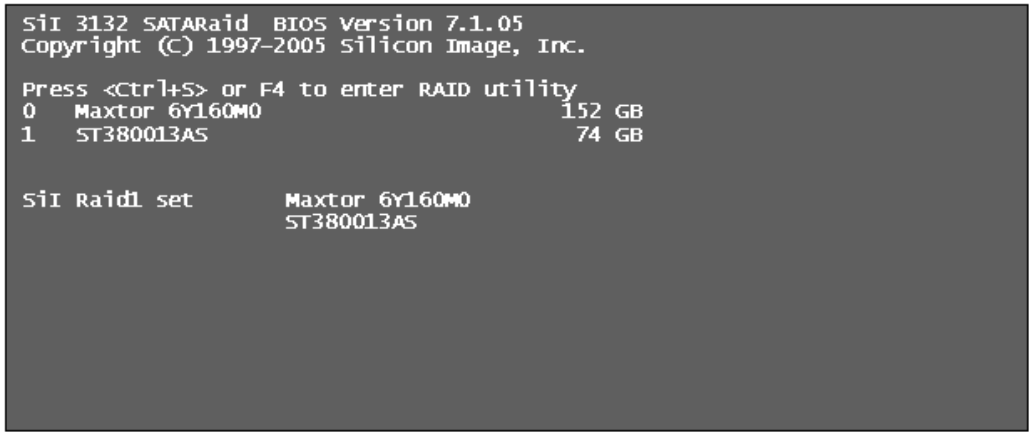
3 Managing Legacy RAID Groups with the BIOS RAID Utility

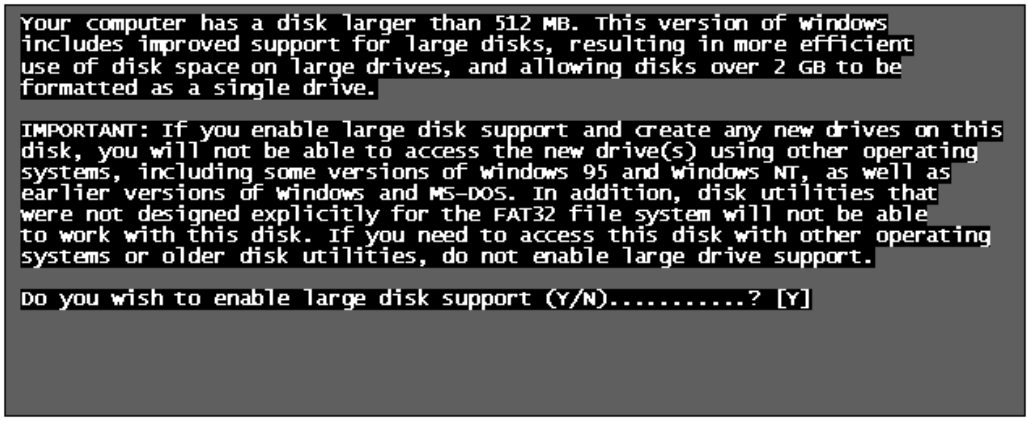
On Windows and Linux platforms with RAID controllers that have two or more ports, you can create and manage legacy RAID sets and JBOD using the BIOS RAID utility or the SATARAID5 GUI. You can create and manage new RAID groups only from the SATARAID5 Manager GUI.

Utility Overview

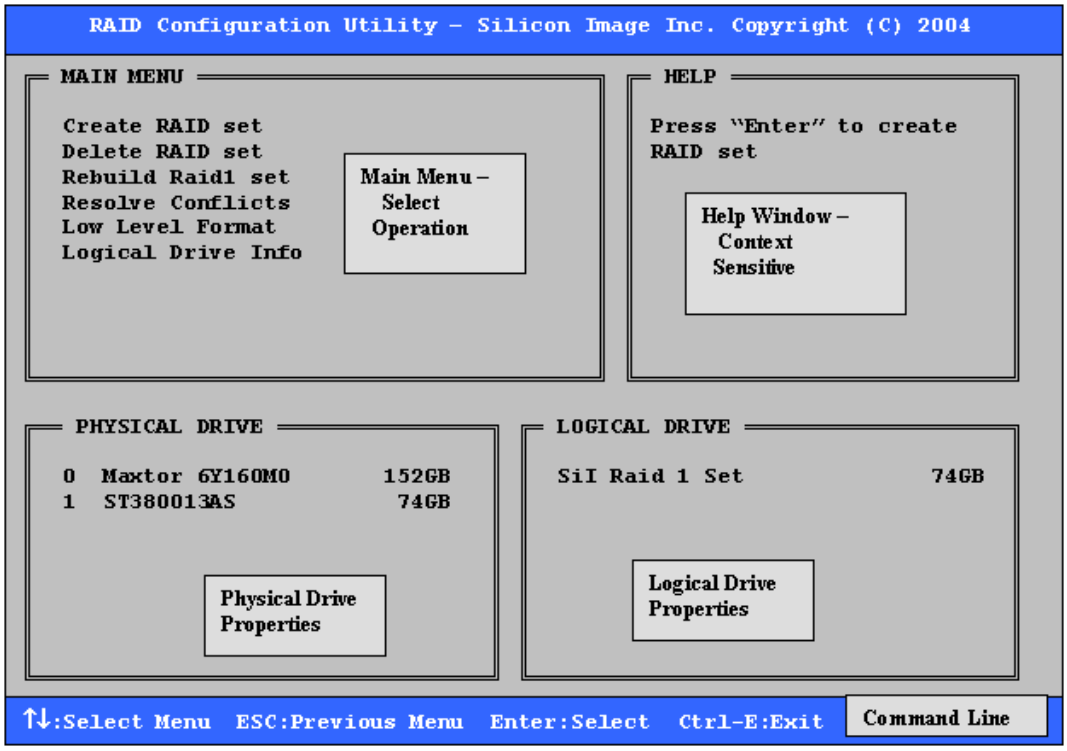
During the system boot-up process and before the Operating System loads, the following message appears for about 5 seconds. Press CTRL+S or the F4 key to enter the BIOS RAID utility.



If you are prompted whether to enable large disk support, respond **Y** so that you can create RAID groups on large disks that the BIOS RAID utility detected.



The RAID Configuration Utility screen is divided into four main sections and a command line.



- The Main Menu section in the upper left lists actions to be performed. Select:
  - Create RAID Group to create a new legacy RAID Set or allocate legacy spare drives.
  - Delete RAID Group to delete a legacy RAID Set or de-allocate a legacy spare drive.
  - Rebuild RAID 1 Set to initiate the rebuild of a RAID 1 set after replacing a drive in the Group.
  - Resolve Conflicts to find the member drives of a disrupted RAID set and restore the Set to proper operation. Do this after moving physical drives.
  - Low Level Format to wipe the data from a single drive. Do not format drives assigned to Sets or allocated as spares.
  - Logical Drive Info to show the current configuration of each RAID set, allocated spare, and unallocated physical drive attached to the SATA host adapter.
- The Help section in the upper right displays context-sensitive help and status messages.
- The Physical Drive section in the lower left displays the model number and capacities of the drives physically attached to the SATA host adapter.
- The Logical Drive section in the lower right displays all logical drives connected to the controller.
  - RAID sets and JBOD drives reported to the system BIOS are listed at the top of this section.
  - Spare drives, reserved drives, conflict drives, and invalid drives not reported to the system BIOS are listed at the bottom of this section.
- The Command Line at the bottom of the screen lists the currently active command keys. Use:
  - Up and Down arrows to select a menu option or action.
  - ESC to go to the previous menu.
  - Enter to select the highlighted choice.
  - Ctrl-E to exit the utility.

  Other keys may be active depending upon the currently selected action.

Reserved Logical Drives and RAID Set Sizes

When you create a RAID set, spare drive, or JBOD on a physical drive, the BIOS RAID utility saves metadata for the configuration in a reserved area of the physical drive. That metadata is not deleted when a RAID set or drive is deleted. After a set or drive is deleted, the BIOS RAID utility recognizes the physical drive as a reserved logical drive and does not report the drive to the system BIOS.

When creating a RAID set, spare drive, or JBOD, one creation parameter is the size of the set or drive. You can accept the default size or you can use the ↑ and ↓ keys to change the size.

- If the physical drive has not yet been used to create a RAID set or drive, the BIOS RAID utility shows the full size of the physical drive as the default size.
- If the physical drive has previously been used, the utility shows the size that was saved in the reserved area of the physical drive.

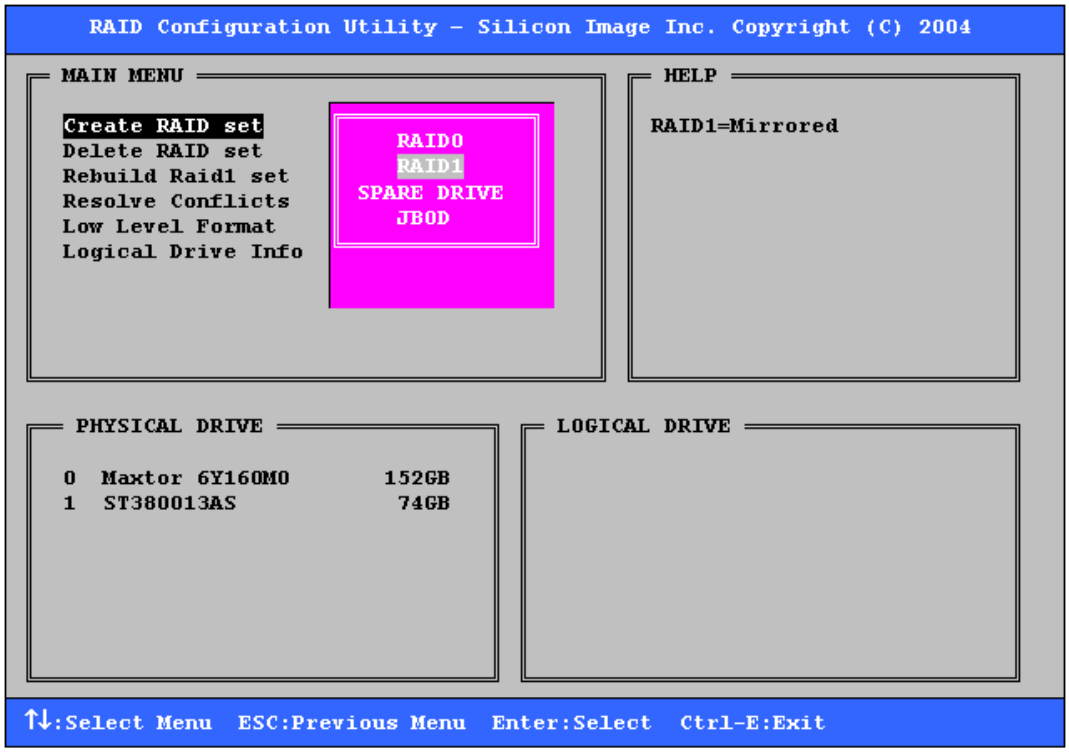
When you increase the default size (using the ↑ key), the utility displays a warning message in the Help section of the RAID Configuration Utility screen and waits for you to confirm the size increase before changing the default size.

Creating RAID Groups (Sets)

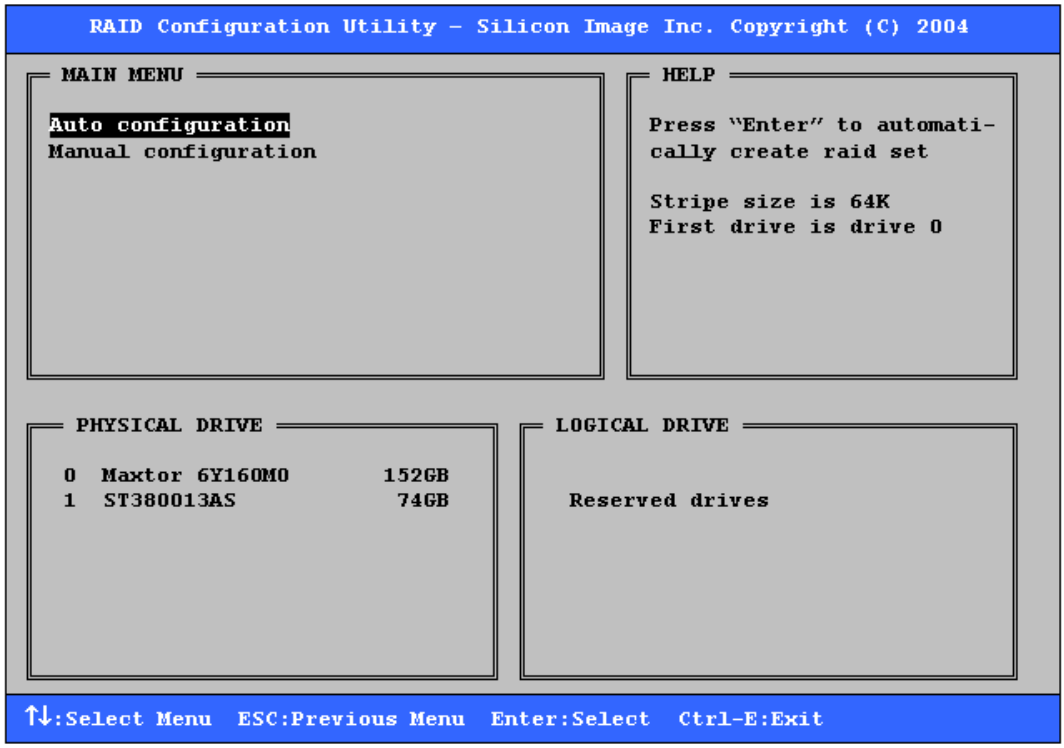
Select from RAID0, RAID1, and JBOD configurations when creating a new RAID group. Select a RAID level based on factors such as performance, data security, and number of drives available. Consider the long-term role of the system and plan the data storage strategy appropriately.

1. Select **Create RAID set** from the Main Menu section of the RAID Configuration Utility screen.
2. Select RAID0 (Striped) or RAID1 (Mirrored) and press **Enter**.

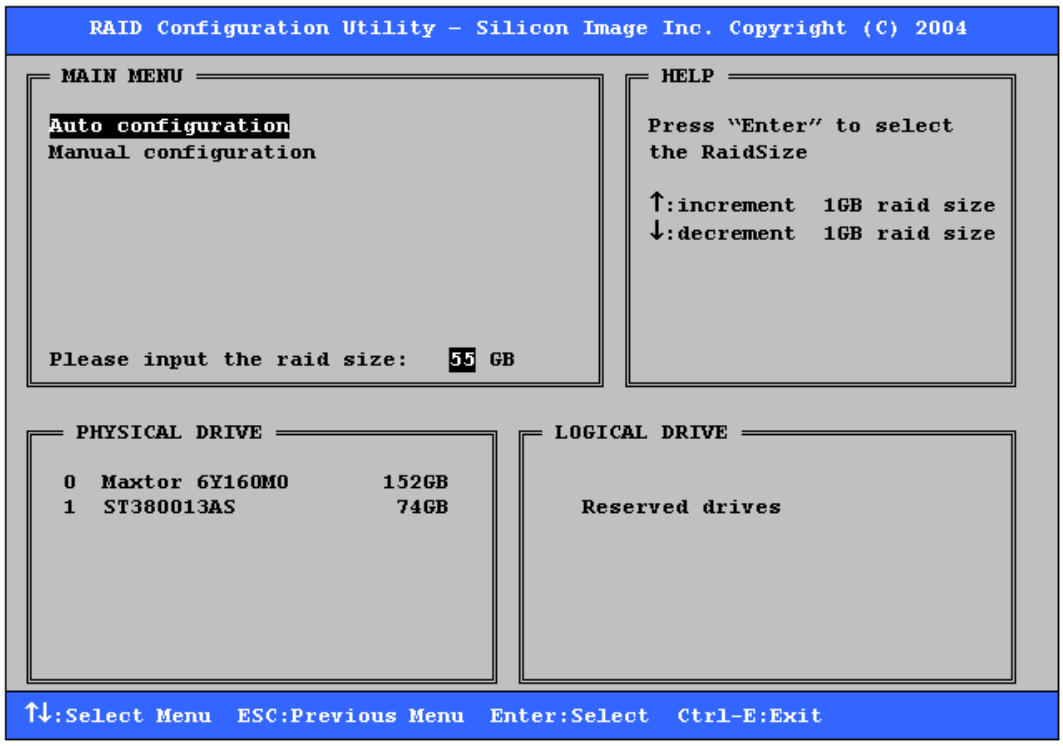
Note: *Procedures to create a JBOD configuration or a spare drive for a RAID1 set are documented separately. See Creating a JBOD Configuration and Creating a Spare Drive for a RAID1 Group.*



3. Select **Auto configuration** or **Manual configuration** of the RAID Set and press **Enter**.
   - If you select **Auto configuration**, the BIOS RAID utility selects RAID member drives automatically and sets the chunk (stripe) size for striped sets to 64KB.
   - If you select **Manual configuration**, select the chunk size for Striped Sets or select the Source and Target drives for mirrored sets.



4. Select the size of the RAID set with the ↑ and ↓ keys and press **Enter**.



5. When the **Are You Sure?** confirmation prompt appears, respond **Y** to complete the RAID Set configuration.

Note: *If you have excess capacity left on the hard drives after creating a RAID set in the BIOS RAID utility, you can later go to the SATARAID5 Manager GUI to create additional logical drives that fully utilize the capacity of all hard drives.*

Creating a JBOD Configuration

The BIOS RAID utility does not report non-RAID drives to the system BIOS. If a non-RAID boot drive or data drive is desired, create a JBOD so the BIOS RAID utility will report the drive to the system BIOS.

1. Select **Create RAID set** from the Main Menu section of the RAID Configuration Utility screen.
2. Select **JBOD** and press **Enter**.
3. Select **JBOD drive** from the Physical Drive list and press **Enter**.
4. Select the size of the JBOD drive with the ↑ and ↓ keys and press **Enter**.
5. When the **Are You Sure?** confirmation prompt appears, respond **Y** to complete the JBOD configuration.

Creating a Spare Drive for a RAID1 Group

If a RAID 1 set exists, you can create a spare drive for the set. The spare drive can then be allocated to the RAID 1 set if a drive in the RAID 1 set fails.

1. Select **Create RAID set** from the Main Menu section of the RAID Configuration Utility screen.
2. Select **Spare Drive** and press **Enter**.
3. Select a spare drive from the Physical Drive list and press **Enter**.
4. Select the size of the spare drive with the ↑ and ↓ keys and press **Enter**.
5. When the **Are You Sure?** confirmation prompt appears, respond **Y** to complete the spare drive creation.

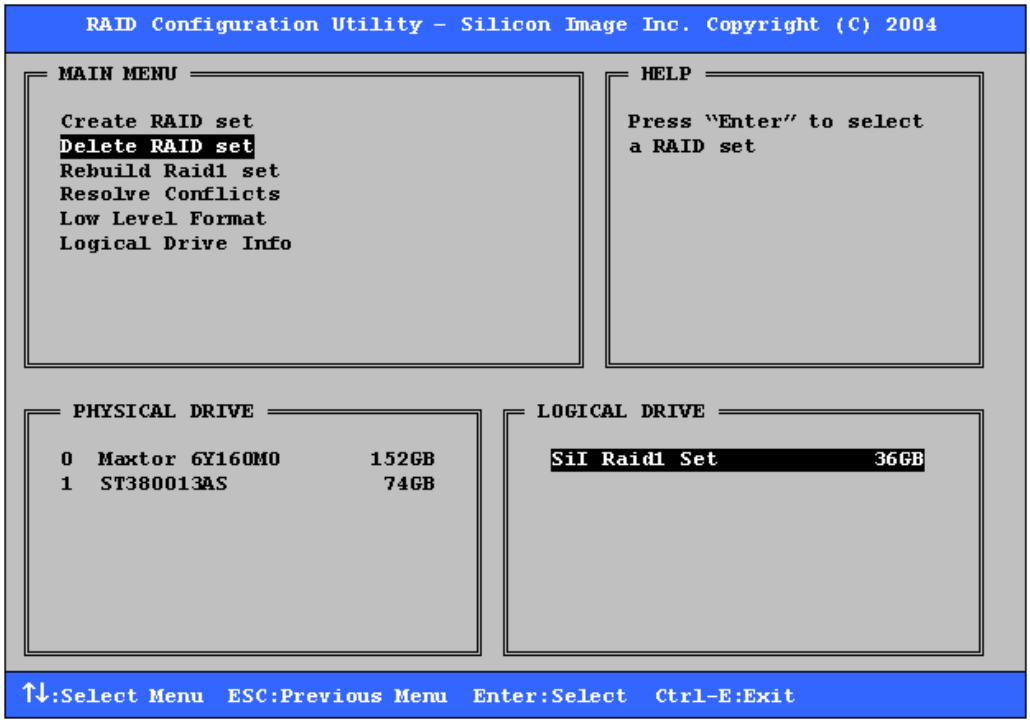
Additional BIOS RAID Main Menu Options

This section documents additional actions you can perform by selecting menu options in the Main Menu section of the RAID Configuration Utility screen.

Delete RAID Set

Use the Delete RAID set menu option to remove a RAID set, spare drive, or JBOD.

1. Select **Delete RAID set** from the Main Menu section of the RAID Configuration Utility screen.
2. Select the item to delete from the Logical Drive list and press **Enter**.



3. When the **Are You Sure?** confirmation prompt appears, respond **Y** to delete the selected RAID set, spare drive, or JBOD.

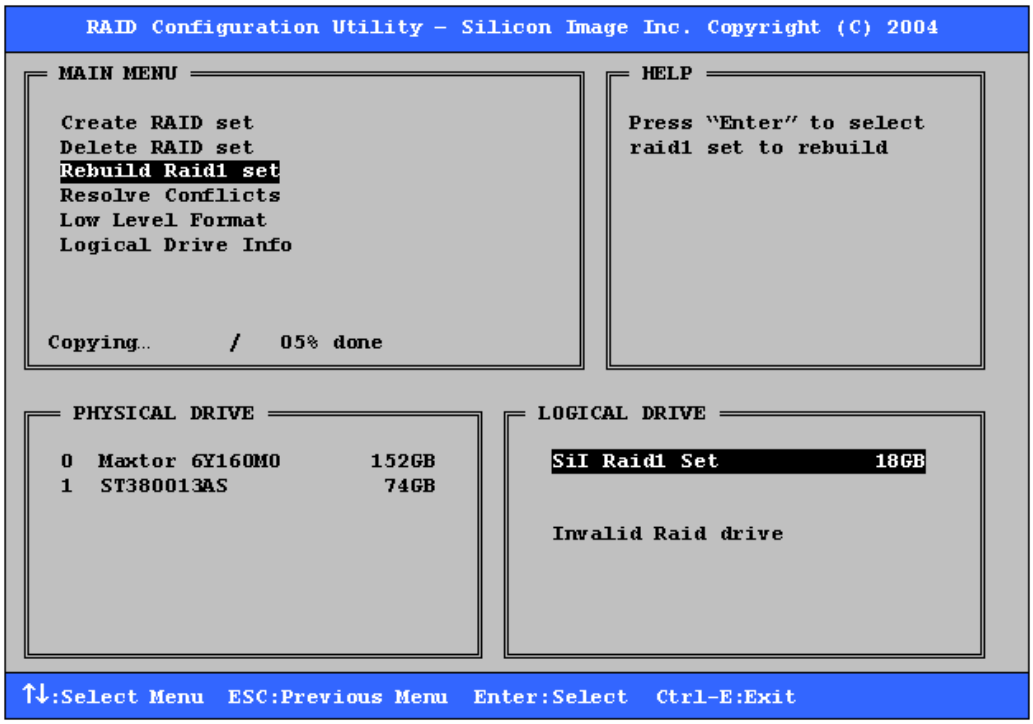
   The screen then displays a selection of logical drives from which to create a new RAID set.

Note: *After you delete a RAID Group, be sure to delete any partition information that may have been associated with that RAID Group.*

Rebuild RAID1 Set

Rebuilding a RAID1 set copies data from an existing drive to a replacement drive that has been installed in a RAID1 set. Take this action if any member of the RAID1 set fails.

1. Select **Rebuild Raid1 set** from the Main Menu section of the RAID Configuration Utility screen.
2. Select the RAID1 set to rebuild from the Logical Drive list and press **Enter**.



3. When the **Are You Sure?** confirmation prompt appears, respond **Y** to rebuild the RAID1 set.

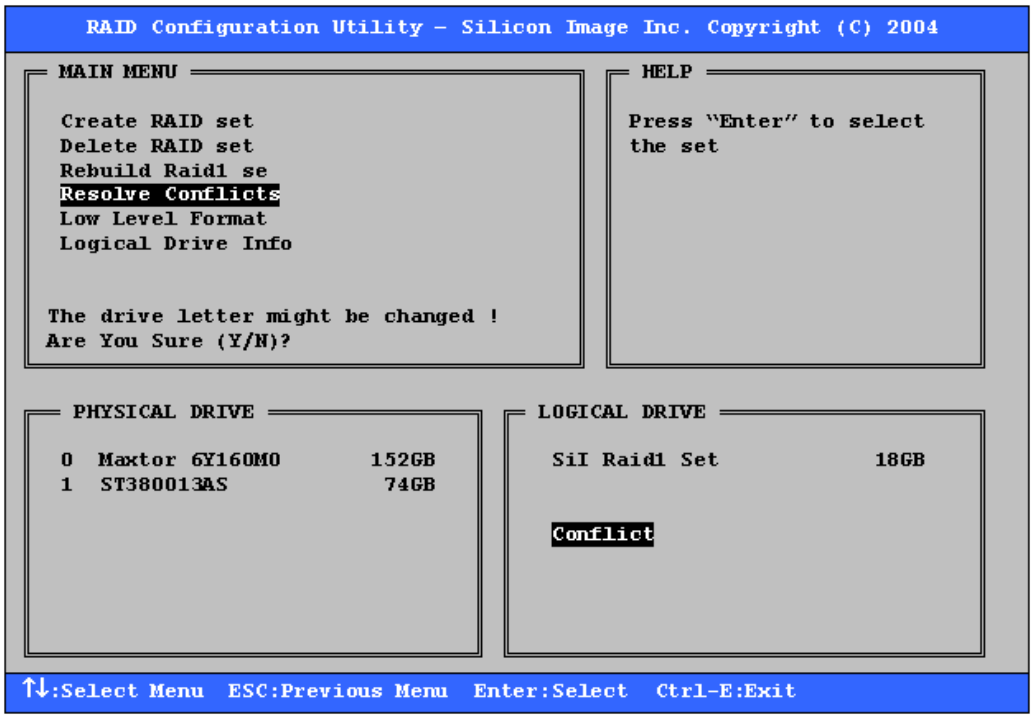
   The set is rebuilt. A progress indicator appears in the Main Menu section during the rebuild.

Resolve Conflicts

When a RAID set is created, metadata of drive-connection information, including the channel on the host adapter to which it is connected, is written to the disk. If a newly installed replacement disk was previously part of a RAID set or was used in another system, the replacement disk may have conflicting drive-connection metadata. This prohibits the RAID set from being created or rebuilt.

In order for the RAID set to function properly, use the Resolve Conflicts menu option to write new metadata with the correct drive-connection information to the replacement disk.

1. Select **Resolve Conflicts** from the Main Menu section of the RAID Configuration Utility screen.
2. Select the **Conflict** entry in the Logical Drive section and press **Enter**.



Some conflict resolutions may result in changing the drive letter assignment. For example, the RAID set may have been drive D, and after the conflict resolution, it becomes drive E. To maintain the same drive lettering, the SATA cables connected to the drives may need to be swapped, or in the case of a SATA-based removable drive unit, the order of the drives within the chassis may need to be changed.

3. When the **Are You Sure?** confirmation prompt appears, respond **Y** to resolve the conflict.

   The conflict is resolved and the RAID Set appears in the Logical Drive section.

Low Level Format

The Low Level Format menu option displays a pop-up menu with the following actions:

- Format 1st Part(ition), which removes the first Silicon Image partition on the disk.
- Secure Format, which formats the entire disk.
- Quick Format, which removes the first Silicon Image partition on the disk plus the last 1GB that contains the Silicon Image meta-data describing partitions.

Note: *The Low Level Format actions are typically not required, because formatting the drive under Windows is sufficient to prepare the drive for use.*

Logical Drive Info

The Logical Drive Info menu option displays the assignment of physical drives within a logical set (RAID set, RAID 1 spare, or unassigned).

- Use the up and down arrow keys to scroll between the drives in the Logical Drive list.
- Press the ESC key when you are finished viewing logical drive information.