SATA RAID SOFTWARE

to be used with the SIS 964

User's Manual

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1. INTRODUCTION

1.1 Introduction

The SiS SATA controller is a hybrid solution that combines two independent SATA ports and one Ultra ATA port for support of up to two Serial ATA (Serial ATA RAID) and two Ultra ATA (Ultra ATA RAID) drives. However the South Bridge SiS964 SATA controller only support two Serial ATA on two independent ports. Specifications are as follows:

Serial ATA Interface

Serial ATA (SATA) is the latest generation of the ATA interface. SATA hard drives deliver blistering transfer speeds of up to 150MB/sec. Serial ATA uses long, thin cables, making it easier to connect your drive and improving the airflow inside your PC.
¨ Supports 150 MB/s transfers with CRC error checking
¨ Large LBA support for drives over 137 GB
¨ Data handling optimizations including tagged command queuing, elevator seek and packet chain command

Serial ATA RAID Interfaces

The Serial ATA RAID is designed to provide a cost-effective, high performance RAID solution that adds performance and/or reliability to PC desktops and/or servers using Serial ATA/150 hard disks.

Serial RAID function supports striping (RAID 0), mirroring (RAID 1), and span (JBOD). Please note that the function supports hard disk drives only and the South Bridge SiS964 SATA controller don't support Striping + mirroring (Raid 0+1).

With striping, identical drives can read and write data in parallel to increase performance. Mirroring increases read performance through load balancing and elevator sorting while creating a complete backup of your files. Span would increase the logic hard disk space.

Serial ATA RAID striped arrays can double the sustained data transfer rate of Serial ATA/150 drives. Serial ATA RAID fully supports Serial ATA/150 specification of up to 150MB/sec per drive, depending on individual drive specifications.

The technology also offers fault tolerant, data redundancy for entry-level network file servers or simply for desktop PC users wanting to continually protect valuable data on their PC. The Serial ATA RAID offers RAID 1 mirroring (for two drives) to protect data. Should a drive that is part of a mirrored array fail, Serial ATA RAID technology uses the mirrored drive (which contains identical data) to assume all data handling. When a new replacement drive is later installed, Serial ATA RAID rebuilds data to the new drive from the mirrored drive to restore fault tolerance.

1.2 Features and Specifications

The South Bridge SiS964 SATA controller only support two Serial ATA (Serial ATA RAID) drivers.
Support RAID function: RAID 0, RAID 1, and JBOD.
Windows-based SiS RAID Utility software tool (only support Windows XP and 2000).
BIOS RAID Setting Utility

1.3 Support operating Systems

Microsoft Windows 98 Second Edition

Microsoft Windows Me
Microsoft Windows 2000 Professional and Server

Microsoft Windows XP

2. Step 0. What is RAID

KNOW HOW

This section will give you an overview about the RAID system and introduce the basic background and glossary which you need to know before using "SiS RAID Controller Application".

1. RAID: (Redundant Array of Independent Disk Drives) use jointly several hard drives to increase data transfer rates and data security. It depends on the number of drives present and RAID function you select to fulfill the security or performance purposes or both.

2. RAID 0: Also known as "Stripping". All of the data are distributed evenly to all of the existing drives. You gain benefits on performance because the data transfer rate is multiplied by the number of drives. However, RAID 0 has high risks of data security. All of the stored data will be lost if even any one drive in the RAID set crashes.

3. RAID 1: Also known as "Mirroring". Two hard drives are required. The goal of RAID 0 is to ensure data security. Data is written to two or more drives synchronously. That is, 100% duplication of data from one drive to another.

4. RAID 0 + 1: Also known as "StripeMirror". At least four hard drivers are required. RAID 0 + 1 is a combination of RAID 0 and RAID 1. Data is striped into two drives then mirrored. It provides high performance and high data protection. This is a costly solution as RAID 1 because the two mirrored drives represent an expensive insurance

5. JBOD: (Just a Bunch of Drives). Also known as "Spanning". Two or more hard drives are required. Several hard disk types configured as a single hard disk. The hard drives are simply hooked up in series. This expands the capacity of your drive and results in a useable total capacity. However, JBOD will not increase any performance or data security.

Performance hints and recommend setting

For the best performance and reliability, please read the following suggestions.

1. In Serial ATA port, use Native Serial ATA drives. Parallel ATA to Serial ATA converter board is NOT suggested.

2. Use the same model hard drives.

3. If you have only two Serial ATA drives, the auto-configure function will assign each on a different channel as a master drive.

4. We strongly recommend you should use "DMA" transfer mode.

5. The recommended block size is "64K" when creating RAID 0.

3. Step 1. Hardware Setup

■Hard Drives setup

The South Bridge SiS964 SATA controller only supports two Serial ATA hard drivers.

■For RAID 0 (Striping array)

The South Bridge SiS964 SATA controller only supports following below combination.

HDD Population Rules for RAID 0 (Striping)	
Serial ATA (Master 1)	Serial ATA (Master 2)
V	V

NOTE: Storage Capacity: the number of hard drives times the capacity of the smallest drive in the disk array.
Working Speed: the speed of the lowest drive in the disk array.

■ For RAID 1 (Striping array)

The South Bridge SiS964 SATA controller only supports following below combination.

HDD Population Rules for RAID 1 (Striping)	
Serial ATA (Master 1)	Serial ATA (Master 2)
V	V

NOTE: Storage Capacity: the capacity of the smallest drive in the disk array.

Working Speed: the speed of the lowest drive in the disk array.

■ For JBOD (Spanning array)

The South Bridge SiS964 SATA controller only supports following below combination.

HDD Population Rules for JBOD (Spanning)	
Serial ATA (Master 1)	Serial ATA (Master 2)
V	V

NOTE: Storage Capacity: the number of hard drives times the capacity of the smallest drive in the disk array..

Working Speed: the speed of the lowest drive in the disk array.

4. Step 2. Installing Software Drivers

●SiS RAID driver support Microsoft Windows XP/2000/Me/98SE

1. South Bridge SiS964 SATA controller support Serial ATA w/ RAID0, RAID 1 and JBOD by installing SiS RAID driver. For RAID function, SIS 964 support RAID0, RAID1 and JBOD by software RAID driver only.
2. For special occasions, users can refer to the following sections with details on the SiS964 driver installation when usd with various operating systems.

■Windows XP/2000/Me/98SE

■New Windows XP/2000 Installation

The following details that installation of the drivers while installing new Windows XP/2000. This method don't be supported for new Windows Me/98SE installation.

1. Start the installation:
    Boot from the CD-ROM. Press F6 when the message "Press F6 key if you need to install third party SCSI or RAID driver" appears.
2. When the Windows XP/2000 Setup window is generated, press S key to specify an Additional Device(s).
3. Insert the driver diskette into drive A: and press Enter.
4. Choose one of the following items:
    "WinXP SiS Raid/IDE Controller ",
    "Win2000 SiS Raid/IDE Controller",
    that appears on screen, and then press the Enter key.
5. 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.
6. From the Windows XP/2000 Setup screen, press the Enter key. Setup will now load all device files and then continue the Windows XP/2000 installation.
7. Please install the driver package again while the operation system has been setup.

Remark:

If you would like to install windows to any RAID set, you should create RAID from BIOS RAID setting Utility or SiS964 RAID Utility first and then follow the steps above.

■Existing Windows XP/2000/Me/98SE Installation

    1. Install the driver by execute SiS RAID driver setup utility.

    2. The driver will be automatically installed.

■Confirming Windows XP/2000 InstallatioN

    1. From Windows XP/2000, open the Control Panel from "My Computer" followed by the System icon.

    2.Choose the "Hardware" tab, then click the "Device Manager" tab. Click the "+" in front of "SCSI and RAID Controllers" hardware type.

■Confirming Windows ME/98SE Installation

    1.From Windows Me/98SE, open the Control Panel from "My Computer" followed by the System icon.
    2.Choose the "Device Manager" tab.
    3.Click the "+" in front of " IDE ATA/ATAPI Controllers" hardware type.

5. Step 3. BIOS Utility Operation

NOTE: For the best performance and reliability, please read "Perfor mance Hints and Recommend Setting" section in Step 0.

■Starting BIOS Utility

Silicon Integrated Systems Corp. RAID BIOS Setting Utility v0.XX
(c) 2003-2005 Silicon Integrated Systems Corp. All Rights Reserved.

Press <Ctrl> <S> to run BIOS Setting Utility
Scan Devices. Please wait............

   Primary Master : XXXXXXXXXX XXXXXMB UDMA X
   Primary Slave   : < Device Not Found >
   Secondary Master : < SATA Device Not Found >
   Secondary Slave : XXXXXXXXXX XXXXXMB UDMA X

[RAID Information]

1. Boot your system. If this is the first time you have booted with the SiS964 and the drives installed, the BIOS will display the following.

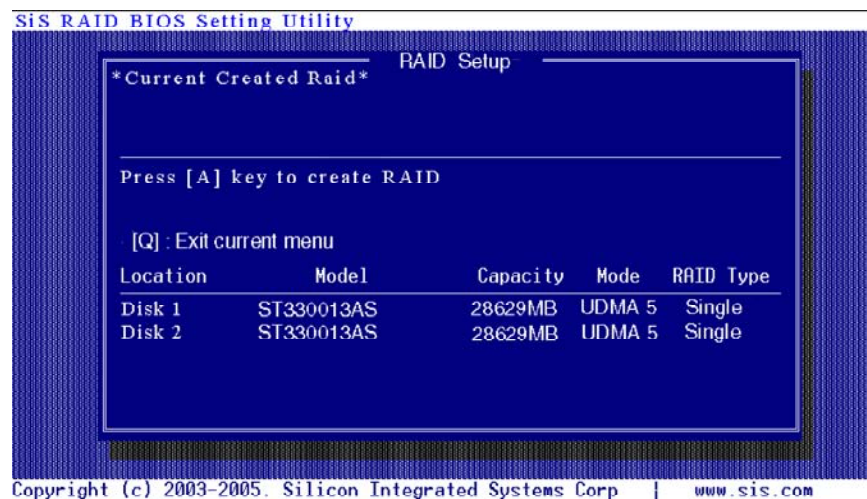 [RAID Information] includes some statements. See below :

 a. No RAID Install !! → Not any completed RAID exists.

 b. Raid 1 (Mirror) : [Disk X] [Disk X] →Have a RAID set.

 c. Broken RAID detected. Do you want to enter Setup Menu (Y/ N)? Y → You can select [Y] to enter setup menu to handle it. Or you can select [N] to ignore this message.

 d. Found a new HD! Do you want to rebuild RAID 1?Y → Occurs when the controller has broken Raid 1 and single HDD existing simulta neously and the location of single HDD is just conformed it's rebuild conditions.

 e. The Raid is wrong!! Do you want to fix it?(Y/N) → Occurs when the locations of two SATA HDD change owing to ATA HDD existing or not.

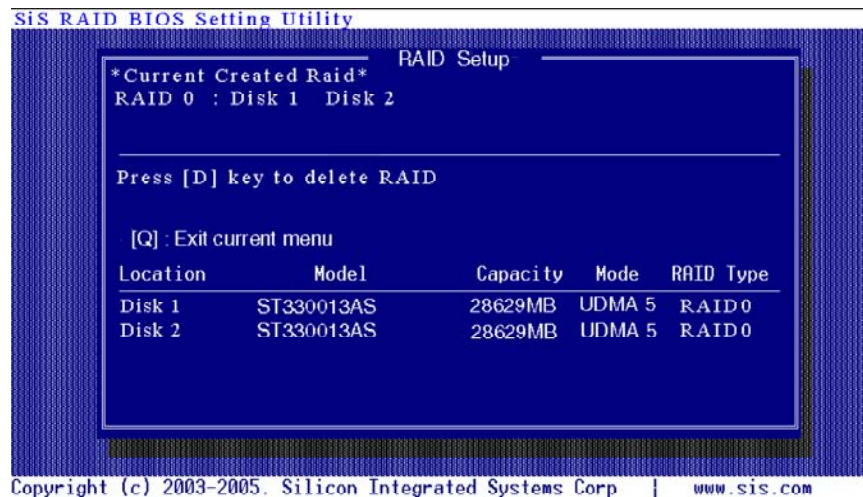2. Press <Ctrl-S> keys to display the SiS964 Utility Main Menu.
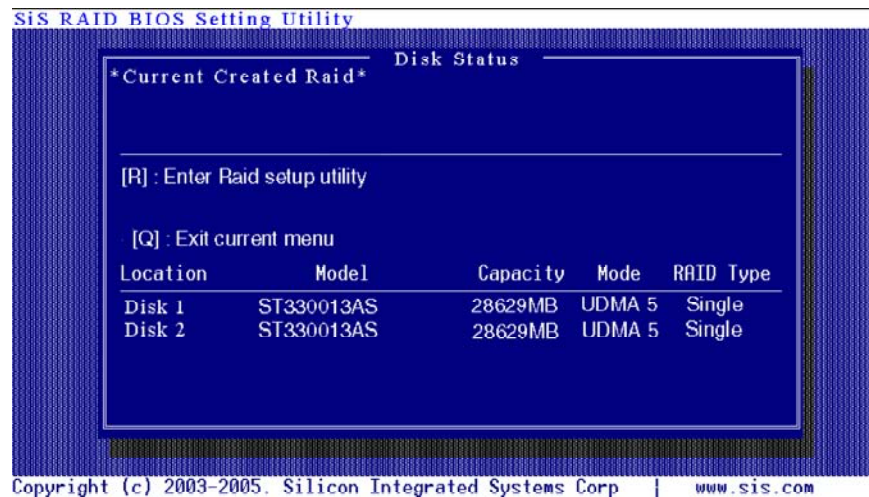
3. Press <R> to display the RAID setup menu below. This is the fastest and easiest method to create your first array. The [A] and [D] key will appear randomly in the different conditions.
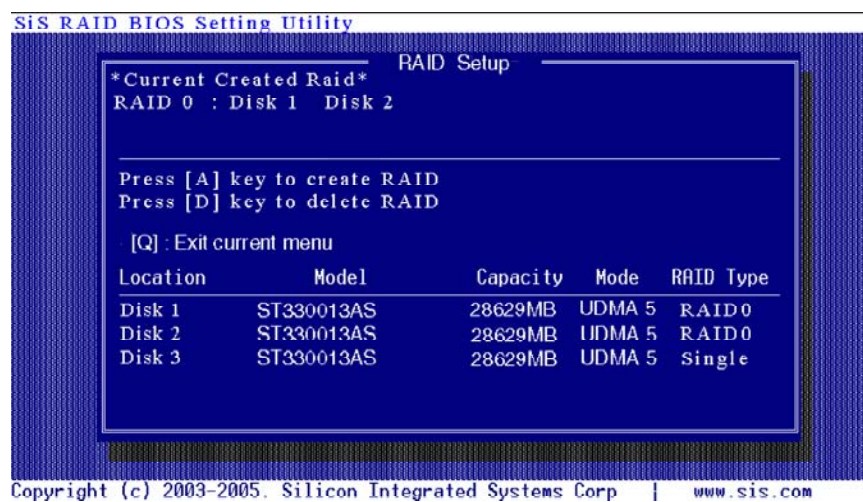
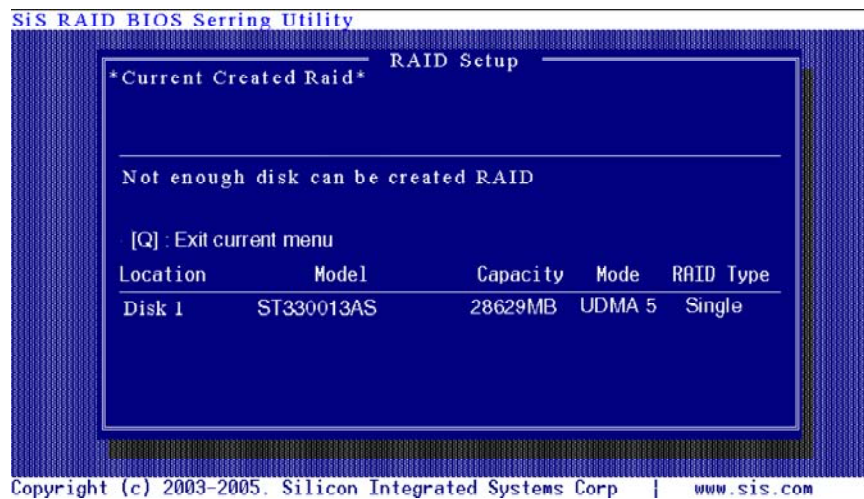   [a]. No RAID existing but have available disks existing :

[b]. No available disk existing but have RAID existing :


```
SiS RAID BIOS Setting Utility
                            RAID Setup
*Current Created Raid*
RAID 0 : Disk 1   Disk 2

Press [D] key to delete RAID

 [Q] : Exit current menu

Location          Model         Capacity   Mode    RAID Type

Disk 1      ST330013AS         28629MB   UDMA 5   RAID 0
Disk 2      ST330013AS         28629MB   UDMA 5   RAID 0

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```

[c]. Available disks and RAID existing simultaneously :


```
SiS RAID BIOS Setting Utility
                            RAID Setup
*Current Created Raid*
RAID 0 : Disk 1   Disk 2

Press [A] key to create RAID
Press [D] key to delete RAID

 [Q] : Exit current menu

Location          Model         Capacity   Mode    RAID Type

Disk 1      ST330013AS         28629MB   UDMA 5   RAID 0
Disk 2      ST330013AS         28629MB   UDMA 5   RAID 0
Disk 3      ST330013AS         28629MB   UDMA 5   Single

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```

[d]. Available disk is not enough to create RAID :

```
SiS RAID BIOS Serring Utility
┌─────────────────────── RAID Setup ───────────────────────┐
│ *Current Created Raid*                                    │
│                                                           │
│                                                           │
│ Not enough disk can be created RAID                       │
│                                                           │
│  [Q] : Exit current menu                                  │
│ Location        Model          Capacity   Mode   RAID Type│
│ Disk 1        ST330013AS        28629MB   UDMA 5   Single  │
│                                                           │
│                                                           │
└───────────────────────────────────────────────────────────┘
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```

■Create RAID

> NOTE:
> SiS964 SATA controller support RAID0, RAID 1 and JBOD.

■Creating a RAID 0 (Stripe) Array for Performance

> NOTE:
> SiS964 Only supports 2 SATA driver to create a stripe array.

To create an array for best performance, follow these steps:
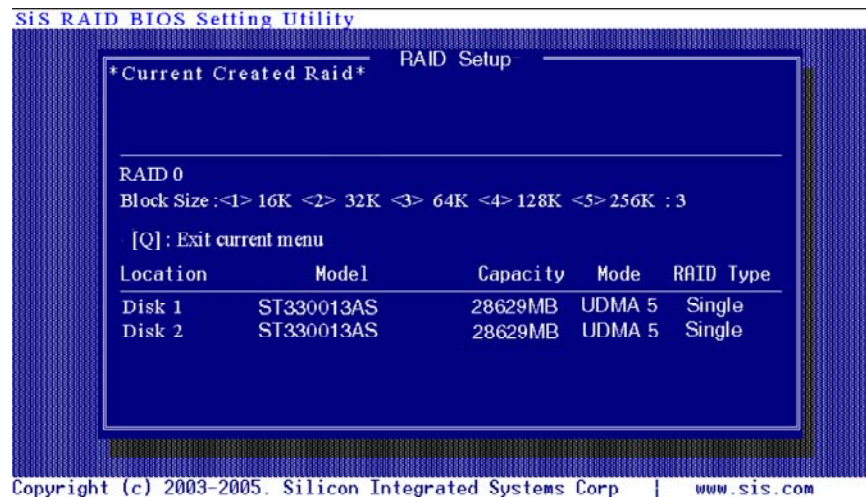
1. Press <A> to start creating a RAID array.

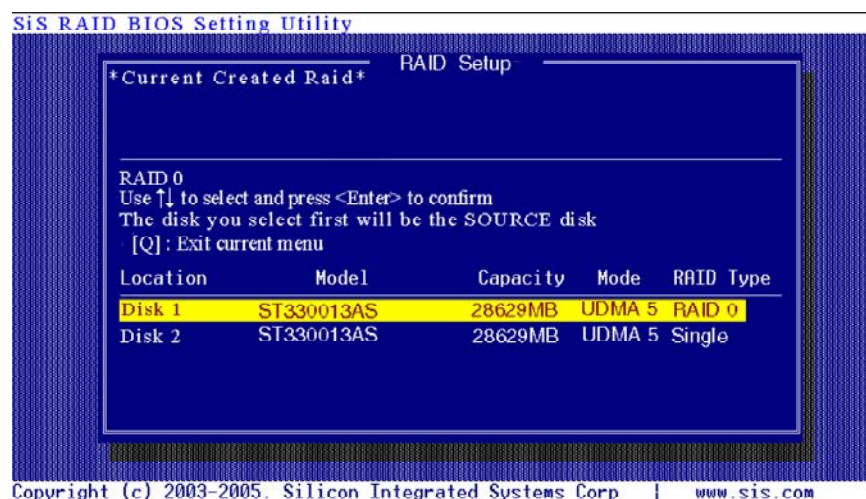2. Press <2> and <Enter> to select RAID 0.
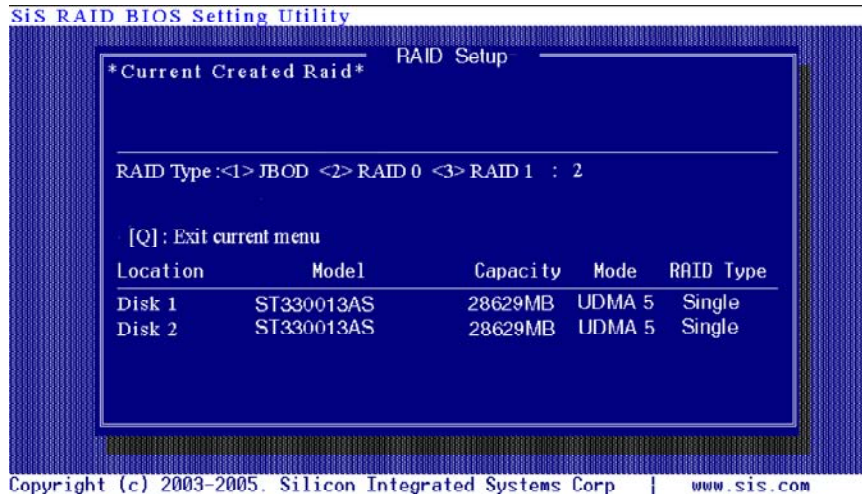
3. You will have two selections to create a RAID 0 array. The default value is <1>. If you select <1>Auto Create, you can create a RAID 0 array faster and easier. The Blocksize will be selected by its default value "64K". The result after auto creating will be shown on step 6. Besides, you also can select <2>Manual Create, see following steps.
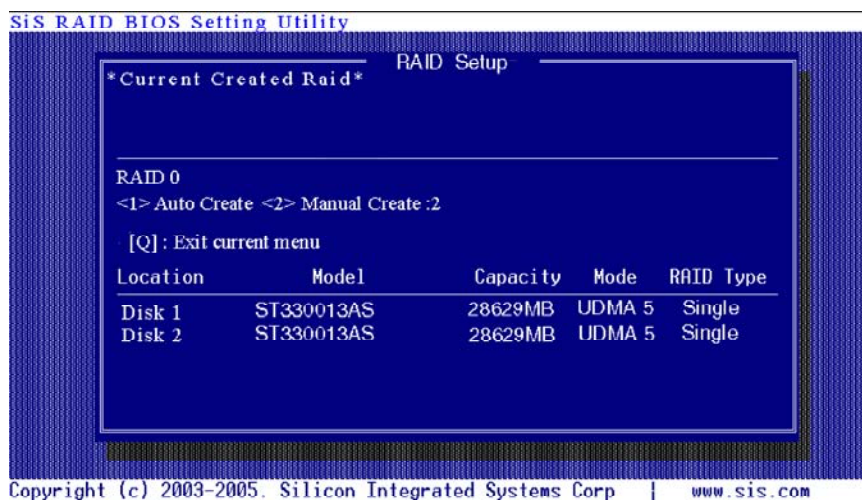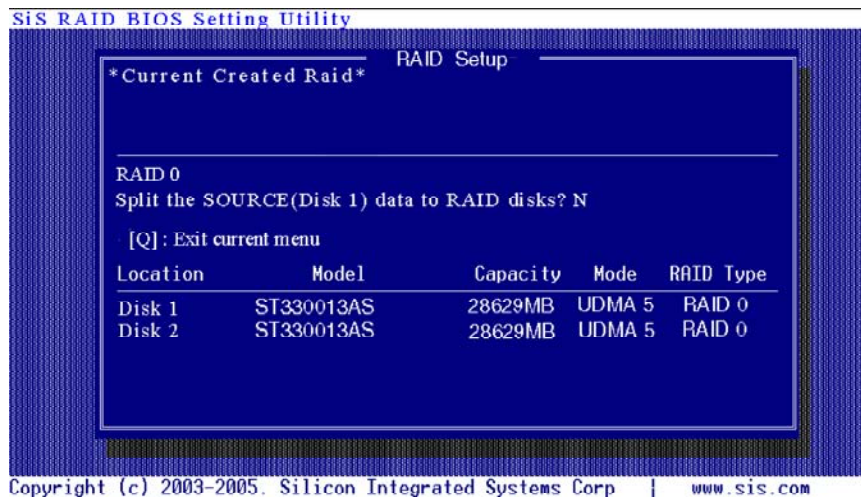
4. Press <1> ~ <5> key and <Enter> to select Block Size. (Default: 64K)

SiS RAID BIOS Setting Utility

━━━━━━━━━━━━━━━━━━━━━ RAID Setup ━━━━━━━━
Current Created Raid

RAID 0
Block Size :<1> 16K <2> 32K <3> 64K <4> 128K <5> 256K : 3

[Q] : Exit current menu

Location	Model	Capacity	Mode	RAID Type
Disk 1	ST330013AS	28629MB	UDMA 5	Single
Disk 2	ST330013AS	28629MB	UDMA 5	Single

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5. Use <↑> <↓> to select disk , and press <Enter> to select disk, <Q> to exit. When you press <Enter> on the disk you wanted, the RAID Type will be changed from Single to RAID 0. And the disk you select first will be the SOURCE disk.

SiS RAID BIOS Setting Utility

━━━━━━━━━━━━━━━━━━━━━ RAID Setup ━━━━━━━━
Current Created Raid

RAID 0
Use ↑↓ to select and press <Enter> to confirm
The disk you select first will be the SOURCE disk
[Q] : Exit current menu

Location	Model	Capacity	Mode	RAID Type
Disk 1	ST330013AS	28629MB	UDMA 5	RAID 0
Disk 2	ST330013AS	28629MB	UDMA 5	Single

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6. Next, you will see a message "Split the SOURCE(Disk x) data to RAID disks?". Press <N> and <Enter> to create RAID 0 array only or press <Y> and <Enter> to split the data from source disk to other disks.
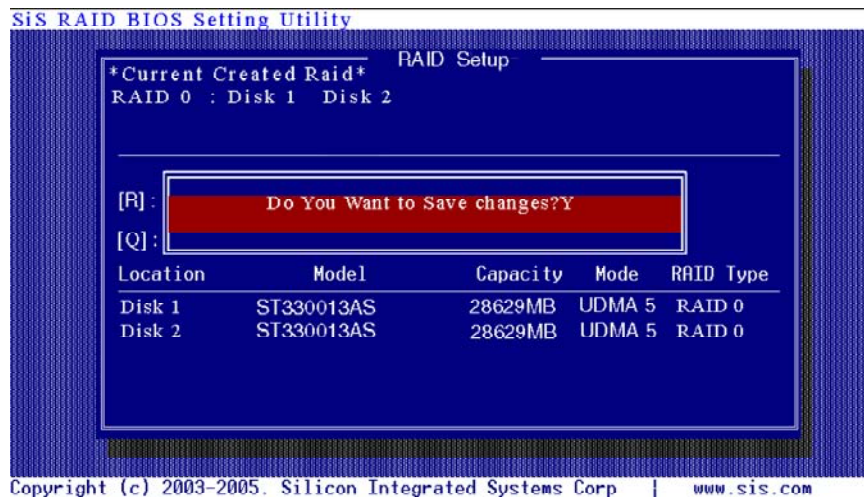
```
SiS RAID BIOS Setting Utility
┌─────────────────────── RAID Setup ──────────────────┐
│ *Current Created Raid*                               │
│                                                      │
│  ──────────────────────────────────────────────────  │
│  RAID 0                                              │
│  Split the SOURCE(Disk 1) data to RAID disks? N      │
│                                                      │
│   [Q] : Exit current menu                            │
│  Location        Model        Capacity   Mode   RAID Type │
│  ──────────────────────────────────────────────────  │
│  Disk 1      ST330013AS      28629MB   UDMA 5   RAID 0 │
│  Disk 2      ST330013AS      28629MB   UDMA 5   RAID 0 │
│                                                      │
│                                                      │
└──────────────────────────────────────────────────────┘
Copyright (c) 2003-2005. Silicon Integrated Systems Corp  |  www.sis.com
```
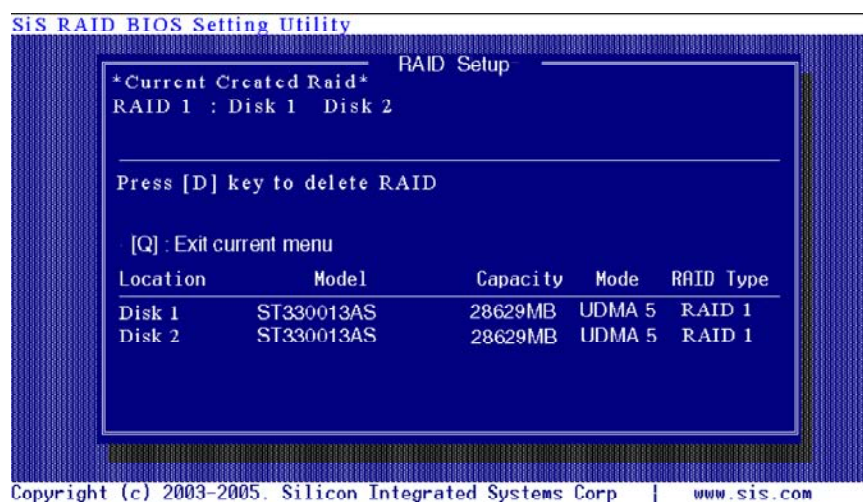
7. Starting splitting action, the following frame will be shown.

```
SiS RAID BIOS Setting Utility
┌─────────────────────── RAID Setup ──────────────────┐
│ *Current Created Raid*                               │
│                                                      │
│  ──────────────────────────────────────────────────  │
│  RAID 0                                              │
│  Split the SOURCE(Disk 1) data to RAID disks? N      │
│                                                      │
│   [Q] : Exit current menu                            │
│  Location        Model        Capacity   Mode   RAID Type │
│  ──────────────────────────────────────────────────  │
│  Disk 1      ST330013AS      28629MB   UDMA 5   RAID 0 │
│  Disk 2      ST330013AS      28629MB   UDMA 5   RAID 0 │
│                                                      │
│                                                      │
└──────────────────────────────────────────────────────┘
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```
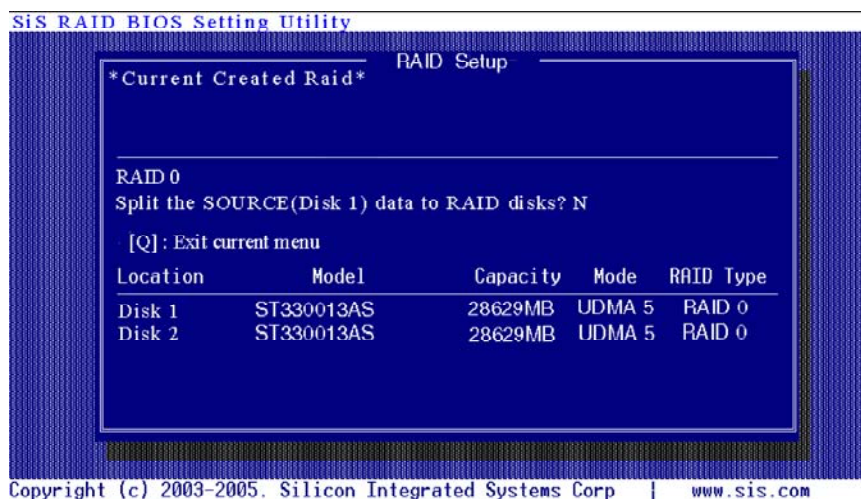
8. After all steps finished, press <Q> until escape the setup menu and RAID 0 array will be shown on the top of the main frame.

```
SiS RAID BIOS Setting Utility
                               RAID Setup
  *Current Created Raid*
  RAID 0  : Disk 1   Disk 2


  Press [D] key to delete RAID


   [Q] : Exit current menu

   Location          Model         Capacity   Mode    RAID Type

   Disk 1       ST330013AS          28629MB   UDMA 5   RAID 0
   Disk 2       ST330013AS          28629MB   UDMA 5   RAID 0




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```
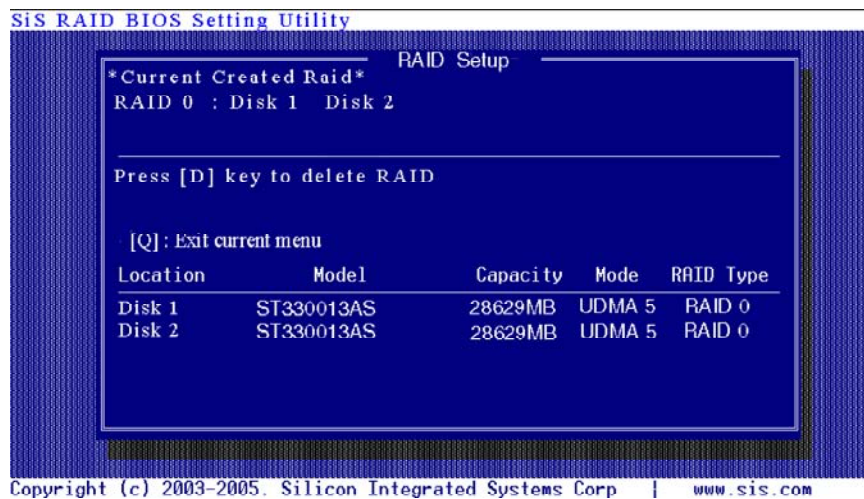
9. Press <Q> until exit this BIOS utility and the red message frame will show. Press <Y> and <Enter> to save changes.

```
SiS RAID BIOS Setting Utility
                               RAID Setup
  *Current Created Raid*
  RAID 0  : Disk 1   Disk 2


  [R] :         Do You Want to Save changes?Y

  [Q] :
   Location          Model         Capacity   Mode    RAID Type

   Disk 1       ST330013AS          28629MB   UDMA 5   RAID 0
   Disk 2       ST330013AS          28629MB   UDMA 5   RAID 0




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```

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.

■ Creating a RAID 1 (Mirror) Array

NOTE:
SiS964 enables users to create Mirror arrays with pair of drives only.

To create an array for best performance, follow these steps:

1. Press ＜A＞ to start creating a RAID array.

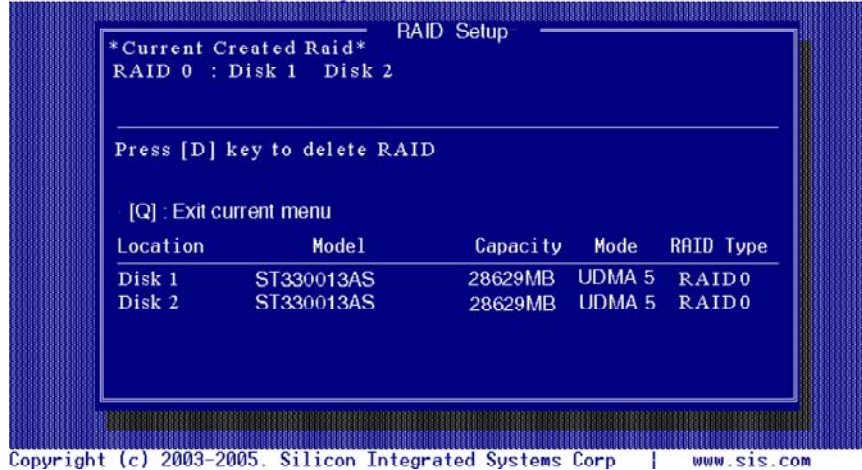2.Press ＜3＞ and ＜Enter＞ to select Mirror.
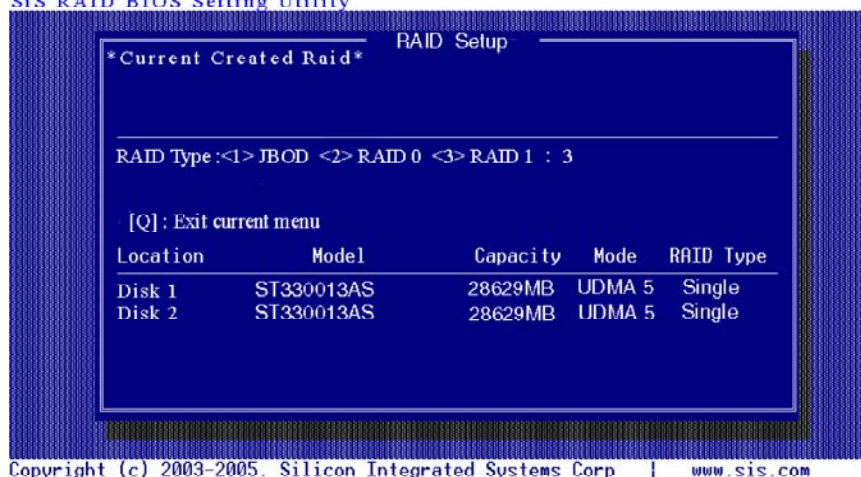
3.You will have two selections to create a RAID 1 array. The default value is ＜1＞. If you select ＜1＞Auto Create, you can create a RAID 1 array faster and easier. The result after creating will be shown on step 5. Besides, you also can select ＜2＞Manual Create, see following steps.
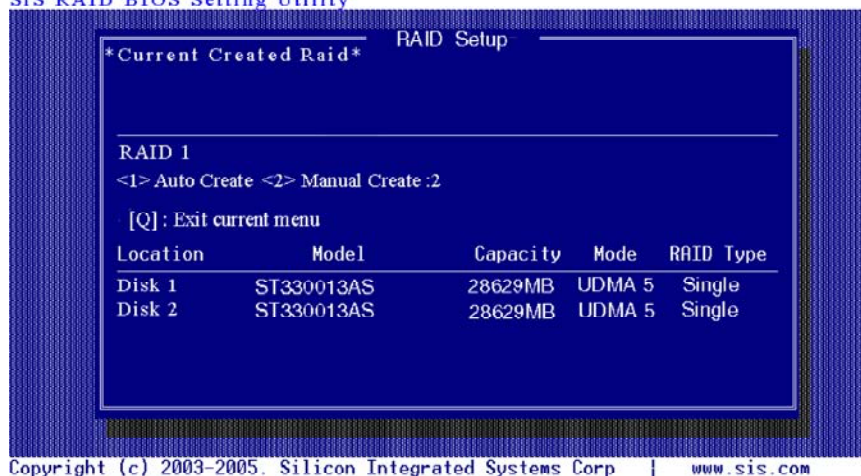
4. Use<↑> <↓> to select disk , and press <Enter> to select disk, <Q> to exit. When you press <Enter> on the disk you wanted, the RAID Type will be changed from Single to RAID 1. The same as RAID 0, the disk you select first will be the SOURCE disk.
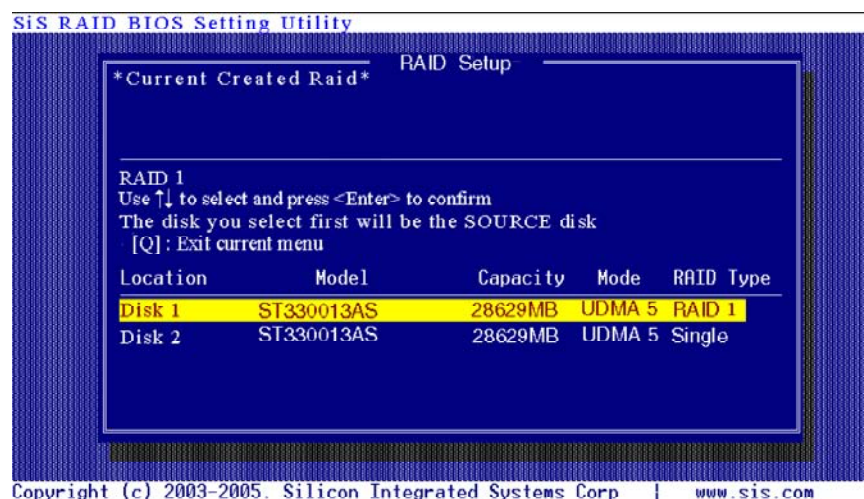
5. Next, you will see a message "Duplicate the SOURCE(Disk x) data to RAID disks?". Press <N> and <Enter> to create RAID 1 array only or press <Y> and <Enter> to duplicate the data from source disk to mirror disk.
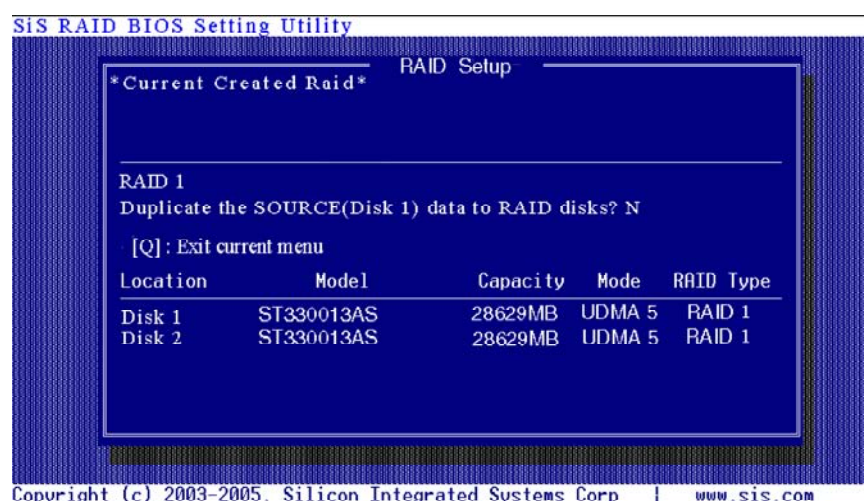
6. Starting duplicating action, the following frame will be showing.

```
SiS RAID BIOS Setting Utility
                              RAID Setup
 *Current Created Raid*


  RAID 1
  Please wait ..... \ Write 10%

   [Q] : Exit current menu

  Location        Model          Capacity   Mode    RAID Type
  Disk 1        ST330013AS       28629MB    UDMA 5   RAID 1
  Disk 2        ST330013AS       28629MB    UDMA 5   RAID 1




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```
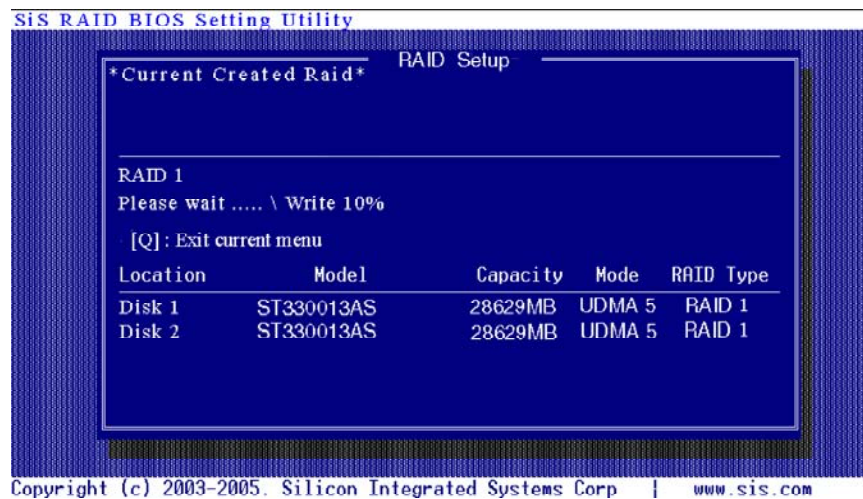
7. After all setps finished, press ＜Q＞ until escape the setup menu and RAID 1 array will be shown on the top of the main frame.

```
SiS RAID BIOS Setting Utility
                              RAID Setup
 *Current Created Raid*
  RAID 1 : Disk 1   Disk 2


  Press [D] key to delete RAID

   [Q] : Exit current menu

  Location        Model          Capacity   Mode    RAID Type
  Disk 1        ST330013AS       28629MB    UDMA 5   RAID 1
  Disk 2        ST330013AS       28629MB    UDMA 5   RAID 1




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```

8. Press <Q> until exit this BIOS utility and the red message frame will show as the same as the creation of the RAID 0 array. Press <Y> and <Enter> to save changes.
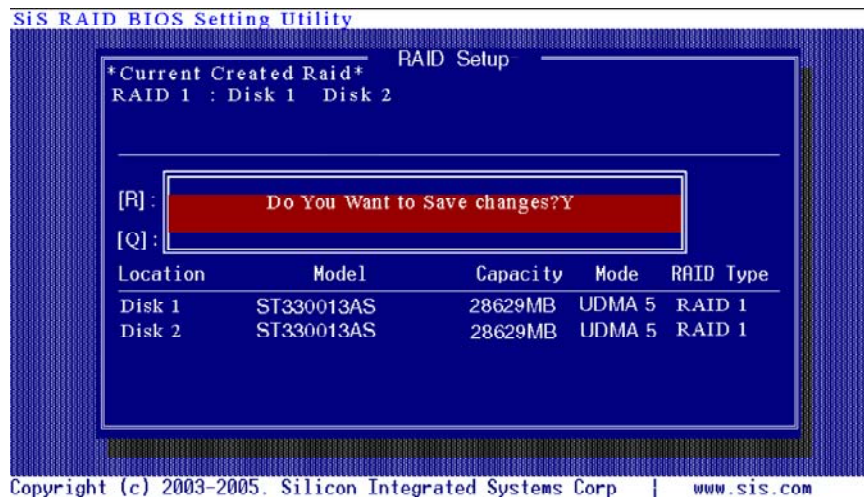
9. Once the array has been created, you will need to FDISK and FOR-MAT the array as if it were a new single hard drive.

■Createing JBOD Array

NOTE:
SiS964 only supports 2 SATA driver to create a JBOD arrays.

To create an array for best performance, follow these steps:

1. Press <A> to start creating a RAID array.

2. Press <1> and <Enter> to select JBOD.
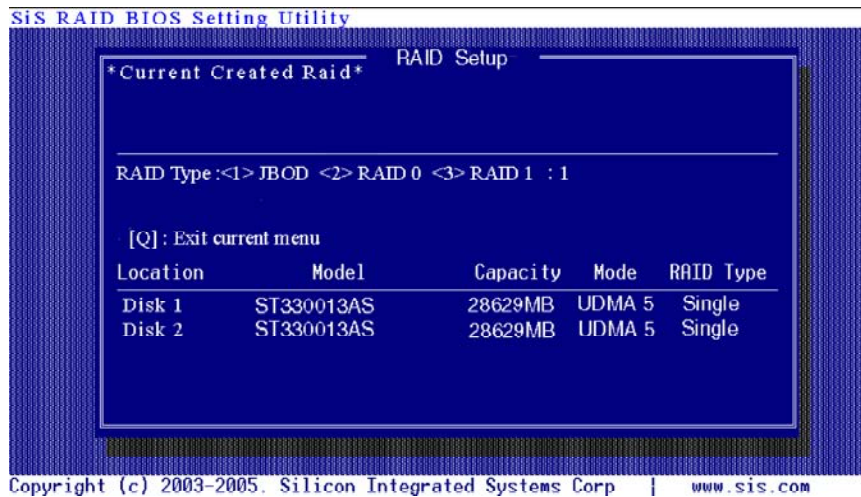
3.You will have two selections to create a JBOD array. The default value is <1>. If you select <1>Auto Create, you can create a JBOD array faster and easier. The result after creating will be shown on step 5. Besides, you also can select <2>Manual Create, see following steps.
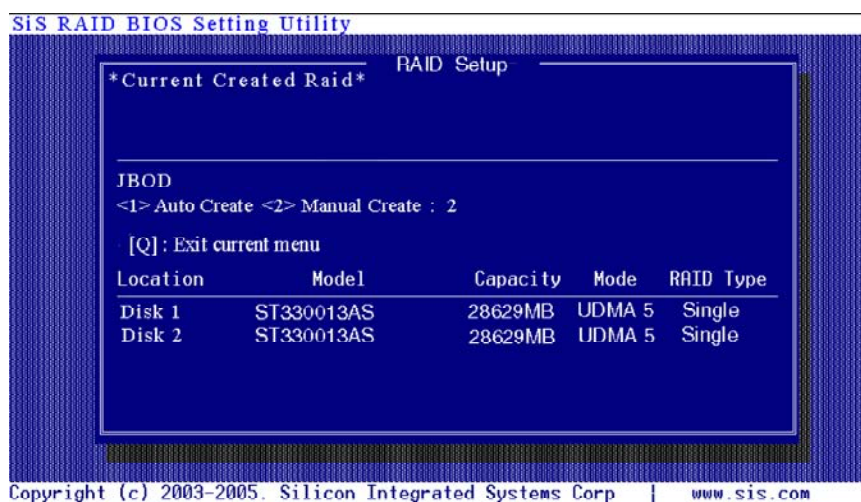
4. Use<↑> <↓> to select disk , and press <Enter> to select disk, <Q> to exit. When you press <Enter> on the disk you wanted, the RAID Type will be changed from Single to JBOD
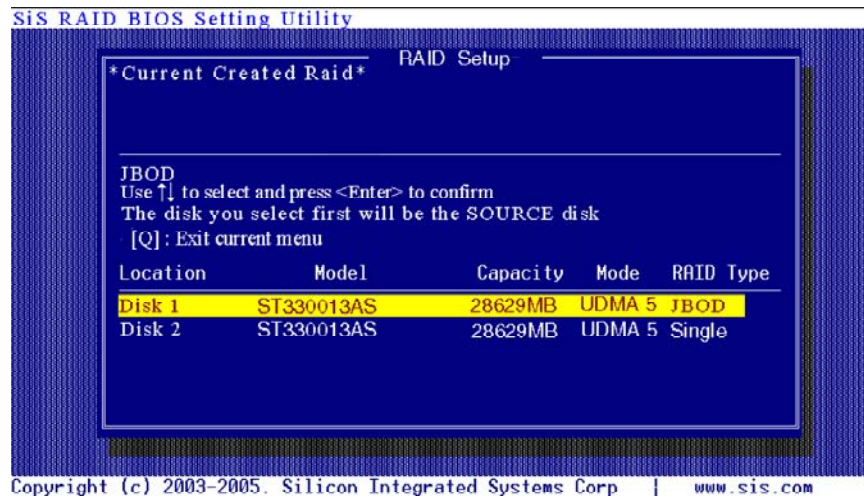
5. After all steps finished, press <Q> until escape the setup menu and JBOD array will be shown on the top of the main frame.
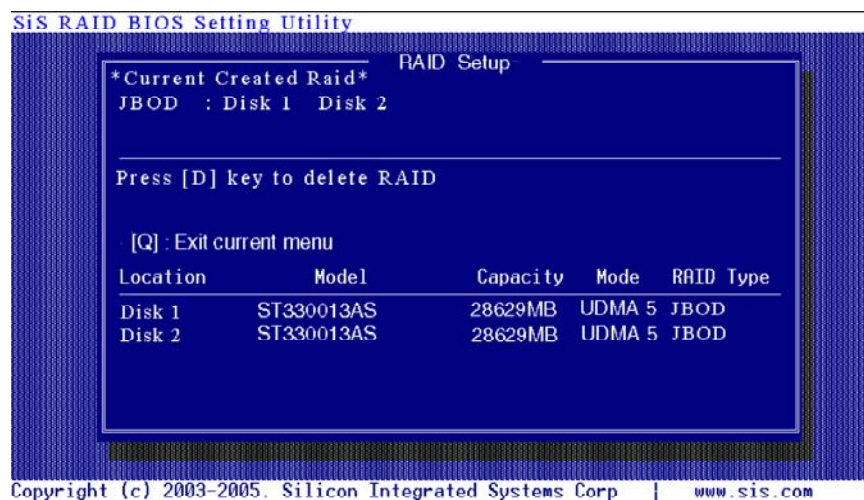
6. Press <Q> until exit this BIOS utility and the red message frame will show as the same as the creation of the RAID 0 array. Press <Y> and <Enter> to save changes.


```
SiS RAID BIOS Setting Utility

                                    RAID Setup
*Current Created Raid*
JBOD  :  Disk 1   Disk 2


[R] :
           Do You Want to Save changes?Y
[Q] :

Location        Model        Capacity   Mode   RAID Type

Disk 1     ST330013AS        28629MB   UDMA 5  JBOD
Disk 2     ST330013AS        28629MB   UDMA 5  JBOD



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```
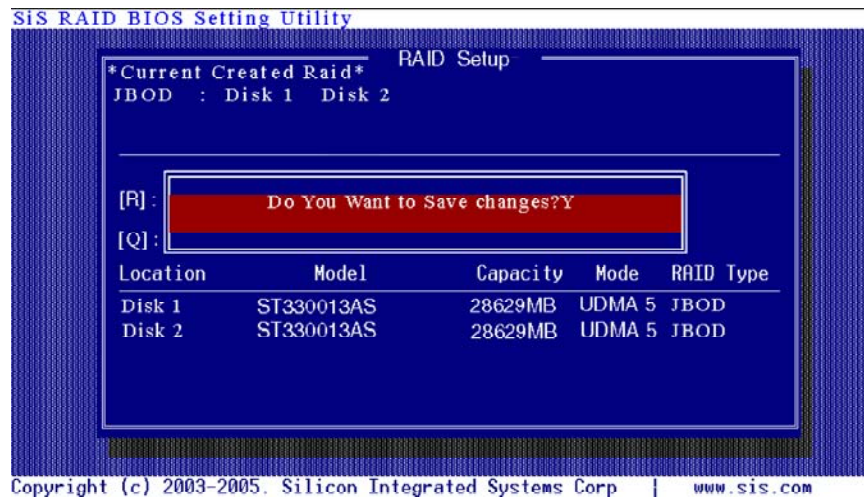
7. Once the array has been created, you will need to FDISK and FORMAT the array as if it were a new single hard drive.

■ Delete RAID

■ Starting to delete a RAID array

1. After enter the SiS964 Utility Main Menu, press <R> to display the RAID setup menu below. This is the fastest and easiest method to delete your first array.

SiS RAID BIOS Setting Utility

```
──────────────────────── RAID Setup ────────────────────────
*Current Created Raid*
RAID 0 : Disk 1   Disk 2


Press [D] key to delete RAID

 [Q] : Exit current menu

Location          Model           Capacity    Mode    RAID Type

Disk 1          ST330013AS        28629MB    UDMA 5   RAID 0
Disk 2          ST330013AS        28629MB    UDMA 5   RAID 0
```

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2. Press ＜D＞ to start deleting a RAID array, and use ＜↑＞＜↓＞ to
   select RAID array you wanted to delete.

SiS RAID BIOS Setting Utility

```
──────────────────────── RAID Setup ────────────────────────
*Current Created Raid*
RAID 0 : Disk 1   Disk 2



Use ↑↓ to select and press <Enter> to confirm

 [Q] : Exit current menu

Location          Model           Capacity    Mode    RAID Type

Disk 1          ST330013AS        28629MB    UDMA 5   RAID 0
Disk 2          ST330013AS        28629MB    UDMA 5   RAID 0
```

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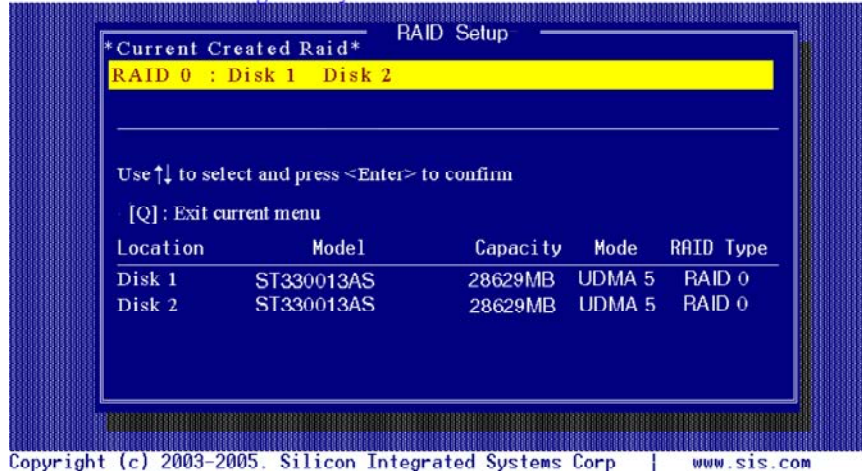
3. Press <Enter> to select the RAID array that you want to delete. And a message "Are you sure to delete this RAID?" will show on this frame.
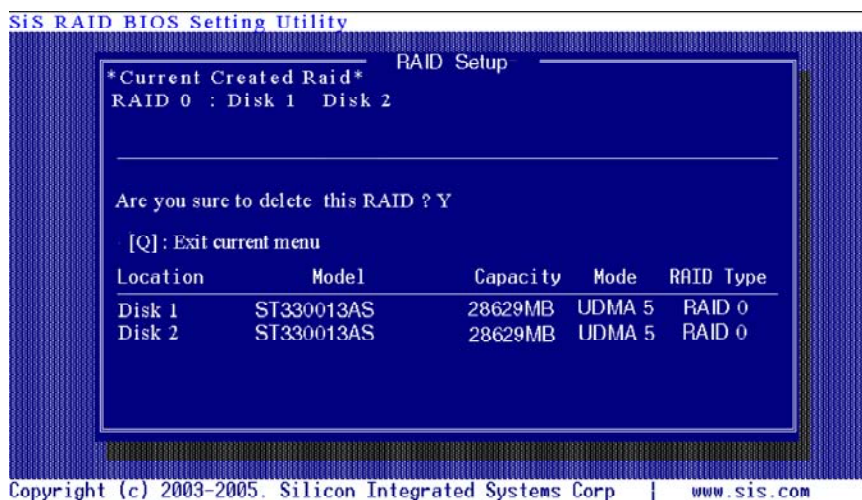
4. Press <Y> and <Enter>, the deleting action finish. And the RAID Type of all disk members of this RAID array will be changed from RAID 0 to Single.
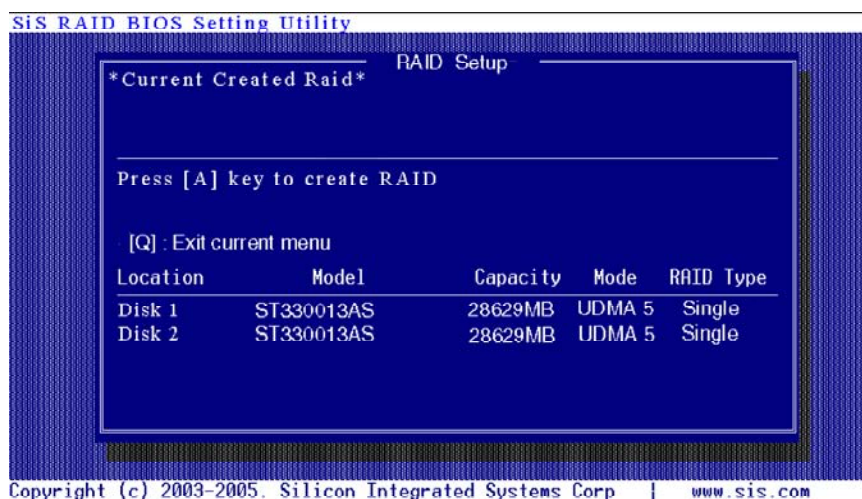
5. Press ＜Q＞ until escape the BIOS Utility, and the red message frame will show on it.
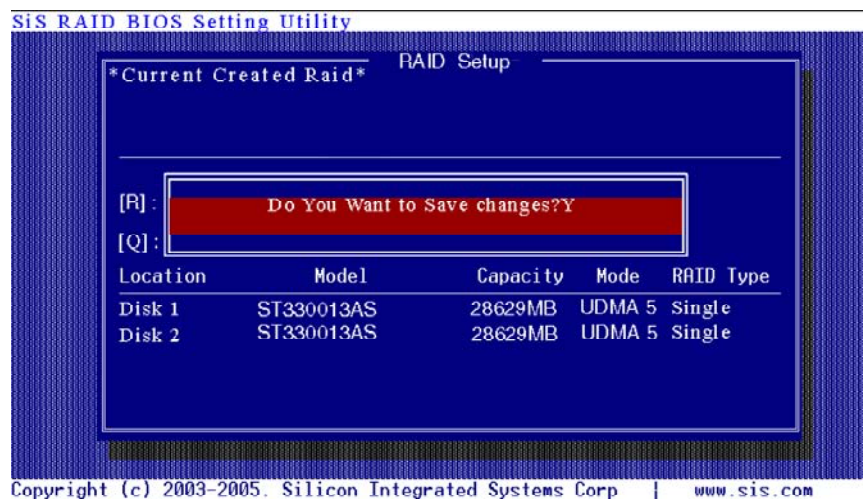
6. Press ＜Y＞ and ＜Enter＞to save all changes.

6. Step 4. SiS964 RAID Utility

NOTE:

1. For the best performance and reliability, please read "Performance Hints and Recommend Setting" section in Step 0.

2. This Utility only supports Windows XP/2000.

■Starting to use SiS964 RAID Utility

1. After installing the SiS RAID utility, go to "Start" menu and choose "Programs." From the "Programs" menu, choose "SiS RAID Utility" and click on "SiSRaid".

2. This SiS RAID utility will be resident in the toolbar. You can click the right button of the mouse on the SiS Raid Utility's icon and some selection will be popup. You can click "Exit" to close this resident utility or let it always be resident in the toolbar. Or click "SiS Raid" to open the SiS RAID Utility as Step (3). The "Help" will show the help document to tell you how to use this RAID Utility and the "About" will show as Step (5).

3. The SiS RAID Utility window opens as below. The main interface has two tabs: View and Configuration. You can switch to different tabs by clicking on it. On "View" tab, we can see some device information on different controllers. You can click the drop-down box "Adapter" to select the controller you want to use. The default value is the information of the first device on "SiS RAID controller 1".
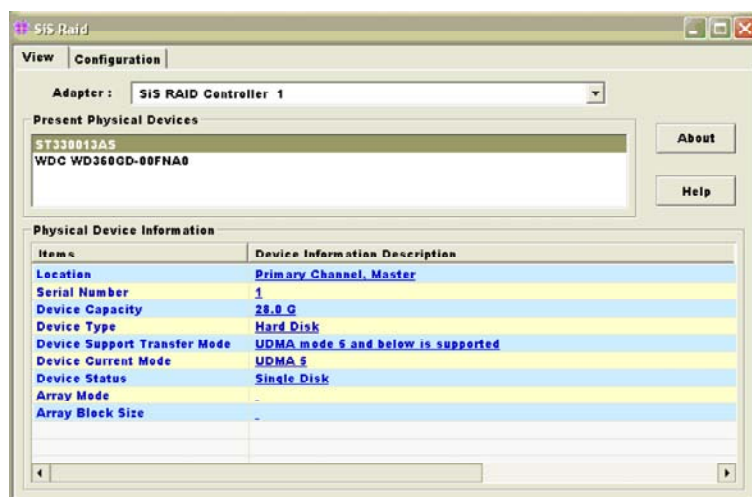
Besides, if this controller has some broken RAID existing, this AP will show some warning message on initial time. If this broken RAID is RAID 1 , it will tell you that you can go to the "Raid Recovery" tab to recovery this broken RAID 1.

4. Click the button "Help", you can open a help document that tell you how to use this RAID utility.

5. Click the button "About", you can find an about message. It show that RAID utility version (version 0.XX) and some copyright information.

6. Click the tab "configuration", you can find three tabs: Create Raid Delete Raid and Raid Recovery. In the same way, you can switch to different tabs by clicking on it.

■About Create Raid

Click the tab "Create Raid", you can find three drop-down box and three panes. Those meaning will be showing below.

■Viewing the "Create Raid"

a) Raid Type: Click the drop-down box "Raid Type". This box enables the user to select array type. There are four array types that the user can select: JBOD, RAID 0 (Stripe), RAID 1 (Mirror). User can select any one array type to create a RAID set.
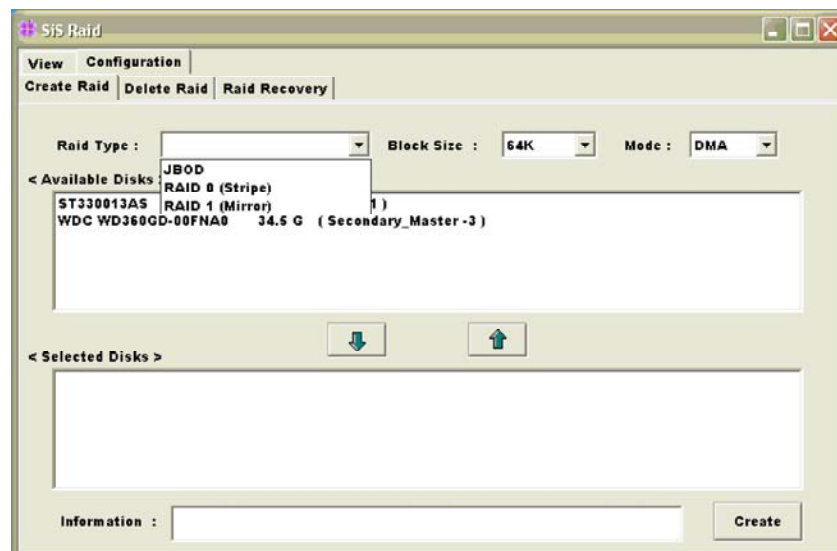
b) Block Size: If user selected RAID 0 array types in the "Array Type" box, the "Block Size" drop-down box will be enabled and user must select a block size. Clicking the drop-down box "Block Size", there are seven block size that the user can select: 8k, 16k, 32k, 64k, 128k, 256k and 512k. User can select any one block size to create a RAID 0 set. The default selection is 64k.
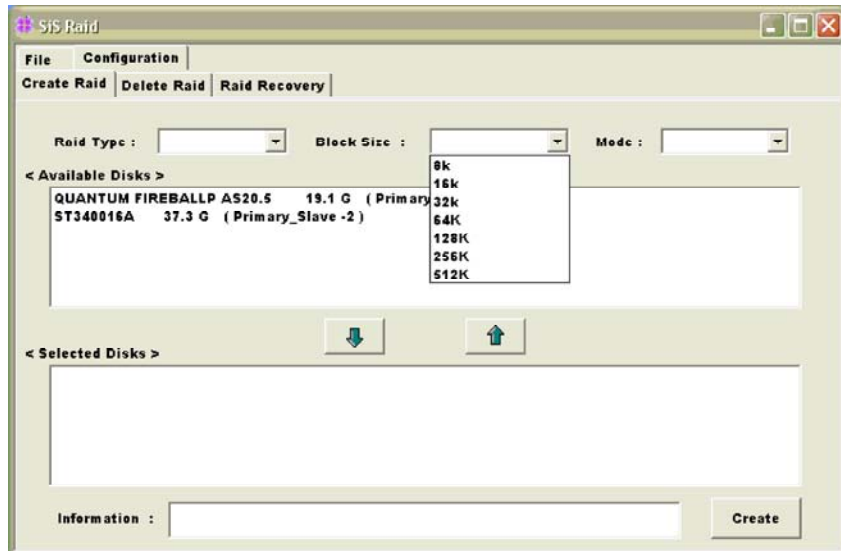
c)　　Mode Type: Click the drop-down box "Mode Type". This box
enables the user to select mode type. There are two mode types that
the user can select: PIO and DMA. User can select any one mode
type to create a RAID set. The default selection is DMA.
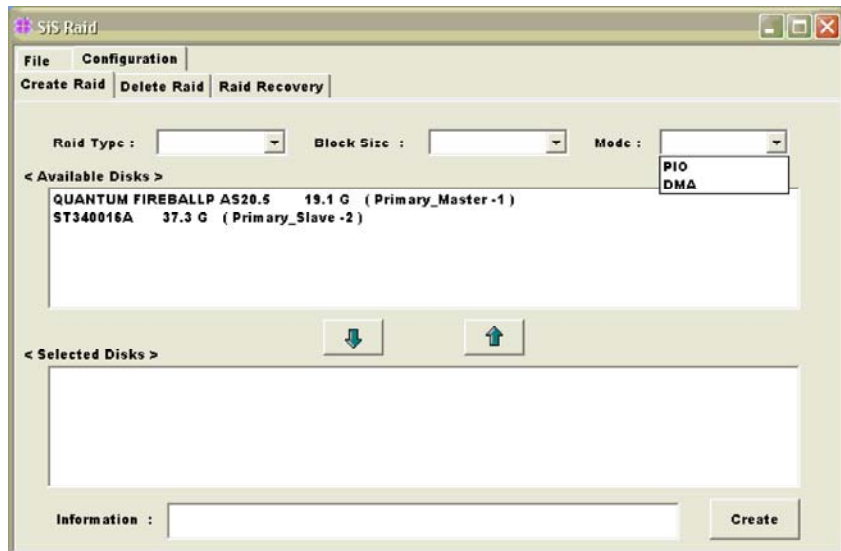
d)   Available Disks: This pane will list out all the disks that can be used to create a RAID set currently. It will show some disk information (ex. Location, serial numbers, the ability of boot and the status of recovering).
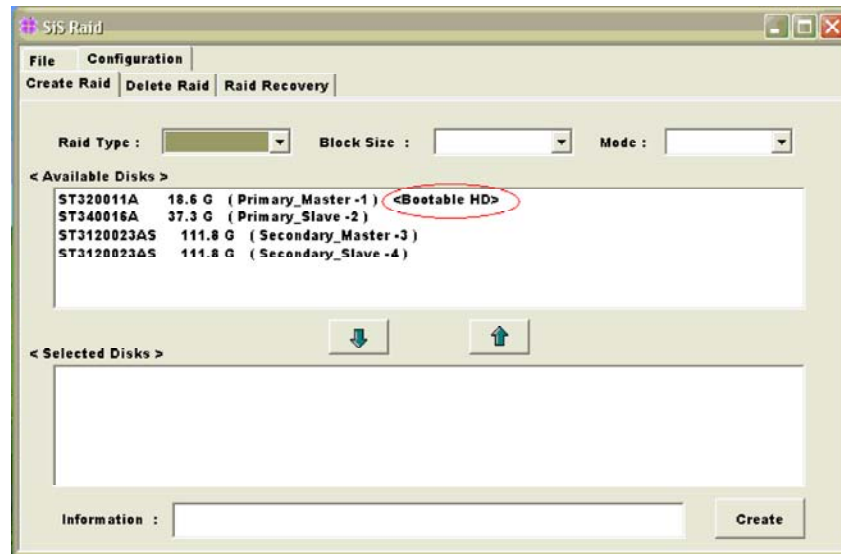
e)   Selected Disks: This pane will list out all the disks that have been selected to create a RAID set. User can highlight the specific disk that we wants in the "Available Disks" pane and click the downward arrow icon or double click the marked disk to select the disk into the "Selected Disks" pane. In the same way, user can click the upward arrow icon or double click the marked disk in the "Selected Disks" to get back the disk that we might select wrong to the "Available Disks" pane.

f)   Information: This pane will show the information about creating a RAID set after clicking the button "Create". The information may be "Please select the <Raid Type> first!", "Please select the <Mode Type> first!", "Please select the <Block Size> first!", "Please select the disk you want first!", "Mirror supports TWO DISKS only.", "Raid Created successful! Reboot please!!" or "Raid Creation failed!"

■Create a RAID set

a) To create a JBOD array, follow these steps:
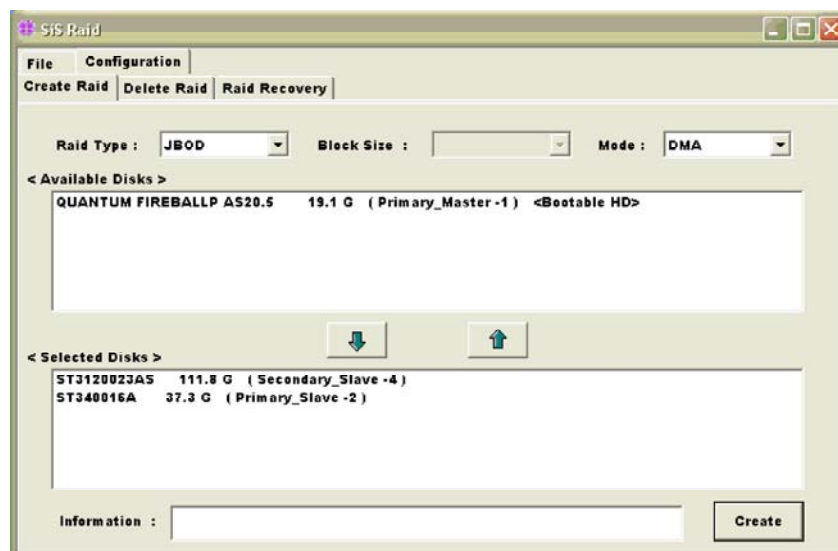
NOTE: You must have at least two hard disks to create a JBOD array.

1. "Configuration"→"Create Raid"→ "Raid Type" → JBOD.

2. From the drop-down box "Mode Type", select the mode type you want or use the default value "DMA".

3. From the "Available Disks" pane, select the disk and click downward arrow icon or double click it to add the disk on the "Selected Disks" pane.

4. When the JBOD array's configuration is finished, click the button "Create". Then a warning message will be popup. Pay attention to the warning message, and then click "Yes" button to finish the creation of JBOD array, or click "No" button to cancel.
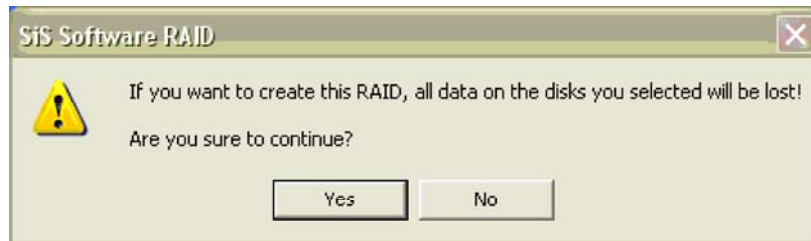
NOTE: If the disk you selected has the ability of booting, another warning message will be popup before "SiS Software RAID" message. You can click "Yes" button to continue or click "No" button to cancel.
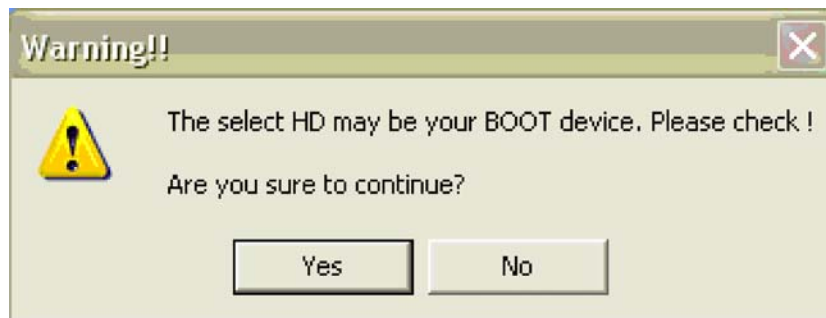
5. Next, another message box will be popup to tell user that disk setting has been changed and ask whether to restart the computer or not. Click "Yes" button to restart the computer and you can get new setting. Or click "Cancel" button to skip restarting.
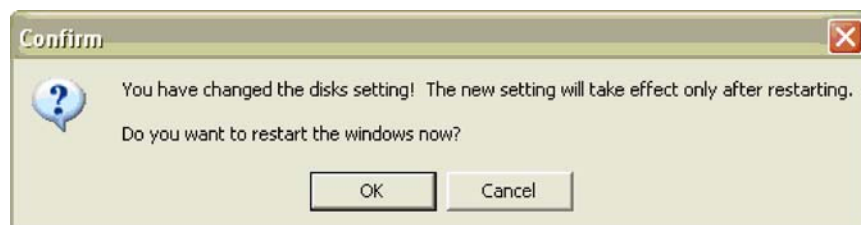
b) To create a RAID 0 (Stripe) array, follow these steps:

> NOTE: You must have at least two hard disks to create a RAID 0 array.

1. "Configuration"→"Create Raid"→ "Raid Type" → RAID 0.

2. From the drop-down box "Mode Type", select the mode type you want or use the default value "64K".

3. From the drop-down box "Mode Type", select the mode type you want or use the default value "DMA".

4. From the "Available Disks" pane, select the disk and click downward arrow icon or double click it to add the disk on the "Selected Disks" pane. This action is the same as the operation to create a JBOD array.

5. When the RAID0 array's configuration is finished, click the button "Create". Then a "Create Stripe RaidSet" dialog will be popup.

NOTE:

Source: The first selected disk.

Target: All other disks but first one.

Create Only: This operation will destroy all data on all the selected disks and create a clean stripe array without any data on it.

＜Split data into Raid0 Set＞

Source is NOT a boot device: Split operation will split data from source disk into all the selected disks. In this operation, the source disk can't be a boot device.

Source is a boot device: This operation is similar to "Source is NOT a boot device" operation, but the source disk is a boot device.

Ok: Start the selected operation.

＜Disk Copy Remaining Sector＞: Show the remaining splitting data sector numbers.

~ ~

Note: MiniCapacity x N > SourceCapacity

MiniCapacity:The minimum size of all selected disks.

SourceCapacity: The size of source disk.

N: Total disk numbers.

~ ~

6. Next, you can click "Ok" button to continue after the operation being selected. The differential warning messages will be popup following the differential operations. If the operation is "Create Only", the warning messages are similar to JBOD array creation.
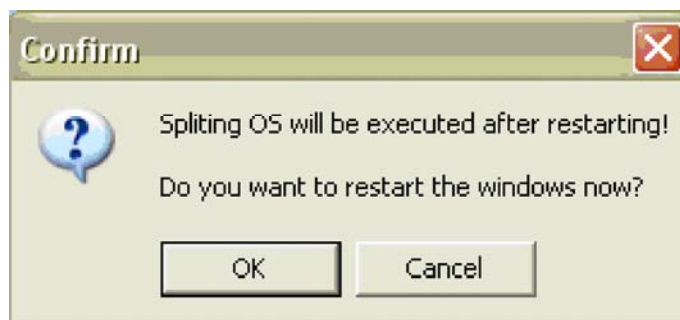
7. If the operation is "Source is NOT a boot device" of <Split data into Raid0 Set>, the following warning message will be popup, seeing below:
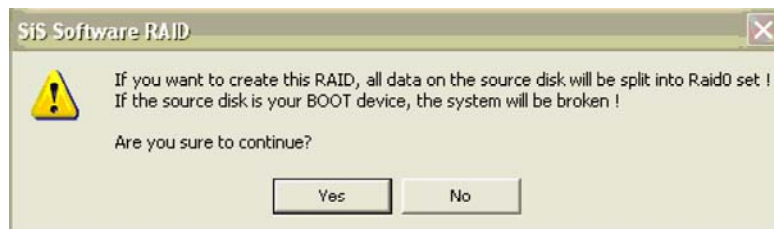
Next, you can click "Yes" button to start the operation or click "No" button to cancel. When you click "Yes" button to start this operation, the following warning message will be popup.
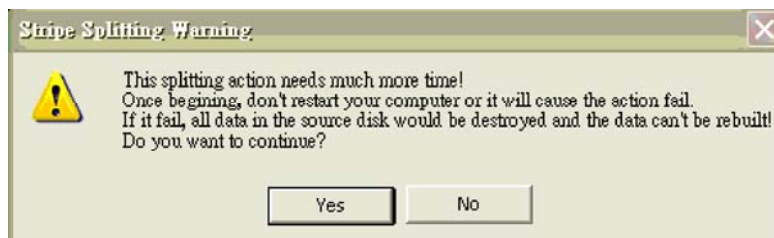
Next, you can click "Yes" button to start the operation or click "No" button to cancel. When you click "Yes" button to start this operation, the operation will begin.

When this operation is beginning, you still can click the destroy button on the "Create Stripe RaidSet" dialog to stop this operation. But this action will cause the data of the source disk broken. And the following message will be popup to remind you

8. If the operation is "Source is a boot device" of <Split data into Raid0 Set>, the following warning message will be popup, seeing below:
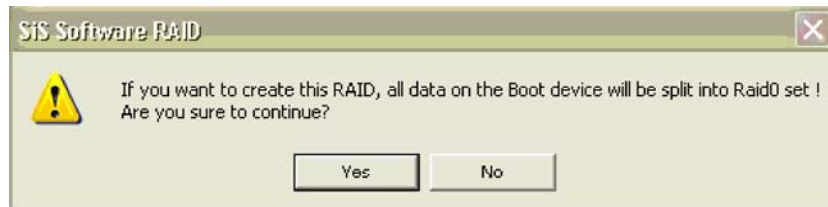
Next, you can click "Yes" button to start the operation or click "No" button to cancel. When you click "Yes" button to start this operation, the following warning message will be popup.
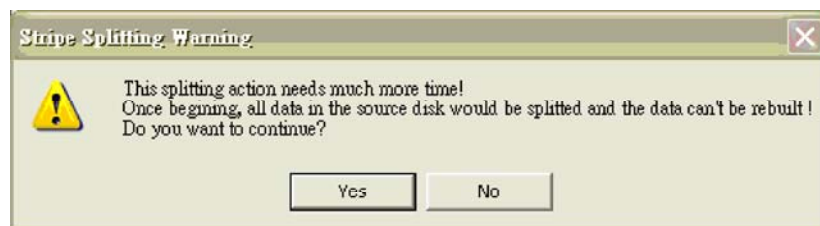
Next, you can click "Yes" button to start the operation or click "No" button to cancel. When you click "Yes" button to start this operation, the following warning message will be popup.

Next, you can click "Ok" button to restart the windows and start the operation "Source is a boot device" of <Split data into Raid0 Set>. Or click "Cancel" button to suspend this operation. But, this operation is still done after restarting the windows next time.

c) To create a RAID 1 (Mirror) array, follow these steps:

NOTE: The RAID1 array supports two hard disks only.

1. "Configuration"→"Create Raid"→ "Raid Type" → RAID 1.

2. From the drop-down box "Mode Type", select the mode type you want or use the default value "DMA".

3. From the "Available Disks" pane, select the disk and click downward arrow icon or double click it to add the disk on the "Selected Disks" pane. This action is the same as the operation to create a JBOD array.

4. When the RAID 1 array's configuration is finished, click the button "Create". Then a "Create Miror RaidSet" dialog will be popup.
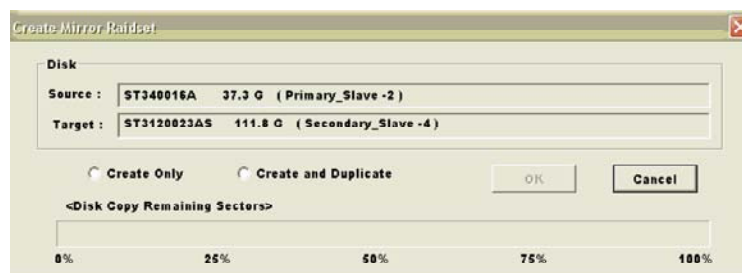
NOTE:

Source: The first selected disk.

Target: All other disks but first one.

Create Only: This operation will destroy all data on all the selected disks and create a clean stripe array without any data on it.

Create and Duplicate: Duplicate operation will reserve data on the source disk and copy them onto the target disk.

Ok: Start the operation.

Cancel:Cancel the operation.

＜Disk Copy Remaining Sector＞: Show the remaining splitting copying data.

5. Next, you can click "Cancel" button to leave or click "Ok" button to continue after the operation being selected. The warning messages will be popup following the differential operations. If the operation is "Create Only", the warning messages are similar to JBOD array creation.

6. If the operation is "Create and Duplicate", the following warning message will be popup, seeing below:
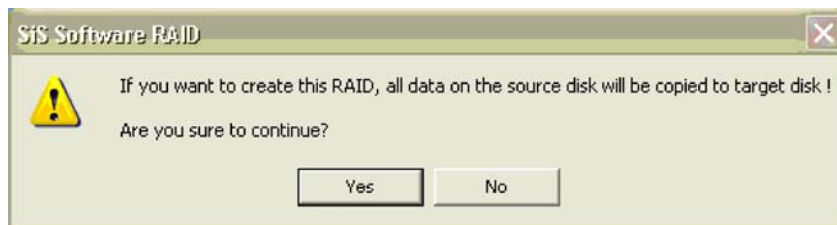
Next, you can click "Yes" button to start the operation or click "No" button to cancel. When you click "Yes" button to start this operation, the following warning message will be popup.

Click "OK" button to start this duplicating action. Don't restart your computer or it will cause the action fail.

7. When the operation is finished, the restart warning message will be popup as well as JBOD array creation.

■About Delete Raid

Click the tab "Delete Raid", you can find some panes and two buttons.
The RaidType meaning will show below.

■Viewing the RaidType meaning

General case: RAID0(A=BC|DE)

＜Meaning＞

RAID0: Raid Type
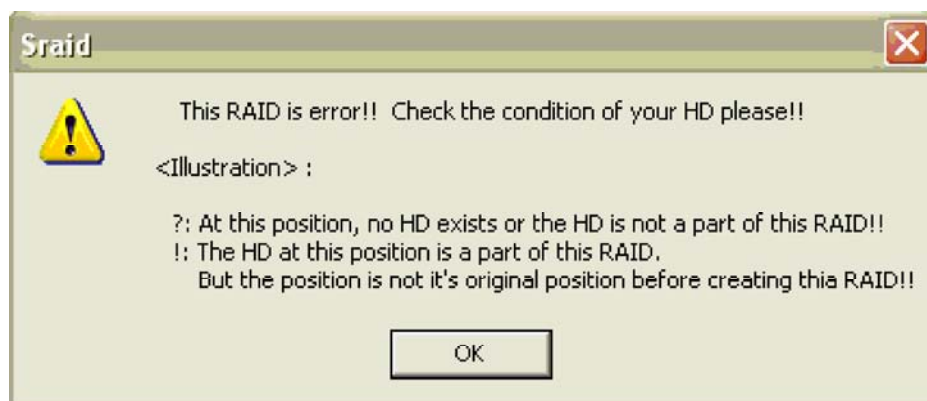
A: total number of disks in this Raid
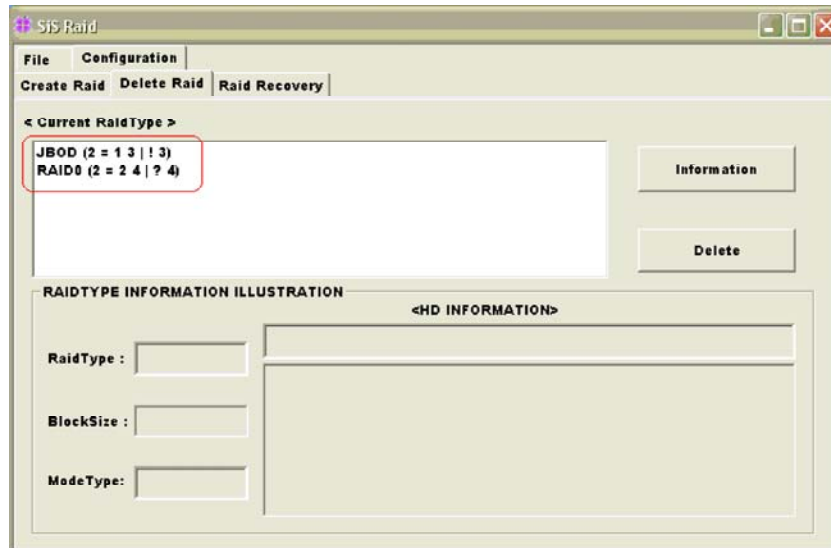
B,C: the serial number of each disk in this Raid

D,E:　a) Raid is correct, B=D　C=E
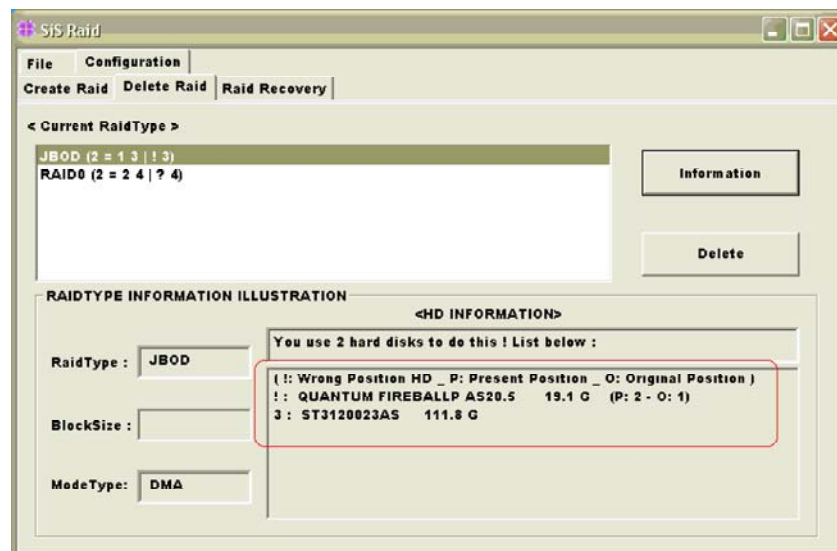
b) Raid is error, D or E will show "?" or "!"

In which, the meaning of "?" and "!" will show below.

Sraid

This RAID is error!!　Check the condition of your HD please!!

<Illustration> :

?: At this position, no HD exists or the HD is not a part of this RAID!!
!: The HD at this position is a part of this RAID.
　But the position is not it's original position before creating thia RAID!!
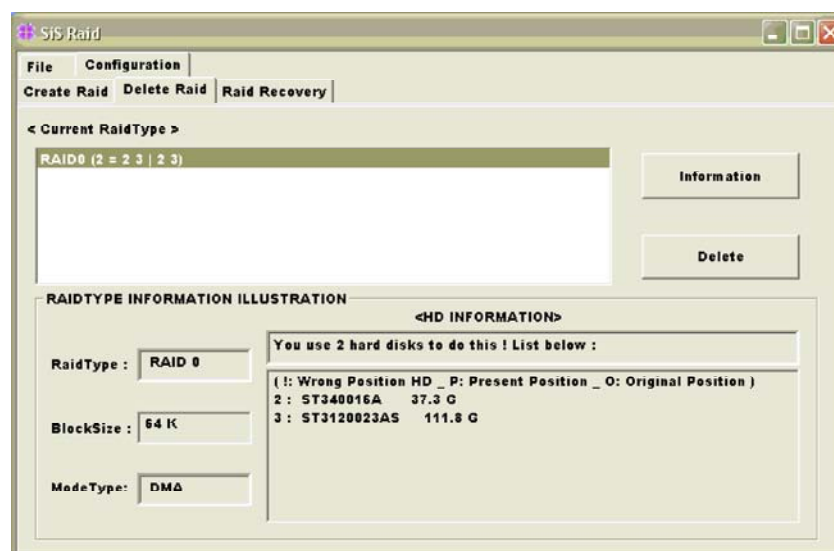
OK

＜Example＞

＜Showing its information＞

■Delete a Raid set

    a)   To delete a JBOD, RAID0 or RAID1 array, follow these steps:

1."Configuration" ¡÷ "Delete Raid", the following windows will appear:
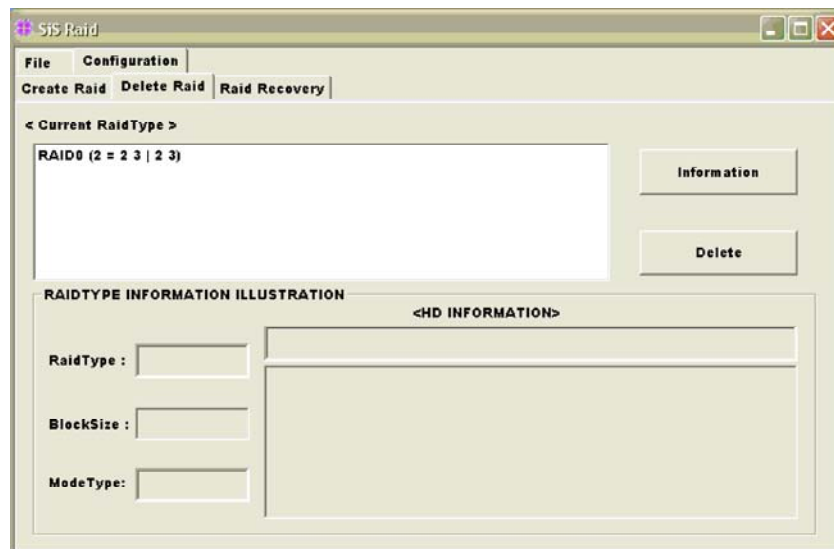

2. Highlight the disk array in the "Current RaidType" pane, and then click the "Information" button or double click the array. You can get some information about the disk array.

3. If you want to delete a disk array you selected, you can highlight the disk array and then click the button "Delete". Then a warning message will be popup, and pay attention to the warning message. You can click "Yes" to delete the selected disk array or click "No" to cancel.
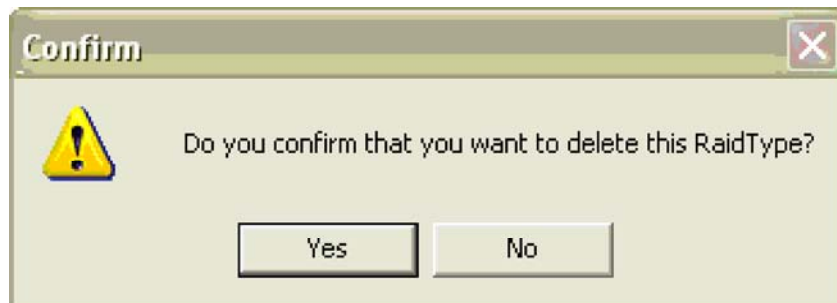
4. Next, another message will be popup to tell user the setting of these disks have been changed and ask whether to restart the computer.
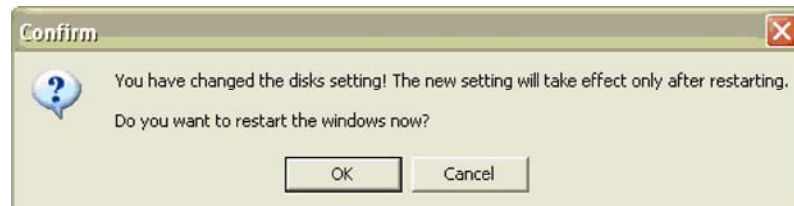
■About Raid Recovery

Click the tab "Raid Recovery", you can find two panes and some buttons. Those meaning will be showing below:

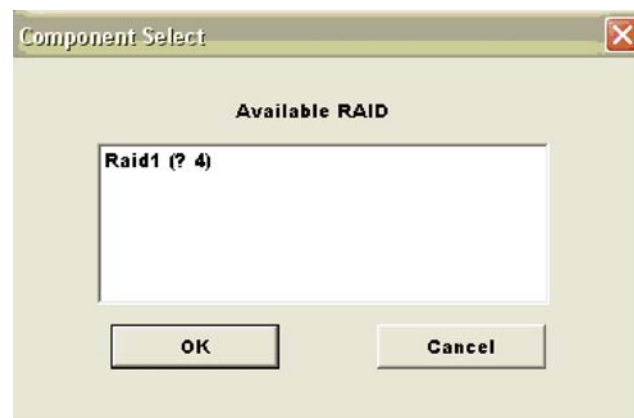# ■Raid Recovery Operation

Click the tab "Raid Recovery", you can find two panes and some buttons. Those meaning will be showing below:

NOTE:

a) First, you can click the button "Available Raid" to find whether any error Raid set existing. See below:

Next, highlight the error Raid set you want to recovery. And you can click the button "Ok" to continue or click "Cancel" to cancel this operation.

b) After "Available RAID" selected, click the button "Available Disk" to find whether any empty hard disk existing. See below:
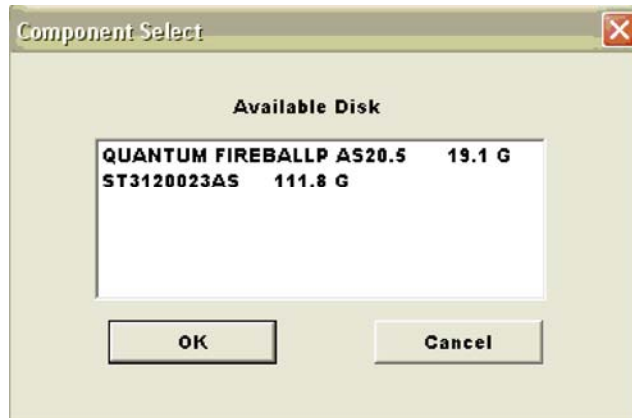
Next, highlight the empty hard disk you want to select. And you can click the button "Ok" to continue or click "Cancel" to give up this selection.

c) When the "Available Raid" and "Available Disk" is finished, you can click the button "Start" to start this operation. And the button "Start" will become "Pause". Then you can click the button "Pause" to pause the thread operation. And the button "Pause" will become "Start". Or you can click the button "Stop" to cancel this operation. This operation can be broken off if you want to close this RAID utility or shut down your computer, and it can continue when you open this RAID utility again or restart you computer next time.