Guide to SATA Hard Disks Installation and RAID Configuration

1. Guide to SATA Hard Disks Installation

1.1 Serial ATA (SATA) Hard Disks Installation

This motherboard adopts SiS 965L south bridge chipset that supports Serial ATA (SATA) hard disks. You may install SATA hard disks in this motherboard for internal storage devices. This section will guide you to install the SATA hard disks.

STEP 1: Install the SATA hard disks into the drive bays of your chassis.

STEP 2: Connect one end of the SATA data cable to the motherboard's primary SATA connector (SATA1).

STEP 3: Connect the other end of the SATA data cable to the primary SATA hard disk.

STEP 4: Connect the SATA power cable to the SATA hard disk. If you just want to install only one SATA HDD, the installation process is complete at this step. If you want to install two SATA HDDs or you want to use RAID function, please continue to do the following steps.

STEP 5: Connect one end of the second SATA data cable to the motherboard's secondary SATA connector (SATA2).

STEP 6: Connect the other end of the SATA data cable to the secondary SATA hard disk.

STEP 7: Connect the SATA power cable to the SATA hard disk.

1.2 Making An SATA Driver Diskette

If you want to install Windows 2000 or Windows XP on SATA HDDs, you will need to make an SATA driver diskette before you start the OS installation.

How to make an SATA driver diskette?

STEP 1: Insert the ASRock Support CD into your optical drive to boot your system. (Do NOT insert any floppy diskette into the floppy drive at this moment!)

STEP 2: During POST at the beginning of system boot-up, press <F11> key, and then a window for boot devices selection appears. Please select CD-ROM as the boot device.

STEP 3: When you see the message on the screen, "Do you want to generate Serial ATA driver diskette [YN]?", press <Y>.

STEP 4: Then you will see these messages,

Please insert a diskette into the floppy drive.
WARNING! Formatting the floppy diskette will
lose ALL data in it!
Start to format and copy files [YN]?

Please insert a floppy diskette into the floppy drive, and press <Y>.

STEP 5: The system will start to format the floppy diskette and copy SATA drivers into the floppy diskette.

Once you have the SATA driver diskette ready, you may start to install Windows 2000 / Windows XP on your system directly without setting the RAID configuration on your system, or you may start to use "SiS RAID BIOS Setting Utility" to set RAID 0 / RAID 1 / JBOD configuration before you install the OS. You may also set the RAID configuration by using "SiS RAID Utility for Windows" in Windows environment. Please refer to the document in the Support CD, "Guide to SiS RAID Utility for Windows", which is located in the folder at the following path:

.. \ RAID Utility for Windows

2. Guide to RAID Configurations (RAID 0 / RAID 1 / JBOD)

2.1 Introduction of RAID

This motherboard adopts SiS 964 south bridge chipset that integrates RAID controller supporting RAID 0 / RAID 1 / JBOD function with two independent Serial ATA (SATA) channels. This section will introduce the basic knowledge of RAID, and the guide to configure RAID 0, RAID 1, and JBOD settings.

RAID

The term "RAID" stands for "Redundant Array of Independent Disks", which is a method combining two or more hard disk drives into one logical unit. For optimal performance, please install identical drives of the same model and capacity when creating a RAID set.

RAID 0 (Data Striping)

RAID 0 is called data striping that optimizes two identical hard disk drives to read and write data in parallel, interleaved stacks. It will improve data access and storage since it will double the data transfer rate of a single disk alone while the two hard disks perform the same work as a single drive but at a sustained data transfer rate.

WARNING!!
Although RAID 0 function can improve the access performance, it does not provide any fault tolerance. Hot-Plug any HDDs of the RAID 0 Disk will cause data damage or data loss.

RAID 1 (Data Mirroring)

RAID 1 is called data mirroring that copies and maintains an identical image of data from one drive to a second drive. It provides data protection and increases fault tolerance to the entire system since the disk array management software will direct all applications to the surviving drive as it contains a complete copy of the data in the other drive if one drive fails.

JBOD

JBOD (Just a Bunch of Drives) is also called data spanning. It will expands the capacity of your drive and results in a useable total capacity since it will make several hard disk types configured as a single hard disk, and the hard drives are simply hooked up in series. However, JBOD will not increase any performance or data security.

2.2 RAID Configurations Precautions

1. Please use two new drives if you are creating a RAID 0 (striping) array for performance. It is recommended to use two SATA drives of the same size. If you use two drives of different sizes, the smaller capacity hard disk will be the base storage size for each drive. For example, if one hard disk has an 80GB storage capacity and the other hard disk has 60GB, the maximum storage capacity for the 80GB-drive becomes 60GB, and the total storage capacity for this RAID 0 set is 120GB.
2. You may use two new drives, or use an existing drive and a new drive to create a RAID 1 (mirroring) array for data protection (the new drive must be of the same size or larger than the existing drive). If you use two drives of different sizes, the smaller capacity hard disk will be the base storage size. For example, if one hard disk has an 80GB storage capacity and the other hard disk has 60GB, the maximum storage capacity for the RAID 1 set is 60GB.
3. Please verify the status of your hard disks before you set up your new RAID array.

Please carefully read the following list of limitations of "SiS SATA Driver" and "SiS RAID BIOS Setting Utility" before you use the RAID function.

Limitations of "SiS SATA Driver" and "SiS RAID BIOS Setting Utility"

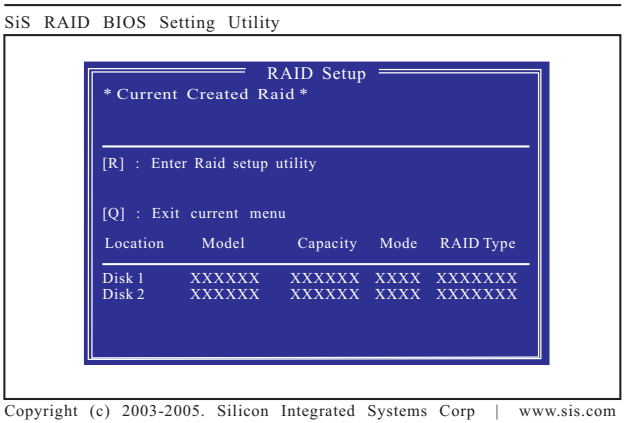
1. "SiS RAID Utility for Windows" are only available for Windows XP / Windows 2000. There is no RAID utility supporting Windows 98 SE and Windows ME.
2. "SiS SATA driver/utility/BIOS" may be updated occasionally. Please visit ASRock website for the latest driver update. ASRock website: http://www.asrock.com

2.3 RAID 0 Configuration

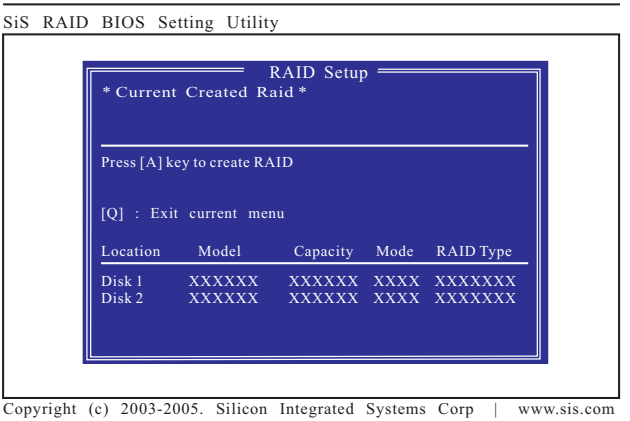
This section will guide you to configure RAID 0. To set RAID0 configuration, please follow the instruction below to use “SiS RAID BIOS Setting Utility”.

> **NOTE**
> In the following instruction, the term “Disk 1” refers to the SATA hard disk that you connect to “SATA1” connector on your motherboard; the term “Disk 2” refers to the SATA hard disk that you connect to “SATA2” connector on your motherboard.

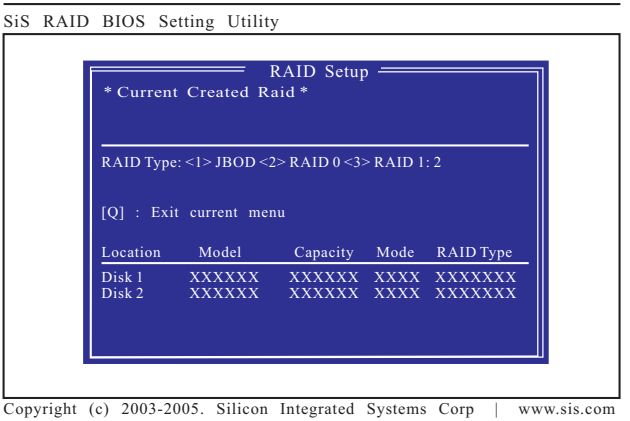
STEP 1: Boot-up your computer.
STEP 2: Press <Ctrl-S> key to enter “SiS RAID BIOS Setting Utility”
STEP 3: Press <R> key to enter RAID setup utility and start to create array.



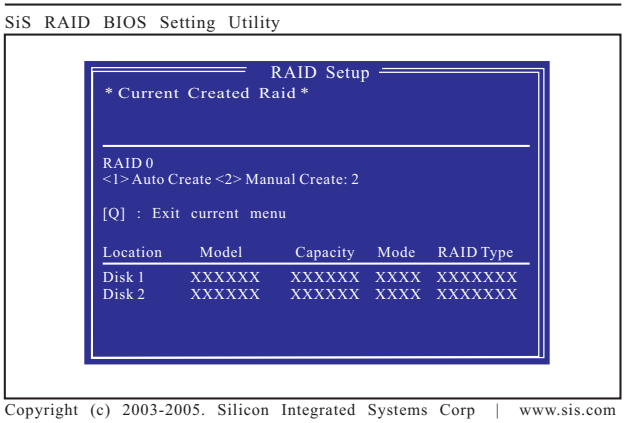
STEP 4: Press <A> key to create array.



STEP 5: Press <2> and <Enter> to select RAID 0.



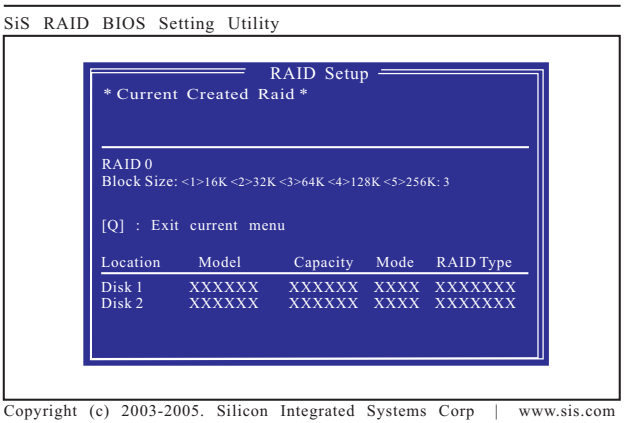
STEP 6: Press <1> or <2> to select Create options. If you select <1> “Auto Create”, “Disk 1” will be the Source disk. If you select <2> “Manual Create”, the first selected disk will be the Source disk.



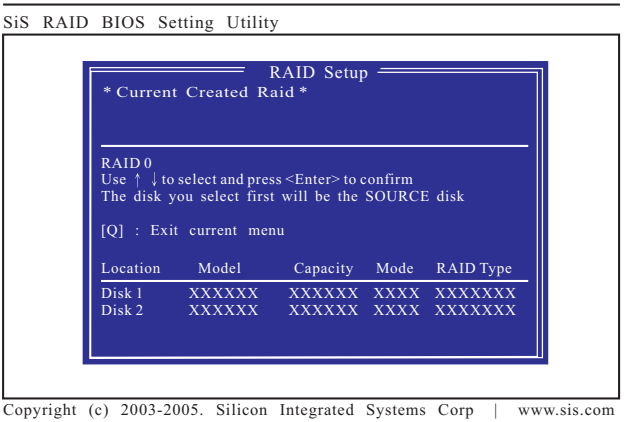
WARNING!!

The SOURCE disk should be correctly selected, otherwise, the inside data will be cleared after RAID 0 created.

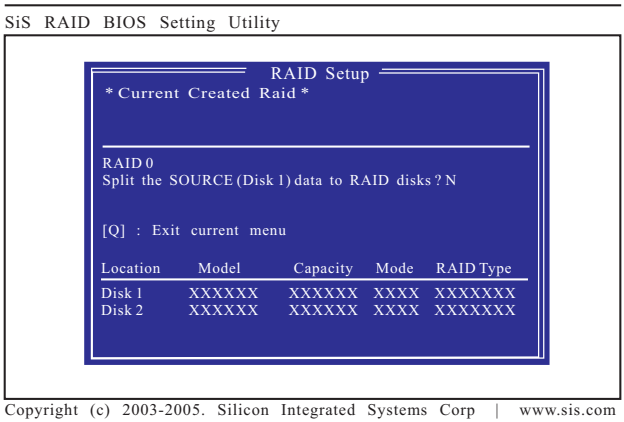
STEP 7: If you select <2> “Manual Create” in STEP 6, then the following screen will appear. Please press <1>-<5> keys and <Enter> to select Block Size. (Default : 64K)



STEP 8: Use <↑> and <↓> keys to select disk, and press <Enter> to confirm your selection. Please note that the disk you select first will be the SOURCE disk.



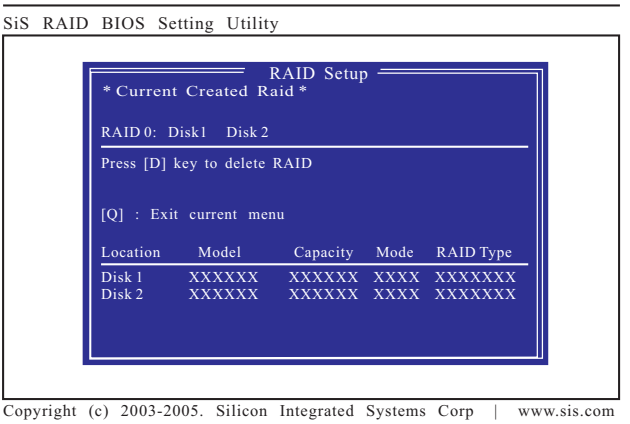
STEP 9: Press <Q> to escape the current setup menu. Then you will see the following message: “Split the SOURCE (Disk 1) data to RAID disks? N” If you press <N> and <Enter>, it will Create Stripe only. If you press <Y> and <Enter>, it will split the data on source disk to RAID disks.



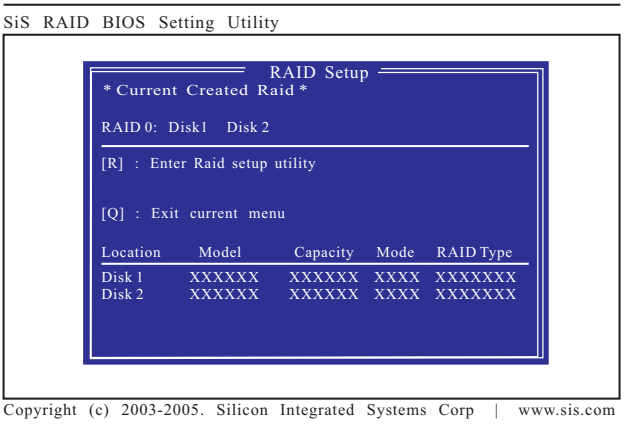
NOTE

If both SATA disks are empty, or you don’t need the data any more, you should select <N> to save your time. If you want to keep the data of the source disk, you should select <Y>. This split action may take several hours depending on the size of your HDD.

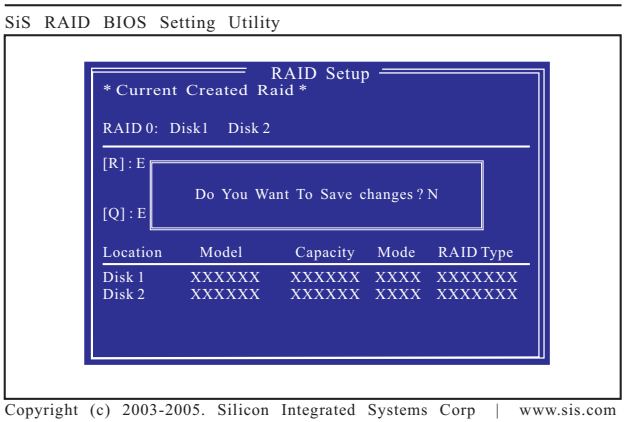
STEP 10: Press <Enter> to escape the current menu. Then the following screen will appear.



STEP 11: Press <Q> again to escape the setup Utility.



STEP 12: Then you will see the confirming message: “Do You Want to Save Changes? N” Please press <Y> and <Enter> to save changes.



STEP 13: Once the array has been created, you will need to FDISK and format the array as if it were a new single hard drive.

2.4 RAID 1 Configuration

This section will guide you to configure RAID 1. To set RAID 1 configuration, please follow the instruction below to use “SiS RAID BIOS Setting Utility” for the setting of RAID 1 configuration.

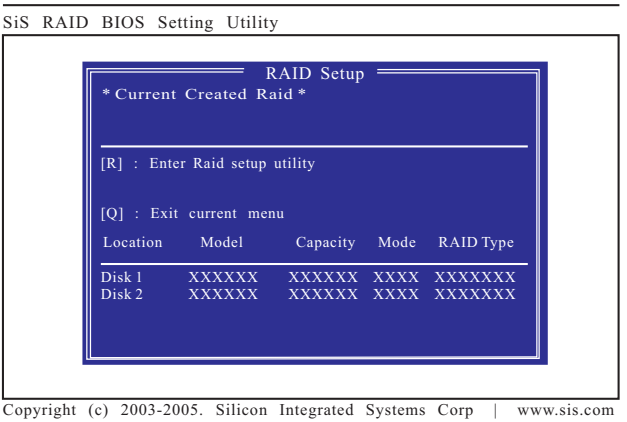
NOTE

In the following instruction, the term “Disk 1” refers to the SATA hard disk that you connect to “SATA1” connector on your motherboard; the term “Disk 2” refers to the SATA hard disk that you connect to “SATA2” connector on your motherboard.

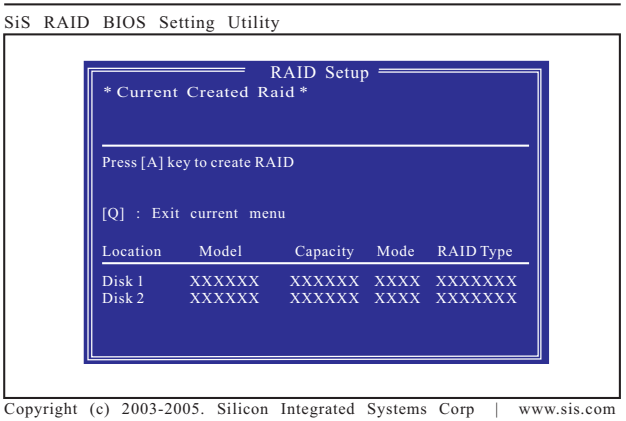
STEP 1: Boot-up your computer.

STEP 2: Press <Ctrl-S> key to enter “SiS RAID BIOS Setting Utility”

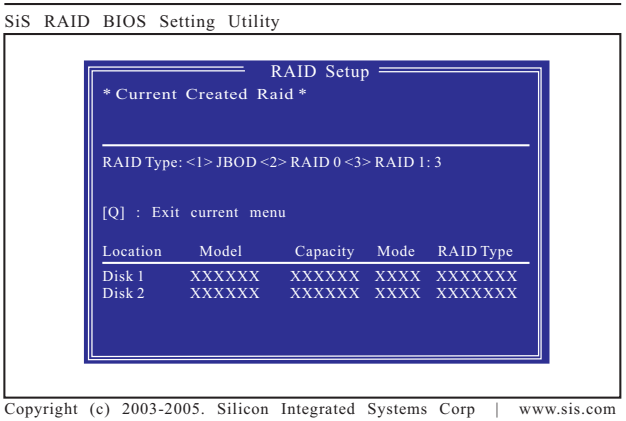
STEP 3: Press <R> key to enter RAID setup utility and start to create array.



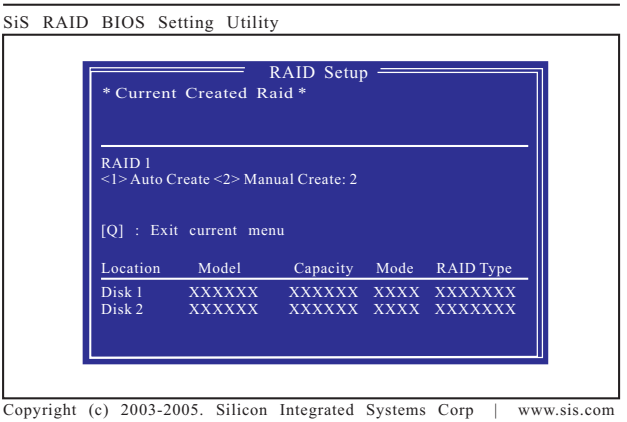
STEP 4: Press <A> key to create array.



STEP 5: Press <3> and <Enter> to select RAID 1.



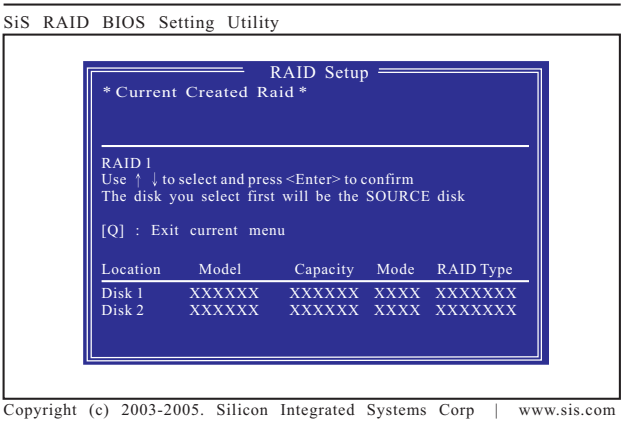
STEP 6: Press <1> or <2> to select Create options. If you select <1> “Auto Create”, “Disk 1” will be the SOURCE disk, and the “Disk 2” will be the MIRROR disk. If you select <2> “Manual Create”, the first selected disk will be the SOURCE disk, and the next selected disk will be the MIRROR disk.



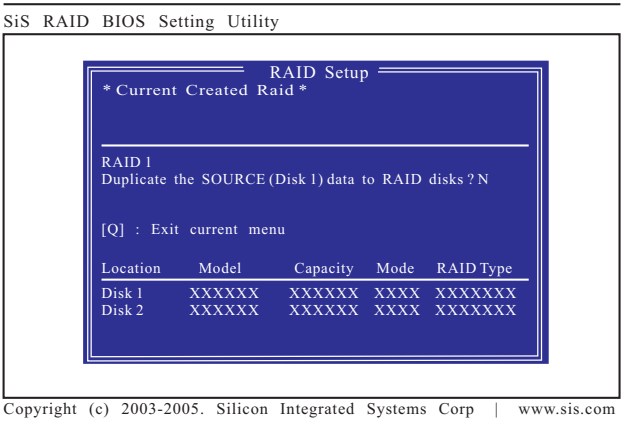
WARNING!!

The SOURCE disk should be correctly selected, otherwise, the inside data will be cleared after RAID 1 created.

STEP 7: Use <↑> and <↓> keys to select disk, and press <Enter> to confirm your selection. Please note that the disk you select first will be the SOURCE disk.



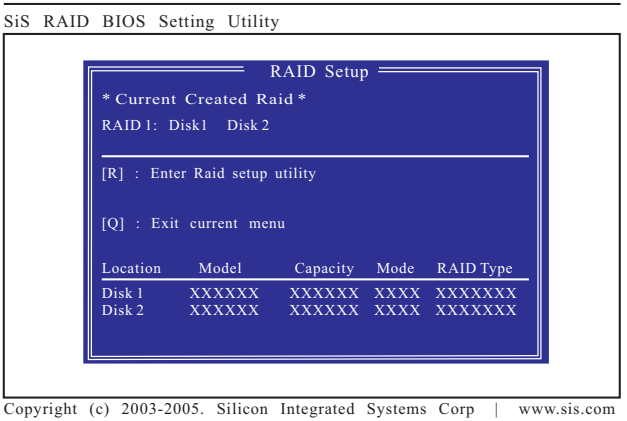
STEP 8: Then you will see the following message: “Duplicate the SOURCE (Disk 1) data to RAID disks? N”. If you press <N> and <Enter>, it will Create Mirror only. If you press <Y> and <Enter>, it will duplicate the data on source disk to RAID disks.



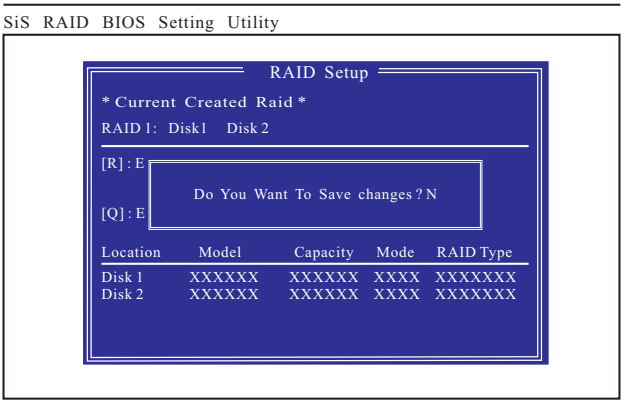
NOTE

If both SATA disks are empty, or you don’t need the data any more, you should select <N> to save your time. If you want to keep the data of the SOURCE disk, you should select <Y>. This mirror action may take several hours depending on the size of your HDD.

STEP 9: Press <Q> to escape the setup menu.



STEP 10: Before you escape the setup Utility, you will see the confirming message: “Do You Want to Save Changes? N” Please press <Y> and <Enter> to save changes.



STEP 11: Once the array has been created, you will need to FDISK and format the array as if it were a new single hard drive.

2.5 JBOD Configuration

This section will guide you to configure JBOD. To set JBOD configuration, please follow the instruction below to use “SiS RAID BIOS Setting Utility” for the setting of JBOD configuration.

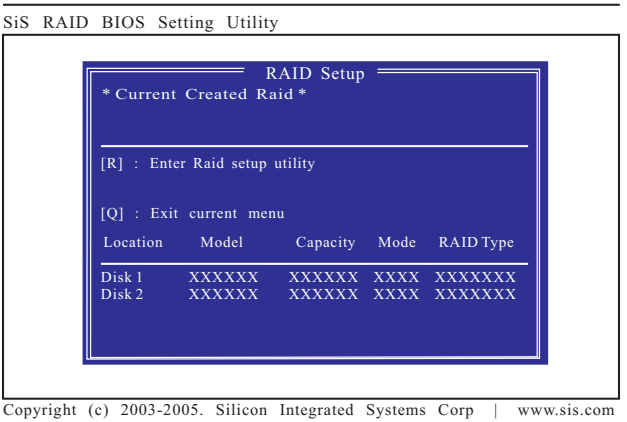
NOTE

In the following instruction, the term “Disk 1” refers to the SATA hard disk that you connect to “SATA1” connector on your motherboard; the term “Disk 2” refers to the SATA hard disk that you connect to “SATA2” connector on your motherboard.

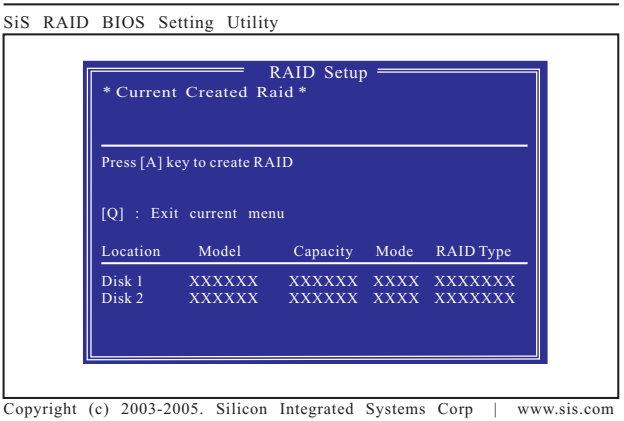
STEP 1: Boot-up your computer.

STEP 2: Press <Ctrl-S> key to enter “SiS RAID BIOS Setting Utility”

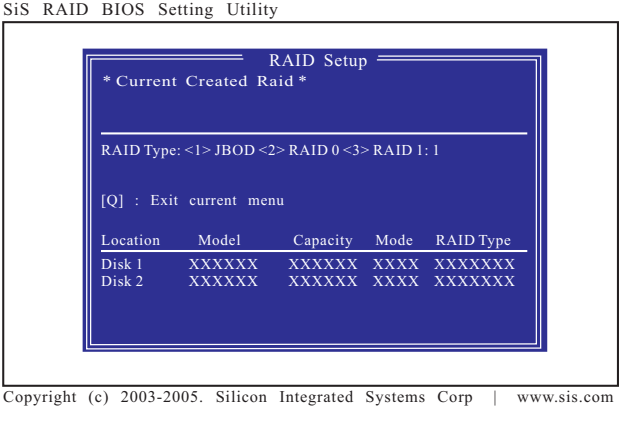
STEP 3: Press <R> key to enter RAID setup utility and start to create array.



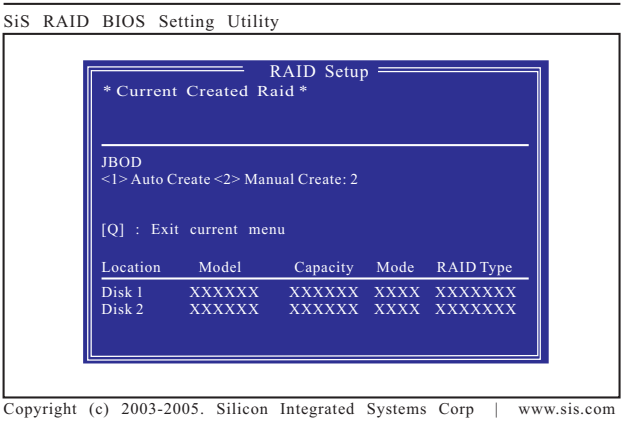
STEP 4: Press <A> key to create array.



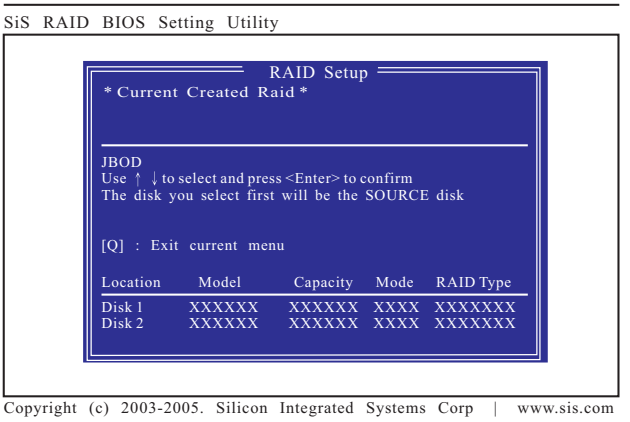
STEP 5: Press <1> and <Enter> to select JBOD.



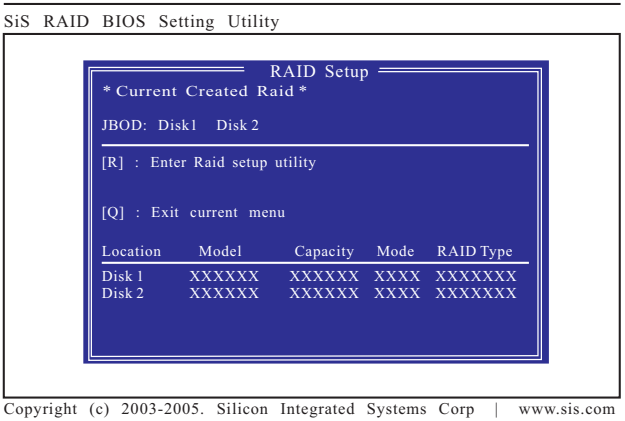
STEP 6: Press <1> or <2> to select Create options. If you select <1> “Auto Create, the “Disk 1” will be the first disk, and “Disk 2” will be the second disk. If you select <2> “Manual Create”, the first selected disk will be the first disk, and the next selected disk will be the second disk.



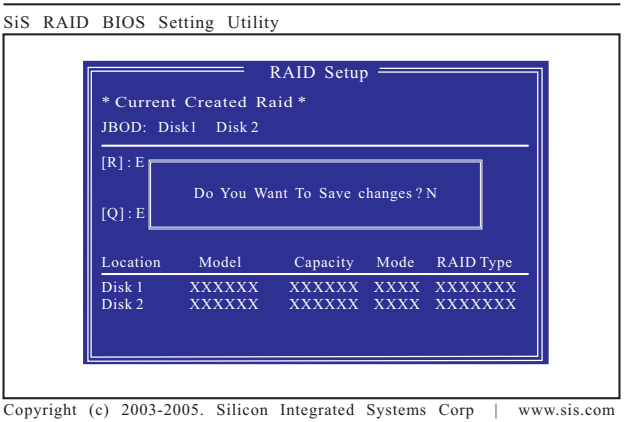
STEP 7: Use <↑> and <↓> keys to select disk, and press <Enter> to select disk.



STEP 8: Press <Q> to escape the setup menu.



STEP 9: Then you will see the confirming message: “Do You Want to Save Changes? N” Please press <Y> and <Enter> to save changes.



WARNING!!
After the JBOD function is created, the original data in both SATA disks will be cleared.

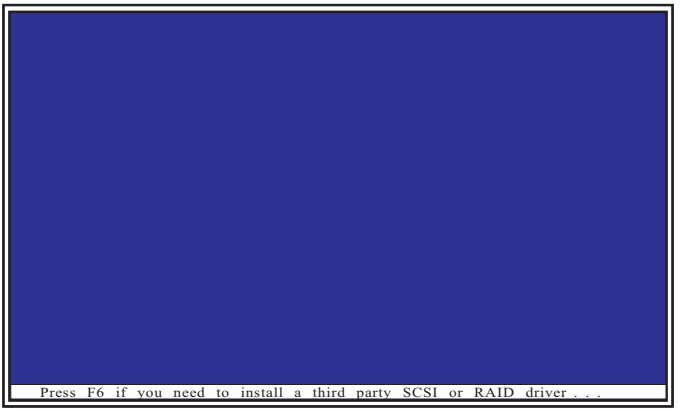
STEP 10: Once the array has been created, you will need to FDISK and format the array as if it were a new single hard drive.

3. Installation of Windows 2000 / Windows XP

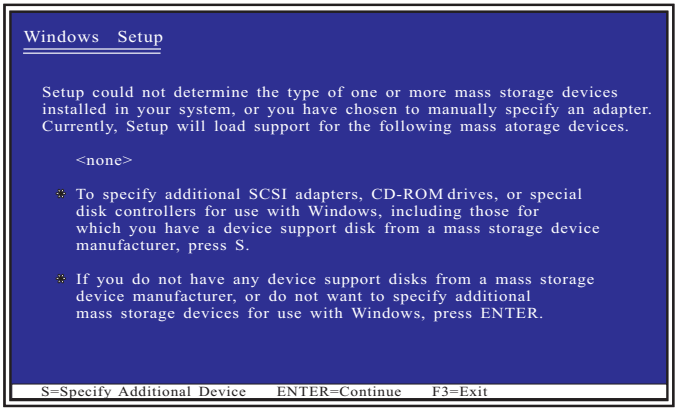
If you want to install Windows 2000 or Windows XP on your SATA HDDs, you will need to make an SATA driver diskette (see page 3 for details) before you start the OS installation. If you prefer not to use RAID function, you may start to install Windows 2000 / Windows XP once you have the SATA driver diskette ready. If you want to use RAID function, you need to set the RAID configuration (see page 4 to page 22) before you install Windows 2000 / Windows XP.

For the installation of the SATA drivers while installing Windows 2000 or Windows XP, please follow the instruction below.

1. Insert Windows 2000 or Windows XP CD into the optical drive.
2. Remove the floppy diskette, and reboot the system. When you start the installation, press <F6> once you see the message at the bottom of the screen, “Press F6 if you need to install a third party SCSI or RAID driver”.

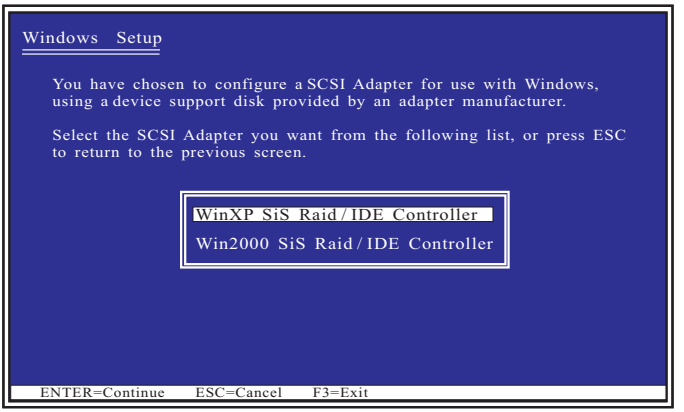


3. When the Windows 2000 / Windows XP Setup window is generated, press <S> key to specify an Additional Device(s).



4. Insert the SATA driver into drive A: and press <Enter>.

5. Choose one of the following items:
   "WinXP SiS Raid/IDE Controller" (for RAID),
   "Win2000 SiS Raid/IDE Controller" (for RAID),
   that appears on screen, and then press <Enter> key.



6. Press <Enter> to continue with installation or if you need to specify any additional devices to be installed, do so at this time. Once all devices are specified, Press Enter to continue with installation.
7. From the Windows 2000/Windows XP Setup screen, press <Enter> key. Setup will now load all device files and then continue the Windows 2000 / Windows XP installation.
8. Please install the driver package again while the operation system has been setup.

NOTE
If you would like to install windows to any RAID set, you should create RAID from BIOS utility first and then follow the steps above.