Table of Contents

Configuring IDE RAID Hard Drive(s) (Controller：GigaRAID (IT8212))

To set up IDE RAID hard drive(s), follow the steps below：

(1) Install IDE hard drive(s) in your computer.

(2) Configure GigaRAID controller mode and boot sequence in BIOS Setup.

(3)* Configure RAID set in RAID BIOS.

(4) Make a floppy disk containing the IDE RAID controller driver

(5) Install the IDE RAID controller driver during OS installation.

Before you begin

Please prepare:

(a) Two IDE hard drives (to ensure optimal performance, it is recommended that you use two hard
     drives with identical model and capacity). If you do not want to create RAID with the GigaRAID controller,
     you may prepare only one hard drive.

(b) An empty formatted floppy disk.

(c) Windows XP/2000 setup disk.

(d) Driver CD for your motherboard.

(1) Installing IDE hard drive(s) in your system

Attach one end of the IDE cable to the rear of the IDE hard drive and the other end to IDE port(s) controlled
by the GigaRAID controller on the motherboard. (To ensure that your IDE CD-ROM drive can work
properly, please connect it to the IDE port that is controlled by the Southbridge, not the GigaRAID controller).
Then connect the power connector from your power supply to the hard drive(s).

"*" Skip this step if you do not want to create RAID array on the IDE controller

(2) Configuring GigaRAID controller mode and boot sequence in BIOS Setup

You have to make sure whether the GigaRAID controller are configured correctly in system BIOS Setup and set BIOS boot sequence for the IDE RAID hard drive(s).

Step 1:

Turn on your computer and press Del to enter BIOS Setup during POST (Power-On Self Test). If you want to create RAID, assure that the **Onboard H/W GIGARAID** item under **Integrated Peripherals** is set to **Enabled** and **GigaRAID Function** to **RAID** (Figure 1). If you do not want to create RAID, set **GigaRAID Function** to **ATA**.

```
              CMOS Setup Utility-Copyright (C) 1984-2004 Award Software
                              Integrated Peripherals

     On-Chip Primary PCI  IDE            [Enabled]              Item Help
     On-Chip Secondary PCI IDE           [Enabled]           Menu Level  ▶
     On-Chip SATA                        [Auto]
   x SATA Port0 Configure as             SATA Port0          If a hard disk
     SATA Port1 Configure as             SATA Port1          controller card is
     SATA RAID Function                  [Enabled]           used, set as Disabled
     USB Controller                      [Enabled]
     USB 2.0 Controller                  [Enabled]           [Enabled]
     USB Keyboard Support                [Disabled]          Enabled onboard IDE
     USB Mouse Support                   [Disabled]          Port
     AC97 Audio                          [Auto]
     Onboard H/W SATA                    [Enabled]           [Disabled]
     Serial ATA Function                 [RAID]              Disabled onboard IDE
     Onboard H/W GIGARAID                [Enabled]           Port
     GigaRAID Function                   [RAID]
     Onboard H/W 1394                    [Enabled]
     Onboard H/W LAN                     [Enabled]
     Onboard Serial Port 1               [3F8/IRQ4]
     Onboard Serial Port 2               [2F8/IRQ3]

   ↑↓→←: Move    Enter: Select    +/-/PU/PD: Value    F10: Save    ESC: Exit    F1: General Help
        F5: Previous Values      F6: Fail-Safe Defaults           F7: Optimized Defaults
```
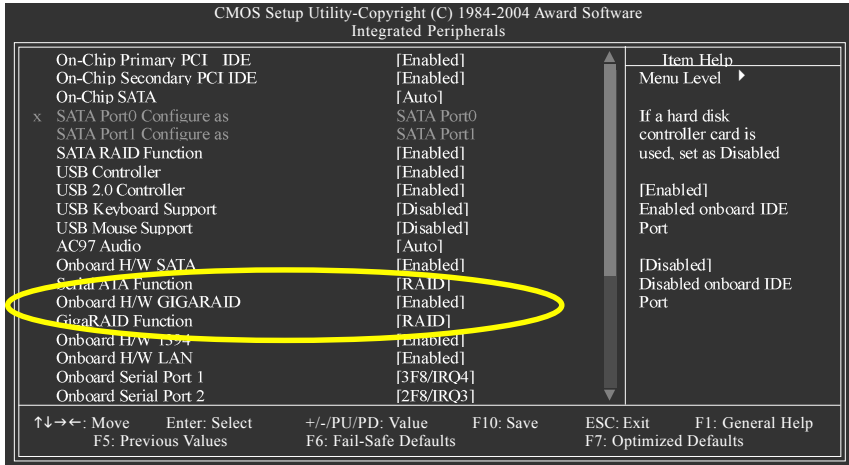
Figure 1

The BIOS Setup menus described in this section may not show the exact settings for your motherboard. The actual BIOS Setup menu options you will see shall depend on the motherboard you have and the BIOS version .

Step 2：
Next, go to **Advanced BIOS Features** and select **Hard Disk Boot Priority**. In the Hard Disk Boot Priority submenu, use the ARROW keys to select the desired IDE hard drive onto which you want to install Microsoft Windows 2000/XP and use the PLUS SIGN to move it up to the first item. In this procedure, we select **1. SCSI-0: IT8212** (Figure 2).
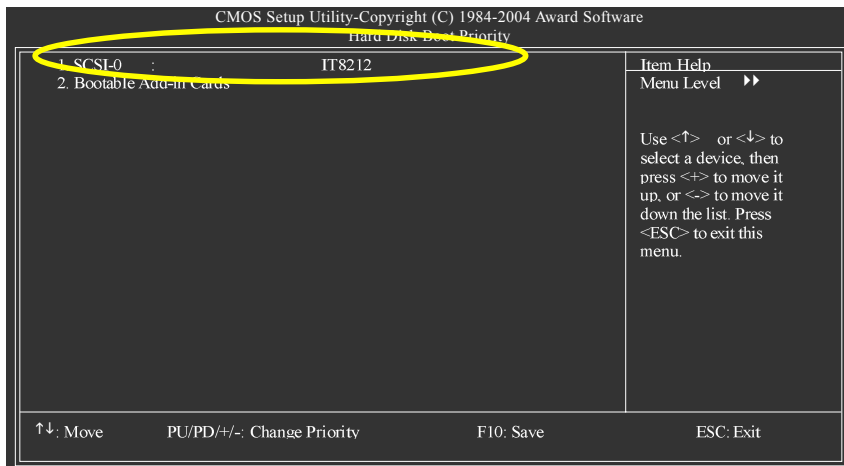

CMOS Setup Utility-Copyright (C) 1984-2004 Award Software
Hard Disk Boot Priority

1. SCSI-0 : IT8212	Item Help
2. Bootable Add-in Cards	Menu Level ▶▶
	Use <↑> or <↓> to select a device, then press <+> to move it up, or <-> to move it down the list. Press <ESC> to exit this menu.

↑↓: Move   PU/PD/+/-: Change Priority   F10: Save   ESC: Exit

Figure 2

Step 3：
Set **First Boot Device** to **CD-ROM** so you can boot from Installation CD after system restarts.(Figure 3)

CMOS Setup Utility-Copyright (C) 1984-2004 Award Software
Advanced BIOS Features

▶ Hard Disk Boot Priority	[Press Enter]	Item Help
First Boot Device	[CDROM]	Menu Level ▶
Second Boot Device	[Hard Disk]	
Third Boot Device	[CDROM]	
Password Check	[Setup]	
Limit CPUID Max. to 3	[Enabled]	
DRAM Data Integrity Mode	Non-ECC	

↑↓→←: Move   Enter: Select   +/-/PU/PD: Value   F10: Save   ESC: Exit   F1: General Help
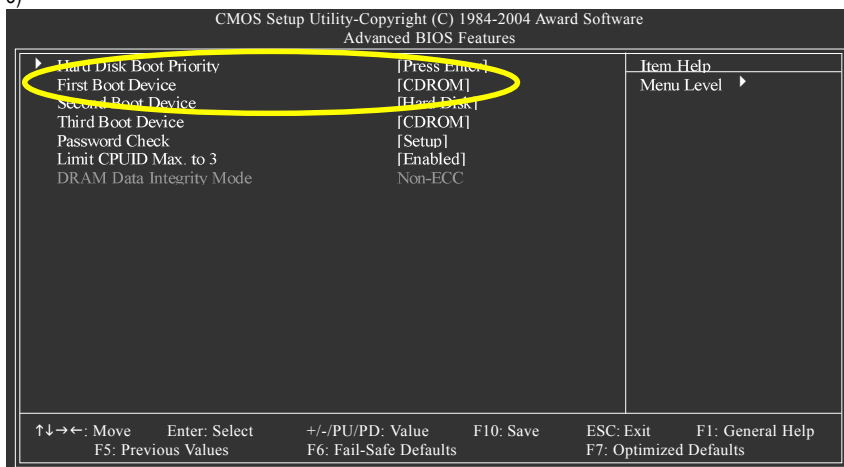F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults

Figure 3

Step 4：
Save and exit BIOS Setup.

(3) Configuring RAID set in RAID BIOS

Enter the RAID setup utility to create RAID set on the GigaRAID controller. Skip this step and proceed to Section 4 if you do not want to create RAID.

Step 1:

If you have attached hard drives to the GigaRAID controller correctly, after the Power-On Self Test (POST) memory test begins and before the operating system boot begins, the GigaRAID BIOS will detect the drives attached and show the following screen.

```
GigaRAID BIOS V1.41 F/W Ver 02093030
Copyright 2002-2003 ITE, Inc. All Rights Reserved

Press wait for IDE scan...
Drive 0: Maxtor    6E030L0                              IDE 0
Drive 1: Not Detected
Drive 3: Maxtor 6E030L0                                 IDE2
Drive 4: Not Detected

Press <Ctrl-G> to enter Setup Utility or
Press <ESC> or <S> to continue booting....
```

Figure 4

After entering the GigaRAID Setup Utility, you should see a screen similar to Figure 5 below.

Navigate the GigaRAID Setup Utility: You can use Number keys 1 to 5 to select the item you need.

Auto Configuration [1]: It will guide you to set an array and this is the simplest and fastest way to create your first array.

Define RAID [2]: To manually create an array, press 2 to enter the Define RAID menu.

Delete RAID [3]: To delete existing RAID set, press 3 to enter the Delete RAID menu.

Rebuild RAID [4]: To rebuild RAID 1 or RAID 0+1 set, press 4 to enter the Rebuild RAID menu.

RAID Card Configuration [5]: To check information about the RAID controller and current hard drive status, press 5 to enter the RAID Card Configuration screen.
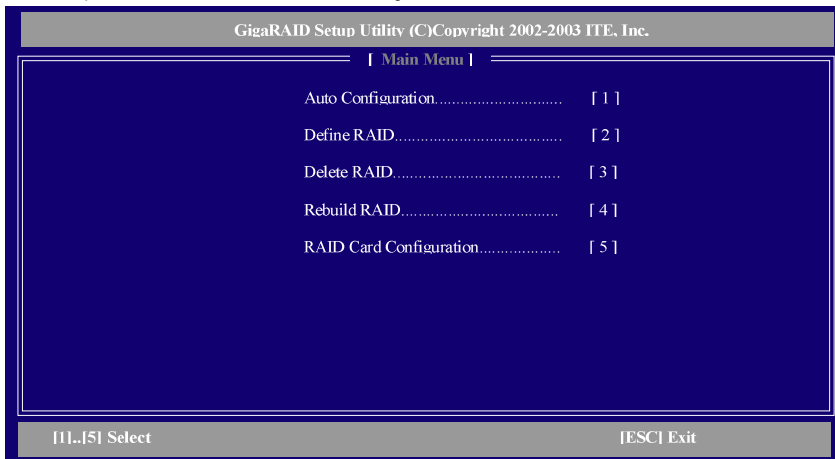
```
                GigaRAID Setup Utility (C)Copyright 2002-2003 ITE, Inc.
                         [ Main Menu ]

                 Auto Configuration.............................    [ 1 ]

                 Define RAID.....................................    [ 2 ]

                 Delete RAID.....................................    [ 3 ]

                 Rebuild RAID....................................    [ 4 ]

                 RAID Card Configuration..................    [ 5 ]




   [1]..[5] Select                                              [ESC] Exit
```

Figure 5

Auto Configuration :

Auto Configuration will guide you to set an array and this is the simplest and fastest way to create your first array. You should see a screen similar to Figure 6 below after pressing 1 from the Main Menu. Auto Configuration Menu: You can use the ARROW keys or SPACEBAR to cycle through RAID mode options under the **Setup Array Type as** item. The supported RAID modes include RAID0, RAID1, RAID0+1, JBOD, and Normal (standard ATA mode). The folllowing is an example of RAID 0 creation. Array Configuration: This section displays the information about the RAID set you select, such as RAID mode and RAID array size.

After selecting the RAID mode, press CTRL+Y to save the settings. Press Y to confirm your selection. And press any key to return to the Main Menu. This action completes RAID configuration.

GigaRAID Setup Utility (C)Copyright 2002-2003 ITE, Inc.		
[Auto Configuration Menu]		
Setup Array Type as:		**RAID0**
[Array Configuration]		
RAID Mode..	Stripe	
Un-used Drives...	0	
Drive(s) in Array...	2	
Array Capacity (size in MB)...................................	55791	
[→ ←, Space] Change Option	[CTRL-Y] Save	[ESC] Exit
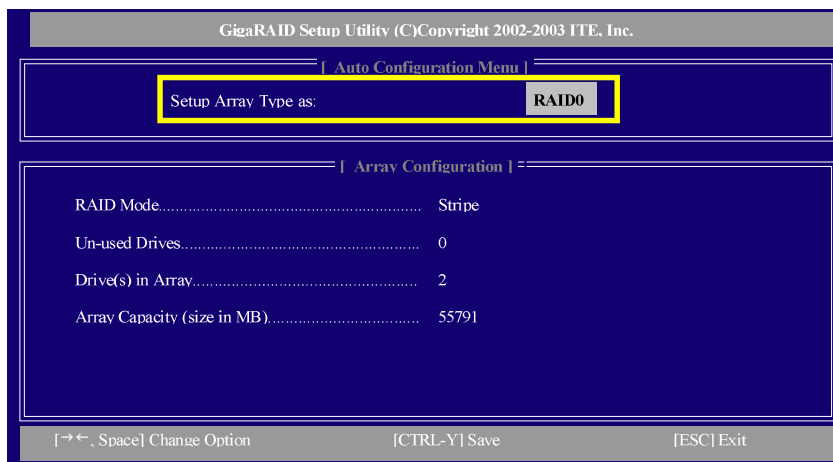
Figure 6

Define RAID:

The Define RAID selection allows you to create RAID set with several hard drives to mirror the data from a damaged RAID 1 (or RAID 0+1) hard drive to the new replacement hard drive.

Press 2 in Main Menu and the Define RAID Menu as shown in Figure 7 will appear. Use ARROW keys to highlight through arrays and press ENTER after selecting an array. You will see the Define RAID Sub-Menu (Figure 8 on next page) from which you may configure the new RAID array.
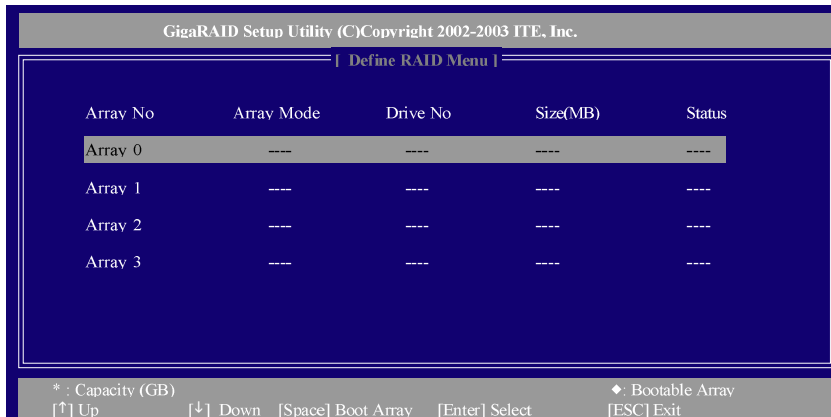

Figure 7

Define RAID Sub-Menu (Figure 8):

Use the UP or DOWN ARROW key to move to an item and use SPACEBAR to cycle through options.

RAID Array Setup Sequence--

1. Array Mode: Press SPACEBAR under this item to select RAID 0 (Striping) mode. In the following procedure, we will create a RAID 0 (Striping) array as an example.

2. Block Size: If you select to create RAID 0 (Striping) or RAID 0+1 (Striping+Mirroring), you have to specify the block size. The block size options include 1KB, 2KB, 4KB, 8KB, 16KB, 32KB and 64KB.

3. Assignment: Use the ARROW keys to move to the Assignment section of the desired hard drive and press SPACEBAR to change the Assignment option to Y. This action adds the drive to the RAID set. To successfully create a RAID array, you need to set at least two hard drives to Y status. You will see that the Drive No section displays the number of hard drives that are labeled with Y.

4. Press CTRL+Y to save the selection.

5. Next, if you are sure to erase the old data in the hard drive, press Y to confirm (or N to cancel). Now, you should see "Functional" in the Status section, which indicates the RAID array is operational.

6. Press ESC to return to the Define RAID Menu and you should see the functional RAID set (refer to Figure 9 on next page).

Figure 8

GigaRAID Setup Utility (C)Copyright 2002-2003 ITE, Inc.				
[Define RAID Menu]				
Array No	Array Mode	Drive No	Size(MB)	Status
Array 0	Striped	2	55791	Functional
Array 1	----	----	----	----
Array 2	----	----	----	----
Array 3	----	----	----	----

* : Capacity (GB)   ◆ : Bootable Array
[↑] Up   [↓] Down   [Space] Boot Array   [Enter] Select   [ESC] Exit

Figure 9: Information about the RAID set.

Delete RAID:

Press 3 in Main Menu to enter the Delete RAID Menu (Figure 10).

Use UP or DOWN ARROW key to move the selection bar to the RAID array that you want to delete and press Del.
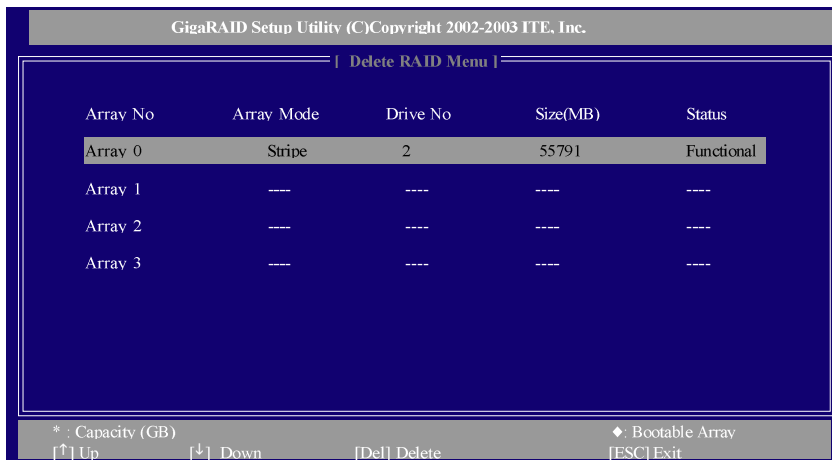
GigaRAID Setup Utility (C)Copyright 2002-2003 ITE, Inc.				
[Delete RAID Menu]				
Array No	Array Mode	Drive No	Size(MB)	Status
Array 0	Stripe	2	55791	Functional
Array 1	----	----	----	----
Array 2	----	----	----	----
Array 3	----	----	----	----

* : Capacity (GB) ◆: Bootable Array
[↑] Up   [↓] Down   [Del] Delete   [ESC] Exit

Figure 10

When a screen similar to that below appears, confirm again whether you are sure to delete the RAID array. Press CTRL+Y to confirm or other key to abort. Then, when the "Erase the data in the array?" message appears, press Y if you want to keep the data in the RAID set,
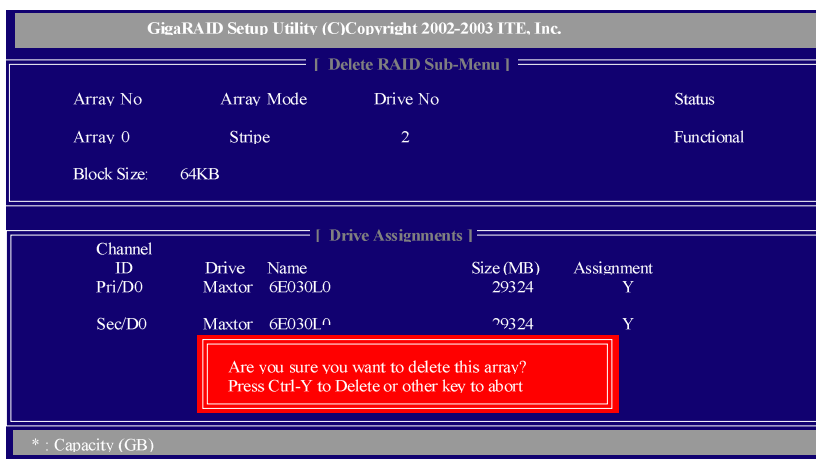
GigaRAID Setup Utility (C)Copyright 2002-2003 ITE, Inc.				
[Delete RAID Sub-Menu]				
Array No	Array Mode	Drive No		Status
Array 0	Stripe	2		Functional
Block Size:	64KB			

[Drive Assignments]

Channel ID	Drive	Name	Size (MB)	Assignment
Pri/D0	Maxtor	6E030L0	29324	Y
Sec/D0	Maxtor	6E030L0	29324	Y

Are you sure you want to delete this array?
Press Ctrl-Y to Delete or other key to abort

* : Capacity (GB)

Figure 11

Rebuild RAID:

The Rebuild RAID selection allows you to initiate the copying of data from an existing drive to a replacement drive that has been installed in a RAID 1 or RAID 0+1 set after the failure of one of the members. Press 4 in Main Menu to enter the Rebuild RAID Menu. Use the ARROW keys to select an array that you want to rebuild. This function will not be active if you select a non-RAID 1 or non-RAID 0+1 array.
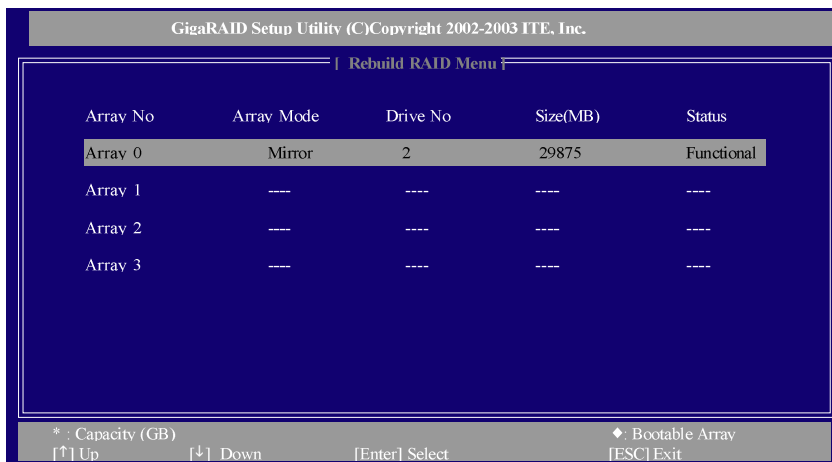
GigaRAID Setup Utility (C)Copyright 2002-2003 ITE, Inc.				
[Rebuild RAID Menu]				
Array No	Array Mode	Drive No	Size(MB)	Status
Array 0	Mirror	2	29875	Functional
Array 1	----	----	----	----
Array 2	----	----	----	----
Array 3	----	----	----	----
* : Capacity (GB)			◆: Bootable Array	
[↑] Up	[↓] Down	[Enter] Select	[ESC] Exit	

Figure 12

Move to the RAID ARRAY to be rebuilt and press ENTER and you will see a screen as shown in Figure 13 below. You have to assign the Source Drive and Target Drive. In the Drive List section, use UP or DOWN keys to select the desired drive and press ENTER.

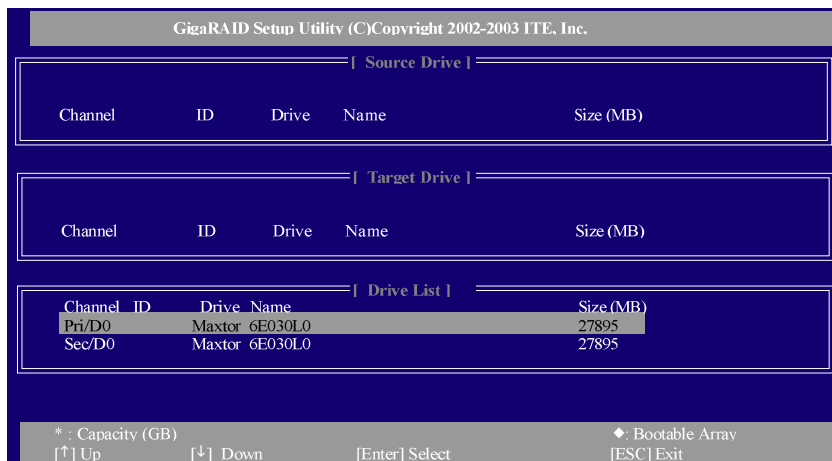| GigaRAID Setup Utility (C)Copyright 2002-2003 ITE, Inc.				
[Source Drive]				
Channel	ID	Drive	Name	Size (MB)
[Target Drive]				
Channel	ID	Drive	Name	Size (MB)
[Drive List]				
Channel ID		Drive Name		Size (MB)
Pri/D0		Maxtor 6E030L0		27895
Sec/D0		Maxtor 6E030L0		27895
* : Capacity (GB)			◆: Bootable Array	
[↑] Up	[↓] Down	[Enter] Select	[ESC] Exit	

Figure 13

After the assignment, the following window (Figure 14) will appear. Press Y to continue or N to abort. Later, answer Y or N to the next prompt "Do you like monitoring the reconstruction status till it completes?" If you answer Y, you can monitor the whole rebuild process until it completely ends or select background rebuild. If you choose background rebuild, rebuild can proceed at the background and you can leave Setup Utility and boot directly.
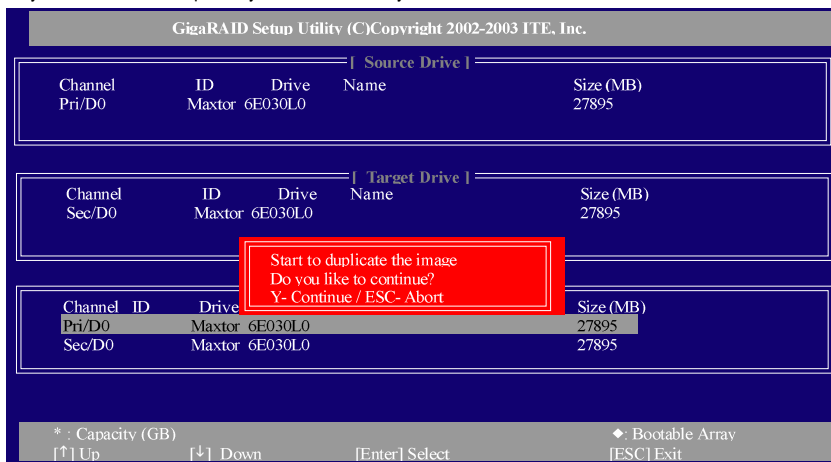

Figure 14

RAID Card Configuration:

Press 5 in Main Menu to enter the RAID Card Configuration menu (Figure 15).

The RAID Card Configuration section: When Auto-Rebuild is enabled, the GigaRAID ATA RAID Controller can rebuild your mirrored array automatically. If a failed mirrored drive is replaced without shutting down your PC, the GigaRAID ATA RAID Controller can detect the hot-swap action and start rebuilding automatically. When Auto-Rebuild is disabled, you need to rebuild your mirrored array manually from Rebuild RAID Menu (please refer to page 11).

The RAID Card Resource section: This section displays PCI slot interrupt and I/O port address used by the GigaRAID ATA RAID Controller.

The Driver Status section: This section displays the status of each hard drive.

GigaRAID Setup Utility (C)Copyright 2002-2003 ITE, Inc.				
[RAID Card Configuration]				
Auto-Rebuild:	Disabled			
[RAID Card Resource]				
Channel 0	Interrupt: A	I/P Port: 0008410		
Channel 1	Interrupt: A	I/P Port: 0008C10		
[Drive Status]				
Channel		Size		Drive
ID	Drive Name	(MB)	Array No	Mode
Pri/D0	Maxtor 6E030L0	27895	Array 0	U6
Sec/D0	Maxtor 6E030L0	27895	Array 0	U6
* : Capacity (GB)		Drive Mode: P: PIO, D:DMA, U: UDMA		
[→←, Space] Change Option				[ESC] Exit

Figure 15

(4) Making a IDE RAID controller driver disk

To install Windows 2000/XP onto a hard drive on the GigaRAID controller successfully, you need to install required driver for the GigaRAID controller on your motherboard during OS installation. Without the driver,the hard drive may not be recognized during the Windows setup process.

First of all, you need to copy the driver for the IDE RAID controller from the motherboard driver CD to a floppydisk. The instructions below explain how to copy the driver.

Step 1: Find an available system and insert the motherboard driver CD into the CD-ROM drive. The installation utility will appear automatically. Quit the installation utility first.

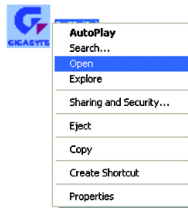Step 2: Go to **My Computer** and right-click the CD-ROM drive icon and select **Open** (Figure 11).

Figure 16

Step 3: Go to the **BootDrv** folder and look for an executable program named MENU.*exe* (Figure 17).
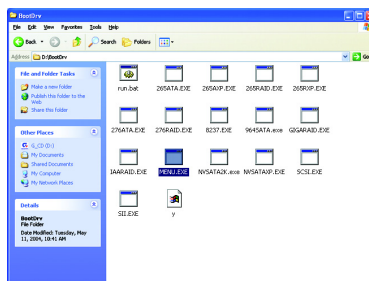

Figure 17

Step 3:
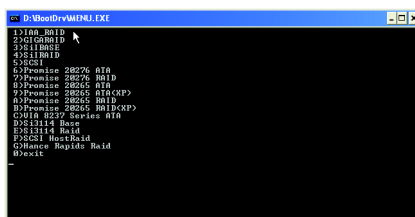Double-click MENU.*exe*. An MS-DOS prompt screen similar to Figure 18 below will appear.

Figure 18

Step 4:
Insert an empty floppy disk. Press 2 to select the **2)GIGARAID** item. Then it will take about one minute to copy the GigaRAID driver from the motherboard driver CD to the floppy disk.

Step 5:
Press 0 to exit when the procedure is complete (Figure 19). You have copied the IDE RAID driver sucessfully.
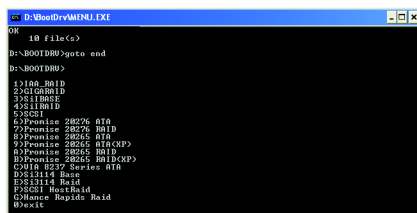

Figure 19

(5) Installing IDE RAID controller driver during OS installation

Now that you have prepared a floppy disk with the IDE RAID controller driver and adjusted BIOS settings, you are ready to install Windows 2000/XP onto your IDE hard drive with the driver. The following is an example of Windows XP installation.

Step 1: Restart your system to boot from the Windows 2000/XP Setup disk and press F6 as soon as you see the "Press F6 if you need to install a 3rd party SCSI or RAID driver" message (Figure 20). After pressing F6, there will be a few moments of some files being loaded before you see the next screen.
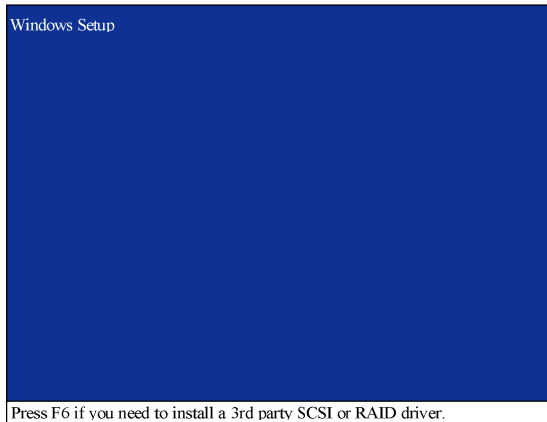

Windows Setup

Press F6 if you need to install a 3rd party SCSI or RAID driver.

Figure 20

Step 2:

When a screen similar to that below appears (Figure 21), insert the floppy disk containing the IDE RAID driver and press S.

Windows Setup

Setup could not determine the type of one or more mass storage devices installed in your system, or you have chosen to manually specify an adapter. Currently, Setup will load support for the following mass storage devices(s)

<none>

* To specify additional SCSI adapters, CD-ROM drives, or special disk controllers for use with Windows, including those for which you have a device support disk from a mass storage device manufacturer, press S.

* If you do not have any device support disks from a mass storage device manufacturer, or do not want to specify additional mass storage devices for use with Windows, press ENTER.

S=Specify Additional Device   ENTER=Continue   F3=Exit
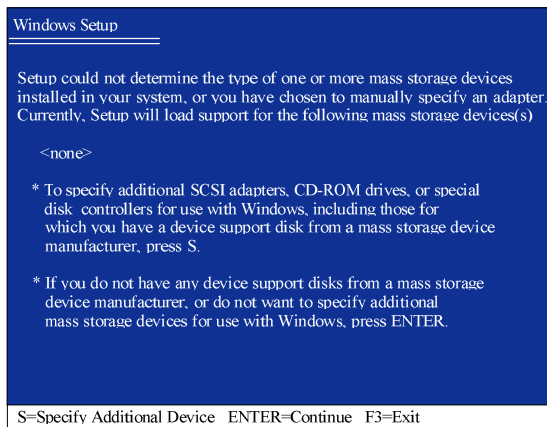
Figure 21

Step 3:

If Setup correctly recognizes the driver in the floppy disk, a controller menu will appear. If you want to install Windows XP, use the UP or DOWN ARROW key to select **ITE IT8212 ATA RAID Controller (Windows 2000/XP)*** (Figure 22) and press ENTER. Then it will begin to load the driver from the floppy disk.
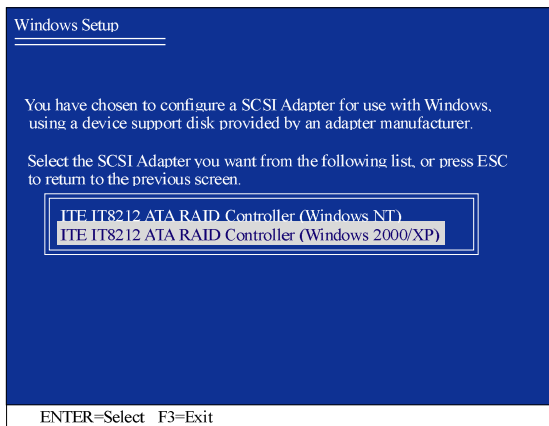
```
Windows Setup

   You have chosen to configure a SCSI Adapter for use with Windows,
   using a device support disk provided by an adapter manufacturer.

   Select the SCSI Adapter you want from the following list, or press ESC
   to return to the previous screen.

        ITE IT8212 ATA RAID Controller (Windows NT)
        ITE IT8212 ATA RAID Controller (Windows 2000/XP)

   ENTER=Select   F3=Exit
```

Figure 22

⚠ CAUTION If a message appears saying one or some file(s) cannot be found, please check the floppy disk or copy the correct GigaRAID controller driver again from the motherboard driver CD.

Step 4:

When the screen as shown below appears, press ENTER to continue the driver installation from the floppy disk. The driver installation will be finished in about one minute.
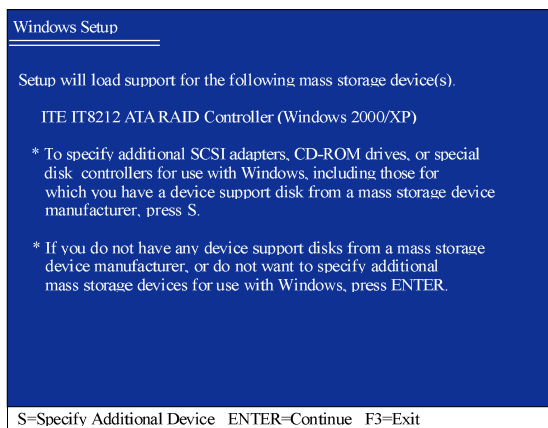
```
Windows Setup

   Setup will load support for the following mass storage device(s).

        ITE IT8212 ATA RAID Controller (Windows 2000/XP)

    * To specify additional SCSI adapters, CD-ROM drives, or special
      disk  controllers for use with Windows, including those for
      which you have a device support disk from a mass storage device
      manufacturer, press S.

    * If you do not have any device support disks from a mass storage
      device manufacturer, or do not want to specify additional
      mass storage devices for use with Windows, press ENTER.

   S=Specify Additional Device   ENTER=Continue   F3=Exit
```

Figure 23

"*" Select the driver according to which of the following operating systems you want to install: Windows XP, Windows 2000, or Windows NT.

After the GigaRAID controller driver installation is completed, you should see a screen similar to Figure 23 below. It indicates that you have installed the driver successfully. You can proceed with the Windows 2000/XP installation.

```
WindowsXP Professional  Setup

 Welcome to Setup.
 This port of the Setup program prepares Microsoft(R)
 Windows (R) XP  to run on your computer.

    To set up Windows XP now, press ENTER.

    To repair a Windows XP installation using
    Recovery Console, press R.

    To quit Setup without installing Windows XP, press F3.




 Enter= Continue    R=Repair       F3=Exit
```
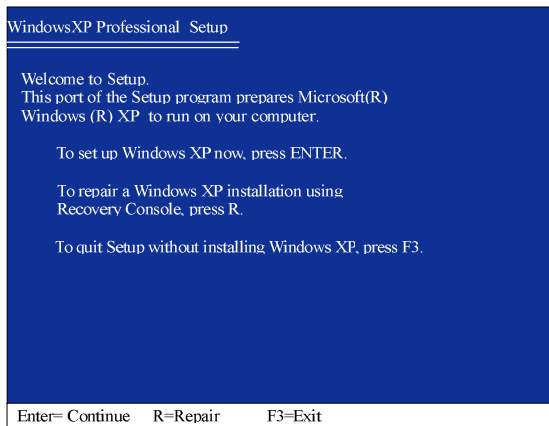
Figure 23

(Note: Each time you add a new hard drive to a RAID array, the RAID driver will have to be installed under Windows once for that hard drive. After that, the driver will not have to be installed.)