



Server Systems and Motherboards

*Raid Configuration and
Driver installation guide*

For Adaptec 7902W chip

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1. RAID Configuration

GIGABYTE server systems and motherboards that a RAID supports is comply with the following RAID solutions:

- **Hardware RAID:** Use dedicate hardware to control RAID array, and supposed to doing RAID 0, 1, 1+0, 5 configurations through software utility.
- **Software RAID (Host RAID):** Use BIOS setup and management utility complete RAID 0, 1, 1+0, Spare configurations and support Ultra 320 products.
- **SATA RAID:** Adaptec SATA RAID is embedded in the Intel south bridge chip, depending on the specific configure, it is support up to two SATA hard disk drives and RAID support 0, 1, JBOD configuration.

1.1 RAID Definition

RAID 0, Striping supports up to two SCSI disk drives to read and write data in parallel. Even two hard disk drives reliability the same as single disk, but offers higher performance than a single disk. If one disk fails then all data in the array is lost.

RAID 1, Mirroring copy from one hard disk to second hard disk such both of them contains exactly the same data, in case of failure of one disk, the system will boot through the second disk and data is still available to use therefore.

RAID 1+0 is a combine with data striping and data mirroring. Take a stripe pair of disks and mirror them completely in parallel architecture. Excellent solution for RAID 10 provides fast and highly fault tolerant.

1.2 Installing hard disk drives

In general, we suggest using the same model and capacity disk drives to create RAID array.

1. Install the disk drives into the drive bays of the respective GIGABYTE server or motherboard.
2. Select cables suitable for your disk drives.
3. Connect power code to hard disk on each HDD.
4. Enable or Disable SCSI termination.

Note → Please make sure your SCSI controller support U160 or U320 SCSI device and find suitable for your SCSI disk, cable and terminator.

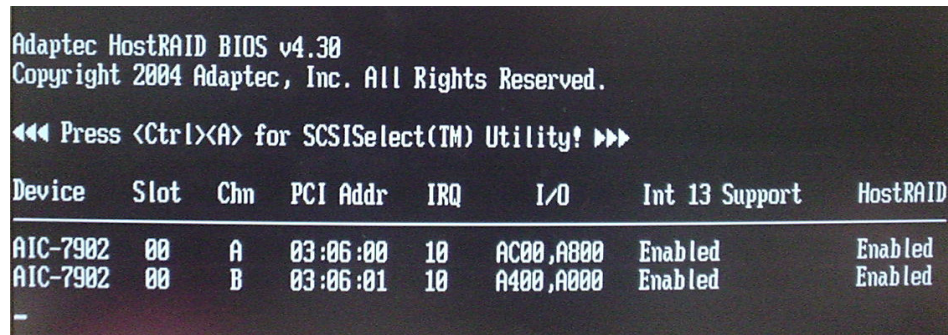
1.3 Setting the RAID in BIOS

Since onboard RAID controller option, please enable onboard H/W SCSI capability of the BIOS utility before you creating.

- 1) During the POST screen, please enter the BIOS setup utility.
- 2) Into **Advance Menu** > click **Integrated Peripherals** screen item.
- 3) Choose **Onboard Device** item > **Onboard H/W SCSI [Enable]**.
- 4) Save your change and Exist BIOS setup.

1.4 Adaptec 7902W RAID configuration utility

Adaptec 7902W RAID controller is built-in BIOS code, even you create software RAID after detected SCSI devices that you need to start SCSI select utility by pressing "**Ctrl+A**" during the controller BIOS startup.

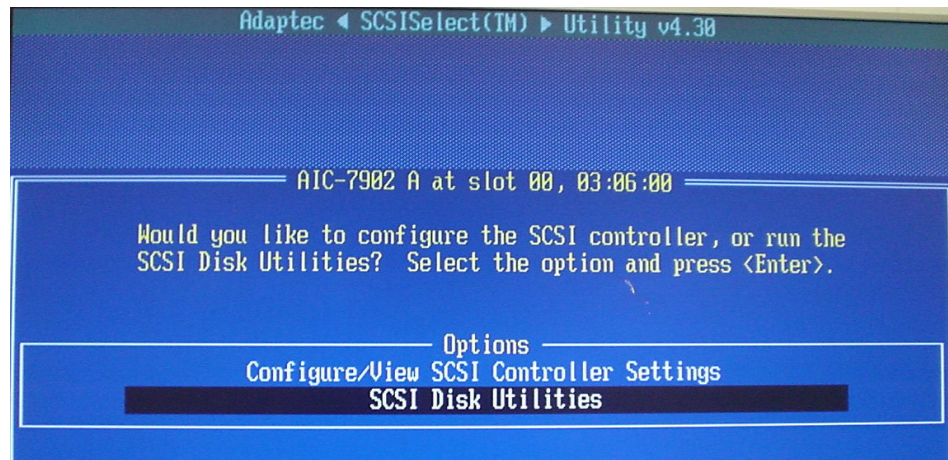


Adaptec HostRAID BIOS v4.30
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◀◀ Press <Ctrl><A> for SCSISelect(TM) Utility! ▶▶

Device	Slot	Chn	PCI Addr	IRQ	I/O	Int 13 Support	HostRAID
AIC-7902	00	A	03:06:00	10	AC00,A800	Enabled	Enabled
AIC-7902	00	B	03:06:01	10	A400,A000	Enabled	Enabled

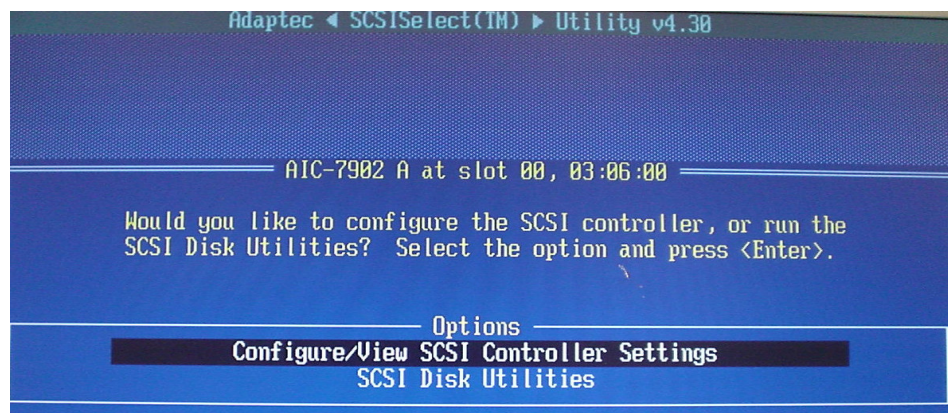
The illustrator is an Adaptec 7902W host RAID utility; you can set SCSI capability on options window.



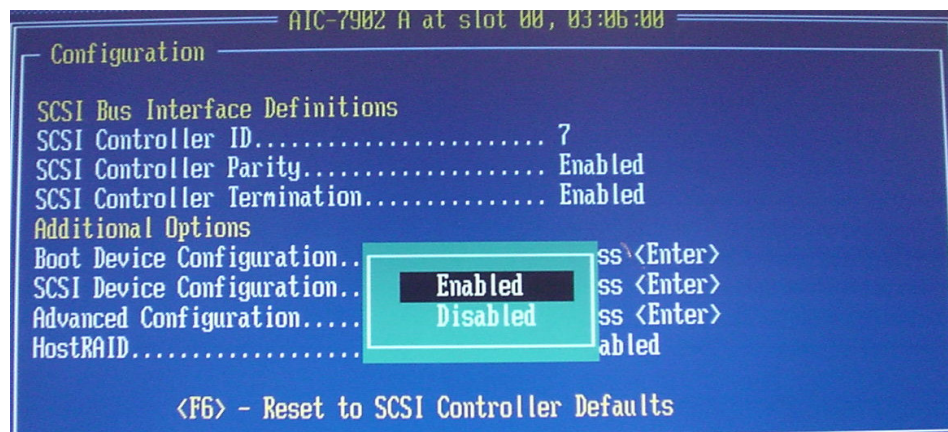
After into **SCSI Disk Utility** screen, you can check your SCSI hard disk drives be detected on your system, in general, a SCSI bus can support up to 15 devices and the controller connected to its 16-bit bus.



Return **Options**, choose "**Configure/View SCSI Controller Settings**".



Select HostRAID options and "**Enabled**" it.



Click "**Configure/ View HostRAID settings**" icon that will allow you to check and create RAID array or Spare capability of SCSI hard disk drives.

AIC-7902 A at slot 00, 03:06:00

Create, Spare, Delete, Rebuild, Verify, Bootable

ID	Type	Vendor	Product	Size	Status
0	Hard Drive	SEAGATE	ST373453LC	73GB	Free
1	Hard Drive	SEAGATE	ST373453LC	73GB	Free
2	Hard Drive	SEAGATE	ST373453LC	73GB	Free
3	Hard Drive	SEAGATE	ST373453LC	73GB	Free

1.4.1 Create a RAID 0 (Stripe)

From the Create RAID menu, please click "**RAID-0 (High Performance, No Fault Tolerance)**" that disk drives set requires for the maximum of 4 drives.

Adaptec < SCSISelect(TM) > Utility v4.30

AIC-7902 A at slot 00, 03:06:00

Create RAID

ID	Vendor	Product	Size
0	SEAGATE	ST373453LC	73GB
1	SEAGATE	ST373453LC	73GB
2	SEAGATE	ST373453LC	73GB
3	SEAGATE	ST373453LC	73GB

Select RAID Type

- RAID-0 (High Performance, No Fault Tolerance)
- RAID-1 (Fault Tolerance)
- RAID-10 (Fault Tolerance, High Performance)

Striping Requirements

Min 2 drives, Max 4 drives.

All required SCSI hard disk drives will appear in the **Select RAID members** screen.

Adaptec < SCSISelect(TM) > Utility v4.30

AIC-7902 A at slot 00, 03:06:00

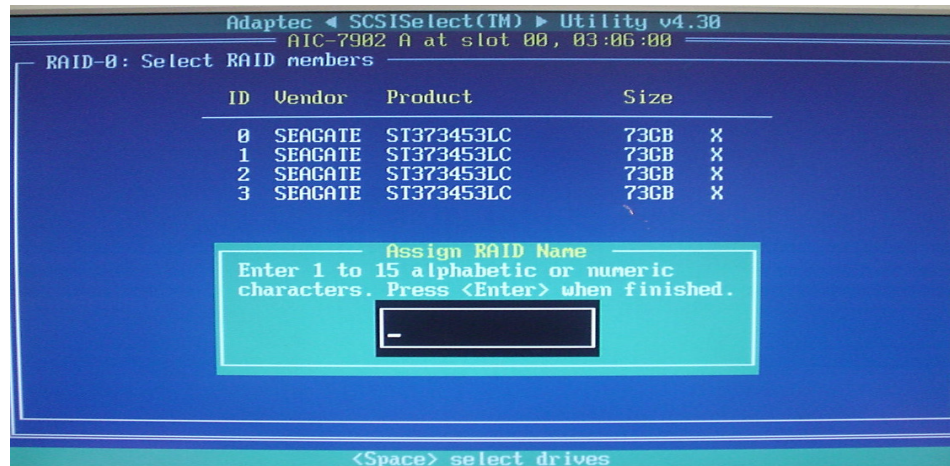
RAID-0: Select RAID members

ID	Vendor	Product	Size	
0	SEAGATE	ST373453LC	73GB	X
1	SEAGATE	ST373453LC	73GB	X
2	SEAGATE	ST373453LC	73GB	X
3	SEAGATE	ST373453LC	73GB	X

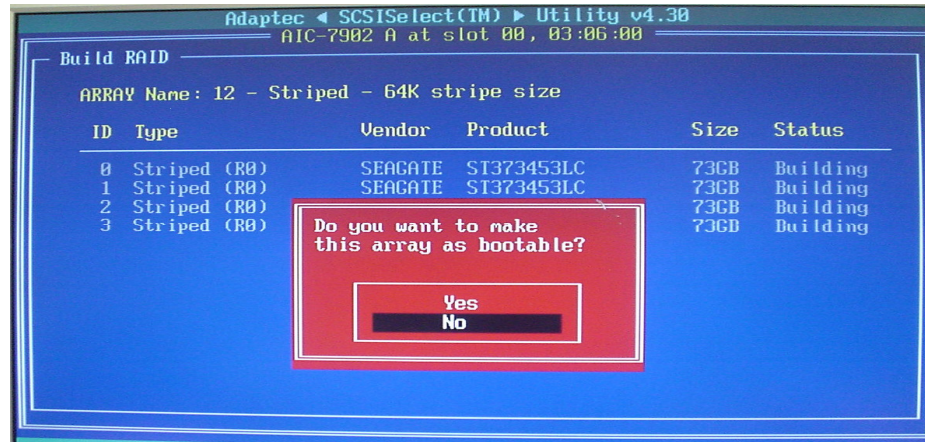
Select default Strip size **64-KB** from the menu, then press **<Enter>**.
 (Of course, you also can select 16-KB or 32-KB by your application)



Enter 1 ~15 alphabetic or numeric characters to assign RIAD name and press **<Enter>** to proceed.



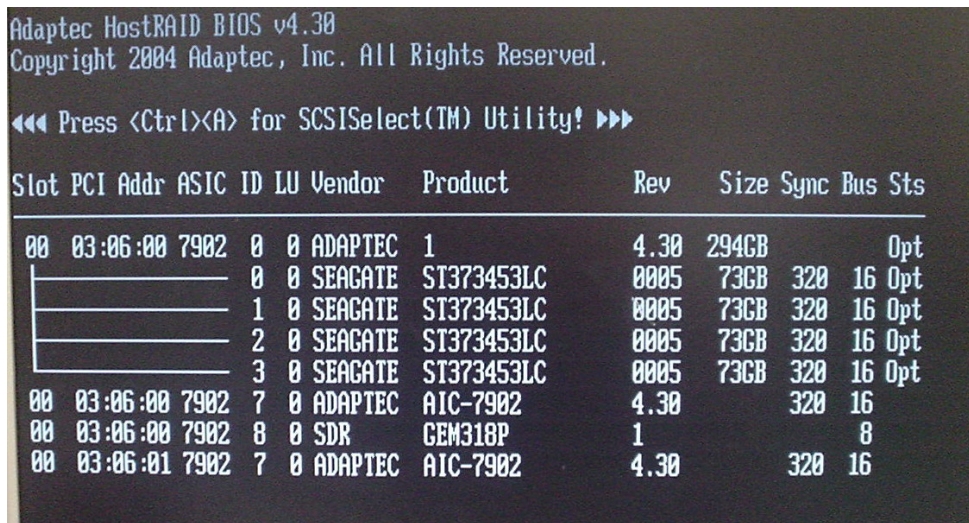
If you would like to set this array on bootable, please select **"Yes"** on this window and apposite, please select **"No"**.



The RAID-0 is complete the array properties.



After configure successfully, please exit Adaptec SCSISelect Utility window and restart system.

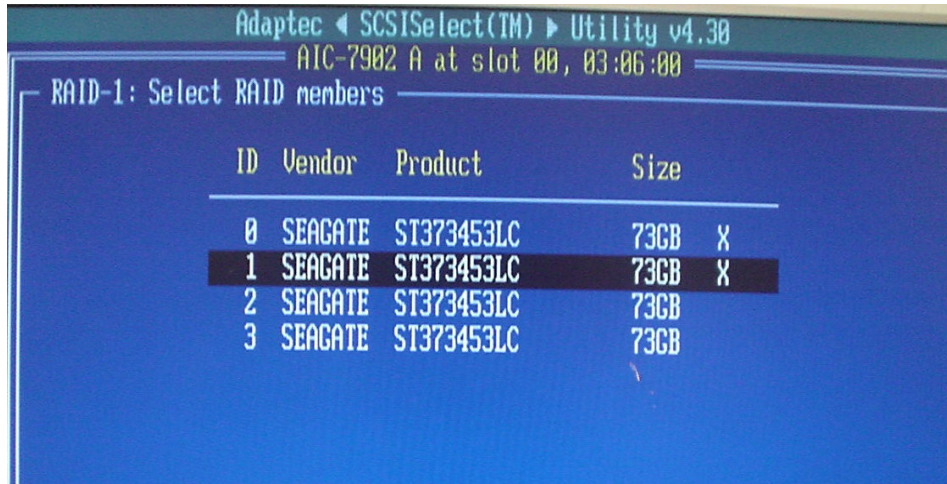


1.4.2 Create RAID 1 (Mirrored)

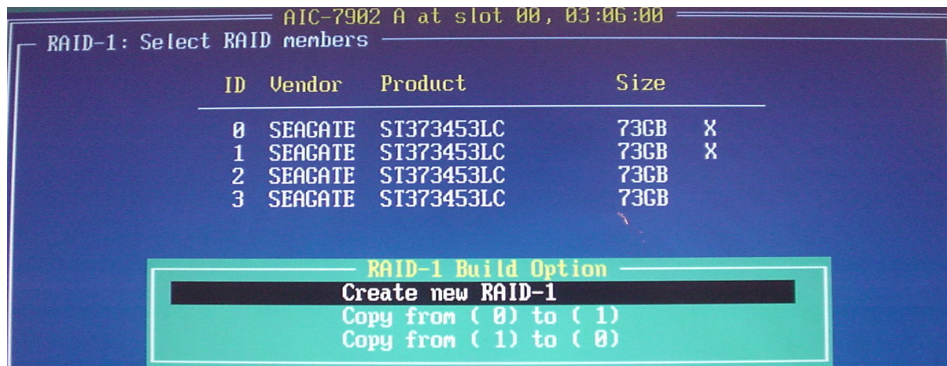
From the Create RAID menu, click **RAID-1 (Fault Tolerance)** that disk drives set requires for the maximum of 2 drives.



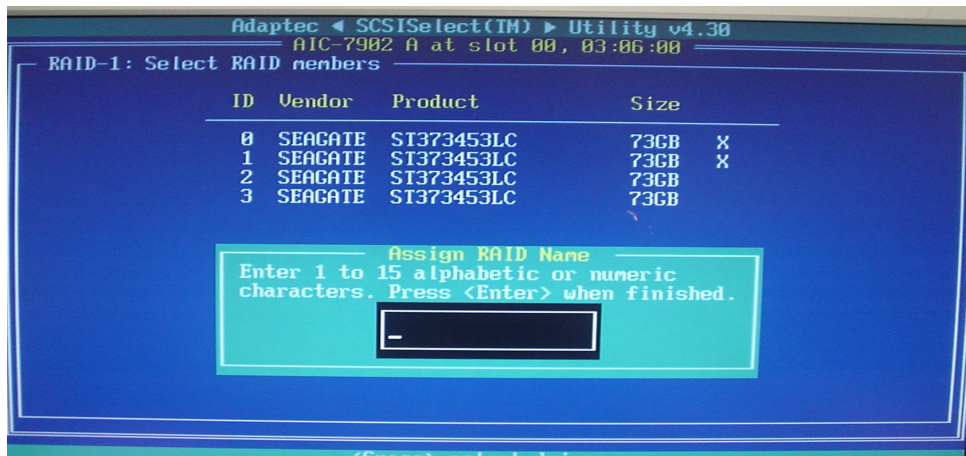
All required SCSI hard disk drives will appear in the **Select RAID members** screen.



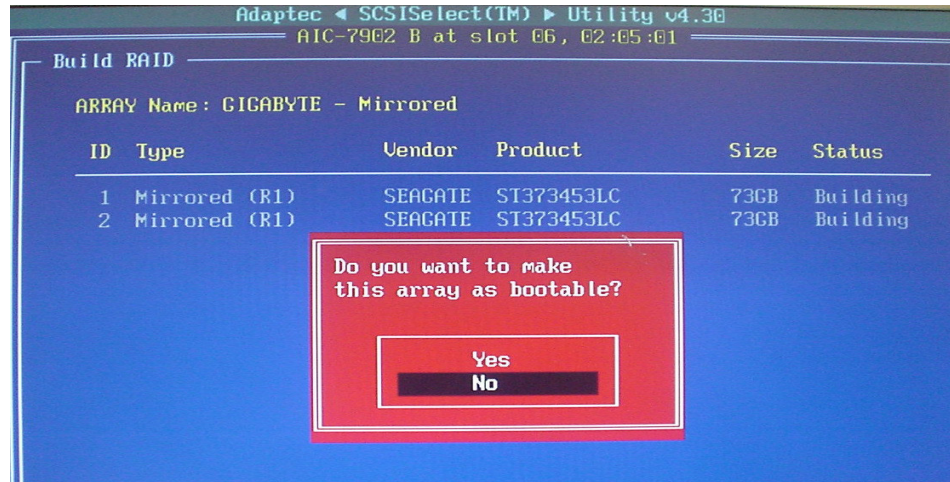
Select default "**Create new RAID-1**" on RAID-1 build option. In the **RAID-1 Build Option** item, you also can choose copy data from one hard disk to the second hard disk.



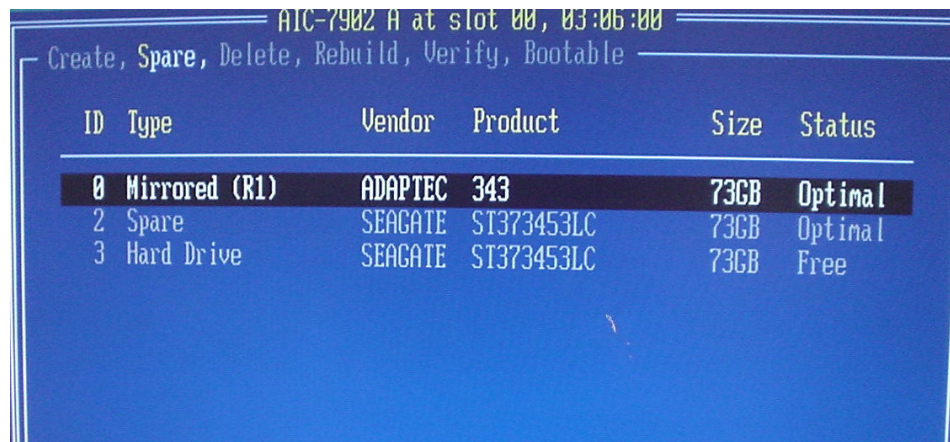
Enter 1 ~15 alphabetic or numeric characters to assign RAID name.



If you would like to set this array on bootable, please select **"Yes"** on this window and apposite, please select **"No"**.



After RAID-1 builds the array propertied completed, you can select other disk drives for Spare.



※ **SPARE: Set one drive on stand by should prompt for replacement of the dead one if one of the hard disk drive failing.**

After configure successfully, please exit Adaptec SCSISelect Utility window and restart system.

```

Adaptec HostRAID BIOS v4.30
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<<< Press <Ctrl><A> for SCSISelect(TM) Utility! >>>

Slot PCI Addr ASIC ID LU Vendor Product Rev Size Sync Bus Sts
-----
00 03:06:00 7902 0 0 ADAPTEC 343 4.30 73GB
|         |         |         |         |         |         |         |
|         |         |         |         |         |         |         |
|         |         |         |         |         |         |         |
00 03:06:00 7902 2 0 SEAGATE ST373453LC 0005 73GB 320 16 Opt
00 03:06:00 7902 3 0 SEAGATE ST373453LC 0005 73GB 320 16 Spare
00 03:06:00 7902 7 0 ADAPTEC AIC-7902 4.30 320 16
00 03:06:00 7902 8 0 SDR GEM318P 1 8
00 03:06:01 7902 4 0
  
```

1.4.3 Create RAID 1+0

From the Create RAID menu, please click **RAID-10 (Fault Tolerance, High Performance)** that you want to add to create array, then press **<Enter>**.

```

Create RAID
-----
ID Vendor Product Size
-----
1 SEAGATE ST373453LC 73GB
2 SEAGATE ST373453LC 73GB
3 IBM IC35L146UCDY10-0 147GB
4 IBM IC35L146UCDY10-0 147GB

Select RAID Type
RAID-0 (High Performance, No Fault Tolerance)
RAID-1 (Fault Tolerance)
RAID-10 (Fault Tolerance, High Performance)

Striping/Mirroring Requirements
Min 4 drives, Max 4 drives.
  
```

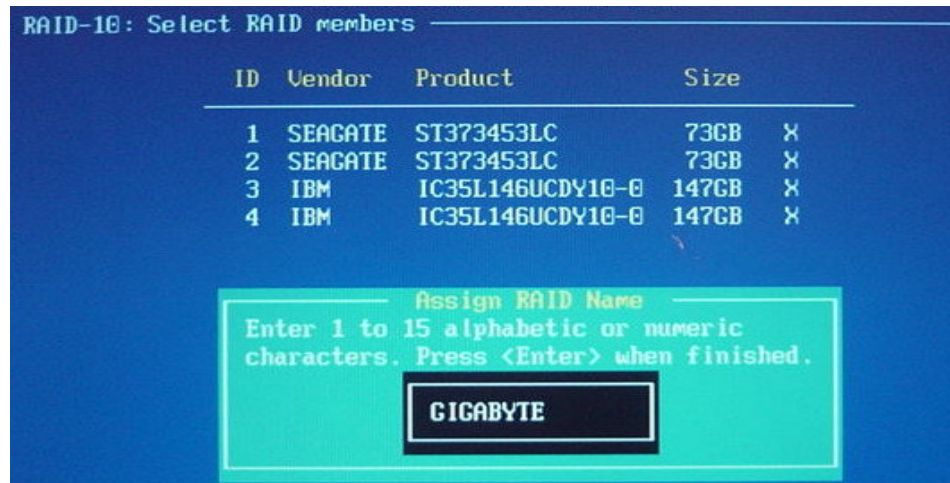
Select default Strip size **64-KB** from the menu, then press **<Enter>**.
(Of course, you also can select 16-KB or 32-KB by your application)

```

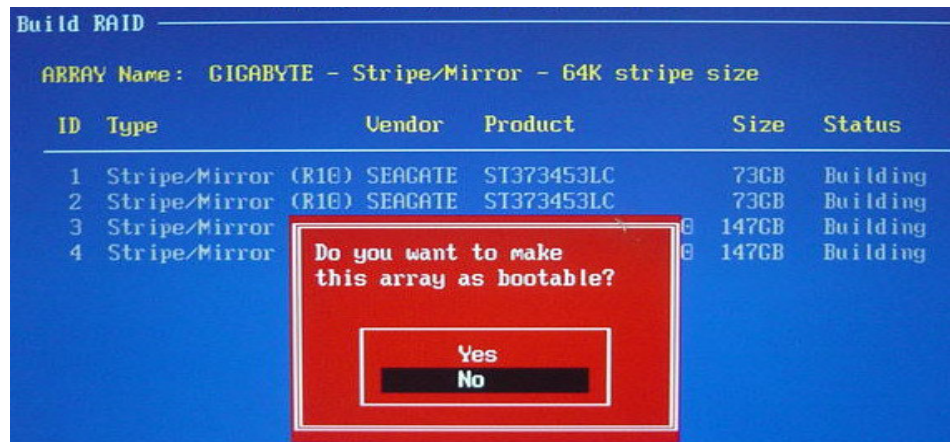
RAID-10: Select RAID members
-----
ID Vendor Product Size
-----
1 SEAGATE ST373453LC 73GB X
2 SEAGATE ST373453LC 73GB X
3 IBM IC35L146UCDY10-0 147GB X
4 IBM IC35L146UCDY10-0 147GB X

Select stripe size
16-KB
32-KB
64-KB
  
```

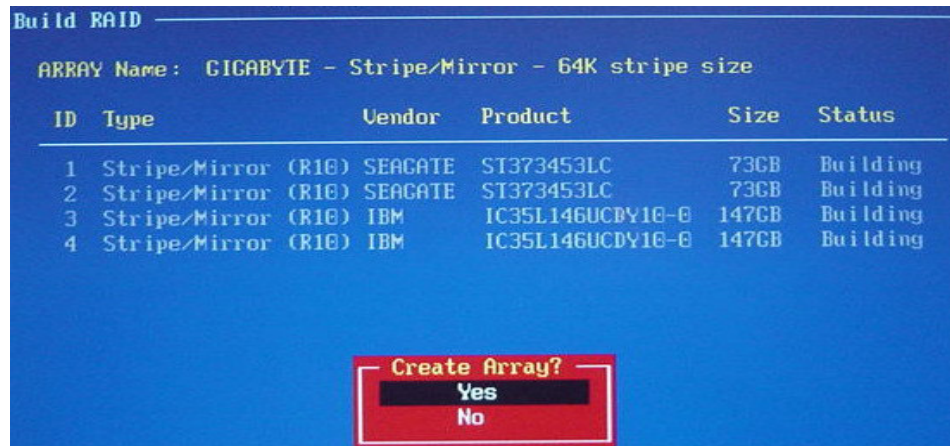
Enter 1 ~15 alphabetic or numeric characters to assign RAID name.



All required SCSI hard disk drives will appear in the **Select RAID members** screen. If you would like to set this array on bootable, please select "**Yes**" on this window, whereas select "**No**".



Click <**Yes**> to proceed.



The RAID-10 is completed array propertyed.

```

AIC-7902 A at slot 00, 03:06:00
Create, Spare, Delete, Rebuild, Verify, Bootable

```

ID	Type	Vendor	Product	Size	Status
0	Stripe/Mirror (R10)	ADAPTEC	12	147GB	Optimal

After configure successfully, please exit Adaptec SCSISelect Utility window and restart system.

```

Adaptec HostRAID BIOS v4.30
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<<< Press <Ctrl><A> for SCSISelect(TM) Utility! >>>

```

Slot	PCI Addr	ASIC	ID	LU	Vendor	Product	Rev	Size	Sync	Bus	Sts
00	03:06:00	7902	0	0	ADAPTEC	1	4.30	147GB			Opt
			0	0	SEAGATE	ST373453LC	0005	73GB	320	16	Opt
			1	0	SEAGATE	ST373453LC	0005	73GB	320	16	Opt
			2	0	SEAGATE	ST373453LC	0005	73GB	320	16	Opt
			3	0	SEAGATE	ST373453LC	0005	73GB	320	16	Opt
00	03:06:00	7902	7	0	ADAPTEC	AIC-7902	4.30		320	16	
00	03:06:00	7902	8	0	SDR	GEM318P	1				8
00	03:06:01	7902	4	0							

1.4.4 Deleting a RAID set

From the Adaptec SCSIselect utility menu, go to the Striped (R0) properties. Press "Del" key to display the Main Menu below. This is the fastest and easiest method to delete your first array.

```

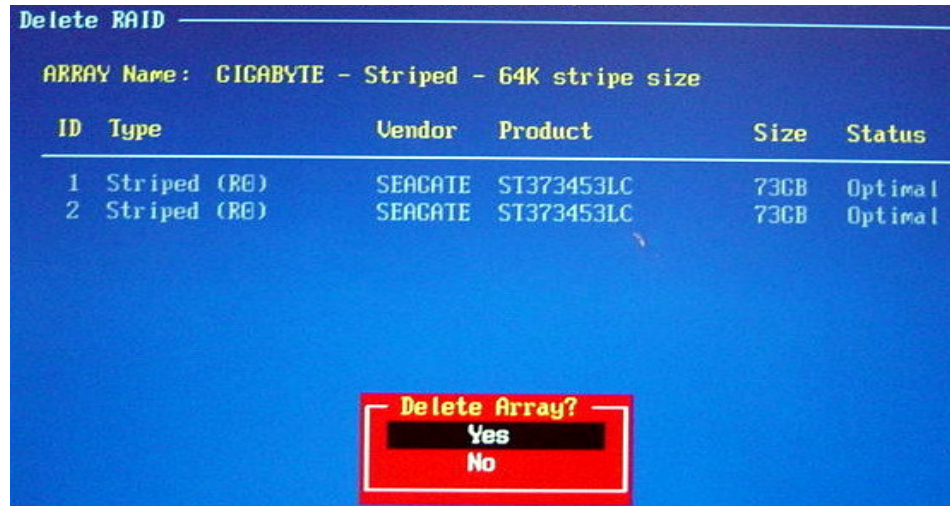
Create, Spare, Delete, Rebuild, Verify, Bootable

```

ARRAY Name: GIGABYTE - Striped - 64K stripe size

ID	Type	Vendor	Product	Size	Status
1	Striped (R0)	SEAGATE	ST373453LC	73GB	Optimal
2	Striped (R0)	SEAGATE	ST373453LC	73GB	Optimal

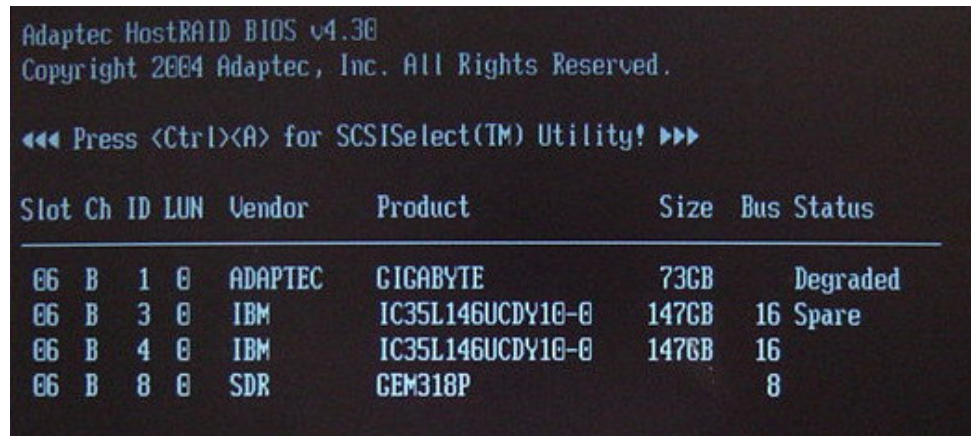
When the dialogue windows appear, click <Yes> to proceed.



1.4.5 rebuilding a RAID 1 Set

During the post screen, SCSI HostRAID BIOS does checks RAID 1 condition each time. If one of the disk broken, it is appears which drive failure.

After replaced a drive, restart a system and during the POST screen, please press "Ctrl+A" into the SCSI utility



Note → Please determined which drive in the RAID has failed and need to be replaced

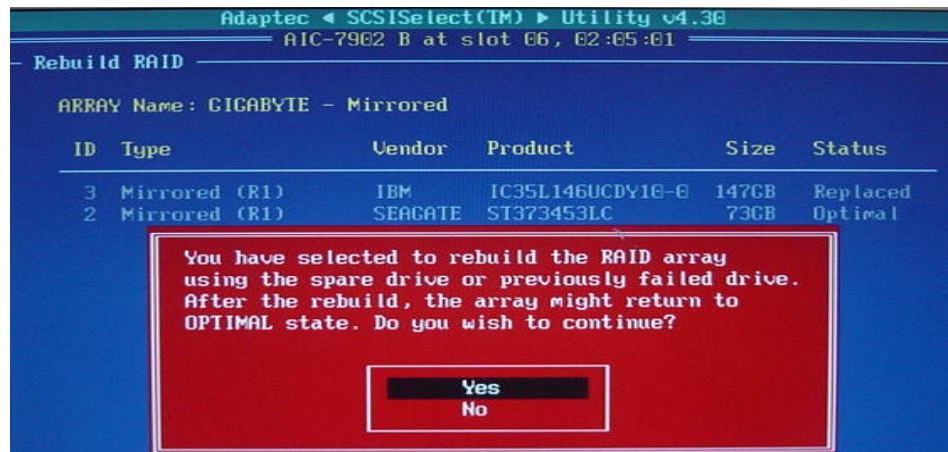
From the **SCSISelect Utility** menu, press **<Enter>** on ID-1 Mirrored (R1) property.



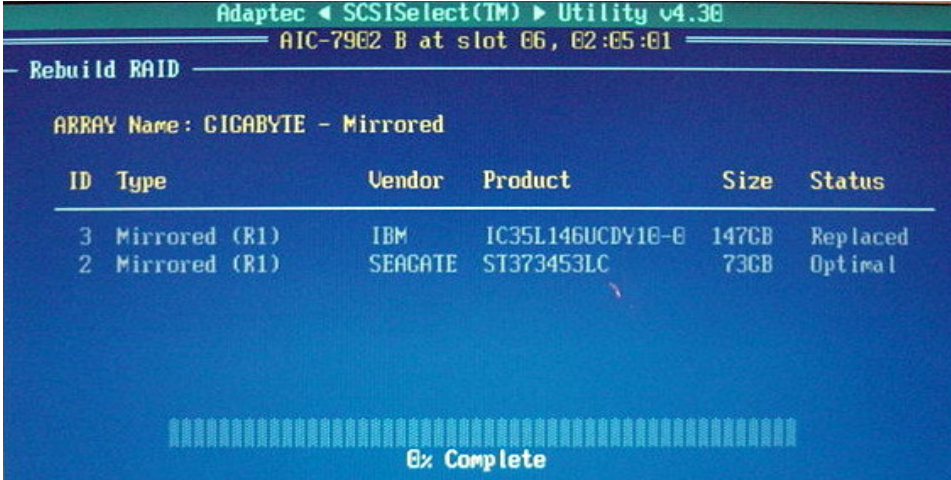
From the SCSIRAID properties menu, press **<R>** key to rebuild a replaced drive.



A prompt message will pop-up after you ready for rebuild replaced drive, please choose **<YES>** button



All data will be overwritten on the new drive from the existing array drive in a while.



After finished the rebuilding, please restart system again.

2. RAID driver installation

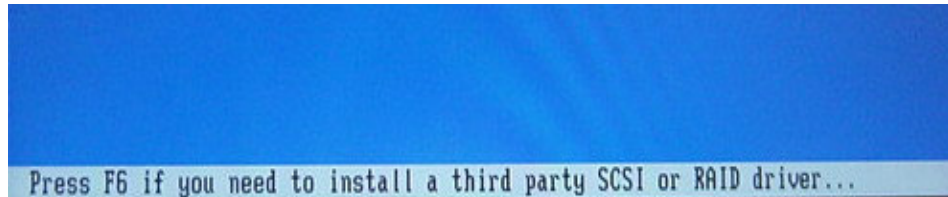
A system with Adaptec 7902W SCSI RAID driver installed needs have an appropriate driver for the RAID controller to operate properly. If you would like add RAID driver to an existing system, the driver may be direct installed from the CD, whereas install the RAID driver in new system usually will require a driver disk, please extract RAID driver into floppy disk form CD or GIGABYTE web site.

2.1 Installing the Adaptec 7902W RAID controller

2.1.1 Windows 2000/XP/2003

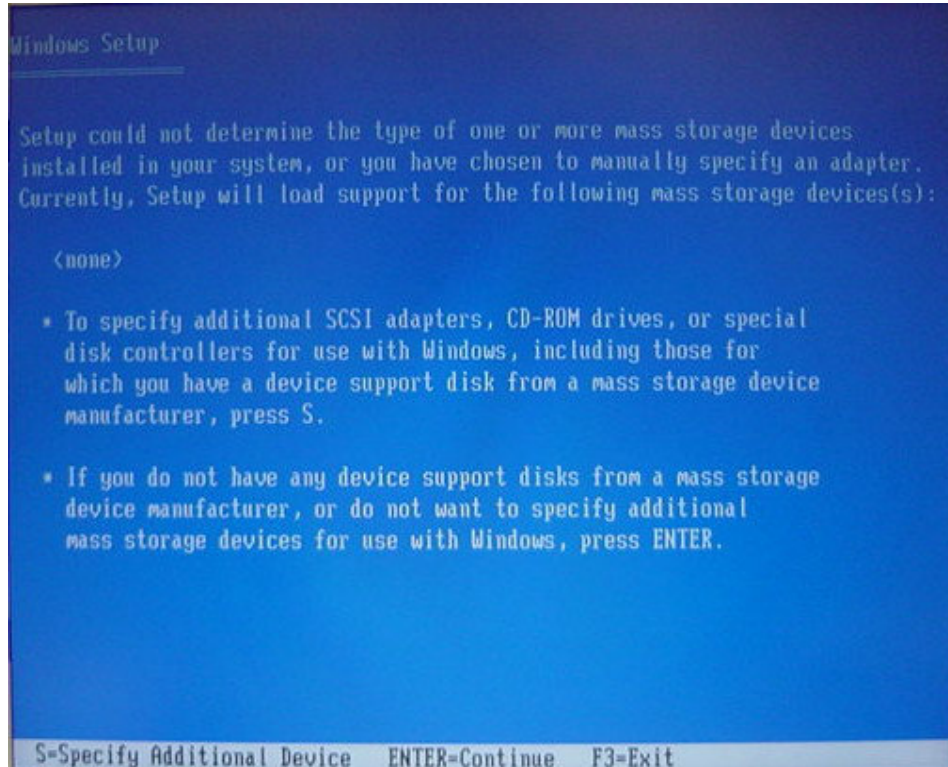
(Installing the driver in new system)

If you installing the driver in new system, please press <F6> during the message appears "Press F6 if you need to install a third party SCSI or RAID driver...".

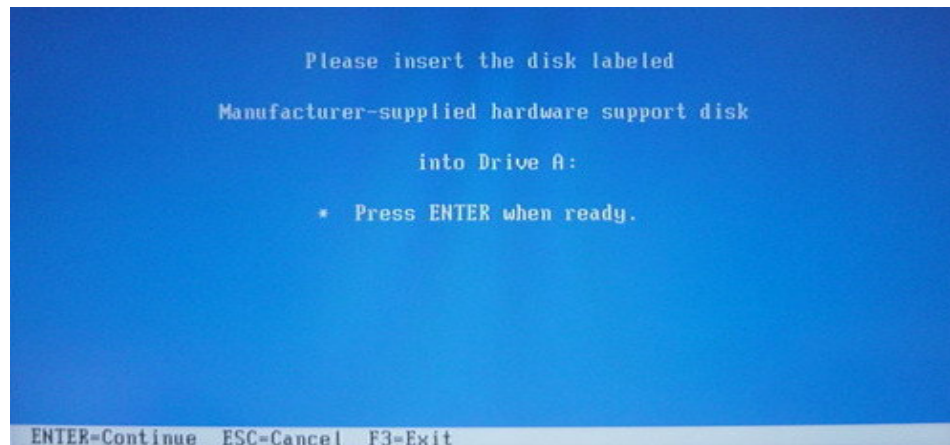


Note → You only have 5 seconds to press the F6 key during the installation startup. Press F6 at this time; otherwise, you must restart the Windows 2000/XP installation process to complete this procedure

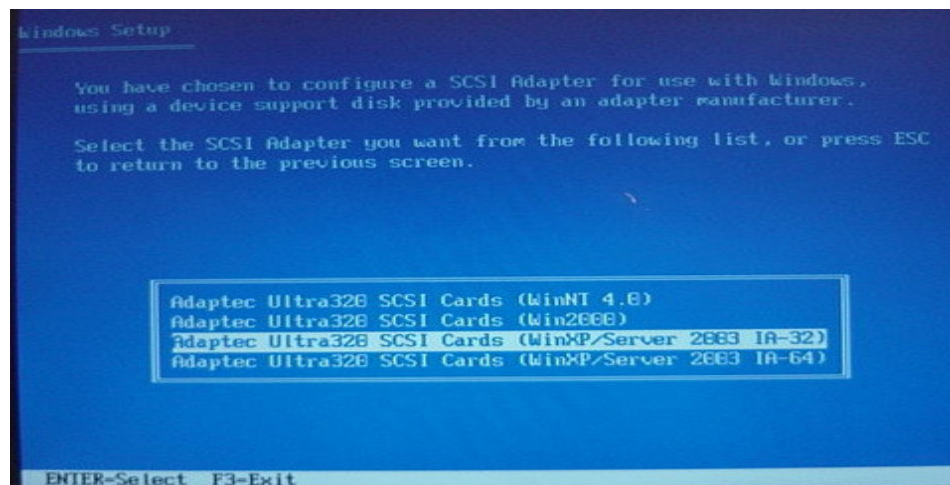
Press <S> to specify additional device when Windows prompted.



Insert Adaptec 7902W RAID driver disk that you earlier extract RAID driver into floppy disk, then press <Enter>

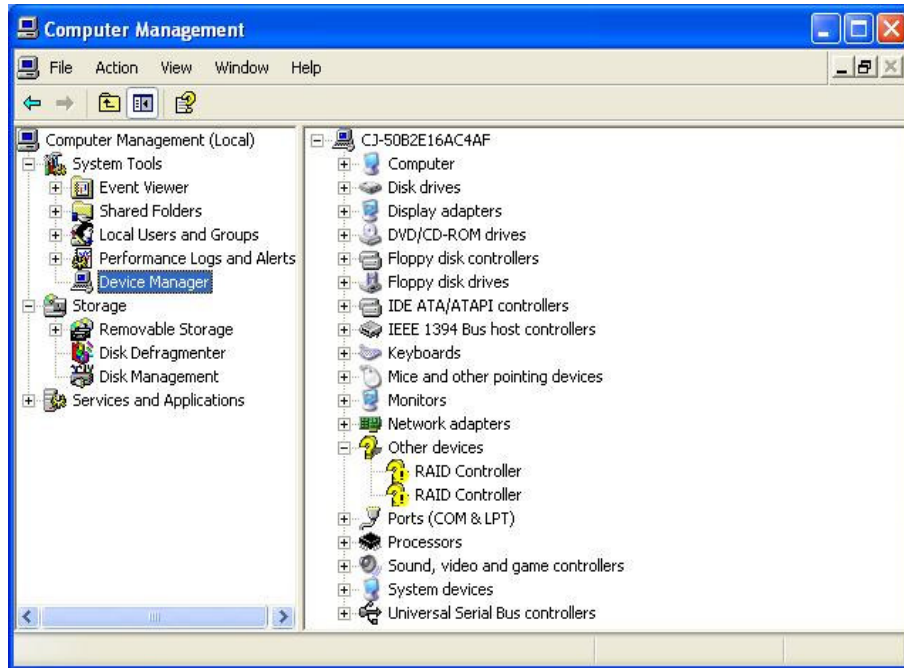


Select the **Adaptec Ultra 320 SCSI cards (Windows XXXX)** depend on your type of operating system, then press <Enter> to proceed.



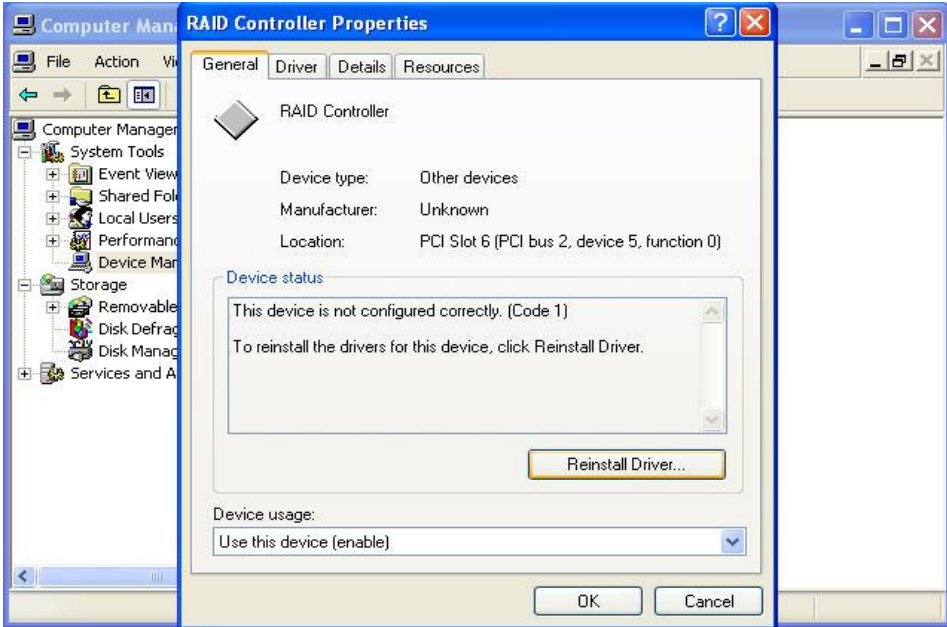
2.1.2 Windows 2000/XP/2003 (Adding the controller to an existing system)

If you would like add the RAID controller to an existing system, please restart system and into **Computer Management** window (**My Computer** click right button > choose **Manage**).



Note→ Windows will automatic detect the RAID controller and then pop-up "New Hardware Found" window, please click "Cancle" and install driver by manually.

Double click **RAID Controller** item, **RAID Controller Properties** window is pop-up, then click "Reinstall Driver" button.

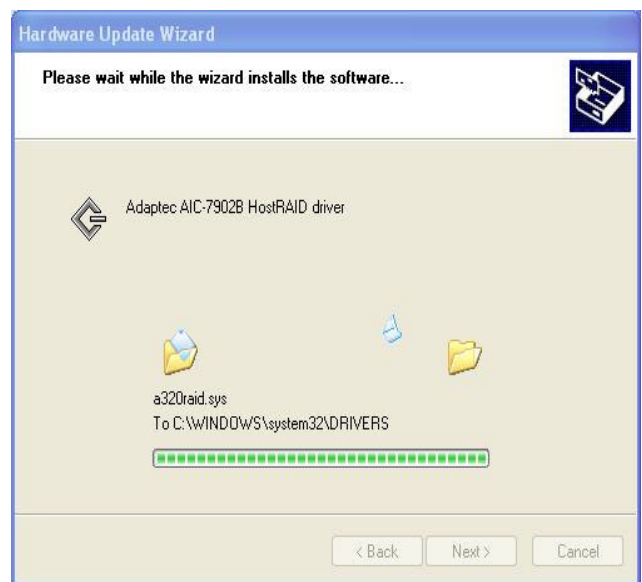
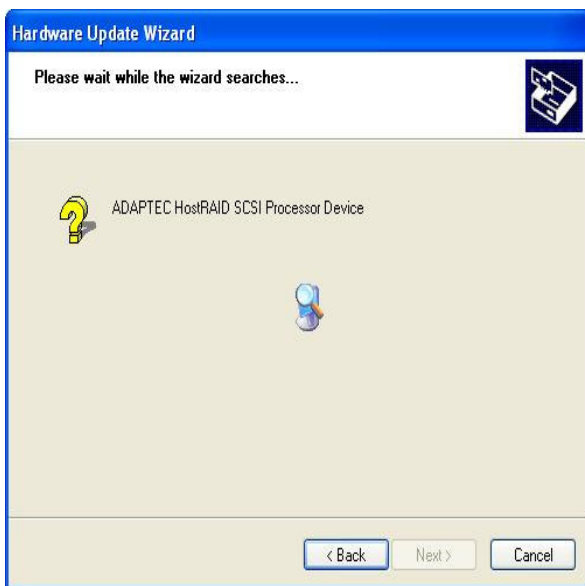


Insert original CD or floppy disk that you earlier extract RAID driver into floppy disk.

Select **Install the software automatically (Recommended)**, then press **<Enter>**.



Hardware Update Wizard window appears, system doing search a suitable driver automatically.

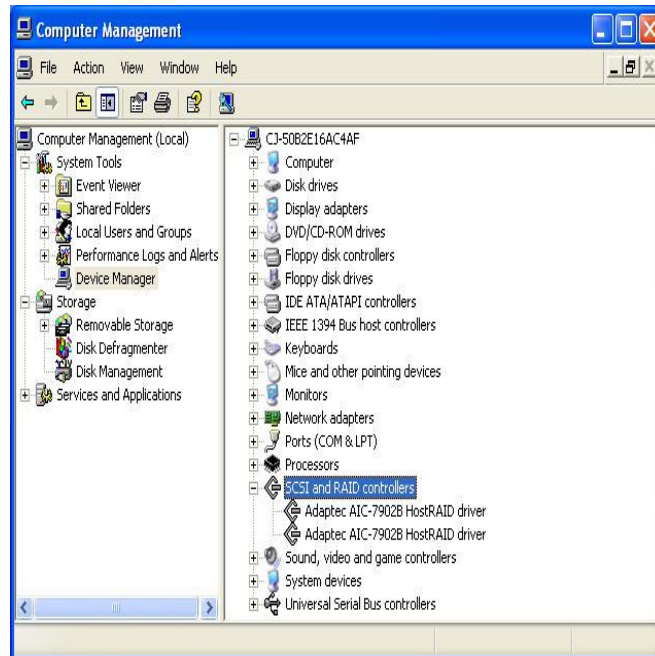


After the driver installation is done, click <**Finish**>



Please repeat the above step and installing Host RAID SCSI Processor Device.

After the Host RAID SCSI Processor Device installed completely, please restart system, then initial partition.

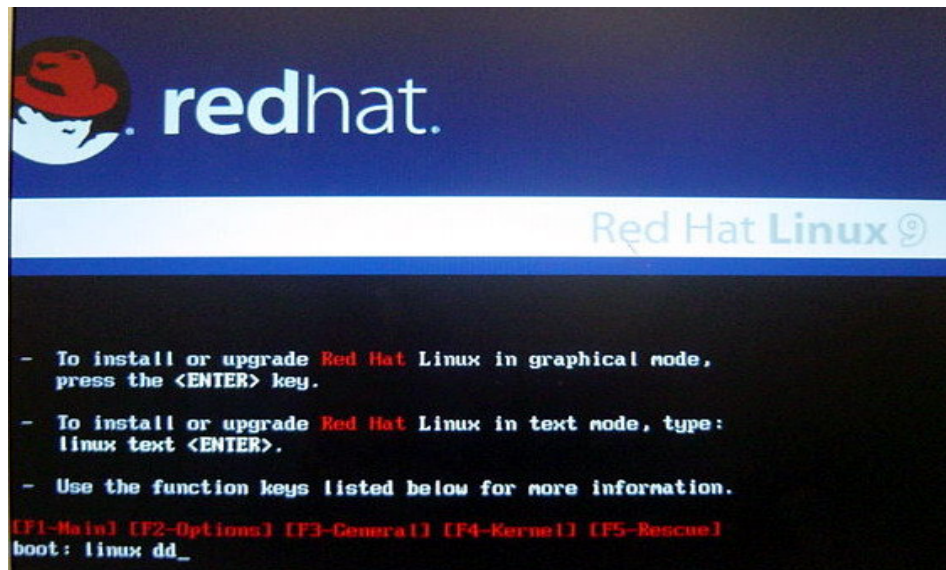


2.1.3 Red Hat 9.0

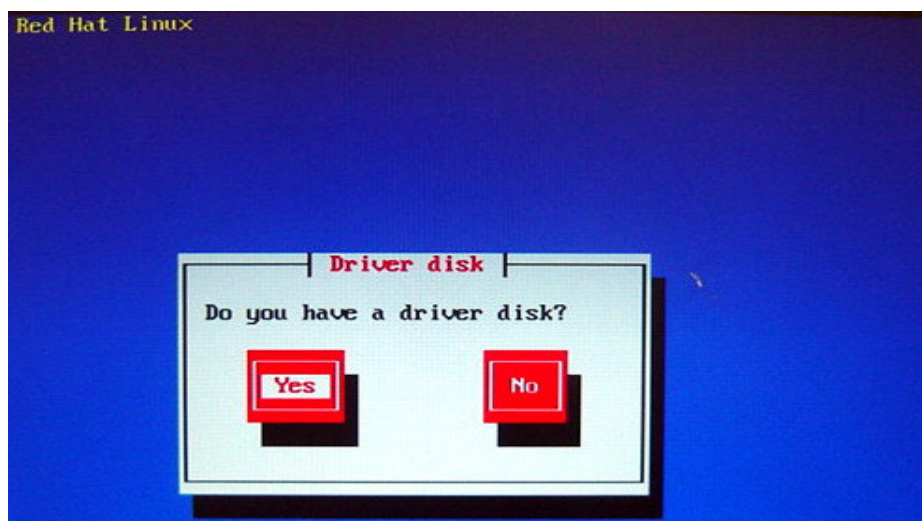
The Adaptec 7902W or SCSI RAID controller in a Red Hat 9.0 Linux system does require SCSI RAID driver installation.

To install the host RAID controller:

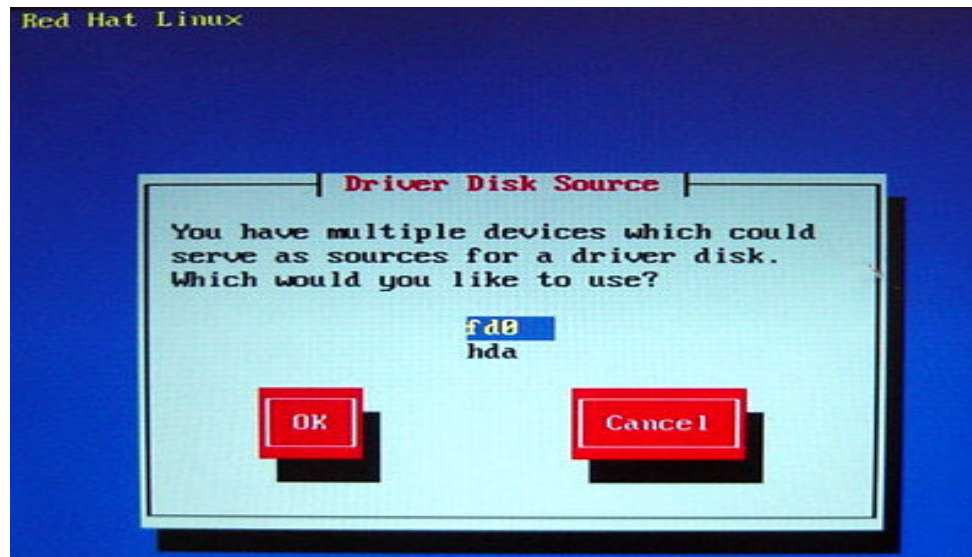
1. Boot Red Hat 9 from the CD 1.
2. When the Red Hat Linux 9 screen appears, type "**linux dd**", then press enter.



When dialogue window "Do you have a driver disk?" pop-up, please click "Yes" by pressing <Tab> key.



Please extract SCSI RAID driver for Red Hat 9.0 file to a floppy disk, insert this disk and click "fd0" item when the system asks which device you would like to use, then press <Enter>



A prompt message is pop-up after your floppy disk has already inserted. Choose <YES> button while the system has ready for loading this driver.



Please continue with the Linux install while the driver to installed the system.