PXL-S30R
LSI 1030 SCSI RAID card
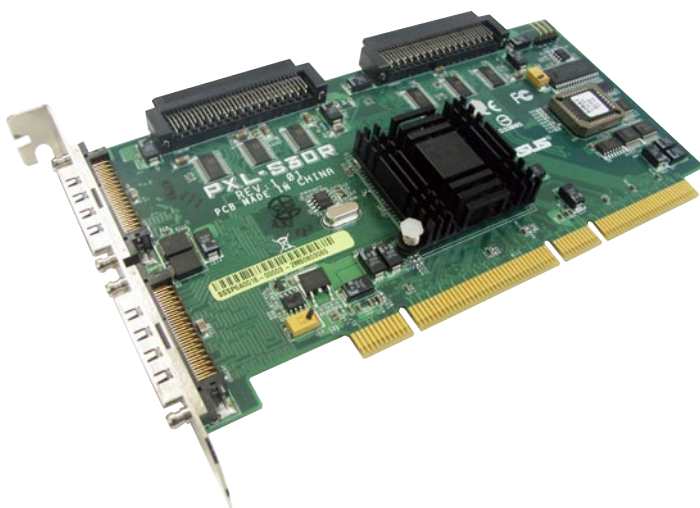
E3175

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Contents

Notices

Federal Communications Commission Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with manufacturer's instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

> The use of shielded cables for connection of the monitor to the graphics card is required to assure compliance with FCC regulations. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Canadian Department of Communications Statement

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

This class B digital apparatus complies with Canadian ICES-003.

Safety information

Electrical safety

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the server.
- When adding or removing devices to or from the server, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing server before you add a device.
- Before connecting or removing signal cables from the server, ensure that all power cables are unplugged.
- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.
- Make sure that your power supply is set to the correct voltage in your area. If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer.

Operation safety

- Before installing any component to the server, carefully read all the manuals that came with the package.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- Place the product on a stable surface.
- If you encounter technical problems with the product, contact a qualified service technician or your retailer.

About this guide

This user guide contains the information you need when installing and configuring the server management board.

How this guide is organized

This guide contains the following parts:

- **Chapter 1: Product introduction**

  This chapter offers the LSI 1030 SCSI RAID card features and the new technologies it supports.

- **Chapter 2: RAID configuration**

  This chapter provides instructions on setting up, creating, and configuring RAID sets using the available utilities.

- **Chapter 3: Driver update**

  This chapter provides instructions for updating the latest drivers in Windows® Server 2003 .

Where to find more information

Refer to the following sources for additional information and for product and software updates.

1. **ASUS websites**

   The ASUS website provides updated information on ASUS hardware and software products. Refer to the ASUS contact information.

2. **Optional documentation**

   Your product package may include optional documentation, such as warranty flyers, that may have been added by your dealer. These documents are not part of the standard package.

Conventions used in this guide

To make sure that you perform certain tasks properly, take note of the following symbols used throughout this manual.

DANGER/WARNING: Information to prevent injury to yourself when trying to complete a task.

CAUTION: Information to prevent damage to the components when trying to complete a task.

IMPORTANT: Instructions that you MUST follow to complete a task.

NOTE: Tips and additional information to help you complete a task.

Typography

Bold text	Indicates a menu or an item to select.
Italics	Used to emphasize a word or a phrase.
<Key>	Keys enclosed in the less-than and greater-than sign means that you must press the enclosed key.
	Example: <Enter> means that you must press the Enter or Return key.
<Key1+Key2+Key3>	If you must press two or more keys simultaneously, the key names are linked with a plus sign (+).
	Example: <Ctrl+Alt+D>
`Command`	Means that you must type the command exactly as shown, then supply the required item or value enclosed in brackets.
	Example: At the DOS prompt, type the command line: `format a:`

PXL-S30R specifications summary

SCSI Bus	Ultra320 SCSI
SCSI processor	LSI53C1030
Host Bus type	64-bit/133MHz PCI-X Interface
PCI card type	Universal add-in card (3.3V and 5.0V signaling)
Channel quantity	2
Transfer rate	Up to 320 MB/s for each channel
Internal connector	2 x 68-pin High Density (HD) SCSI connectors
External connector	2 x 68-pin Very High Density Cable Interconnect (VHDCI) SCSI connectors
Termination	Universal (LVD/SE) termination, auto cable detection per channel
RAID level	Integrated Hardware RAID0, RAID1, and RAID1E
OS support	Windows: -Win2003 -FUSION-MPT Windows Server 2003 Driver
Support device	Connects up to 15 internal and external SCSI devices for each channel
Certification level	PCI 2.2 and PCI-X 1.0a
Form factor	Full height form factor: 6.5 in x 3.58 in (16.5cm x 9.1cm)

Specifications are subject to change without notice.

This chapter offers the LSI 1030 SCSI RAID
card features and the new technologies it
supports.

Product introduction

1.1   Welcome!

Thank you for buying an ASUS® PXL-S30R SCSI RAID card!

The ASUS PXL-S30R allows you to create RAID0, RAID1, and RAID1E set(s) from SCSI hard disk drives connected to the SCSI connectors on the RAID card.

Before you start installing the SCSI RAID card, check the items in your package with the list below.

1.2   Package contents

Check your package for the following items.

- ASUS PXL-S30R SCSI RAID card
- Internal 68-pin High Density SCSI cable (one connector on each end) x 2
- Support CD
- User guide

If any of the above items is damaged or missing, contact your retailer.

1.3   Card layout

The illustration below shows the major components of the SCSI RAID card.

1.   Channel A 68-pin VHDCI SCSI connector
2.   Channel B 68-pin VHDCI SCSI connector
3.   Channel B 68-pin HD SCSI connector
4.   Channel A 68-pin HD SCSI connector
5.   Channel A and B activity LED connector
6.   SCSI card status LED (lights up to indicate that the card is working normally)

> You may connect the HDD activity LED cable to the J1 connector. When Channel A or Channel B has data access, the LED blinks.

1.4   System requirements

Before you install the PXL-S30R SCSI RAID card, check if the remote server system meets the following requirements:

·   **workstation or server motherboard with a PCI-X slot**

·   **SCSI hard disk drives (SCSI cable within 8M)**

·   **Supporting operating system:**

     Windows: -Win2003 -FUSION-MPT Windows Server 2003 Driver

·   **Other requirement:**

     - Appropriate thermal solution

     - Certified power supply module

This chapter provides instructions on setting up, creating, and configuring RAID sets using the available utilities.

RAID configuration

2

2.1 Setting up RAID

The RAID card supports RAID 0, RAID 1 and RAID 1E set.

2.1.1 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 1-E *(Enhanced RAID 1)* has a striped layout with each stripe unit having a secondary (or alternate) copy stored on a different disk. You can use three or more hard disk drives for this configuration.

> 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.

2.1.2 Installing hard disk drives

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

To install the SCSI hard disks for RAID configuration:

1. Install the SCSI hard disks into the drive bays following the instructions in the system user guide.
2. Connect a SCSI signal cable to the signal connector at the SCSI backplane.
3. Connect a power cable to the power connector on each drive.

2.1.3   Flashing RAID card firmware

The PXL-S30R SCSI RAID card supports RAID 0, RAID 1 and RAID 1E solution. If you need to switch the solution, you need to flash the firmware using the support CD that comes with the RAID card.

To flash the RAID card firmware in DOS environment:

1.   Place the motherboard support CD in the optical drive.
2.   Restart the computer, then enter the BIOS Setup.
3.   Select the optical drive as the first boot priority to boot from the support CD. Save your changes, then exit the BIOS Setup.
4.   Restart the computer.
5.   Press any key when prompted to boot from CD.

```
 Loading FreeDOS FAT KERNEL GO!
 Press any key to boot from CDROM...
```

The Makedisk menu appears.

```
A)   FreeDOS command prompt
B)   Make PXL-S30R RAID Card driver disk for Windows 2000
C)   Make PXL-S30R RAID Card driver disk for Windows Server 2003
D)   Flash PXL-S30R RAID Card BIOS and Firmware for RAID 0
E)   Flash PXL-S30R RAID Card BIOS and Firmware for RAID 1

Please choose A TO E:
```

6.   Select D) or E) to flash the RAID card BIOS and firmware for RAID 0 or RAID 1/RAID 1E based on your needs, and press <Enter> to start flashing.

2.2 LSI Logic MPT SCSI Setup Utility

The LSI Logic MPT SCSI Setup Utility is an integrated RAID solution that allows you to create the following RAID set(s) from SCSI hard disk drives supported by the LSI1030 SCSI controller:

- RAID 1 (Integrated Mirroring)/ RAID 1E (Integrated Mirroring Enhanced)
- RAID 0 (Integrated Striping)

2.2.1 Integrated Mirroring (IM) volume/ Integrated Mirroring Enhanced (IME) volume

Overview

The Integrated Mirroring (IM) feature supports simultaneous mirrored volumes with two disks (IM). Integrated Mirroring Enhanced (IME) supports three to eight disks, or seven mirrored disks plus a hot spare disk.

The IM feature supports hot swap capability, so when a disk in an IM volume fails, you can easily restore the volume, and the swapped disk is automatically re-mirrored.

Creating Integrated Mirroring volumes

The RAID BIOS setup screens shown in this section are for reference only and may not exactly match the items on your screen.

To create an IM volume:

1. Turn on the system after installing all SCSI hard disk drives.

2. During POST, press <Ctrl+C> to enter the SCSI configuration utility.

```
LSI Logic Corp. MPT IS BIOS
MPTBIOS-5.11.01
Copyright 1995-2003 LSI Logic Corp.

Adapter(s) disabled by user
Press Ctrl-C to start LSI Logic Configuration Utility...
```

3. The following screen appears. Select a channel and press <Enter> to enter the setup.

```
LSI Logic MPT SCSI Setup Utility   Version   MPTBIOS-IME-5.10.03
<Boot Adapter List>  <Global Properties>

LSI Logic Host Bus Adapters
Adapter      PCI    Dev/   Port    IRQ   NVM   Boot   LSI Logic   RAID
             BUS    Func   Number               Order  Control     Status
<1020/1030    2     10>    A000    10    Yes   0      Enabled     --
<1020/1030    2     11>    9000    11    Yes   1      Enabled     --




Esc = Abort/Exit      ArrowKeys=Select Item        -/+ =Change [Item]
                      Home/End =Select Item        Enter=Execute <Item>
F2 =Menu
```

✎ The numbers of the channel depend on the controller.

4. The **Adapter Properties** screen appears. Use the arrow keys to select **RAID Properties**, then press <Enter>.

```
LSI Logic MPT SCSI Setup Utility   Version   MPTBIOS-IME-5.10.03

Adapters Properties

Adapter      PCI    Dev/
             Bus    Func
1020/1030    2      10
             <Device Properties>
             <RAID Properties>  <Synchronize Whole Mirror>
             Host SCSI ID         [ 7]
             SCSI Bus Scan Order  [Low to High (0..Max)]
             Removable Media Support  [None]
             CHS Mapping          [SCSI Plug and Play Mapping]
             Spinup Delay (Secs)  [ 2]
             Secondary Cluster Server  [No]
             Termination Control  [Auto]
             <Restore Defaults>



Esc = Abort/Exit      ArrowKeys=Select Item        -/+ =Change [Item]
                      Home/End =Select Item        Enter=Execute <Item>
```

5.   The RAID Properties screen shows the disks you can add to make up the IM/IME volume. Use the arrow key to select a disk, then move the cursor to the **Array Disk?** column. To include this disk in the array, press <+> or <->.

You may also specify the Hot Spare disk here. Select the disk, then move the cursor to the **Hot Spare** column, then press <+> or <->.

```
 LSI Logic MPT SCSI Setup Utility   Version    MPTBIOS-IME-5.10.03

 RAID Properties     Array:   --  SCSI ID:    --    Size(MB):   ------

 SCSI  Device Identifier          Array  Hot     Status     Predict  Size
 ID                               Disk?  Spare              Failure  (MB)
 0     -                          [No]   [---]   --------   ---      -----
 1     -                          [No]   [---]   --------   ---      -----
 2     -                          [No]   [---]   --------   ---      -----
 3     -                          [No]   [---]   --------   ---      -----
 4     -                          [No]   [---]   --------   ---      -----
 5     -                          [No]   [---]   --------   ---      -----
 6     -                          [No]   [---]   --------   ---      -----
 7     1020/1030                  [No]   [---]   --------   ---      -----
 8     FUJITSU MAT3073NC   0107    [Yes]  [---]   Primary    ---      70136
 9     FUJITSU MAT3073NC   0107    [No]   [---]   --------   ---      70136
 10    FUJITSU MAT3073NC   0107    [No]   [---]   --------   ---      70136
 11    -                          [No]   [---]   --------   ---      -----
 12    -                          [No]   [---]   --------   ---      -----
 13    SDR      GEM318     0       [No]   [---]   --------   ---      -----
 14    -                          [No]   [---]   --------   ---      -----
 15    -                          [No]   [---]   --------   ---      -----



 Esc = Abort/Exit      ArrowKeys=Select Item     -/+  =Change [Item]
                       Home/End =Select Item    Enter=Execute <Item>
                                                          F4=Diagnostic
```

By default, the **Array Disk?** field shows [No] before array creation. This field is grayed out under the following conditions:

- The disk does not meet the minimum requirements for use in a RAID array.

- The disk is not large enough to mirror existing data on the primary drive.

- The disk has been selected as the Hot Spare for the RAID array.

- The disk is already part of another array.

For creating IM volume, the system requires two hard disk drives and at least three hard disk drives for IME volume.

6. A confirmation screen appears.

    Press <F3> to keep existing data on the first disk. If you choose this option, data on the first disk will be mirrored on the second disk that you will add to the volume later. Make sure the data you want to mirror is on the first disk.

    Press <Delete> to overwrite any data and create the new IM array.

```
 LSI Logic MPT SCSI Setup Utility   Version    MPTBIOS-IME-5.10.03


   F3 - Keep  Data(Create 2 disk array)
 Delete-Erase Disk(Create 2 to 6 disk array)















 Esc = Abort/Exit     ArrowKeys=Select Item     -/+  =Change [Item]
                      Home/End =Select Item     Enter=Execute <Item>
                                                         F4=Diagnostic
```
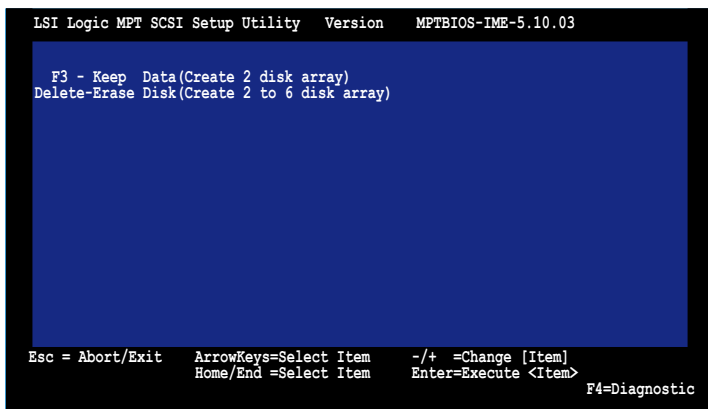
    If you select to erase disk, a confirmation screen appears to double-confirm your selection. Press <Delete> to proceed.

```
 LSI Logic MPT SCSI Setup Utility   Version    MPTBIOS-IME-5.10.03

 WARNING:Data on drive wil be LOST!

 Press DELETE if data loss OK or any other key to cancel








 Esc = Abort/Exit     ArrowKeys=Select Item     -/+  =Change [Item]
                      Home/End =Select Item     Enter=Execute <Item>
                                                         F4=Diagnostic
```
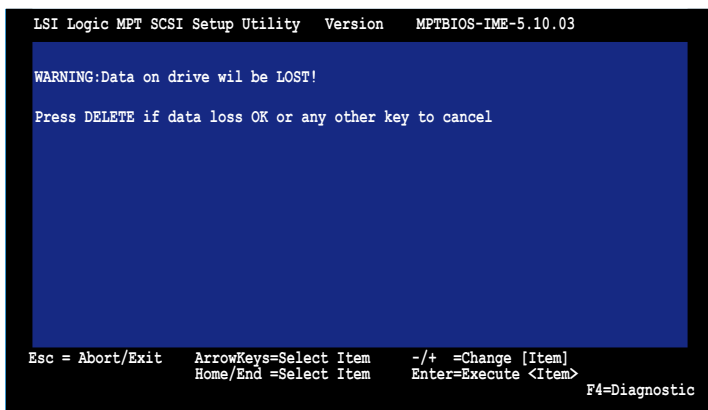
7. Repeat steps 4 and 5 to add the second disk to the volume.

8.   When done, press <Esc> and select **Save changes then exit this menu**.

```
    LSI Logic MPT SCSI Setup Utility    Version     MPTBIOS-IME-5.10.03


                   RAID Properties Changed
                   <Cancel Exit>
                   Exit the Configuration Utility
                   <Save changes then exit this menu>
                   <Discard changes then exit this menu>




    Esc = Abort/Exit     ArrowKeys=Select Item      -/+  =Change [Item]
                         Home/End =Select Item      Enter=Execute <Item>
```

9.   The utility creates the array.

```
    LSI Logic MPT SCSI Setup Utility    Version     MPTBIOS-IME-5.10.03

    Processing...may take up 1 minute




    Esc = Abort/Exit     ArrowKeys=Select Item      -/+  =Change [Item]
                         Home/End =Select Item      Enter=Execute <Item>
                                                              F4=Diagnostic
```

2.2.2 Integrated Striping (IS) volume

Overview

The Integrated Striping (IS) feature provides RAID 0 functionality, supporting volumes with two to eight disks. You may combine an IS volume with an IM volume.

Creating Integrated Striping volumes

To create an IS volume:

1. Turn on the system after installing all SCSI hard disk drives.
2. During POST, press <Ctrl+C> to enter the SCSI configuration utility.

```
LSI Logic Corp. MPT IS BIOS
MPTBIOS-5.11.01
Copyright 1995-2003 LSI Logic Corp.

Adapter(s) disabled by user
Press Ctrl-C to start LSI Logic Configuration Utility...
```

3. The following screen appears. Select a channel and press <Enter> to enter the setup.

```
LSI Logic MPT SCSI Setup Utility   Version    MPTBIOS-IS-5.11.01
<Boot Adapter List>  <Global Properties>

LSI Logic Host Bus Adapters
Adapter       PCI    Dev/   Port     IRQ   NVM   Boot    LSI Logic   RAID
              BUS    Func   Number                Order   Control     Status
<1020/1030     2     10>    A000     10    Yes   0       Enabled     --
<1020/1030     2     11>    9000     11    Yes   1       Enabled     --




Esc = Abort/Exit      ArrowKeys=Select Item         -/+  =Change [Item]
                      Home/End =Select Item         Enter=Execute <Item>
F2 =Menu
```

The numbers of the channel depend on the controller.

4. The **Adapter Properties** screen appears Use the arrow keys to select **RAID Properties**, then press <Enter>.

```
 LSI Logic MPT SCSI Setup Utility   Version    MPTBIOS-IS-5.10.03

 Adapters Properties

 Adapter    PCI    Dev/
            Bus    Func
 1020/1030   2     10
            <Device Properties>
            <RAID Properties>  <Synchronize Whole Mirror>
            Host SCSI ID           [ 7]
            SCSI Bus Scan Order    [Low to High (0..Max)]
            Removable Media Support [None]
            CHS Mapping            [SCSI Plug and Play Mapping]
            Spinup Delay (Secs)    [ 2]
            Secondary Cluster Server [No]
            Termination Control    [Auto]
            <Restore Defaults>



 Esc = Abort/Exit    ArrowKeys=Select Item      -/+ =Change [Item]
                     Home/End =Select Item      Enter=Execute <Item>
```

5. The RAID Properties screen shows the disks you can add to make up the IS volume. Use the arrow key to select a disk, then move the cursor to the **Array Disk?** column. To include this disk in the array, press <+> or <->.

```
 LSI Logic MPT SCSI Setup Utility   Version    MPTBIOS-IS-5.11.01

 RAID Properties    Array:  IS  SCSI ID:   8     Size(MB):   140016


 SCSI  Device Identifier        Array   Status      Predict  Size    ▲
 ID                             Disk?               Failure  (MB)
  0    -                        [No]    --------    ---      -----
  1    -                        [No]    --------    ---      -----
  2    -                        [No]    --------    ---      -----
  3    -                        [No]    --------    ---      -----
  4    -                        [No]    --------    ---      -----
  5    -                        [No]    --------    ---      -----
  6    -                        [No]    --------    ---      -----
  7    1020/1030                [No]    --------    ---      -----
  8    FUJITSU MAT3073NC   0107 [Yes]   --------    ---      70136
  9    FUJITSU MAT3073NC   0107 [Yes]   --------    ---      70136
 10    FUJITSU MAT3073NC   0107 [No]    --------    ---      70136
 11    -                        [No]    --------    ---      -----
 12    -                        [No]    --------    ---      -----
 13    SDR     GEM318      0    [No]    --------    ---      -----
 14    -                        [No]    --------    ---      -----
 15    -                        [No]    --------    ---      -----  ▼

 Esc = Abort/Exit    ArrowKeys=Select Item      -/+ =Change [Item]
                     Home/End =Select Item      Enter=Execute <Item>
                                                      F4=Diagnostic
```

By default, the **Array Disk?** field shows [No] before array creation. This field is grayed out under the following conditions:

- The disk does not meet the minimum requirements for use in a RAID array.
- The disk is already part of another array.

6.   Repeat steps 4 and 5 to add the second disk to the volume.

7.   When done, press <Esc> and select **Save changes then exit this menu**.

```
LSI Logic MPT SCSI Setup Utility    Version    MPTBIOS-IS-5.11.01


                 RAID Properties Changed
                 <Cancel Exit>
                 Exit the Configuration Utility
                 <Save changes then exit this menu>
                 <Discard changes then exit this menu>




Esc = Abort/Exit    ArrowKeys=Select Item       -/+ =Change [Item]
                    Home/End =Select Item        Enter=Execute <Item>
```

8.   The utility creates the array.

```
LSI Logic MPT SCSI Setup Utility    Version    MPTBIOS-IS-5.11.01

Processing...may take up 1 minute






Esc = Abort/Exit    ArrowKeys=Select Item      -/+  =Change [Item]
                    Home/End =Select Item       Enter=Execute <Item>
                                                          F4=Diagnostic
```
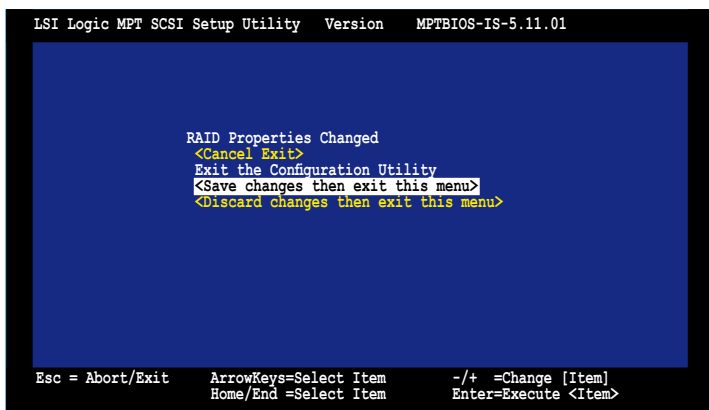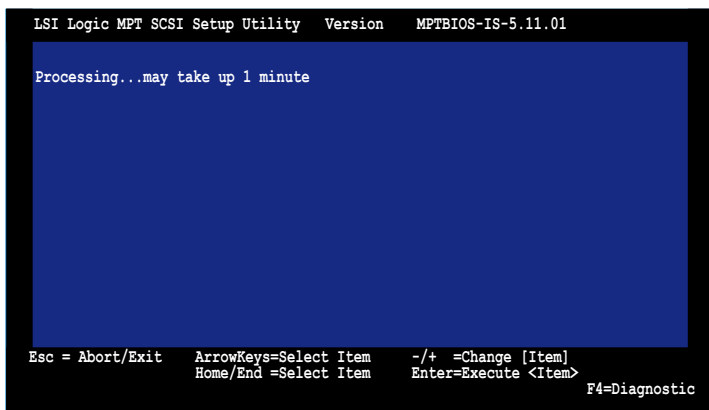
2.2.3   Managing Arrays

The LSI Logic MPT SCSI Setup Utility allows you to perform other tasks related to configuring and maintaining IM volumes.

Refer to this section to view volume properties, manage the hot spare disk, synchronize the array, activate the array, and delete the array.

Viewing volume properties

To view volume properties:

1.   On the main menu, select **RAID Properties**.

```
 LSI Logic MPT SCSI Setup Utility   Version    MPTBIOS-IME-5.10.03

 Adapters Properties

 Adapter     PCI   Dev/
             Bus   Func
 1020/1030    2    10
             <Device Properties>
             <RAID Properties>  <Synchronize Whole Mirror>
             Host SCSI ID         [ 7]
             SCSI Bus Scan Order  [Low to High (0..Max)]
             Removable Media Support  [None]
             CHS Mapping          [SCSI Plug and Play Mapping]
             Spinup Delay (Secs)  [ 2]
             Secondary Cluster Server  [No]
             Termination Control  [Auto]
             <Restore Defaults>



 Esc = Abort/Exit     ArrowKeys=Select Item        -/+  =Change [Item]
                      Home/End =Select Item        Enter=Execute <Item>
```

2.   Here you can view properties of the RAID array(s) created. If you have configured a hot spare, it will also be listed. if you created more than one array, you may view the next array by pressing <F2> and select <Next Array> from the menu.

```
 LSI Logic MPT SCSI Setup Utility   Version    MPTBIOS-IME-5.10.03
 <Next Array>  <Delete Array>  <Add/Delete Hot Spare>  <Activate Array>

 RAID Properties    Array:  IM  SCSI ID:   8    Size(MB):   70008

 SCSI  Device Identifier          Array  Hot   Status        Predict  Size
 ID                               Disk?  Spare               Failure  (MB)
 8      FUJITSU MAT3073NC    0107  Yes   No    Primary       No       70008
 9      FUJITSU MAT3073NC    0107  Yes   No    Out of Sync   No       70008
 10     FUJITSU MAT3073NC    0107  ---   No    Ok            No       70008








 Esc=Abort/Exit      ArrowKeys=Select Item        -/+  =Change [Item]
                     Home/End =Select Item        Enter=Execute <Item>
 F2 =Menu
```

Adding or deleting hot spares

You may configure one disk as a global hot spare to protect critical data on the IM volume(s). You may create the hot spare disk at the same time you create the IM volume. Refer to this section when adding a hot spare disk on an existing volume.

> If a disk on an IM volume fails, the utility automatically rebuilds the failed disk data on the hot spare. When the failed disk is replaced, the utility assigns the replacement as the new hot spare.

To create a hot spare:

1. Follow steps 1~2 of the section **Viewing volume properties**.
2. From the screen, press <F2> to select <Add/Delete Hot Spare>.
3. Use the arrow key to select the disk you would like to configure as hot spare, then move the cursor to the **Hot Spare** column. Press <+> or <-> and the **Hot Spare** column field now shows **Yes**.

```
LSI Logic MPT SCSI Setup Utility   Version   MPTBIOS-IME-5.10.03
<Next Array>  <Delete Array>  <Add/Delete Hot Spare>  <Activate Array>

RAID Properties     Array:  IM  SCSI ID:   8     Size(MB):    70008

SCSI  Device Identifier        Array  Hot   Status        Predict  Size
ID                             Disk?  Spare               Failure  (MB)
 8      FUJITSU MAT3073NC   0107  Yes   No    Primary       No       70008
 9      FUJITSU MAT3073NC   0107  Yes   No    Out of Sync   No       70008
10      FUJITSU MAT3073NC   0107  ---   Yes   Ok            No       70008




Esc=Abort/Exit      ArrowKeys=Select Item      -/+  =Change [Item]
                    Home/End =Select Item      Enter=Execute <Item>
F2 =Menu
```

Deleting an array

⚠   •   You cannot recover lost data if you delete an array. Make sure you back up important data before deleting an array.

       •   If you delete an IM (RAID 1) volume, the data is preserved on the primary disk.

To delete an array:

1.   Follow steps 1~2 of the section **Viewing volume properties**.
2.   From the screen, press <F2> to select <Activate Array>.

```
LSI Logic MPT SCSI Setup Utility   Version    MPTBIOS-IME-5.10.03
<Next Array>  <Delete Array>  <Add/Delete Hot Spare>  <Activate Array>
RAID Properties    Array:  IM  SCSI ID:   8     Size(MB):    70008

SCSI  Device Identifier         Array  Hot   Status      Predict  Size
ID                              Disk?  Spare             Failure  (MB)   ▲
 8    FUJITSU MAT3073NC    0107  Yes    No    Primary     No       70008
 9    FUJITSU MAT3073NC    0107  Yes    No    Out of Sync No       70008
10    FUJITSU MAT3073NC    0107  ---    Yes   Ok          No       70008







                                                                        ▼
Esc=Abort/Exit     ArrowKeys=Select Item      -/+ =Change [Item]
                   Home/End =Select Item      Enter=Execute <Item>
F2 =Menu
```
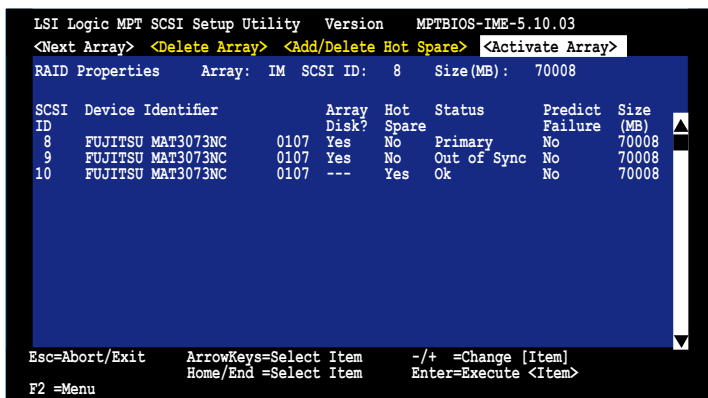
3.   Press <Y> to delete, or <N> to cancel.

Activating an array

If an array is removed from one controller/computer or moved to another, the array is considered inactive. When you add the array back to the system, you may reactivate the array.
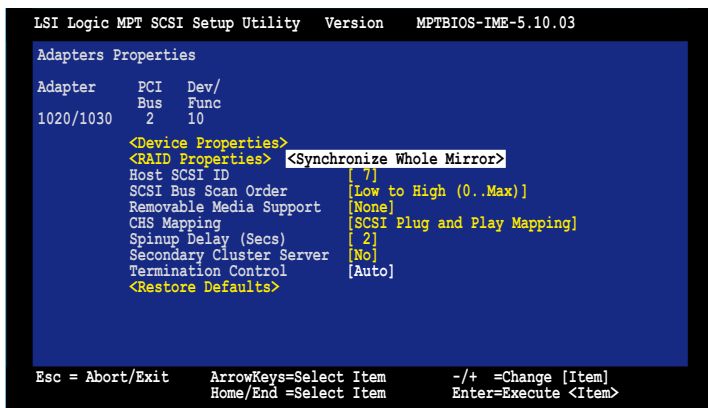
To activate the array:

1. Follow steps 1~2 of the section **Viewing volume properties**.
2. From the screen, press <F2> to select <Activate Array>.

```
 LSI Logic MPT SCSI Setup Utility   Version    MPTBIOS-IME-5.10.03
 <Next Array>  <Delete Array>  <Add/Delete Hot Spare>  <Activate Array>
 RAID Properties     Array:  IM  SCSI ID:   8     Size(MB):   70008

 SCSI  Device Identifier          Array  Hot  Status        Predict  Size
 ID                               Disk?  Spare               Failure  (MB)
  8    FUJITSU MAT3073NC    0107  Yes    No   Primary       No       70008
  9    FUJITSU MAT3073NC    0107  Yes    No   Out of Sync   No       70008
 10    FUJITSU MAT3073NC    0107  ---    Yes  Ok            No       70008




 Esc=Abort/Exit      ArrowKeys=Select Item      -/+  =Change [Item]
                     Home/End =Select Item       Enter=Execute <Item>
 F2 =Menu
```

3. Press <Y> to activate, or <N> to cancel.

Synchronizing the array

Synchronizing the array allows the utility to resynchronize data on the mirrored disk in the array. This procedure is seldom required because data synchronization is automatically done during normal operation. To synchronize the array, select **Synchronize Whole Mirror** from the main menu to start the synchronization.

```
 LSI Logic MPT SCSI Setup Utility   Version    MPTBIOS-IME-5.10.03
 Adapters Properties

 Adapter     PCI   Dev/
             Bus   Func
 1020/1030    2    10
             <Device Properties>
             <RAID Properties>  <Synchronize Whole Mirror>
             Host SCSI ID          [ 7]
             SCSI Bus Scan Order   [Low to High (0..Max)]
             Removable Media Support  [None]
             CHS Mapping           [SCSI Plug and Play Mapping]
             Spinup Delay (Secs)   [ 2]
             Secondary Cluster Server  [No]
             Termination Control   [Auto]
             <Restore Defaults>




 Esc = Abort/Exit     ArrowKeys=Select Item       -/+  =Change [Item]
                      Home/End =Select Item        Enter=Execute <Item>
```
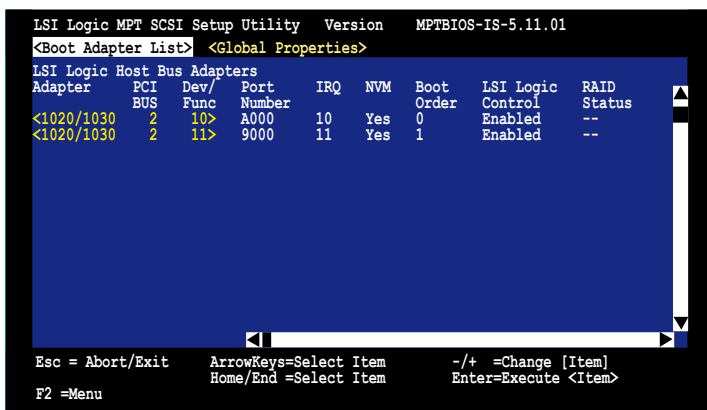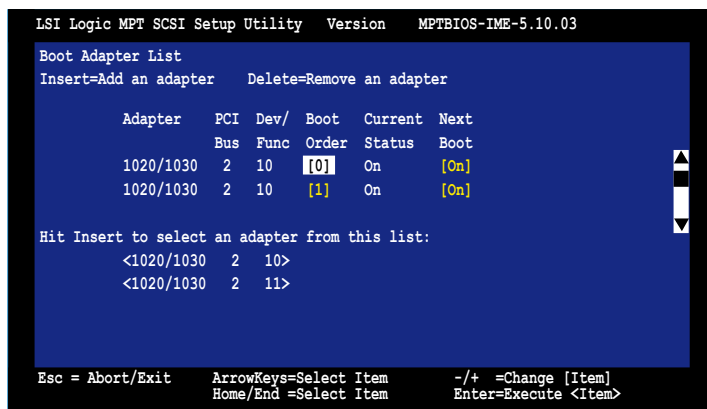
2.2.4   Selecting a boot disk

You can select a boot disk in the first screen you enter SCSI Setup Utility. This disk is then moved to scan ID 0 on the next boot, and remains at this position. This makes it easier to set BIOS boot device options and to keep the boot device constant during device additions and removals. There can be only one boot disk.

Follow these steps to select a boot disk:

1.   After enter the SCSI Setup Utility, press <F2> to select <Boot Adapter List>.

```
LSI Logic MPT SCSI Setup Utility   Version     MPTBIOS-IS-5.11.01
<Boot Adapter List>   <Global Properties>
LSI Logic Host Bus Adapters
Adapter      PCI    Dev/   Port     IRQ   NVM   Boot    LSI Logic   RAID
             BUS    Func   Number                 Order   Control     Status
<1020/1030    2     10>    A000     10    Yes   0       Enabled     --
<1020/1030    2     11>    9000     11    Yes   1       Enabled     --



Esc = Abort/Exit        ArrowKeys=Select Item         -/+  =Change [Item]
                        Home/End =Select Item         Enter=Execute <Item>
F2 =Menu
```
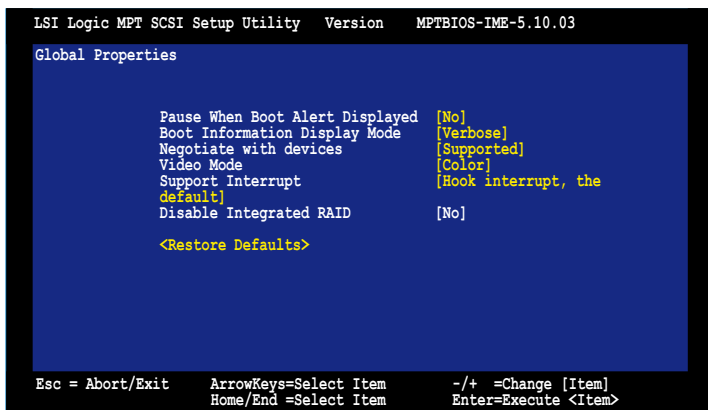
2.   From the **Boot Adapter List** screen, move the cursor to highlight the **Boot Order** column or **Next Boot** column and press <+> or <-> to configure the boot adapters. Press <Insert> to add an adapter and <Delete> to remove an adapter if needed.

```
LSI Logic MPT SCSI Setup Utility   Version     MPTBIOS-IME-5.10.03
Boot Adapter List
Insert=Add an adapter    Delete=Remove an adapter

        Adapter    PCI  Dev/  Boot   Current  Next
                   Bus  Func  Order  Status   Boot
        1020/1030   2    10    [0]    On      [On]
        1020/1030   2    10    [1]    On      [On]

Hit Insert to select an adapter from this list:
        <1020/1030   2   10>
        <1020/1030   2   11>



Esc = Abort/Exit        ArrowKeys=Select Item         -/+  =Change [Item]
                        Home/End =Select Item         Enter=Execute <Item>
```

2.2.5   Global Properties
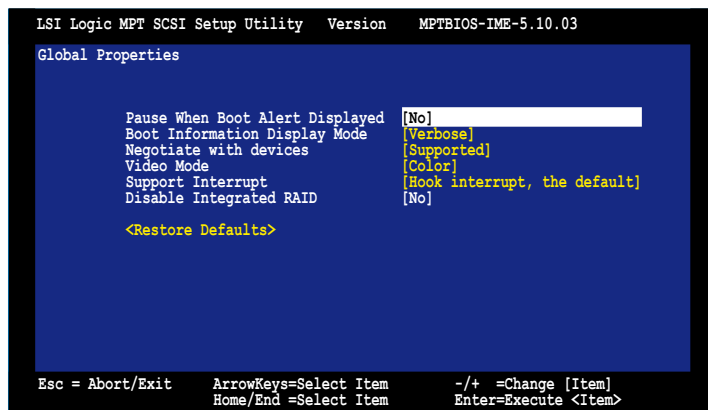
After entering the SCSI Setup Utility screen, press <F2> and select **<Global Properties>** from the menu. The **Global Properties** menu allows you to change related settings.

```
LSI Logic MPT SCSI Setup Utility   Version    MPTBIOS-IME-5.10.03

Global Properties

              Pause When Boot Alert Displayed   [No]
              Boot Information Display Mode      [Verbose]
              Negotiate with devices            [Supported]
              Video Mode                        [Color]
              Support Interrupt                 [Hook interrupt, the
              default]
              Disable Integrated RAID           [No]

              <Restore Defaults>




 Esc = Abort/Exit       ArrowKeys=Select Item        -/+  =Change [Item]
                        Home/End =Select Item         Enter=Execute <Item>
```

Pause When Boot Alert Displayed

Sets whether to pause or not when the boot alert displays.
Configuration options: [Yes] [No]

```
LSI Logic MPT SCSI Setup Utility   Version    MPTBIOS-IME-5.10.03

Global Properties

              Pause When Boot Alert Displayed   [No]
              Boot Information Display Mode      [Verbose]
              Negotiate with devices            [Supported]
              Video Mode                        [Color]
              Support Interrupt                 [Hook interrupt, the default]
              Disable Integrated RAID           [No]

              <Restore Defaults>





 Esc = Abort/Exit       ArrowKeys=Select Item        -/+  =Change [Item]
                        Home/End =Select Item         Enter=Execute <Item>
```

Boot Information Display Mode

Sets the disk information display mode.
Configuration options: [Verbose] [Terse]

```
LSI Logic MPT SCSI Setup Utility    Version    MPTBIOS-IME-5.10.03

Global Properties


            Pause When Boot Alert Displayed    [No]
            Boot Information Display Mode      [Verbose]
            Negotiate with devices            [Supported]
            Video Mode                        [Color]
            Support Interrupt                 [Hook interrupt, the default]
            Disable Integrated RAID           [No]

            <Restore Defaults>




Esc = Abort/Exit      ArrowKeys=Select Item      -/+  =Change [Item]
                      Home/End =Select Item      Enter=Execute <Item>
```
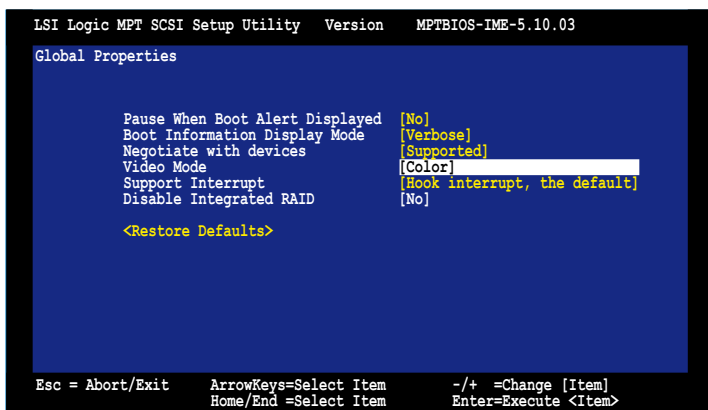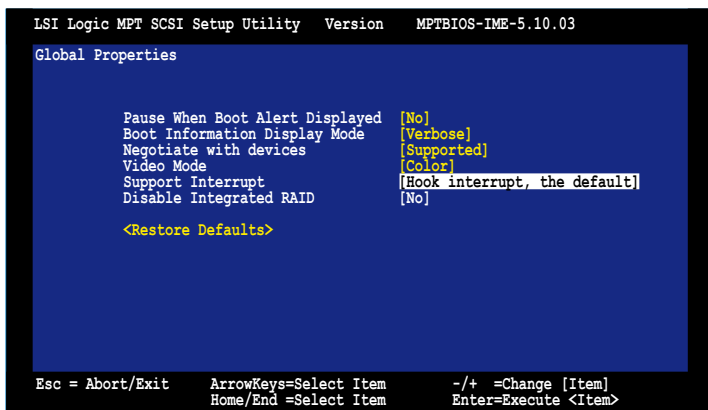
Negotiate with devices

Configuration options: [Supported] [All]

```
LSI Logic MPT SCSI Setup Utility    Version    MPTBIOS-IME-5.10.03

Global Properties


            Pause When Boot Alert Displayed    [No]
            Boot Information Display Mode      [Verbose]
            Negotiate with devices            [Supported]
            Video Mode                        [Color]
            Support Interrupt                 [Hook interrupt, the default]
            Disable Integrated RAID           [No]

            <Restore Defaults>




Esc = Abort/Exit      ArrowKeys=Select Item      -/+  =Change [Item]
                      Home/End =Select Item      Enter=Execute <Item>
```

Video Mode

Configuration options: [Color] [Monochrome]

```
LSI Logic MPT SCSI Setup Utility   Version    MPTBIOS-IME-5.10.03

Global Properties


        Pause When Boot Alert Displayed    [No]
        Boot Information Display Mode       [Verbose]
        Negotiate with devices             [Supported]
        Video Mode                         [Color]
        Support Interrupt                  [Hook interrupt, the default]
        Disable Integrated RAID            [No]

        <Restore Defaults>




Esc = Abort/Exit      ArrowKeys=Select Item        -/+ =Change [Item]
                      Home/End =Select Item        Enter=Execute <Item>
```

Support Interrupt

Configuration options: [Hook interrupt, the Default] [Bypass interrupt hook]

```
LSI Logic MPT SCSI Setup Utility   Version    MPTBIOS-IME-5.10.03

Global Properties


        Pause When Boot Alert Displayed    [No]
        Boot Information Display Mode       [Verbose]
        Negotiate with devices             [Supported]
        Video Mode                         [Color]
        Support Interrupt                  [Hook interrupt, the default]
        Disable Integrated RAID            [No]

        <Restore Defaults>




Esc = Abort/Exit      ArrowKeys=Select Item        -/+ =Change [Item]
                      Home/End =Select Item        Enter=Execute <Item>
```

Disabled Integrated RAID

Configuration options: [No] [Yes]

```
LSI Logic MPT SCSI Setup Utility   Version    MPTBIOS-IME-5.10.03

Global Properties

          Pause When Boot Alert Displayed   [No]
          Boot Information Display Mode      [Verbose]
          Negotiate with devices            [Supported]
          Video Mode                        [Color]
          Support Interrupt                 [Hook interrupt, the default]
          Disable Integrated RAID           [No]

          <Restore Defaults>




 Esc = Abort/Exit     ArrowKeys=Select Item      -/+  =Change [Item]
                      Home/End =Select Item       Enter=Execute <Item>
```

Restore Defaults

This option allows you to discard the selections you made and restore the system
defaults.

```
LSI Logic MPT SCSI Setup Utility   Version    MPTBIOS-IME-5.10.03

Global Properties

          Pause When Boot Alert Displayed   [No]
          Boot Information Display Mode      [Verbose]
          Negotiate with devices            [Supported]
          Video Mode                        [Color]
          Support Interrupt                 [Hook interrupt, the default]
          Disable Integrated RAID           [No]

          <Restore Defaults>




 Esc = Abort/Exit     ArrowKeys=Select Item      -/+  =Change [Item]
                      Home/End =Select Item       Enter=Execute <Item>
```

This chapter provides instructions for
updating the latest drivers in Windows®
Server 2003.

Driver update

3

3.1 RAID controller driver update

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 update the RAID controller drivers after OS installation.
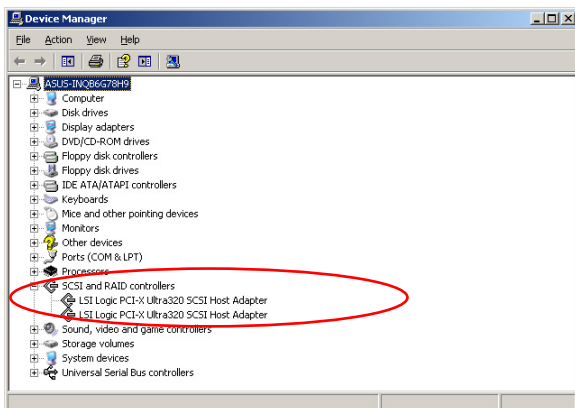
3.1.1 Windows® Server 2003 OS

To update the RAID controller driver after installing Windows® Server 2003 OS:

1. Right-click **My Computer** on the desktop and select **Properties**.
2. Click the **Hardware** tab on the top, then press the **Device Manager** button.
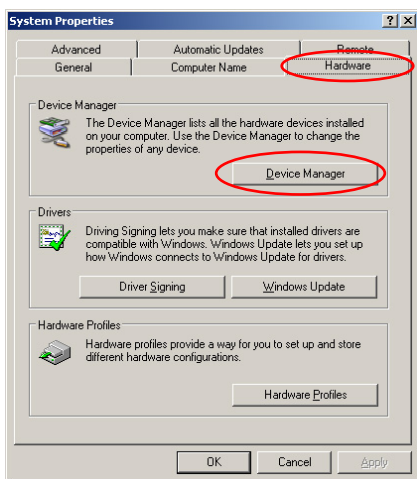
3. Doube-click one of the **LSI Logic PCI-X Ultra320 SCSI Host Adapter**.

4.   Click the **Driver** tab on the top, then click **Update Driver**.
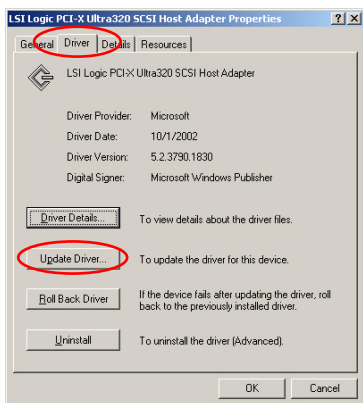
5.   Toggle **No, not this time**, then click **Next** to continue.

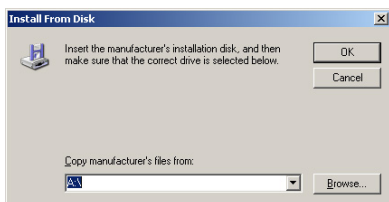6.   Toggle **Install from a list or specific location**, then click **Next** to continue.
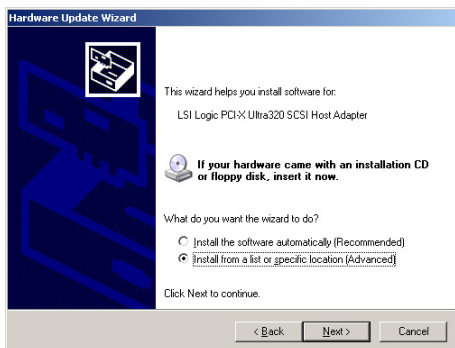
7. Toggle **Don't choose. I will choose the driver to install**, then click **Next** to continue.
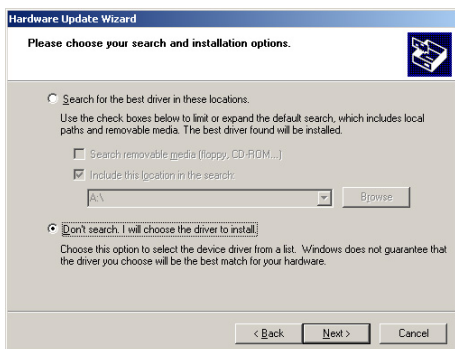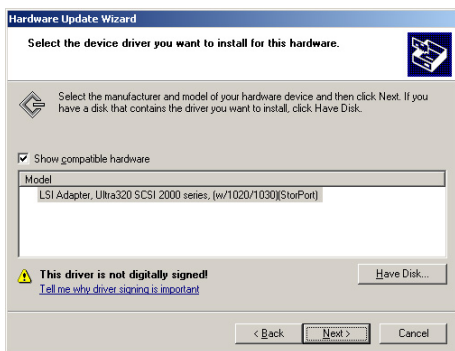

8. Highlight **LSI Logic PCI-X Ultra320 SCSI Host Adapter**, then click **Have Disk**.
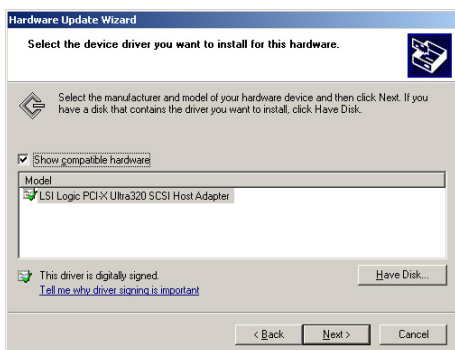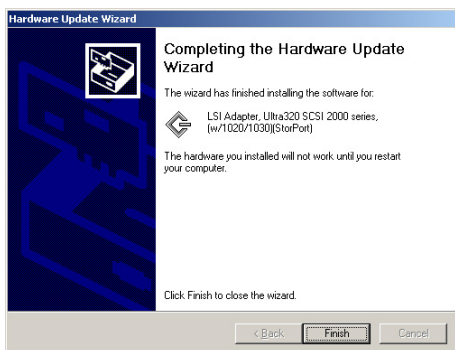

9. Select from the drop-down menu and locate the driver.

10. Click **Next** to start updating the driver.

11. After completing driver update, click **Finish** to close the wizard.

12. Repeat the previous instructions to update the driver of another channel.

3.2 Management applications and utilities installation

The support CD that came with the SCSI RAID card package contains the drivers, that you can install to avail all motherboard features.

> The contents of the support CD are subject to change at any time without notice. Visit the ASUS website (www.asus.com) for updates.

3.2.1 Running the support CD

Place the support CD to the optical drive. The CD automatically displays the Drivers menu if Autorun is enabled in your computer.

> If Autorun is NOT enabled in your computer, browse the contents of the support CD to locate the file ASSETUP.EXE from the BIN folder. Double-click the ASSETUP.EXE to run the CD.

3.2.2 Drivers menu

The Drivers menu shows the available device drivers if the system detects installed devices. Install the necessary drivers to activate the devices.

> The screen display and driver options may vary under different operating system versions.
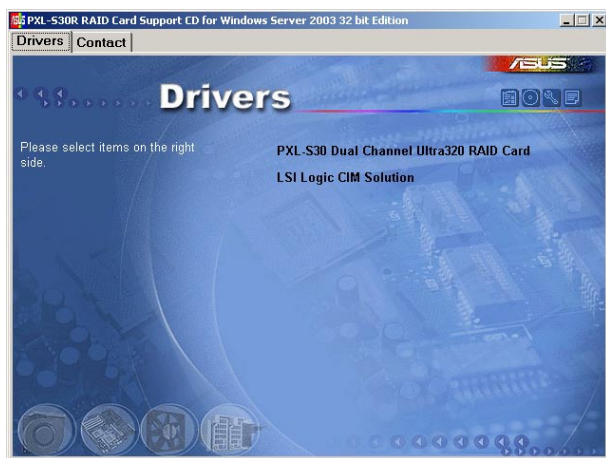
3.2.3   Contact information

Click the Contact tab to display the ASUS contact information. You can also find this information on the inside front cover of this user guide.