After making a selection, press <Ctrl+Y> to save and create a RAID 0 array.
4. A pop-up window appears. Press <Y> (Create and Quick Initialize).



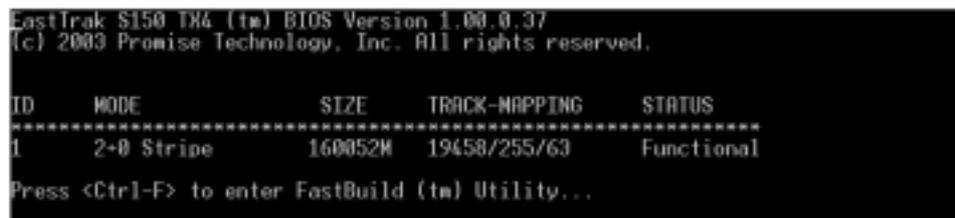
5. A pop-up message appears, warning you that all existing data on the hard disk drives will be deleted. Press <Y> to continue.



6. After you have created the RAID 0 set, press any key to reboot the system.



During POST, the FastTrak S150 TX4™ BIOS checks and displays the disk array information.



7. Once the array is created, use the FDISK utility to format the array as a single hard drive.
8. After you have formatted the arrayed drives, install an operating system (OS). The OS will treat the RAID 0 array as a single drive unit.



---

During the OS installation, the system prompts you to install third-party SCSI or RAID driver. Refer to section “2. RAID driver installation” for details.

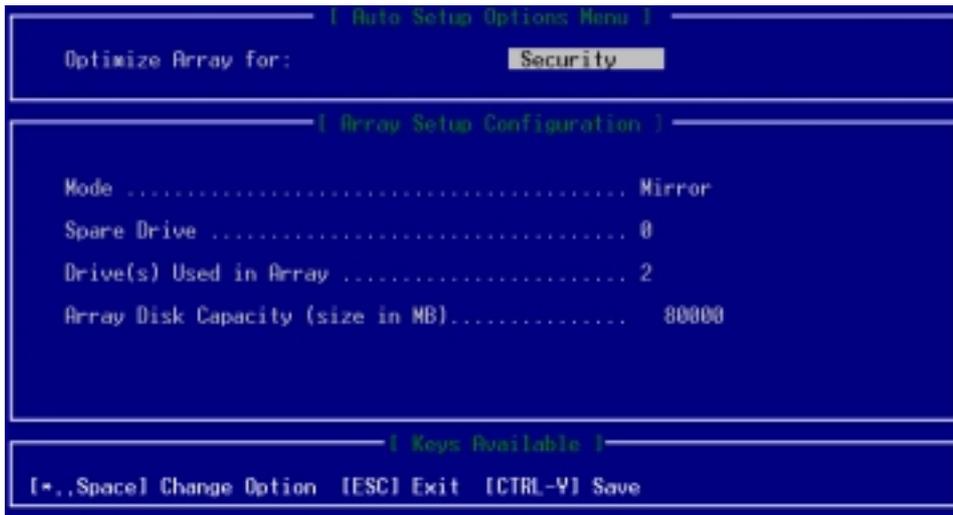
---

## 1.6.2 Creating a RAID 1 set (Security)

*Using two new SATA hard disk drives*

Refer to these instructions when creating a RAID 1 set using two new SATA hard disk drives.

1. Restart the system, then enter the FastBuild™ Utility.
2. In the FastBuild™ Utility main menu, press <1> to display the **Auto Setup Options Menu**.



3. Use the arrow keys to go to the **Optimize Array for** field, then select **Security** using the space bar. The **Mode** field displays **Mirror**.
4. After making a selection, press <Ctrl+Y>.
5. A pop-up window appears. Press <N> (Create only) to create the RAID 1 set.



6. After you have created the RAID 1 set, press any key to reboot the system.

During POST, the FastTrak S150 TX4™ BIOS checks and displays the disk array information.

```
FastTrak S150 TX4 (tm) BIOS Version 1.00.0.37
(c) 2003 Promise Technology, Inc. All rights reserved.

ID      MODE          SIZE      TRACK-MAPPING    STATUS
-----
1       1x2 Mirror     80000H   9726/255/63     Functional
Press <Ctrl-F> to enter FastBuild (tm) Utility...
```

7. Use the FDISK utility to format the array as a single hard drive.
8. After you have formatted the arrayed drives, install an operating system (OS). The OS will treat the RAID 0 array as a single drive unit.



---

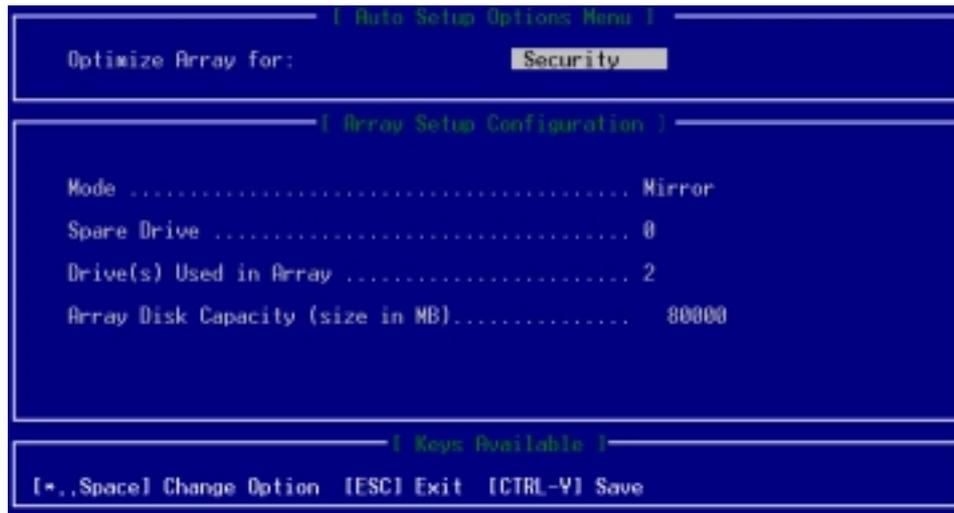
During the OS installation, the system prompts you to install third-party SCSI or RAID driver. Refer to section “2. RAID driver installation” for details.

---

### Using an existing boot/data hard disk drive and a new drive

Refer to these instructions when creating a RAID 1 set using an existing bootable or data hard disk drive and a new drive of the same or larger storage capacity.

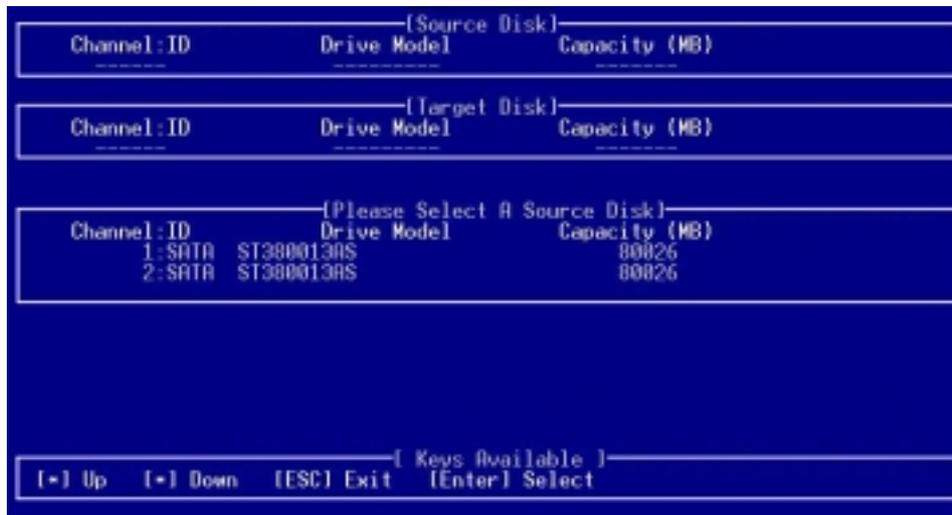
1. Restart the system, then enter the FastBuild™ Utility.
2. In the FastBuild™ Utility main menu, press <1> to display the **Auto Setup Options Menu**.



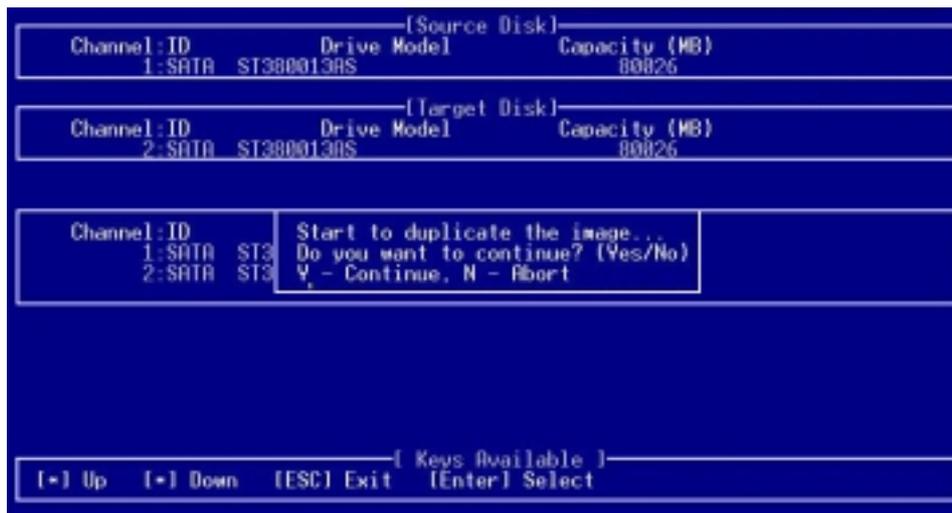
3. Use the arrow keys to go to the **Optimize Array for** field, then select **Security** using the space bar. The **Mode** field displays **Mirror**.
4. After making a selection, press <Ctrl+Y>.
5. A pop-up window appears. Press <Y> (Create and duplicate) to copy the existing data from the source (existing) drive to the target (new) drive.



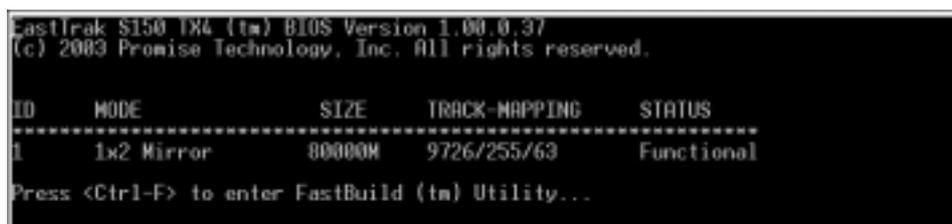
- When prompted, use the arrow keys to select the source disk, then press <Enter>.



- When prompted to start the duplication process, press <Y> to continue; otherwise, press <N> to abort the operation.



- After you have created the RAID 1 set, press any key to reboot the system. During POST, the FastTrak S150 TX4™ BIOS checks and displays the disk array information.



- Use the FDISK utility to format the array as a single hard drive.
- After you have formatted the arrayed drives, install an operating system (OS). The OS will treat the RAID 1 array as a single drive unit.

## Using quick initialization

Refer to these instructions when creating a RAID 1 set using one or two existing hard disk drives containing data that you **do not want to keep**.



Using quick initialization erases all data from the existing hard disk drive(s). Make sure to backup all important data before using this RAID 1 configuration mode.

1. Restart the system, then enter the FastBuild™ Utility.
2. In the FastBuild™ Utility main menu, press <1> to display the **Auto Setup Options Menu**.

```
----- [ Auto Setup Options Menu ] -----
Optimize Array for:      Security
----- [ Array Setup Configuration ] -----
Mode ..... Mirror
Spare Drive ..... 0
Drive(s) Used in Array ..... 2
Array Disk Capacity (size in MB)..... 80000
----- [ Keys Available ] -----
[=,Space] Change Option [ESC] Exit [CTRL-Y] Save
```

3. Use the arrow keys to go to the **Optimize Array for** field, then select **Security** using the space bar. The **Mode** field displays **Mirror**.
4. After making a selection, press <Ctrl+Y>.
5. A pop-up window appears. Press <I> (Create and Quick Initialize).

```
----- [ Auto Setup Options Menu ] -----
Optimize Array for:      Security
----- [ Array Setup Configuration ] -----
Mode ..... Mirror
Spare Drive ..... 0
Drive(s) Used in Array ..... 2
Array Disk Capacity (size in MB)..... 80000
----- [ Keys Available ] -----
[=,Space] Change Option [ESC] Exit [CTRL-Y] Save
```

Do you want the disk image to be duplicated to another or do quick initialize or create only? (Y/N/I)  
Y - Create and Duplicate  
N - Create Only  
I - Create and Quick Initialize

6. After you have created the RAID 1 set, press any key to reboot the system.

During POST, the FastTrak S150 TX4™ BIOS checks and displays the disk array information.

```
FastTrak S150 TX4 (tm) BIOS Version 1.00.0.37
(c) 2003 Promise Technology, Inc. All rights reserved.

ID      MODE          SIZE      TRACK-MAPPING  STATUS
-----
1       1x2 Mirror     80000M   9726/255/63    Functional
Press <Ctrl-F> to enter FastBuild (tm) Utility...
```

7. Use the FDISK utility to format the array as a single hard drive.
8. After you have formatted the arrayed drives, install an operating system (OS). The OS will treat the RAID 1 set as a single drive unit.

### 1.6.3 Creating a RAID 0+1 set (Security and Performance)



You must install four SATA hard disk drives to create a RAID 0+1 set.

1. Restart the system, then enter the FastBuild™ Utility.
2. In the FastBuild™ Utility main menu, press <1> to select **Auto Setup**. The following screen appears.

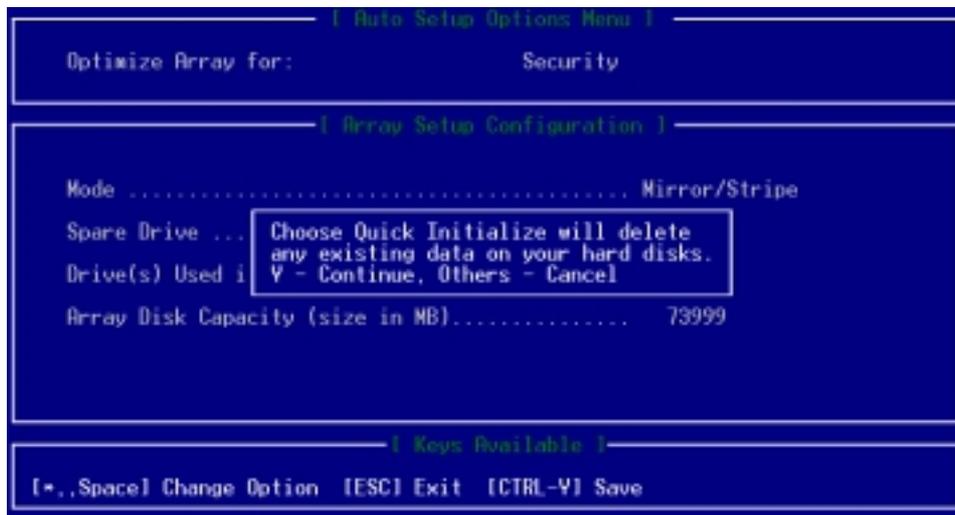
```
----- [ Auto Setup Options Menu ] -----
Optimize Array for:      Security
----- [ Array Setup Configuration ] -----
Mode ..... Mirror/Stripe
Spare Drive ..... 0
Drive(s) Used in Array ..... 4
Array Disk Capacity (size in MB)..... 73999
----- [ Keys Available ] -----
[=,Space] Change Option [ESC] Exit [CTRL-Y] Save
```

3. Use the arrow keys to go to the **Optimize Array for** field, then select **Security** using the space bar. The **Mode** field displays **Mirror/Stripe**.
4. After making a selection, press <Ctrl+Y>.
5. A pop-up window appears. Press <Y> (Create and Quick Initialize) to create the RAID 0+1 set.

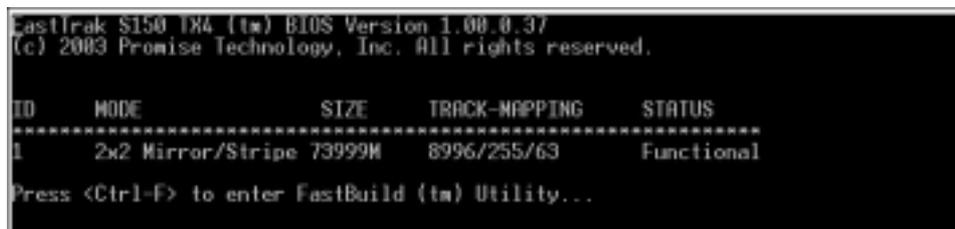
```
----- [ Auto Setup Options Menu ] -----
Optimize Array for:      Security
----- [ Array Setup Configuration ] -----
Mode ..... Mirror/Stripe
Spare Drive ..... 0
Drive(s) Used in Array ..... 4
Array Disk Capacity (size in MB)..... 73999
----- [ Keys Available ] -----
[=,Space] Change Option [ESC] Exit [CTRL-Y] Save
```

Do you want to do quick initialize  
or create only? (Yes/No)  
Y - Create and Quick Initialize  
N - Create Only

6. A pop-up message appears, warning you that all existing data on the hard disk drives will be deleted. Press <Y>.



7. After you have created the RAID 0+1 set, press any key to reboot the system.  
During POST, the FastTrak S150 TX4™ BIOS checks and displays the disk array information.



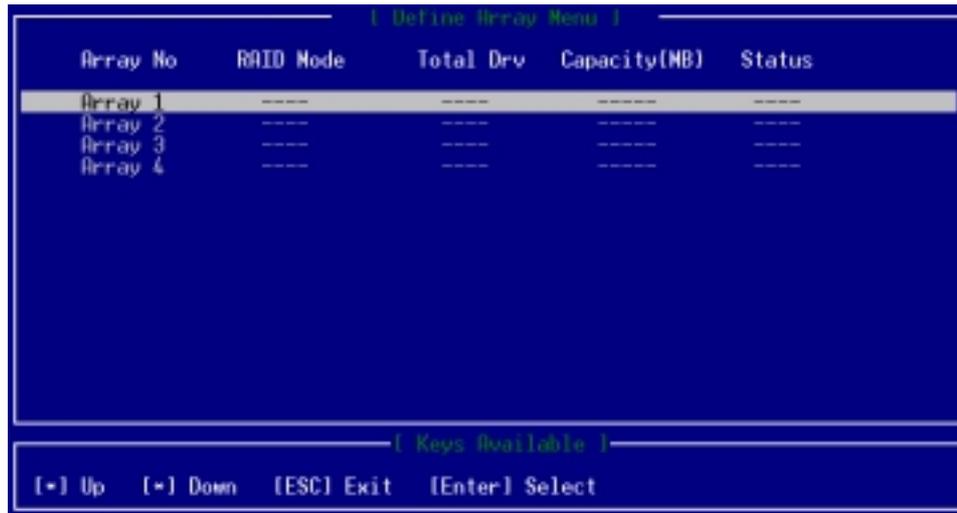
8. Use the FDISK utility to format the array as a single hard drive.
9. After you have formatted the arrayed drives, install an operating system (OS). The OS will treat the RAID 0+1 set as a single drive unit.

## 1.6.4 Manually creating a RAID set

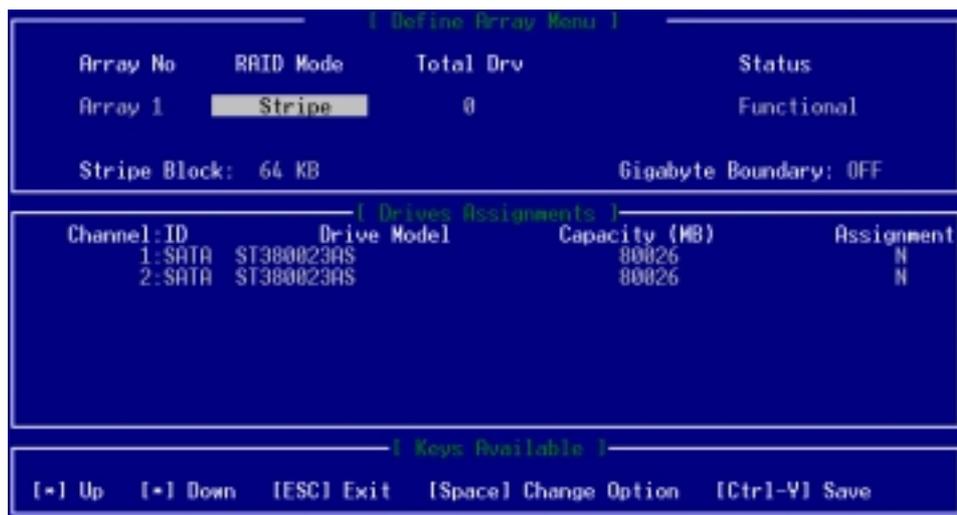


We strongly recommend that you use the **Auto Setup** option to create a RAID set.

1. Restart the system, then enter the FastBuild™ Utility.
2. In the FastBuild™ Utility main menu, press <2> to display the **Define Array Menu**.



3. Press the up or down arrow keys to highlight the array number you want to define, then press <Enter>. The **Define Array Menu** appears.



4. Press the <Spacebar> to select the array type for the selected array number. You can select Performance (RAID 0 Striping) or Security (RAID 1 Mirroring) if you installed two SATA hard disk drives. You can select a RAID 0+1 (Striping/Mirroring) if you have installed four SATA hard disk drives.

- Press the down arrow key to highlight the **Stripe Block** option. Press the <Spacebar> to manually assign the stripe block size to 16, 32, 64, or 128 KB.



- You can manually assign the stripe block size only if you are creating a RAID 0 (Striping) or RAID 0+1 (Striping/Mirroring) set.
- For server systems, we recommend that you use a lower array block size. For multimedia computer systems used mainly for audio and video editing, we recommend a higher array block size for optimum performance.

```

[ Define Array Menu ]
-----
Array No   RAID Mode   Total Drv   Status
Array 1   Mirror      0           Functional

Stripe Block: Not Available           Gigabyte Boundary: ON

[ Drives Assignments ]
-----
Channel:ID   Drive Model   Capacity (MB)   Assignment
1:SATA      ST380023AS    80026           N
2:SATA      ST380023AS    80026           N

[ Keys Available ]
-----
[=] Up   [=] Down   [ESC] Exit   [Space] Change Option   [Ctrl-Y] Save

```

- Press the down array key to move to the **Drives Assignments** section.
- Highlight the hard disk drives that you want to assign to the array, then press <Spacebar>. The **Assignment** column of the assigned drives show **Y**.

```

[ Define Array Menu ]
-----
Array No   RAID Mode   Total Drv   Status
Array 1   Mirror      2           Functional

Stripe Block: Not Available           Gigabyte Boundary: ON

[ Drives Assignments ]
-----
Channel:ID   Drive Model   Capacity (MB)   Assignment
1:SATA      ST380023AS    80026           Y
2:SATA      ST380023AS    80026           Y

[ Keys Available ]
-----
[=] Up   [=] Down   [ESC] Exit   [Space] Change Option   [Ctrl-Y] Save

```

5. Press <Ctrl> + <Y>.
6. When a dialog box appears, press <I> to create and quick initialize the RAID set.



Using quick initialization erases all data from the existing hard disk drives. Make sure to backup all important data before using this RAID configuration mode.

```

      |-----| Define Array Menu |-----|
      |
      | Array No   RAID Mode   Total Drv   Status
      | Array 1   Mirror      2           Functional
      |
      | Stripe Block: Not Available           Gigabyte Boundary: ON
      |
      | Channel:ID   | Do you want the disk image to be
      | 1:SATA ST3   | duplicated to another or do quick
      | 2:SATA ST3   | initialize or create only? (Y/N/I)
      |               | Y - Create and Duplicate
      |               | N - Create Only
      |               | I - Create and Quick Initialize
      |               |
      |               | Assignment
      |               | Y
      |               | Y
      |
      |-----| Keys Available |-----|
      | [+ ] Up   [+ ] Down   [ESC] Exit   [Space] Change Option   [Ctrl-Y] Save
  
```

7. When prompted, press <Y> to continue.

```

      |-----| Define Array Menu |-----|
      |
      | Array No   RAID Mode   Total Drv   Status
      | Array 1   Mirror      2           Functional
      |
      | Stripe Block: Not Available           Gigabyte Boundary: ON
      |
      | Channel:ID   | Choose Quick Initialize will delete
      | 1:SATA S     | any existing data on your hard disks.
      | 2:SATA S     | Y - Continue, Others - Cancel
      |               |
      |               | Assignment
      |               | Y
      |               | Y
      |
      |-----| Keys Available |-----|
      | [+ ] Up   [+ ] Down   [ESC] Exit   [Space] Change Option   [Ctrl-Y] Save
  
```

8. After you have created the RAID set, press any key to reboot the system. During the boot process, the FastTrak S150 TX4™ BIOS checks and displays the disk array information.
9. Use the FDISK utility to format the array as a single hard drive.
10. After you have formatted the arrayed drives, install an operating system (OS). The OS will treat the RAID set as a single drive unit.

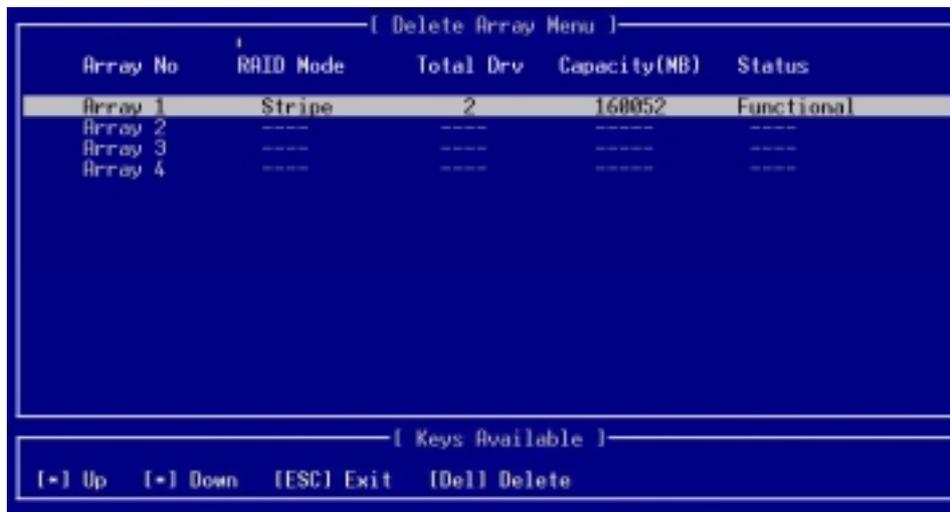
## 1.6.5 Deleting a RAID set



The **Delete Array** menu deletes the disk array assignments and not the data on the hard disk drives. You can recover a deleted array by immediately defining a new one.

To delete an array:

1. Restart the system, then enter the FastBuild™ Utility.
2. In the FastBuild™ Utility main menu, press <4> to display the **Delete Array Menu**.

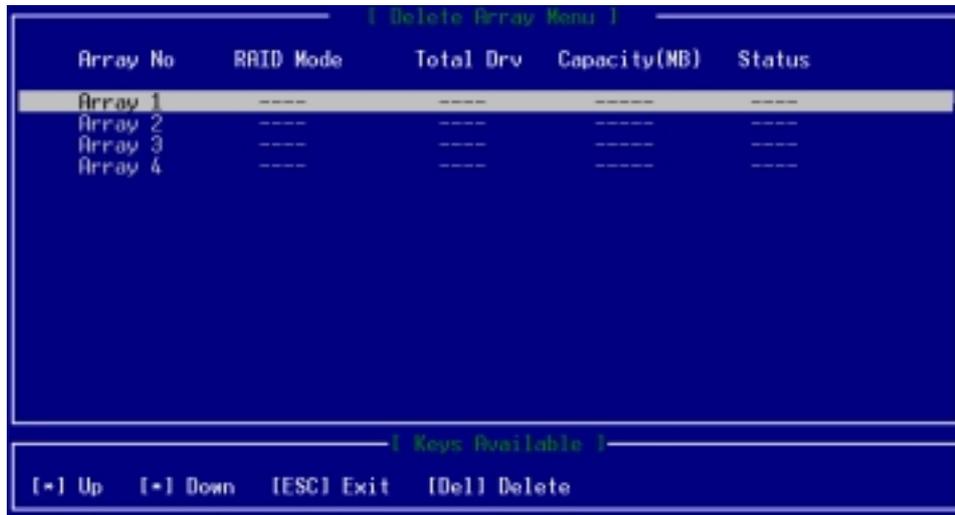


3. Press the up or down arrow keys to highlight the array number you want to delete, then press <Del>. The **View Array Definition Menu** appears displaying the hard disk drives assigned to the selected array.



4. When prompted, press <Ctrl> + <Y> to delete the array.

5. The **Delete Array Menu** appears, showing that the array is successfully deleted. Press <Esc> to exit.



## 1.6.6 Rebuilding a RAID 1 set

The **Rebuild Array Menu** allows you to rebuild a RAID 1 set and recover the array from errors. During POST, the FastTrak S150 TX4™ BIOS checks and displays the RAID 1 condition. The screen displays the following information if the BIOS detected an error on the array.

```
LD      MODE      SIZE      TRACK-MAPPING      STATUS
-----
1      1x2 Mirror  80000M  9726/255/63      Critical

Problem is detected with Array : 1

Critical Status:
A disk member of a mirrored array has failed or is not responding.
The array is still functional, but fault tolerance is disabled.

Before continuing, power off the system and confirm that the drives and
cables are properly attached before replacing the failed drive and
rebuilding the array.

1) Identify which drive has failed with the <3> Define Array menu option.
2) Power off the system, replace the failed drive.
3) Restart the system and enter the FastBuild {tm} setup menu.
4) Choose the <5> option to rebuild the array with replacement drive.
-----

Press <Ctrl-F> to enter FastBuild {tm} Utility or
Press <ESC> to continue booting...
```

To rebuild the array:

1. Press <Ctrl> + <F> to enter the FastBuild™ Utility.
2. From the FastBuild™ Utility main menu, press <3> to display the **Define Array Menu**.

```
----- [ Define Array Menu ] -----
Array No  RAID Mode  Total Drv  Status
-----
Array 1   Mirror    2          Critical

Stripe Block: Not Available          Gigabyte Boundary: ON

----- [ Drives Assignments ] -----
Channel:ID  Drive Model  Capacity (MB)  Assignment
-----
1:SATA     ST380023AS   80026          Y
2:SATA     ST380023AS   80026

----- [ Keys Available ] -----
[+] Up  [+] Down  [ESC] Exit  [Space] Change Option  [Ctrl-Y] Save
```

3. Select the failed array, then identify the failed drive channel and ID.
4. Exit the utility, then turn off the system.
5. Replace the failed drive with an identical (same storage capacity) drive.

6. Restart the system, then press <Ctrl> + <F> to enter the FastBuild™ Utility.
7. From the FastBuild™ Utility main menu, press <5> to display the **Rebuild Array Menu**.

Array No	RAID Mode	Total Drv	Capacity(MB)	Status
Array 1	Mirror	2	80000	Critical
Array 2	----	----	----	----
Array 3	----	----	----	----
Array 4	----	----	----	----

[ Keys Available ]

[↑] Up   [↓] Down   [ESC] Exit   [Enter] Select

8. Use the arrow keys to select the array with a **Critical** status, then press <Enter>.
9. From the **Select Drive to Rebuild** section, use the arrow keys to highlight the replacement drive, then press <Enter>.
 

All data on the replacement drive will be overwritten with mirrored information from the existing array drive. A progress bar indicates the duplicating process.
10. When finished, exit the utility, then restart the system.

## 2. RAID driver installation

After creating the RAID sets for your server system, you are now ready to install an operating system to the independent hard disk drive or bootable array. This part provides instructions on how to install the RAID controller drivers during OS installation.

### 2.1 Creating a RAID driver disk



---

You may have to use another system to create the RAID driver disk from the system/motherboard support CD or from the Internet.

---

#### 2.1.1 Windows® 2000/2003 Server

A floppy disk with the RAID driver is required when installing Windows® 2000/2003 Server operating system on a hard disk drive that is assigned to an array.

To create a RAID driver disk from Windows® environment:

1. Place the system or motherboard support CD in the optical drive.
2. When the **Drivers** menu appears, select the RAID driver disk you want to create.

**OR**

Browse the contents of the support CD to locate the driver disk utility:

- **Intel® 6300ESB** RAID Driver Disk:

\Drivers\6300ESB\Windows

- **Promise® PDC20319** RAID Driver Disk:

\Drivers\Promise20319\Windows

3. Insert a formatted high-density floppy disk to the floppy disk drive.
4. Follow screen instructions to complete the process.
5. After creating a RAID driver disk, eject the floppy disk, then write-protect it to prevent computer virus infection.

## 2.1.2 Red Hat® Linux 9.0

To create an **Intel® 6300ESB** Red Hat® Linux 9.0 driver disk:

1. Insert a blank formatted high-density floppy disk to the floppy disk drive.
2. Decompress the file **RH9.0+release+build+16.gz** into the floppy disk from the following path in the support CD:

**\Drivers\6300ESB\Linux**

3. Eject the floppy disk.

To create a **Promise® PDC20319** Red Hat® Linux 9.0 driver disk:

1. Insert a blank formatted high-density floppy disk to the floppy disk drive.
2. Explore the support CD, then copy all the files in the following folder to the floppy disk drive:

**\Drivers\Promise20319\Linux\RedHat**

3. Eject the floppy disk.

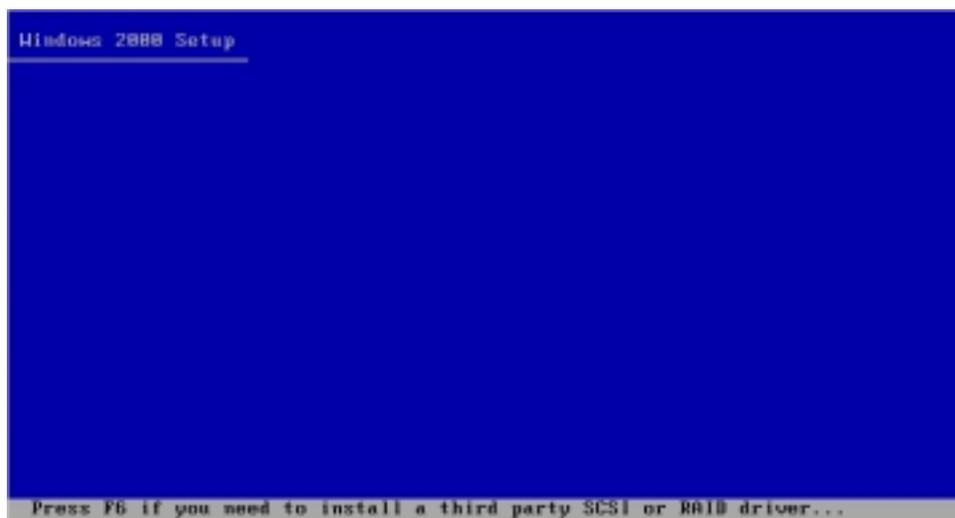
## 2.2 Installing the Intel® 6300ESB RAID controller driver

### 2.2.1 Windows® 2000/2003 Server OS

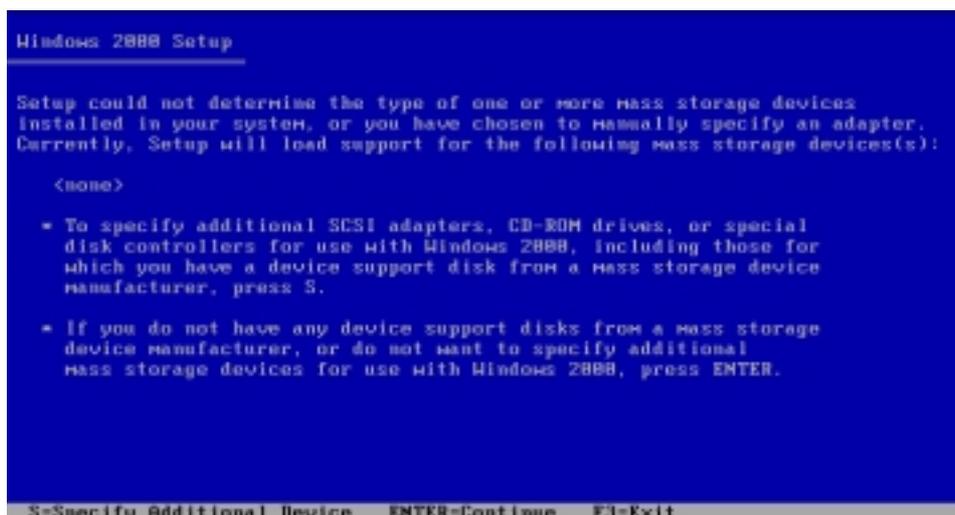
*During Windows® 2000/2003 Server OS installation*

To install the Intel® 6300ESB RAID controller driver when installing Windows® 2000/2003 Server OS:

1. Boot the computer using the Windows® 2000/2003 Server installation CD. The **Windows® 2000/2003 Setup** starts.



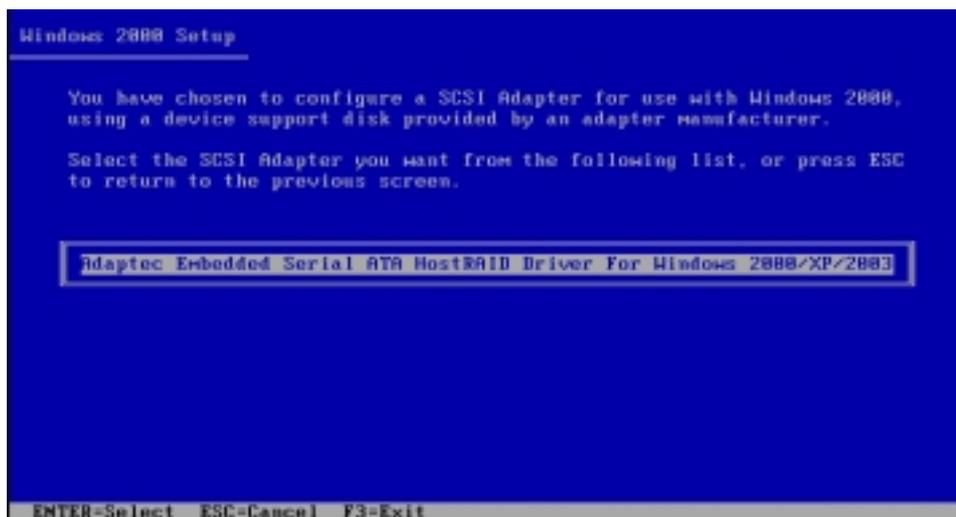
2. Press <F6> when the message “**Press F6 if you need to install a third party SCSI or RAID driver...**” appears at the bottom of the screen.
3. When prompted, press <S> to specify an additional device.



4. Insert the Intel® 6300ESB RAID driver disk you created earlier to the floppy disk drive, then press <Enter>.



5. Select the **Adaptec Embedded Serial ATA HostRAID Driver for Windows 2000/XP/2003**, then press <Enter> to select.

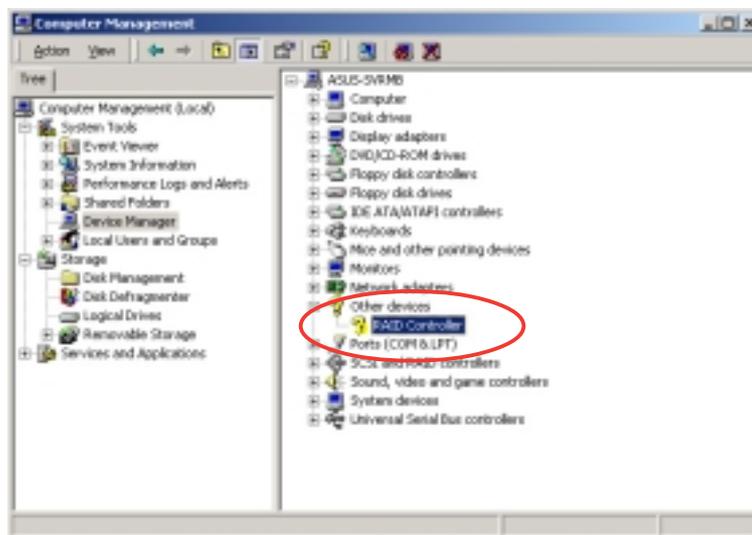


6. The Windows® 2000/2003 Setup loads the RAID controller drivers from the RAID driver disk. When prompted, press <Enter> to continue installation.
7. Setup then proceeds with the OS installation. Follow screen instructions to continue.

To an existing Windows® 2000/2003 Server OS

To install the Intel® 6300ESB RAID controller driver on an existing Windows® 2000/2003 Server OS:

1. Restart the computer, then log in with **Administrator** privileges.
2. Windows® automatically detects the RAID controller and displays a **New Hardware Found** window. Click **Cancel**.
3. Right-click the **My Computer** icon on the Windows® desktop , then select **Properties** from the menu.
4. Click the **Hardware** tab, then click the **Device Manager** button to display the list of devices installed in the system.



5. Right-click the **RAID controller** item, then select **Properties**.
6. Click the **Driver** tab, then click the **Update Driver** button.
7. The **Upgrade Device Driver Wizard** window appears. Click **Next**.
8. Insert the RAID driver disk you created earlier to the floppy disk drive.
9. Select the option "**Search for a suitable driver for my device (recommended)**", then click **Next**.
10. The wizard searches the RAID controller drivers. When found, click **Next** to install the drivers.

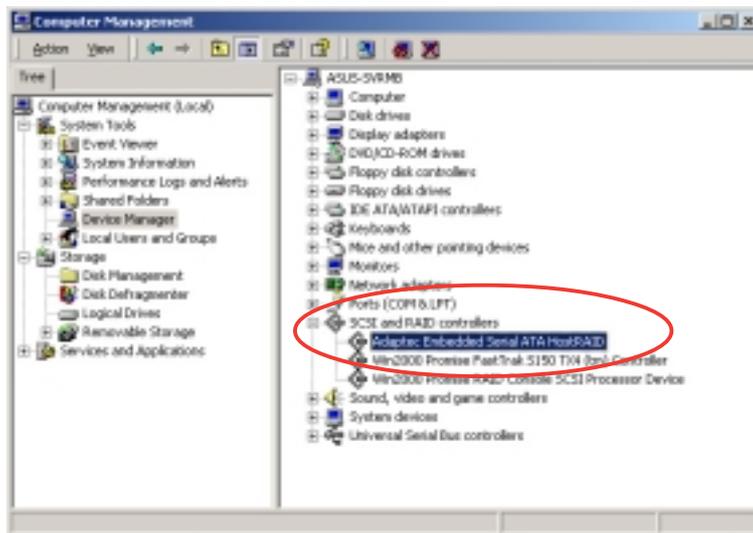


11. Click **Finish** after the driver installation is done.

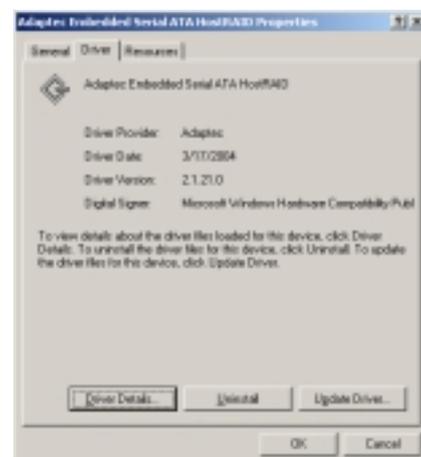


To verify the Intel® 6300ESB RAID controller driver installation:

1. Right-click the **My Computer** icon on the Windows® desktop , then select **Properties** from the menu.
2. Click the **Hardware** tab, then click the **Device Manager** button.
3. Click the “+” sign before the item **SCSI and RAID controllers**. The **Adaptec Embedded Serial ATA HostRAID** item should appear.



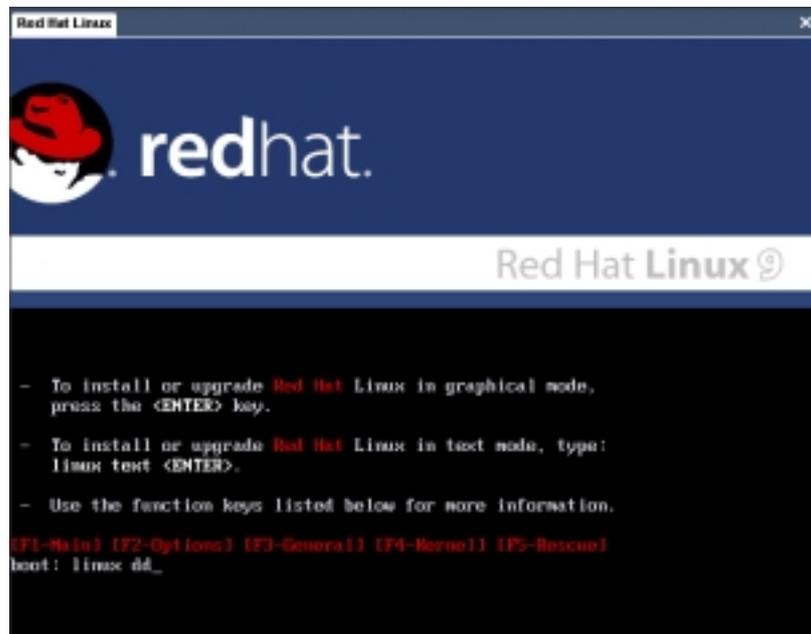
4. Right-click the **Adaptec Embedded Serial ATA HostRAID** item, then select **Properties** from the menu.
5. Click the **Driver** tab, then click the **Driver Details** button to display the RAID controller drivers.
6. Click **OK** when finished.



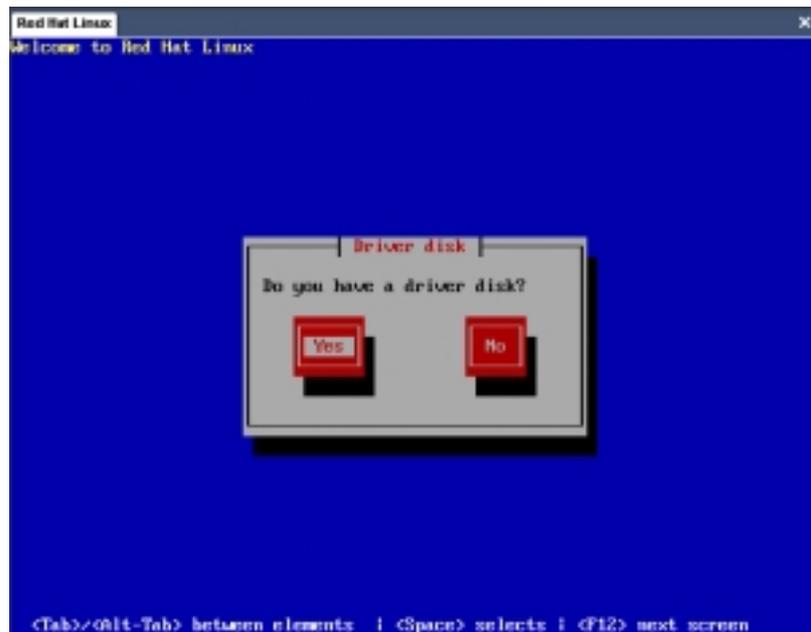
## 2.2.2 Red Hat® Linux 9.0

To install the Intel® 6300ESB RAID controller driver when installing Red Hat® Linux 9.0 OS:

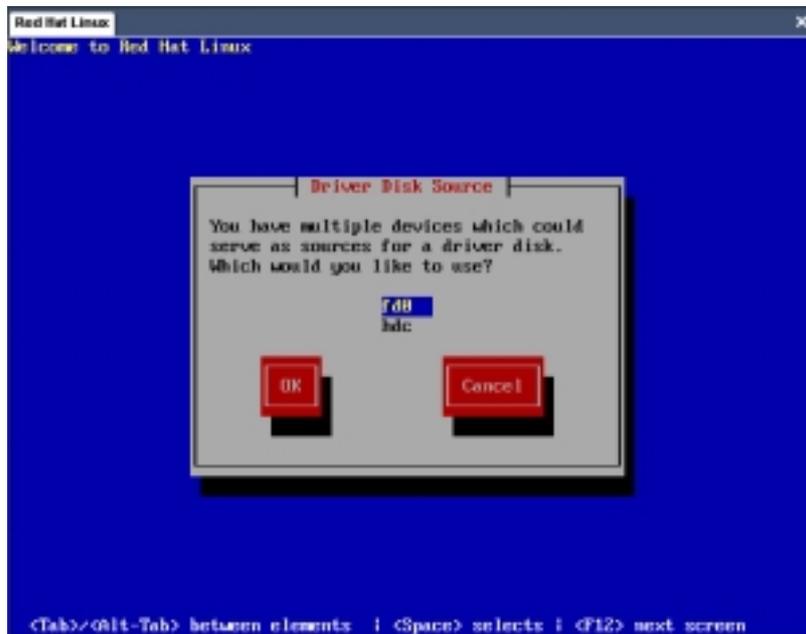
1. Boot the system from the Red Hat® Installation CD.
2. At the `boot:`, type `linux dd`, then press <Enter>.



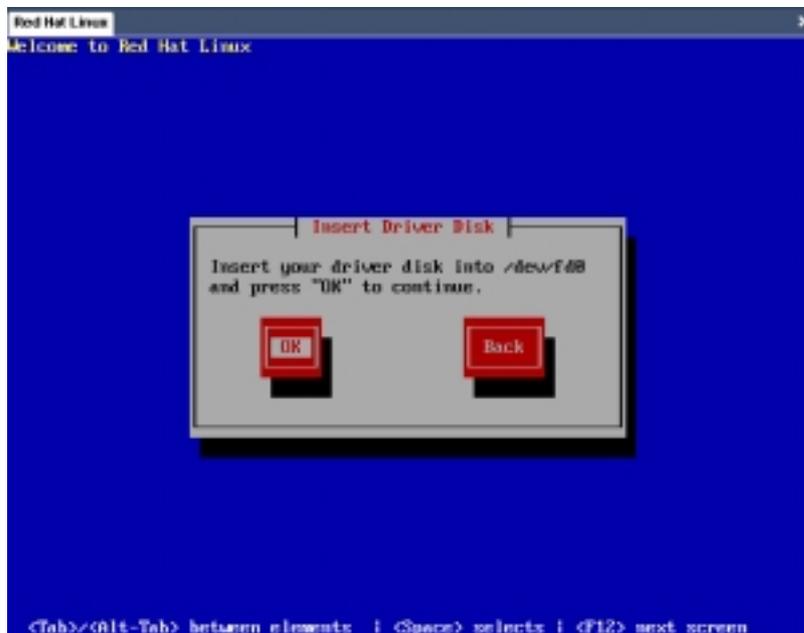
3. Select **Yes** using the <Tab> key when asked if you have the driver disk. Press <Enter>



4. Select **fd0** using the <Tab> key when asked to select the driver disk source. Press <Tab> to move the cursor to **OK**, then press <Enter>.

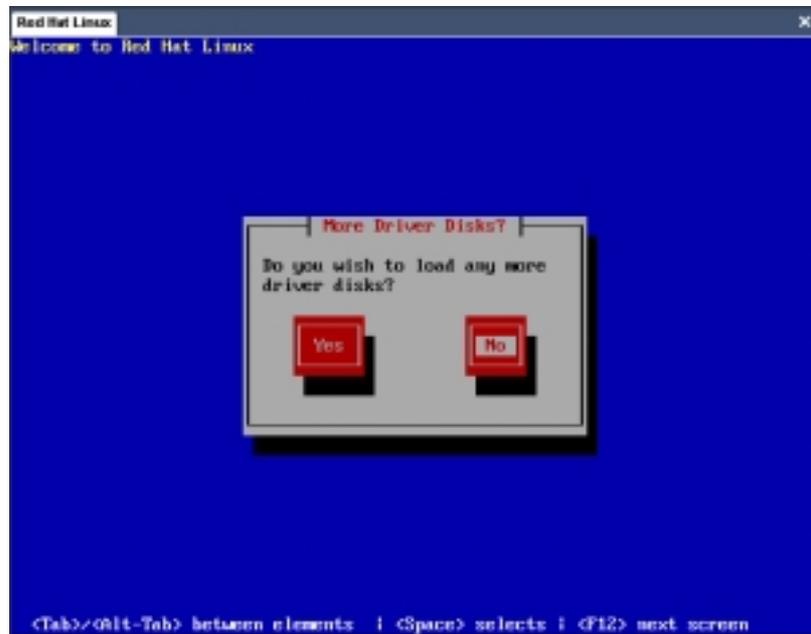


5. When prompted, insert the Intel® 6300ESB Red Hat® Linux 9.0 driver disk to the floppy disk drive, select **OK**, then press <Enter>.



The drivers for the Intel® 6300ESB RAID controller are installed to the system.

- When asked if you will load additional RAID controller drivers, select **No**, then press <Enter>; otherwise, select **Yes** if you need to install additional RAID controller drivers.



- Follow screen instructions to continue the OS installation.

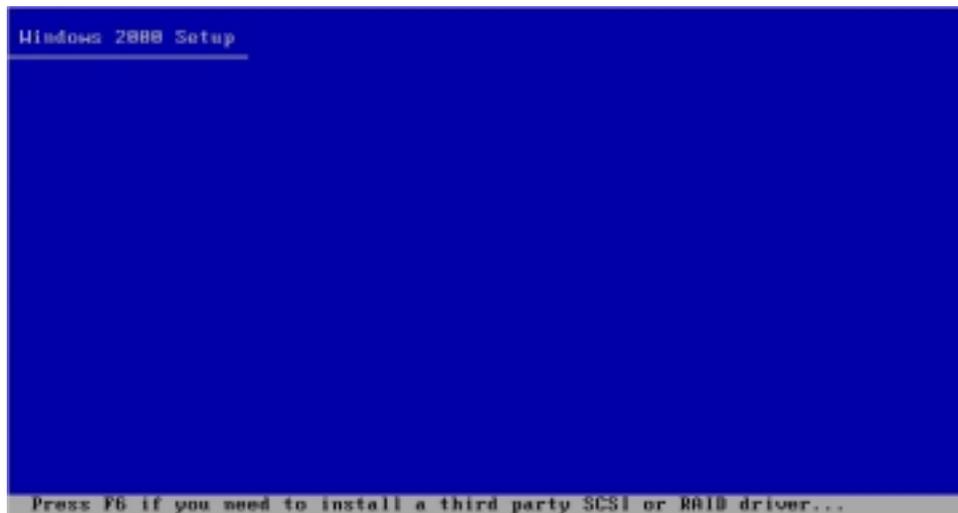
## 2.3 Installing the Promise® PDC20319 RAID controller driver

### 2.3.1 Windows® 2000 Server

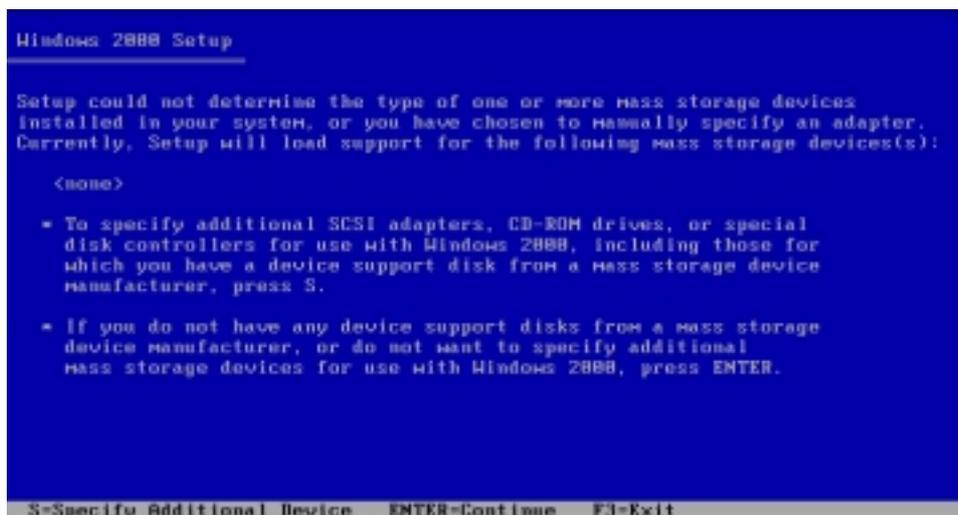
*During Windows® operating system installation*

To install the Promise® PDC20319 RAID controller driver during Windows® 2000 Server OS installation:

1. Boot the computer using the Windows® 2000 Server installation CD. The **Windows® 2000 Setup** starts.



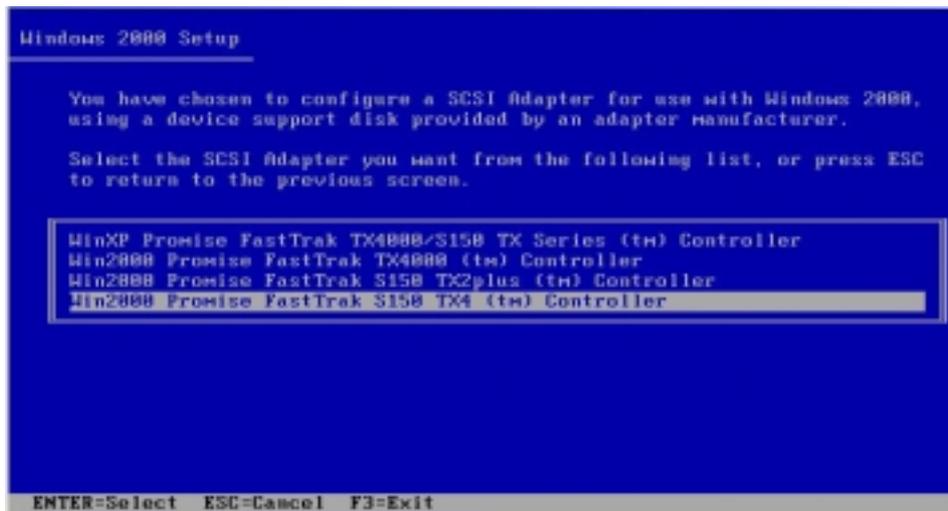
2. Press <F6> when the message “**Press F6 if you need to install a third party SCSI or RAID driver...**” appears at the bottom of the screen.
3. When prompted, press <S> to specify an additional device.



4. Insert the Promise® PDC20319 RAID driver disk you created earlier to the floppy disk drive, then press <Enter>.



5. Use the arrow keys to select the **Win2000 Promise FasTrak S150 TX4 (tm) Controller** item from the list, then press <Enter> to select.



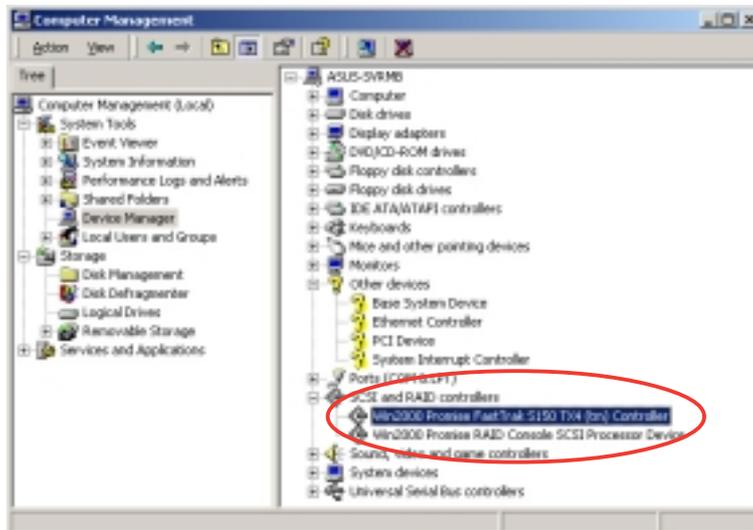
6. The Windows® 2000 Setup loads the RAID controller drivers from the RAID driver disk. When prompted, press <Enter> to continue installation.
7. Setup then proceeds with the OS installation. Follow screen instructions to continue.

To an existing Windows® operating system

Follow the same instructions in the section “**Installing the Intel® 6300ESB RAID controller driver: To an existing Windows® 2000/2003 Server OS**” to install the Promise® PDC20319 RAID controller driver on an existing Windows® 2000 Server OS.

To verify the Promise® PDC20319 RAID controller driver installation:

1. Right-click the **My Computer** icon on the Windows® desktop , then select **Properties** from the menu.
2. Click the **Hardware** tab, then click the **Device Manager** button.
3. Click the “+” sign before the item **SCSI and RAID controllers**.  
The **Win2000 Promise Fastrak S150 TX4 (tm) Controller** item should appear.

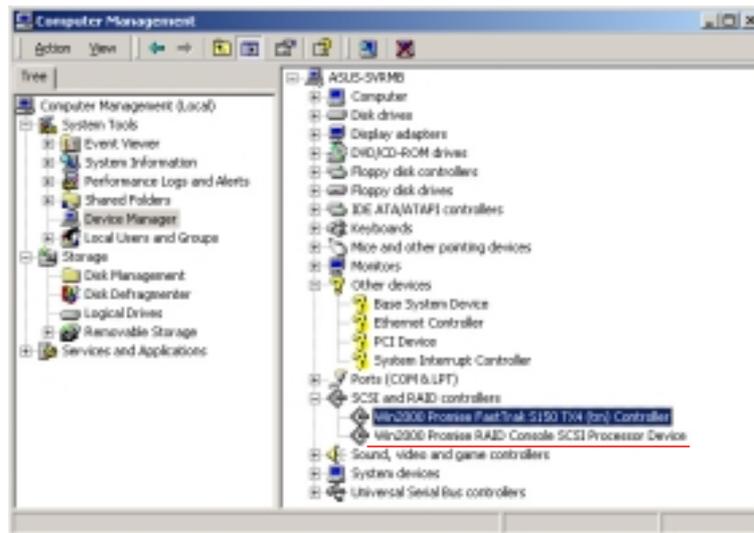


4. Right-click the **Win2000 Promise Fastrak S150 TX4 (tm) Controller** item, then select **Properties** from the menu.
5. Click the **Driver** tab, then click the **Driver Details** button to display the RAID controller drivers.
6. Click **OK** when finished.

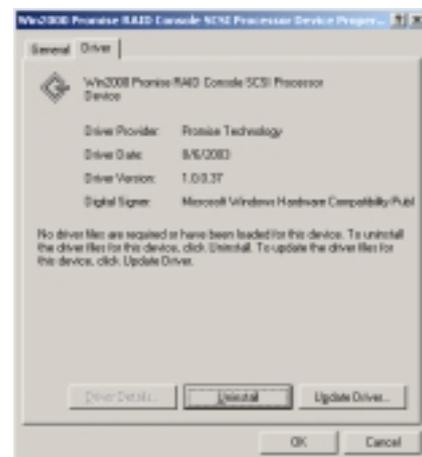


After installing the RAID controller driver, you must remove the Windows®-assigned SCSI controller driver. To do this:

1. From the **Computer Management** window, click the “+” sign before the item **SCSI and RAID controllers**.
2. Right-click the **Win2000 Promise RAID Console SCSI Processor Device** item, then select **Properties** from the menu.



3. Click the **Driver** tab, then click the **Driver Details** button to display the RAID controller properties.
4. Click the **Uninstall** button, then click **OK**.
5. Follow screen instructions to uninstall the driver.



## 2.3.2 Windows® 2003 Server

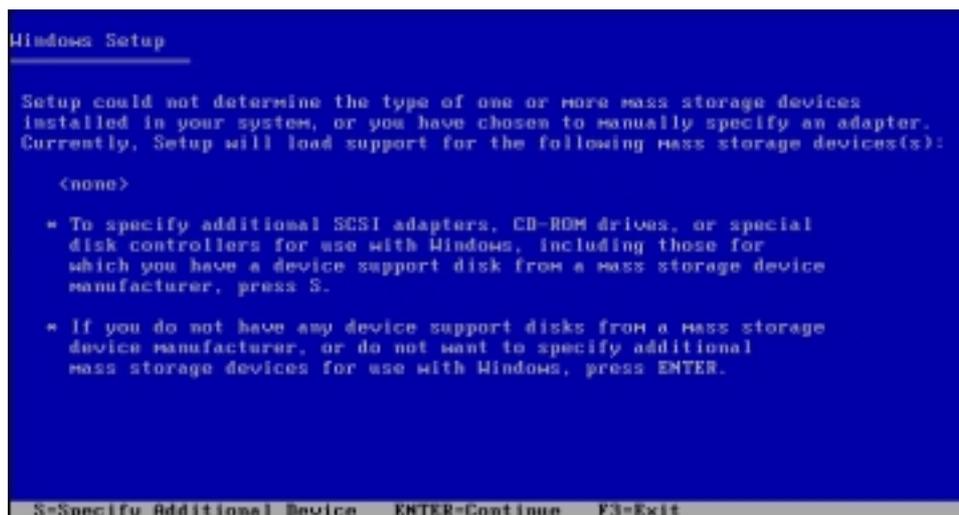
*During Windows® operating system installation*

To install the Promise® PDC20319 RAID controller driver during Windows® 2003 Server OS installation:

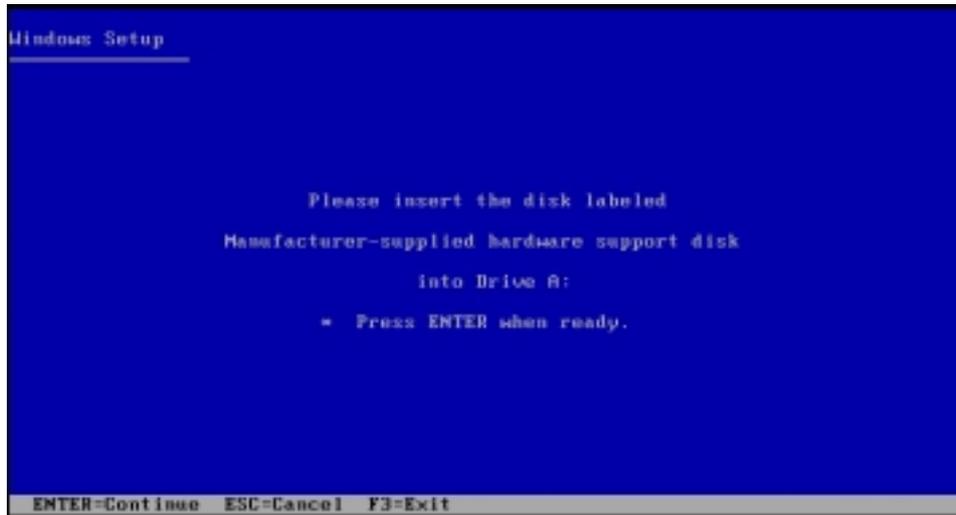
1. Boot the computer using the Windows® 2003 Server installation CD. The **Windows® Setup** starts.



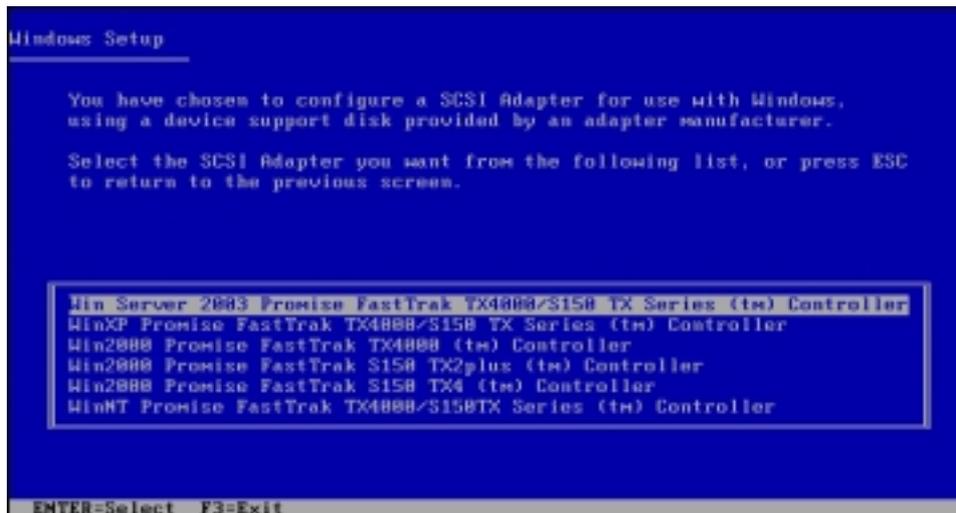
2. Press <F6> when the message **“Press F6 if you need to install a third party SCSI or RAID driver...”** appears at the bottom of the screen.
3. When prompted, press <S> to specify an additional device.



4. Insert the Promise® PDC20319 RAID driver disk you created earlier to the floppy disk drive, then press <Enter>.



5. Use the arrow keys to select the **Win Server 2003 Promise FasTrak TX4000/S150 TX Series (tm) Controller** item from the list, then press <Enter> to select.

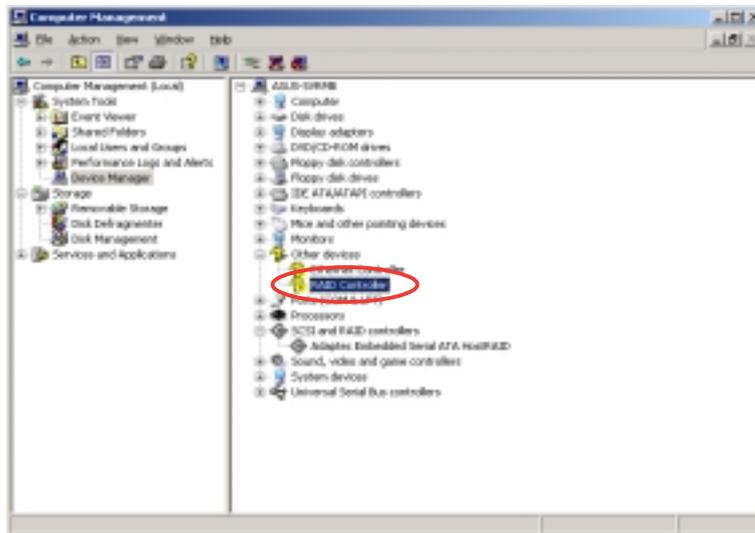


6. The Windows® Setup loads the RAID controller drivers from the RAID driver disk. When prompted, press <Enter> to continue installation.
7. Setup then proceeds with the OS installation. Follow screen instructions to continue.

To an existing Windows® operating system

To install the Promise® PDC20319 RAID controller driver on an existing Windows® 2003 Server OS.

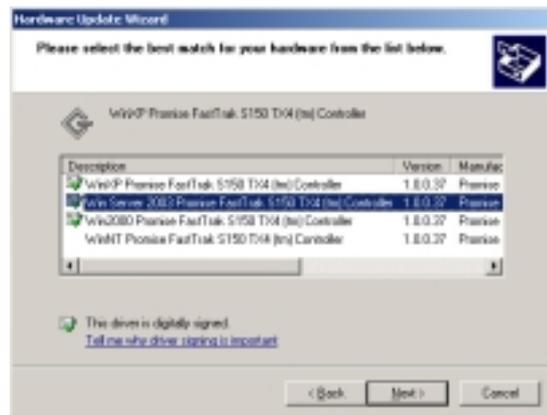
1. Restart the computer, then log in with **Administrator** privileges.
2. Insert the RAID driver disk you created earlier to the floppy disk drive.
3. Windows®s automatically detects the RAID controller and displays a **New Hardware Found** window. Click **Cancel**.
4. Right-click the **My Computer** icon on the Windows® desktop , then select **Properties** from the menu.
5. Click the **Hardware** tab, then click the **Device Manager** button to display the list of devices installed in the system.



6. Right-click the **RAID controller** item, then select **Properties**.
7. Click the **Driver** tab, then click the **Update Driver** button.
8. The **Hardware Update Device Driver Wizard** window appears. Select the option "**Install the software automatically (Recommended)**", then click **Next**.



- The wizard searches for the RAID controller drivers, then displays a list of detected drivers. Select **Win Server 2003 Promise FastTrak S150 TX4 (tm) Controller**, then click **Next**.

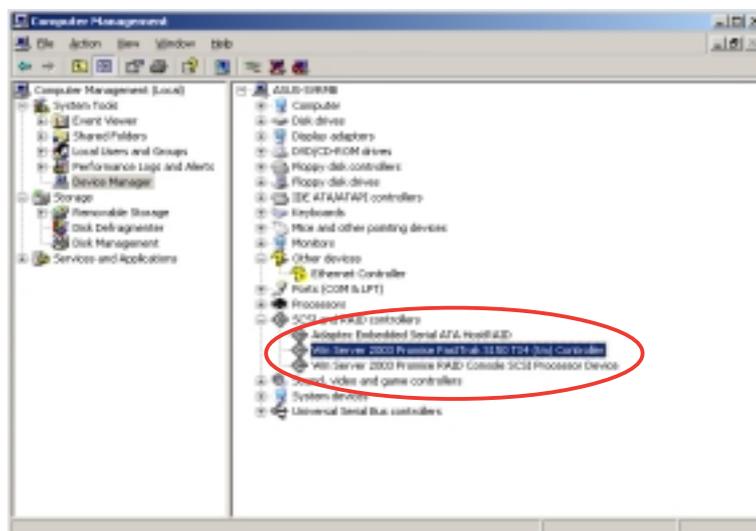


- Click **Finish** after the driver installation is done.

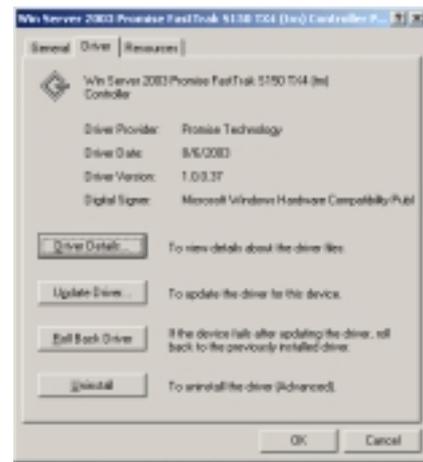


To verify the Promise® PDC20319 RAID controller driver installation:

- Right-click the **My Cobeforemputer** icon on the Windows® desktop, then select **Properties** from the menu.
- Click the **Hardware** tab, then click the **Device Manager** button.
- Click the “+” sign before the item **SCSI and RAID controllers**. The **Win Server 2003 Promise Fastrak S150 TX4 (tm) Controller** item should appear.

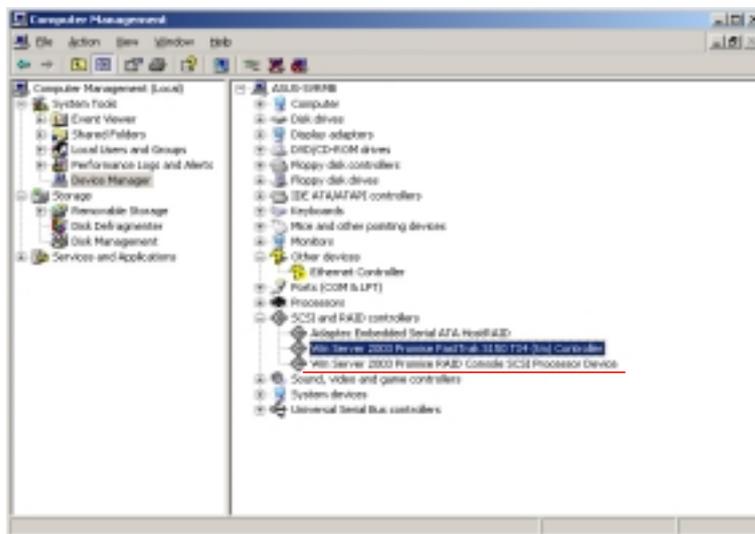


- Right-click the **Win Server 2003 Promise Fastrak S150 TX4 (tm) Controller** item, then select **Properties** from the menu.
- Click the **Driver** tab, then click the **Driver Details** button to display the RAID controller drivers.
- Click **OK** when finished.

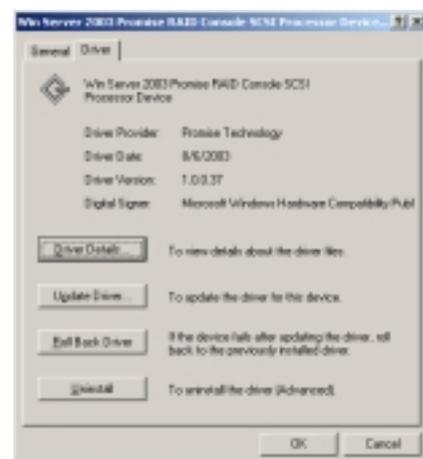


After installing the RAID controller driver, you must remove the Windows®-assigned SCSI controller driver. To do this:

- From the **Computer Management** window, click the “+” sign before the item **SCSI and RAID controllers**.
- Right-click the **Win Server 2003 Promise RAID Console SCSI Processor Device** item, then select **Properties** from the menu.



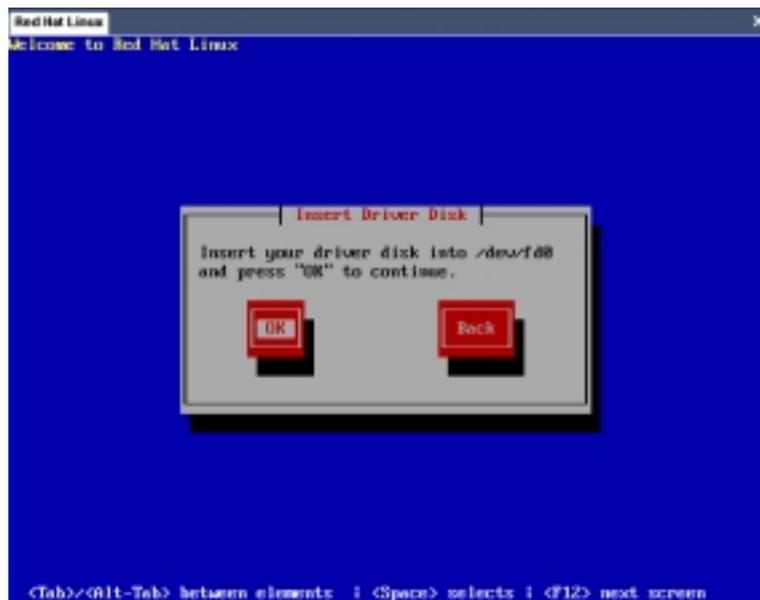
- Click the **Driver** tab, then click the **Driver Details** button to display the RAID controller properties.
- Click the **Uninstall** button, then click **OK**.
- Follow screen instructions to uninstall the driver.



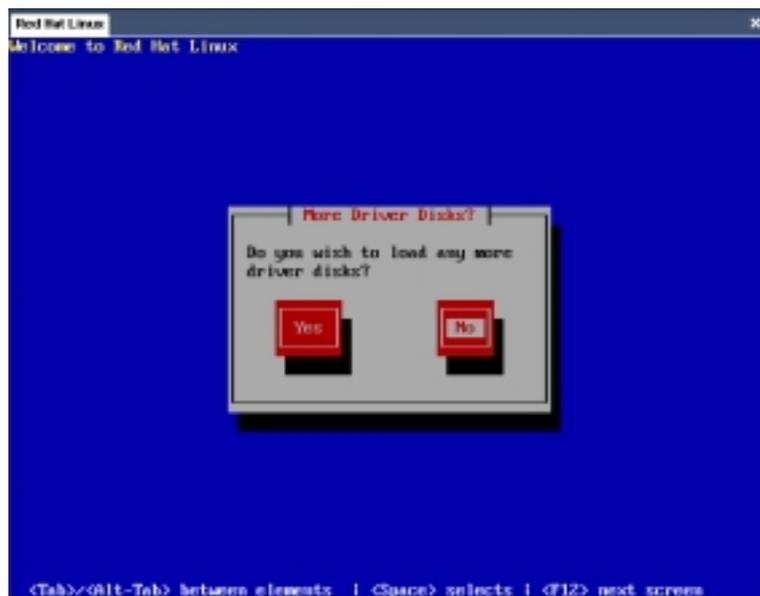
### 2.3.3 Red Hat® Linux 9.0

To install the Promise® PDC20319 RAID controller driver during Red Hat® Linux 9.0 OS installation:

1. Follow steps 1 to 4 of section “2.3.2 Installing the Intel® 6300ESB RAID controller driver > Red Hat® Linux 9.0” on page 47 to 49.
2. When prompted, insert the Promise® PDC20319 driver disk to the floppy disk drive, select **OK**, then press <Enter>.



3. The drivers for the Promise® PDC20319 RAID controller are installed to the system.
4. When asked if you will load additional RAID controller drivers, select **No**, then press <Enter>; otherwise, select **Yes** if you need to install additional RAID controller drivers.



5. Follow screen instructions to continue the OS installation.

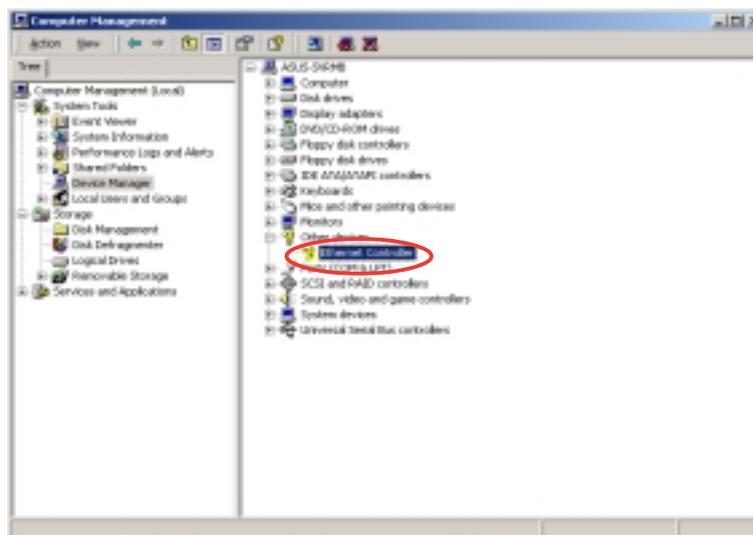
### 3. LAN driver installation

This section provides instructions on how to install the Intel® 82547GI LAN controller drivers.

#### 3.1 Windows® 2000 Server

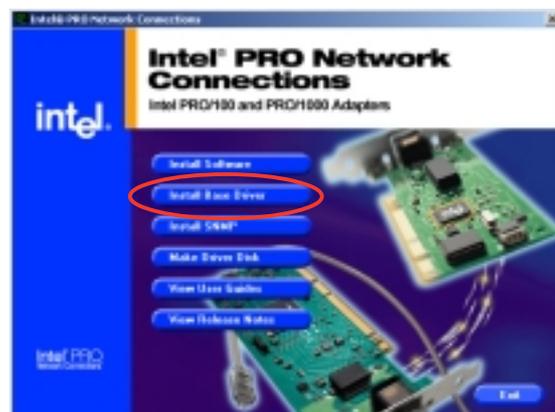
To install the Intel® 82547GI LAN controller driver on a Windows® 2000 Server OS:

1. Restart the computer, then log in with **Administrator** privileges.
2. Insert the motherboard/system support CD to the optical drive, or the LAN controller driver disk to the floppy disk drive.
3. Windows® automatically detects the LAN controller and displays a **New Hardware Found** window. Click **Cancel**.
4. Right-click the **My Computer** icon on the Windows® desktop , then select **Properties** from the menu.
5. Click the **Hardware** tab, then click the **Device Manager** button to display the list of devices installed in the system.



6. Right-click the **LAN Controller** item, then select **Properties**.
7. Click the **Driver** tab, then click the **Update Driver** button.
8. The **Intel® PRO Network Connections** window appears. Click the **Install Base Drivers** button.

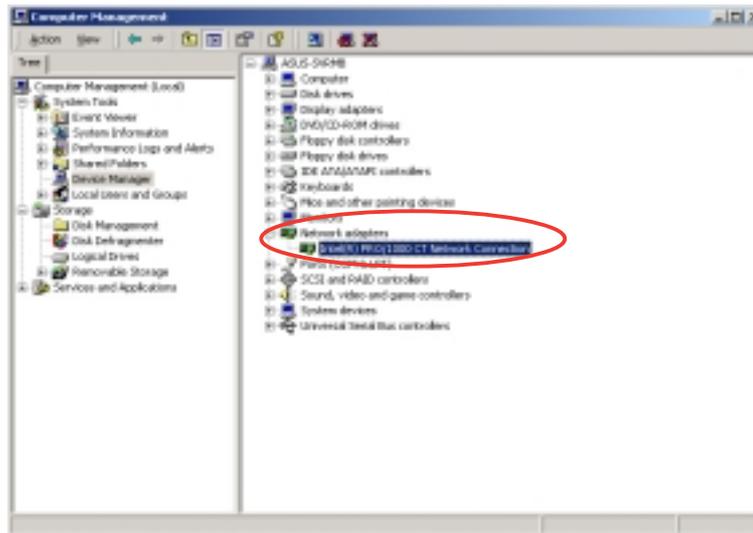
The LAN controller drivers are automatically installed in the system.



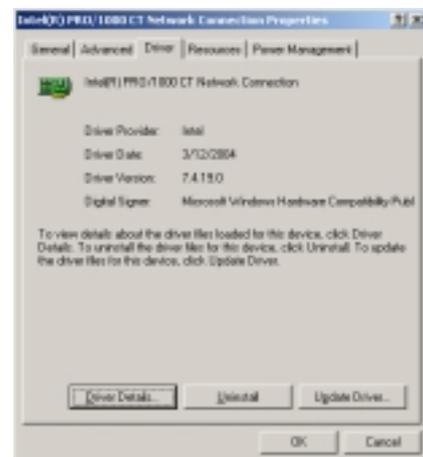
To verify the Intel® 82547GI LAN controller driver installation:

1. Right-click the **My Computer** icon on the Windows® desktop , then select **Properties** from the menu.
2. Click the **Hardware** tab, then click the **Device Manager** button.
3. Click the “+” sign before the item **Network adapters**.

The **Intel(R) PRO/1000 CT Network Connection** item should appear.



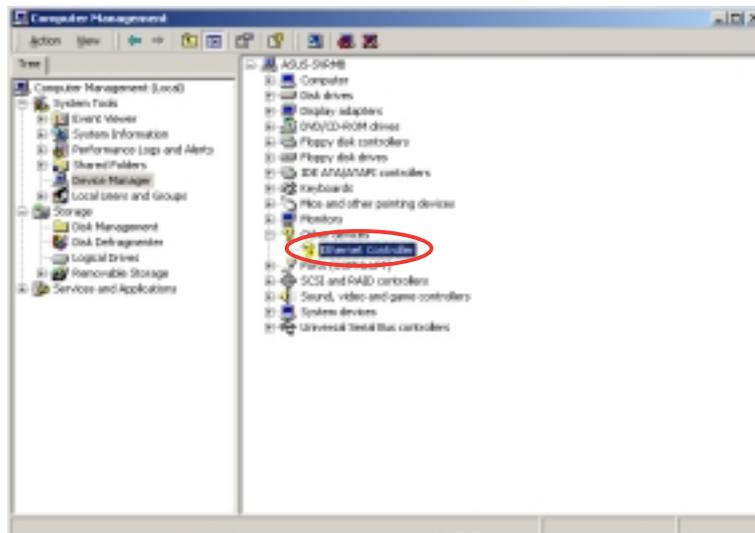
4. Right-click the **Intel(R) PRO/1000 CT Network Connection** item, then select **Properties** from the menu.
5. Click the **Driver** tab, then click the **Driver Details** button to display the RAID controller drivers.
6. Click **OK** when finished.



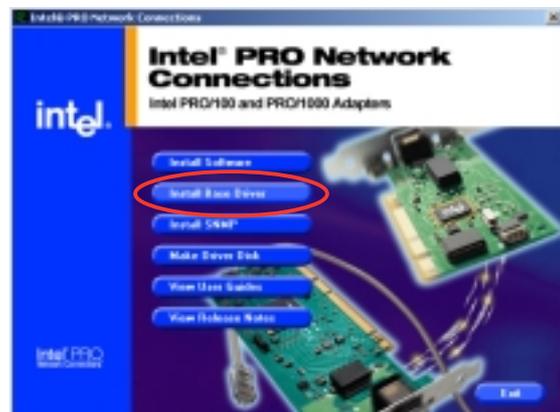
## 3.2 Windows® 2003 Server

To install the Intel® 82547GI LAN controller driver on a Windows® 2003 Server OS:

1. Restart the computer, then log in with **Administrator** privileges.
2. Insert the motherboard/system support CD to the optical drive, or the LAN controller driver disk to the floppy disk drive.
3. Windows® automatically detects the LAN controller and displays a **New Hardware Found** window. Click **Cancel**.
4. Right-click the **My Computer** icon on the Windows® desktop , then select **Properties** from the menu.
5. Click the **Hardware** tab, then click the **Device Manager** button to display the list of devices installed in the system.



6. Right-click the **LAN Controller** item, then select **Properties**.
7. Click the **Driver** tab, then click the **Update Driver** button.
8. The **Hardware Update Device Driver Wizard** window appears. Select the option “**Install the software automatically (Recommended)**”, then click **Next**.
9. The **Intel® PRO Network Connections** window appears. Click the **Install Base Drivers** button.

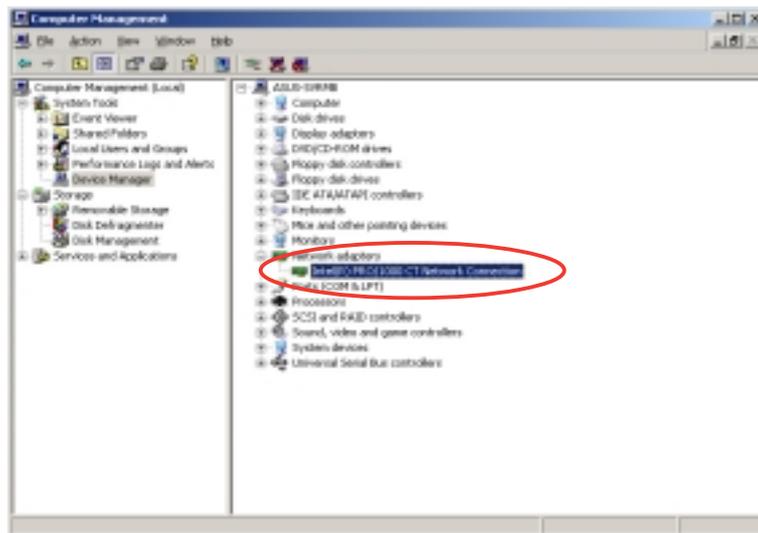


The LAN controller drivers are automatically installed in the system.

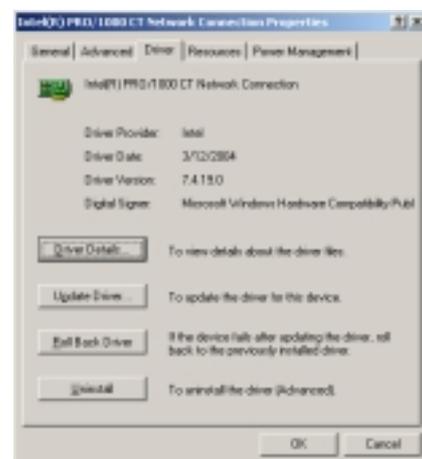
To verify the Intel® 82547GI LAN controller driver installation:

1. Right-click the **My Computer** icon on the Windows® desktop , then select **Properties** from the menu.
2. Click the **Hardware** tab, then click the **Device Manager** button.
3. Click the “+” sign before the item **Network adapters**.

The **Intel(R) PRO/1000 CT Network Connection** item should appear.



4. Right-click the **Intel(R) PRO/1000 CT Network Connection** item, then select **Properties** from the menu.
5. Click the **Driver** tab, then click the **Driver Details** button to display the RAID controller drivers.
6. Click **OK** when finished.



### 3.3 Red Hat® Linux 9.0

Follow these instructions when installing the Intel® 82547GI LAN controller base driver for the in Red Hat® Linux version 5.2.x operating system. The following procedures were tested for 2.4.x kernels through 2.4.20.

#### *Building and installing the drivers*

To build a binary RPM package of this driver, run

```
rpmbuild -tb <filename.tar.gz>
```

Replace <filename.tar.gz> with the specific filename of the driver.



---

The currently running kernel must match the version and configuration of the installed kernel sources for the build to work properly, Reboot the system now if you have just recompiled the kernel. The RPM functionality has only been tested in Red Hat® distributions.

---

1. Move the base driver tar file to the directory of your choice. For example, use `/home/username/e1000` or `/usr/local/src/e1000`.

2. Untar or unzip the archive.

```
tar zxf e1000-x.x.x.tar.gz
```

3. Change to the driver src directory.

```
cd e1000-x.x.x/src/
```

4. Compile the driver module.

```
makeinstall
```

The binary is installed as:

```
/lib/modules/[KERNEL_VERSION]/kernel/drivers/net/e1000.o
```

The locations listed above are default install locations and might not be correct for some Linux distributions. For more information, see the `ldistrib.txt` file included in the driver tar.

5. Install the module.

```
insmod e1000 <parameter>=<value>
```

6. Assign an IP address to the interface by entering the following:

```
ifconfig ethx <IP_address>
```

where x is the interface number.

7. To verify if the interface works, enter the following:

```
ping <IP_address>
```

where <IP\_address> is the IP address of another system on the same subnet as the system being tested.

## 4. VGA driver installation

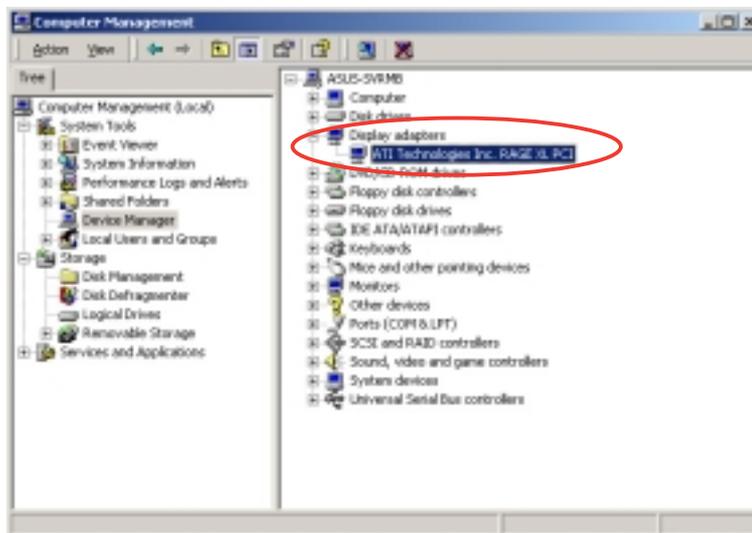
This section provides instructions on how to install the ATI® RAGE XL Video Graphics Adapter (VGA) drivers.

### 4.1 Windows® 2000/2003 Server

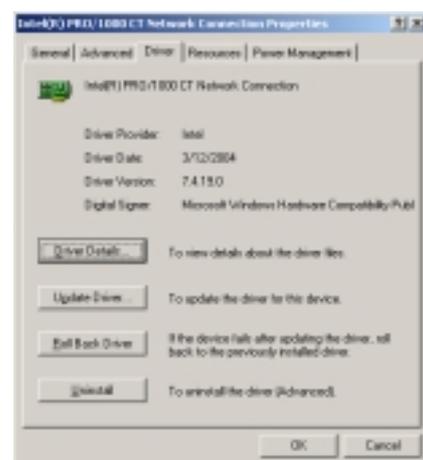
The Windows® 2000/2003 Server operating system automatically recognizes the ATI® RAGE XL VGA drivers during system installation. There is no need to install an additional driver(s) to support the onboard VGA.

Follow these instructions to make sure that the ATI® RAGE XL VGA drivers are properly installed.

1. Right-click the **My Computer** icon on the Windows® desktop , then select **Properties** from the menu.
2. Click the **Hardware** tab, then click the **Device Manager** button.
3. Click the “+” sign before the item **Display adapters**.  
The **ATI Technologies Inc. RAGE XL PCI** item should appear.



4. Right-click the **ATI Technologies Inc. RAGE XL PCI** item, then select **Properties** from the menu.
5. Click the **Driver** tab, then click the **Driver Details** button to display the VGA drivers.
6. Click **OK** when finished.



### 4.2 Red Hat® Linux 9.0

The Red Hat® Linux 9.0 (2.4.x kernels) operating system automatically recognizes the ATI® RAGE XL VGA drivers during system installation. There is no need to install an additional driver(s) to support the onboard VGA.

