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Configuring SATA Hard Drive(s) (Controller: Silicon Image Sil3114)

To configure SATA hard drive(s), follow the steps below:

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(3) Configure SATA hard drives in RAID BIOS

(4) Configure hard drive boot priority in BIOS Setup

(5) Make a SATA controller driver disk

(6) Install SATA controller driver during OS installation

Before you begin

Please prepare:

(a) SATA hard drives (to ensure optimal performance, it is recommended that you use hard drives with identical model and capacity).

(b) An empty formatted floppy disk.

(c) Windows XP/2000 setup disk.

(d) Driver CD for your motherboard.

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

Attach one end of the SATA signal cable to the rear of the SATA hard drive and the other end to available SATA port(s) on the motherboard. If there are more than one SATA controller on your motherboard, you may check the name of the SATA connector to identify the SATA controller for the connector. For example, SATA0_SII/SATA1_SII is controlled by the Sil3114 controller. Or consult the motherboard manual for more details. Then connect the power connector from your power supply to the hard drive.

(2) Enabling SATA controller in BIOS Setup

Assure that the SATA controller is enabled in system BIOS Setup.

Step 1:

Turn on your computer and press **Del** to enter BIOS Setup during POST (Power-On Self Test). In BIOS Setup menu, go to **Integrated Peripherals** and assure that **SATA RAID-5 Function** (Figure 1) is enabled. Please note that **SATA RAID-5 Function** is to enable or disable the Sil3114 controller. To set either RAID or non-RAID mode (or single hard drive), you MUST enter the Sil3114 RAID BIOS utility.
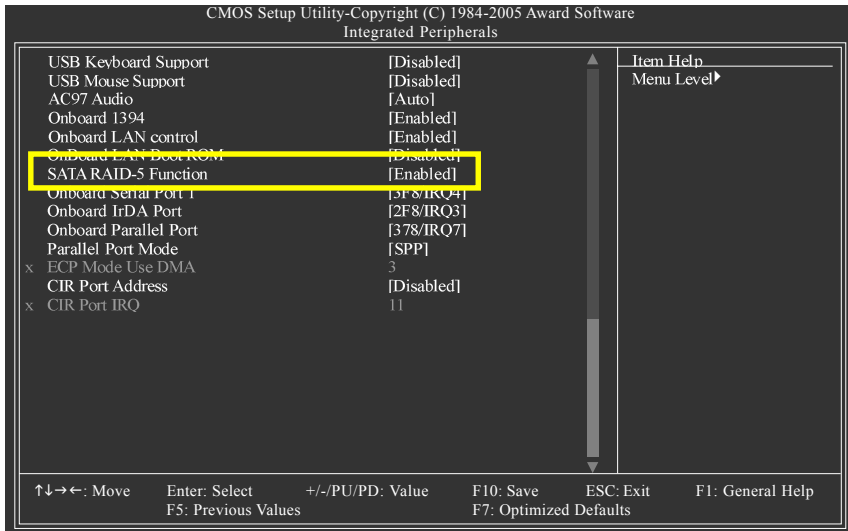
```
              CMOS Setup Utility-Copyright (C) 1984-2005 Award Software
                              Integrated Peripherals

      USB Keyboard Support                  [Disabled]           Item Help
      USB Mouse Support                     [Disabled]           Menu Level ▶
      AC97 Audio                            [Auto]
      Onboard 1394                          [Enabled]
      Onboard LAN control                   [Enabled]
      OnBoard LAN Boot ROM                  [Disabled]
      SATA RAID-5 Function                  [Enabled]
      Onboard Serial Port 1                 [3F8/IRQ4]
      Onboard IrDA Port                     [2F8/IRQ3]
      Onboard Parallel Port                 [378/IRQ7]
      Parallel Port Mode                    [SPP]
    x ECP Mode Use DMA                      3
      CIR Port Address                      [Disabled]
    x CIR Port IRQ                          11




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

Figure 1

> **NOTE** 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 .

(3) Configuring SATA hard drives in RAID BIOS

To configure either RAID or non-RAID boot drive/data drive or single hard drive, you MUST enter the the Sil3114 SATA RAID BIOS setup utility.

After the POST memory test begins and before the operating system boot begins, look for a message which says "Press <Ctrl+S> or <F4> to enter RAID utility"(Figure 2). Hit the CTRL+ S or F4 key to enter the RAID BIOS setup utility. If you cannot enter the RAID BIOS , assure that your SATA drives are properly installed.

```
SiI 3114 SATARaid BIOS Version 5.1.39
Copyright (C) 1997-2004 Silicon Image, Inc.

Press <Ctrl+S> or F4 to enter RAID utility
```
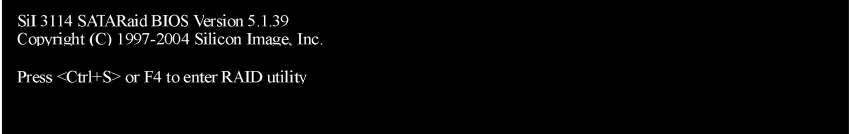
Figure 2

While you are in the RAID BIOS, you should see a screen similar to that below (Figure 3). Use the UP or DOWN ARROW key to highlight through choices. Highlight the item that you want to execute and press ENTER.
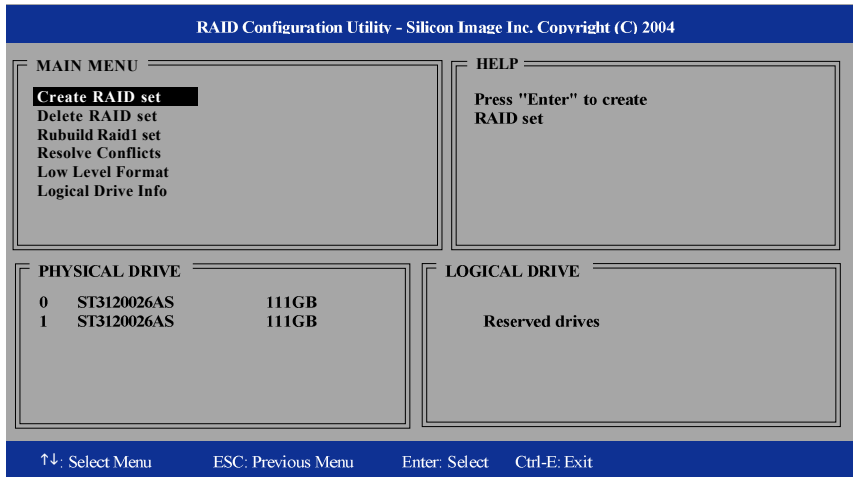
```
          RAID Configuration Utility - Silicon Image Inc. Copyright (C) 2004

  ┌ MAIN MENU ─────────────────────┐  ┌ HELP ──────────────────────┐
  │                                │  │                            │
  │  Create RAID set               │  │  Press "Enter" to create   │
  │  Delete RAID set               │  │  RAID set                  │
  │  Rubuild Raid1 set             │  │                            │
  │  Resolve Conflicts             │  │                            │
  │  Low Level Format              │  │                            │
  │  Logical Drive Info            │  │                            │
  │                                │  │                            │
  └────────────────────────────────┘  └────────────────────────────┘

  ┌ PHYSICAL DRIVE ────────────────┐  ┌ LOGICAL DRIVE ─────────────┐
  │                                │  │                            │
  │  0   ST3120026AS      111GB    │  │    Reserved drives         │
  │  1   ST3120026AS      111GB    │  │                            │
  │                                │  │                            │
  └────────────────────────────────┘  └────────────────────────────┘

    ↑↓: Select Menu      ESC: Previous Menu    Enter: Select    Ctrl-E: Exit
```

Figure 3

3-1 Configuring single hard drive or non-RAID boot drive/data drive

Since the RAID BIOS no longer reports non-RAID drives to the system BIOS, if you wish to install a single hard drive or configure non-RAID boot drive or data drive, you MUST set the hard drive(s) to JBOD mode in RAID BIOS so the RAID BIOS will report it to the system BIOS.

Step 1:

Select **Create RAID set** and press ENTER, and the RAID type selection menu will appear. Use the UP or DOWN ARROW key to select **JBOD (Single)** (Figure 4) and press ENTER.

RAID Configuration Utility - Silicon Image Inc. Copyright (C) 2004

MAIN MENU

Create RAID set
Delete RAID set
Rubuild Raid1 set
Resolve Conflicts
Low Level Format
Logical Drive Info

RAID0
RAID1
RAID 5
RAID10
SPARE DRIVE
JBOD (Single)

HELP

Single drive JBOD only

PHYSICAL DRIVE

0   ST3120026AS   111GB
1   ST3120026AS   111GB

LOGICAL DRIVE

Reserved drives

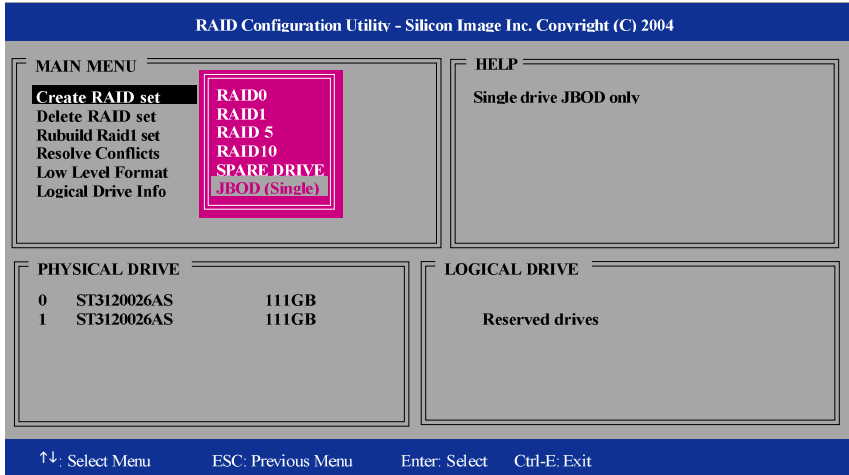↑↓: Select Menu   ESC: Previous Menu   Enter: Select   Ctrl-E: Exit

Figure 4

Step 2:

Select the JBOD hard drive from the physical drive list and press ENTER.

Step 3:

Select the JBOD hard drive size (Figure 5). You should see the default size set by the RAID BIOS. To change the default size, use the UP or DOWN ARROW key. Press ENTER after setting the JBOD size.
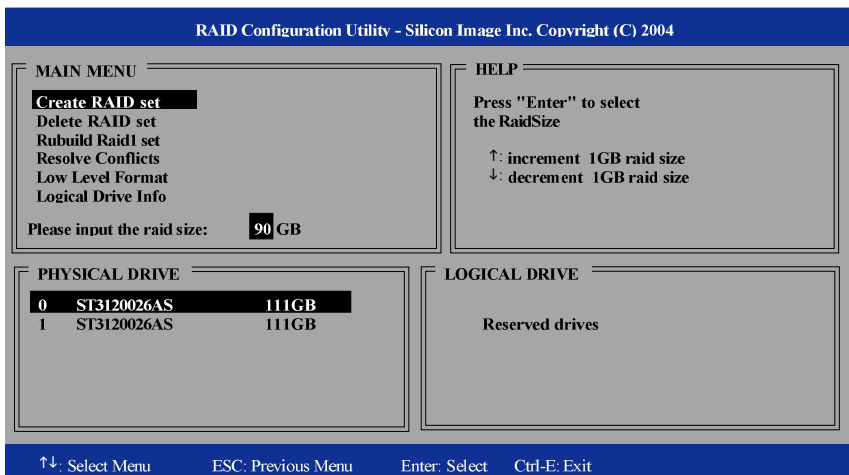
RAID Configuration Utility - Silicon Image Inc. Copyright (C) 2004

MAIN MENU

Create RAID set
Delete RAID set
Rubuild Raid1 set
Resolve Conflicts
Low Level Format
Logical Drive Info

Please input the raid size: 90 GB

HELP

Press "Enter" to select
the RaidSize

↑: increment 1GB raid size
↓: decrement 1GB raid size

PHYSICAL DRIVE

0   ST3120026AS   111GB
1   ST3120026AS   111GB

LOGICAL DRIVE

Reserved drives

↑↓: Select Menu   ESC: Previous Menu   Enter: Select   Ctrl-E: Exit

Figure 5

Step 4:
After the message "Are You Sure?" appears, press Y to confirm or N to abort.

RAID Configuration Utility - Silicon Image Inc. Copyright (C) 2004

MAIN MENU
Create RAID set
Delete RAID set
Rubuild Raid1 set
Resolve Conflicts
Low Level Format
Logical Drive Info

Are you Sure (Y/N)?

HELP
Press "Enter" to select
the RaidSize

↑: increment 1GB raid size
↓: decrement 1GB raid size

PHYSICAL DRIVE
0   ST3120026AS   111GB
1   ST3120026AS   111GB

LOGICAL DRIVE

Reserved drives

↑↓: Select Menu   ESC: Previous Menu   Enter: Select   Ctrl-E: Exit

Figure 6

Step 5:
If you wish to set other hard drives to JBOD, please repeat Step 1~4. After completion, the JBOD hard drives will be displayed in the logical drive list (Figure 7).
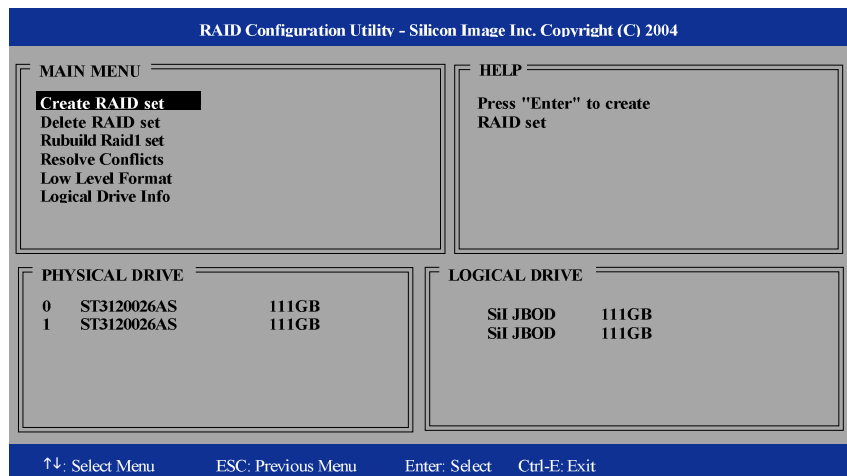
RAID Configuration Utility - Silicon Image Inc. Copyright (C) 2004

MAIN MENU
Create RAID set
Delete RAID set
Rubuild Raid1 set
Resolve Conflicts
Low Level Format
Logical Drive Info

HELP
Press "Enter" to create
RAID set

PHYSICAL DRIVE
0   ST3120026AS   111GB
1   ST3120026AS   111GB

LOGICAL DRIVE

SiI JBOD   111GB
SiI JBOD   111GB

↑↓: Select Menu   ESC: Previous Menu   Enter: Select   Ctrl-E: Exit

Figure 7

3-2 Configuring RAID set

Step 1:

Select **Create RAID set** and press ENTER, and the RAID type selection menu will appear (Figure 8). Use the UP or DOWN ARROW key to select a RAID type that you wish to create and press ENTER. The options include RAID 0, RAID 1, RAID 5, RAID10, SPARE DRIVE, and JBOD. The following is an example of RAID 0 configuration.
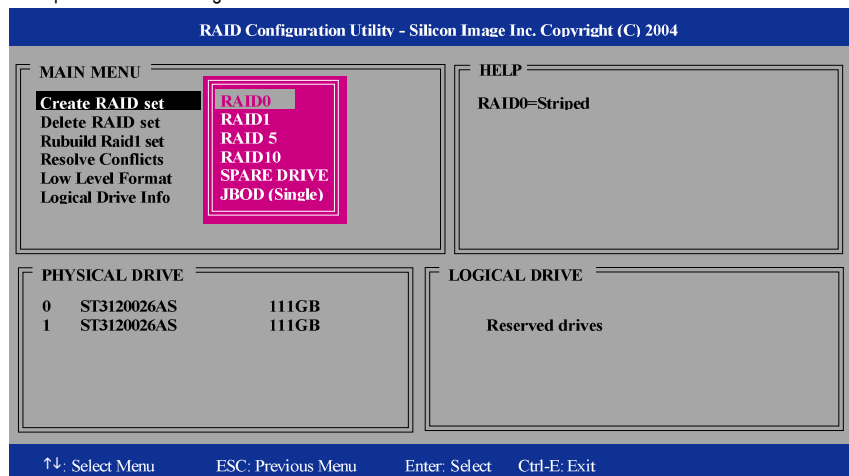

Figure 8

Step 2:

After the selection of RAID 0 , select **Auto configuration** or **Manual configuration** (Figure 9). If **Auto configuration** is selected, BIOS will automatically assign RAID member drives and set the chunk size of Striped Sets to 64KB. If **Manual configuration** is selected, you can manually change the chunk size (from 4K to 128K) and then assign the drives to be used in the RAID array.
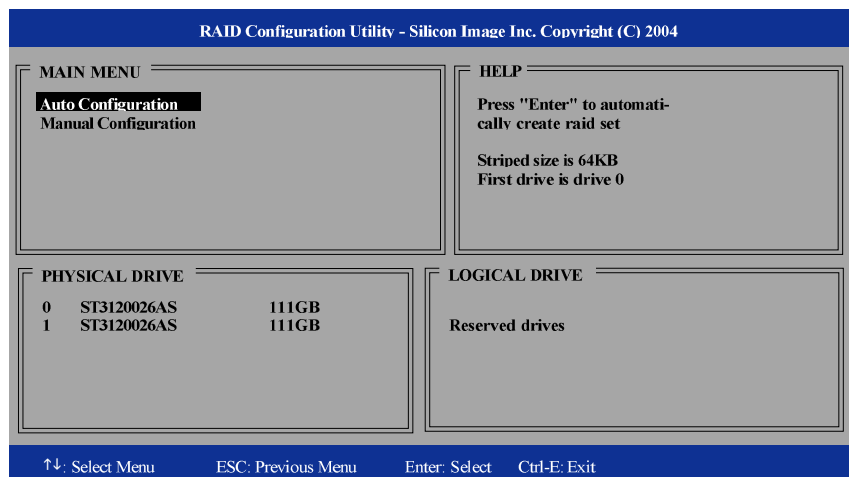

Figure 9

Step 3:

After assigning the hard drives, select the size for the RAID set. BIOS will set a default size for it and you can use the UP or DOWN ARROW key to change the size (Figure 10).

RAID Configuration Utility - Silicon Image Inc. Copyright (C) 2004

MAIN MENU

Auto Configuration
 Manual Configuration

Please input the raid size: **181** GB

HELP

Press "Enter" to select
the RaidSize

↑: increment 1GB raid size
↓: decrement 1GB raid size

PHYSICAL DRIVE

0   ST3120026AS   111GB
1   ST3120026AS   111GB

LOGICAL DRIVE

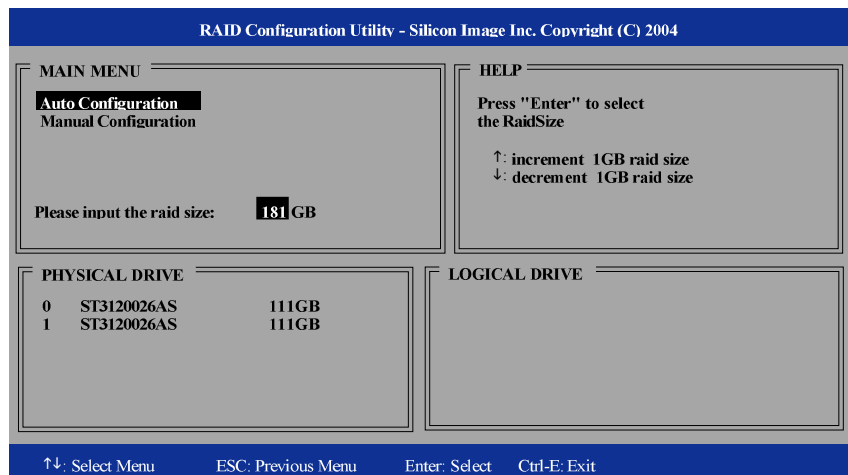↑↓: Select Menu   ESC: Previous Menu   Enter: Select   Ctrl-E: Exit

Figure 10

Step 5:

After finishing all the settings of a RAID set and press ENTER, you should see the prompt
"Are You Sure?" Press Y to confirm or N to cancel. After the configuration is completed, the RAID Set will appear in the logical drive list (Figure 11).
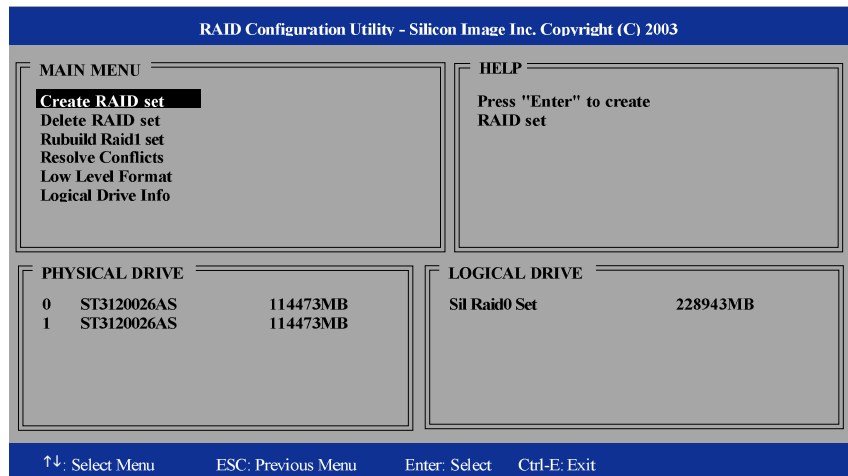
RAID Configuration Utility - Silicon Image Inc. Copyright (C) 2003

MAIN MENU

Create RAID set
 Delete RAID set
 Rubuild Raid1 set
 Resolve Conflicts
 Low Level Format
 Logical Drive Info

HELP

Press "Enter" to create
RAID set

PHYSICAL DRIVE

0   ST3120026AS   114473MB
1   ST3120026AS   114473MB

LOGICAL DRIVE

Sil Raid0 Set   228943MB

↑↓: Select Menu   ESC: Previous Menu   Enter: Select   Ctrl-E: Exit

Figure 11

3-3 Deleting RAID groups, spare drives, or JBOD

If you want to remove one or more RAID sets, spare drives, and JBODs, select the **Delete RAID set** item (Figure 12) in Main Menu. Press ENTER and follow the on-screen instructions to delete the RAID set.

```
          RAID Configuration Utility - Silicon Image Inc. Copyright (C) 2003

  MAIN MENU                                 HELP

  Create RAID set                           Press "Enter" to delete
  Delete RAID set                           a RAID set
  Rubuild Raid1 set
  Resolve Conflicts
  Low Level Format
  Logical Drive Info



  PHYSICAL DRIVE                            LOGICAL DRIVE

  0   ST3120026AS         114473MB          Sil Raid0 Set            228943MB
  1   ST3120026AS         114473MB




  ↑↓: Select Menu       ESC: Previous Menu    Enter: Select   Ctrl-E: Exit
```
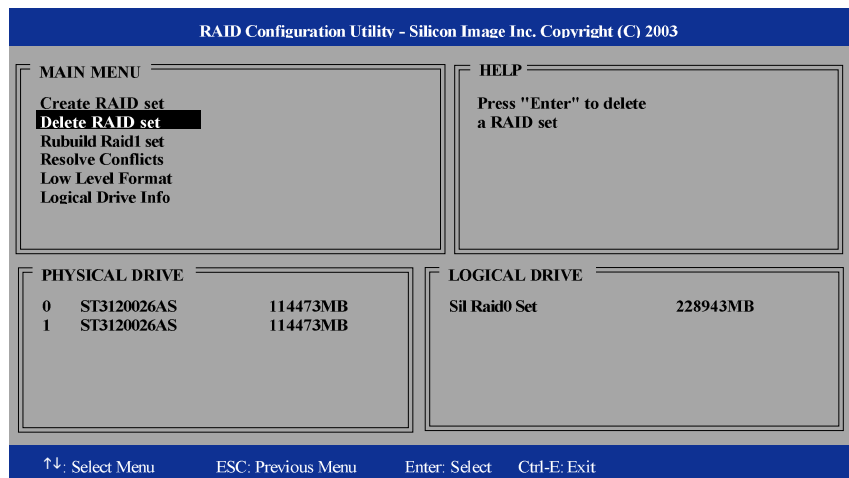
Figure 12

After completing the configuration, press CTRL+E to exit the RAID Configuration Utility.
Now, you can proceed to the installation of the SATA driver and operating system.

(4) Configuring hard drive boot priority in BIOS Setup

After configuring RAID set or hard drive, if you wish to install operating system to the drive, go back to the system BIOS setup to set the hard drive boot priority.

Step 1:

Turn on your computer and press **Del** to enter BIOS Setup during POST (Power-On Self Test). In BIOS Setup menu, select **Hard Disk Boot Priority** under the **Advanced BIOS Features** menu. In the **Hard Disk Boot Priority** submenu, move the SATA hard drive/RAID set onto which you want to install Windows operating system to the first priority by using UP or DOWN ARROW key (Figure 13).

```
              CMOS Setup Utility-Copyright (C) 1984-2005 Award Software
                              Hard Disk Boot Priority

    1. SCSI-0      :   01:48-0 SiI Raid 0 Set               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
```
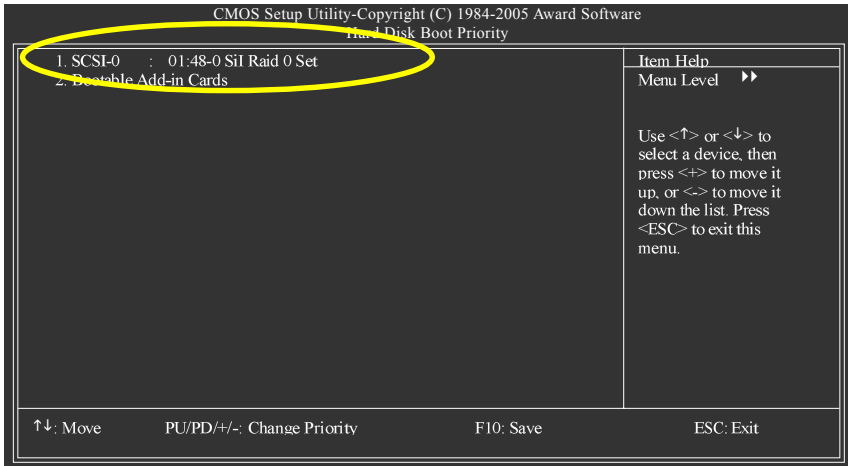
Figure 13

Step 2:

Set **First Boot Device** under the **Advanced BIOS Features** menu to **CD-ROM** (Figure 14). This allows the system to boot from the Windows setup disk after system restarts
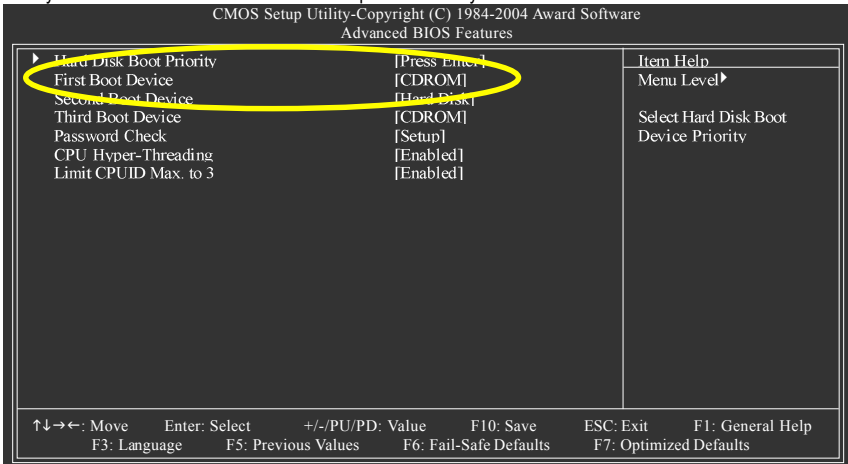
```
              CMOS Setup Utility-Copyright (C) 1984-2004 Award Software
                              Advanced BIOS Features

   ▸ Hard Disk Boot Priority              [Press Enter]      Item Help
     First Boot Device                    [CDROM]            Menu Level ▸
     Second Boot Device                   [Hard Disk]
     Third Boot Device                    [CDROM]            Select Hard Disk Boot
     Password Check                       [Setup]           Device Priority
     CPU Hyper-Threading                  [Enabled]
     Limit CPUID Max. to 3                [Enabled]









    ↑↓→←: Move      Enter: Select      +/-/PU/PD: Value    F10: Save    ESC: Exit    F1: General Help
       F3: Language      F5: Previous Values     F6: Fail-Safe Defaults     F7: Optimized Defaults
```

Figure 14

Step 3:

Save and exit BIOS Setup.

SATA Hard Drive Configurations (Sil3114)   - 10 -

(5) Making a SATA controller driver disk

To install Windows 2000/XP onto a SATA hard drive on the Sil3114 controller successfully, you need to install required driver for the SATA controller 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 SATA controller from the motherboard driver CD to a floppy disk. 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 15).

Figure 15

Step 3: Go to the **BootDrv** folder and look for an executable program named MENU.*exe* (Figure 16).

Figure 16

Step 4:

Double-click MENU.*exe*. An MS-DOS prompt screen similar to Figure 17 below will appear.
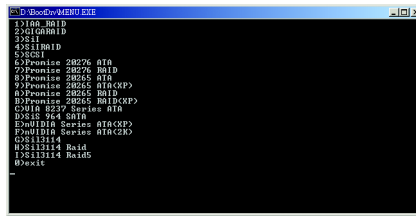
Figure 17

Step 5:

Insert an empty floppy disk. Select the **Sil3114 Raid5** item by pressing the corresponding letter (Figure 18).

Important You MUST select the **Sil3114 Raid5** item no matter which RAID mode you created. If you wish to set up a non-RAID configuration (or single hard drive), you must select **Sil3114 Raid5**, too. After selecting **Sil3114 Raid5**, your system will then automatically zip and transfer this driver file to the floppy disk.
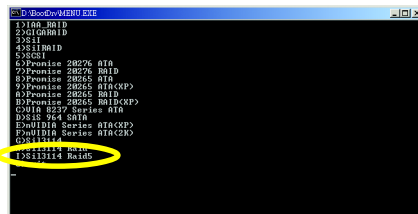
Figure 18

⚠ Selecting **Sil3114** or **Sil3114 Raid** from the menu will result in the failure to install operating CAUTION system during OS installation.

Step 6:

Press 0 to exit when the procedure is complete (Figure 19). You have copied the SATA driver successfully.
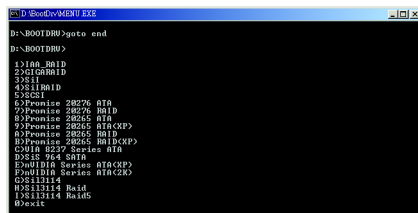
Figure 19

(6) Installing SATA controller driver during OS installation

Now that you have prepared the SATA driver disk and configured BIOS settings, you are ready to install Windows 2000/XP onto your SATA hard drive with the SATA 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 loading files before you see the next screen.

Windows Setup

Press F6 if you need to install a 3rd party SCSI or RAID driver.
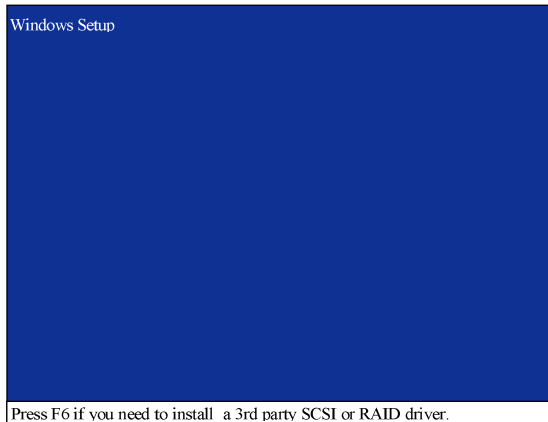
Figure 20

Step 2:
When a screen similar to that below appears (Figure 21), insert the floppy disk containing the SATA 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.

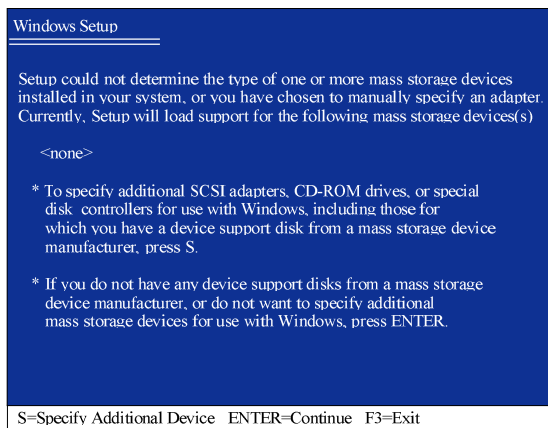S=Specify Additional Device   ENTER=Continue   F3=Exit

Figure 21

Step 3:

If Setup correctly recognizes the driver in the floppy disk, a controller menu similar to Figure 22 below will appear. Use the ARROW keys to select **Silicon Image SiI 3114 SoftRAID 5 Controller for Windows XP/Server 2003** (or the other, depending on the operating system you wish to install) and press ENTER**.** Then it will begin to load the SATA driver from the floppy disk.
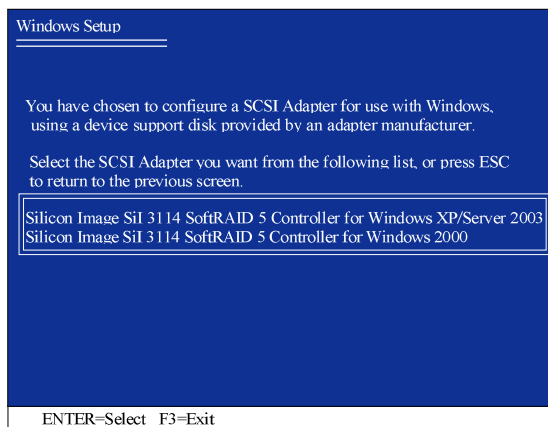

Figure 22

Step 4:

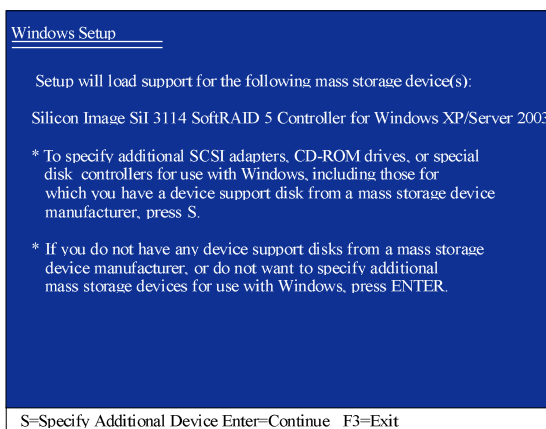When the screen as shown below appears, press ENTER to continue the SATA driver installation from the floppy disk.

Figure 23

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

After the SATA controller driver installation is completed, you should see a screen as shown below. It indicates that you have installed the SATA controller driver successfully. You can proceed with the Windows 2000/XP installation.
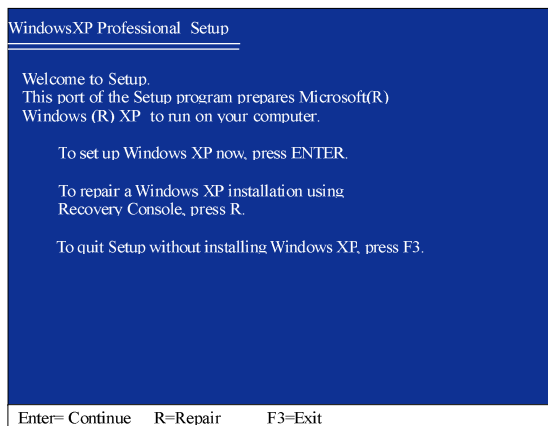

Figure 24

(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.)