Acer Altos® S300's Configuration Guide with Altos® R500

Installation and Configuration Guide for Acer Altos S300 Storage Subsystem with Acer Altos R500 Server

This installation and configuration guide provides instructions for installing and configuring Altos S300 with Altos R500. And it also includes how to configure the Altos S300 and R500 for installing the Microsoft Cluster Server.

This guide also incorporates a broad range of hardware components, including Mylex AcceleRAID 352, Adaptec SCSI RAID 2005S, external LVD SCSI cables, Altos S300, and Altos R500. The operating system used here is Microsoft Windows 2000 Advanced Server.

CONTENTS

INTRODUCTION

This installation and configuration guide provides information and procedures needed to install and configure hardware for Acer Altos S300 storage subsystem. It also includes how to install the Adaptec SCSI RAID 2005S or Mylex AcceleRAID 352 RAID controller in Acer Altos R500 and how to configure the RAID controller and disk volume. In the final, it will present the installation procedures for setting up Microsoft Cluster Server on Altos R500 with Altos S300. The RAID controller used for installing the MSCS is Mylex AcceleRAID 352.

For hardware configuration, it is not related to the operating systems, like Microsoft Windows 2000, or RedHat 7.x, so you can use the same way to configure the system for different operating systems. For software configuration in this guide, it only covers configurations based on Windows 2000 platform.

Acer Altos S300 is an Ultra320-ready SCSI JBOD storage subsystem and provides backward compatible with Ultra160 and Ultra2 SCSI standard. It is a high-density design and can install 14 of one-inch drives in its 3U height enclosure. It can also be installed into standard 19 inches rack.

Acer Altos R500 is a 1U, high-density and rack-mountable dual-processor system loaded with a host of new and innovative features. It supports dual Pentium III processors, up to 4 GB memory, 4 on-board Intel 82550 NIC, and 1 on-board Adaptec 7899W dual-channel SCSI controller.

Adaptec SCSI RAID 2005S is one of Adaptec's family of Zero-Channel RAID (ZCR) cards offers the upgrade path for Acer Altos R500. It is based on Altos R500's on-board dual-channel Ultra160 SCSI controller and provides hardware RAID function on each SCSI channel. One channel is reserved for connecting Altos R500's internal drives and the other can be used for connecting one Altos S300.

Mylex AcceleRAID 352 is a dual-channel Ultra160 PCI RAID controller. It can be installed on Acer Altos R500's PCI slot to provide the connection of one or two Altos S300 storage subsystems.

Who should read this Guide

This configuration guide is intended for:

- Acer field site engineers who are installing and configuring Altos S300 with Altos R500.
- Acer resellers who are providing technical support to customers
- Customers who are implementing this architecture in their environment

Contents of this Guide

This guide's chapters contain the following information:

1. System Specification—presents the detailed specification of Acer Altos R500, Altos S300, Adaptec SCSI RAID 2005S, and Mylex AcceleRAID 352.

2. **Installation and Configuration**—presents step-by-step procedures for installing the Adaptec SCSI RAID 2005S or Mylex AcceleRAID 352 in Altos R500 and connecting it to Altos S300. Also it will include the configuration tips for creating the RAID volumes.
3. **Microsoft Cluster Server Installation**—presents the procedures for installing Microsoft Cluster Server on Altos R500 with Altos S300. The RAID controller, which can support MSCS, is Mylex AcceleRAID 352.

SYSTEM SPECIFICATION

In this part, it will cover the detailed specification summary of Altos S300, Altos R500, Adaptec SCSI RAID 2005S, and Mylex AcceleRAID 352.

Altos S300

The Altos S300 is a new concept in data storage that provides the optimum in investment protection and versatility. The Altos S300 will meet the performance, capacity, and high availability needs of the widest variety of applications, such as video, imaging, prepress, data warehouse, OLTP, and web servers.

FEATURES

- Fourteen disk drive slots, which can install 36 GB and 73 GB 10k RPM or 15k RPM SCA-2 SCSI HDD.
- Redundant AC power supplies.
- Redundant input power cords.
- A total of four fans in two Advanced Cooling Modules (ACM)
- Providing n+1 redundancy on fans.
- Two rear removable I/O option modules provide active/passive failure redundancy on environmental monitoring, or per Bus Monitoring.
- Multi-MODE SCSI Interface Ultra 320/160.
- Hot plug of power supplies and ACM's.
- A maximum configuration of drives supported with one or two power supplies.
- Failure indication of all Field Replaceable Units (FRU) via LEDs and audible alarm (with alarm mute button).
- Disk drive hot plug support.
- Auto-sense termination at end of bus (busses) if no cable present.
- Automatically bus split, if two cables are present.
- Up to 10M of LVD SCSI cable.
- SCSI ID is hard-wired.
- Global remote spins up enable capability.
- Global delayed spins up enable capability.
- Rail Kit mounting for 19" equipment racks.
- Carrier cam lever allows controlled insertion and extraction of disk carriers.

Acer Altos S300

Altos R500

The Acer Altos R500 system is a PCI bus based dual processor system built on an optimized baseboard. It comes with two socket 370 processor slots utilizing two Intel® Coppermine D0 or Tualatin® processors integrated with the ServerWorks HE-SL chipset. The dual-channel SCSI architecture supports Ultra 160 SCSI with a bandwidth of up to 160 MB/s for each channel. The motherboard also integrates the Intel 82550 10/100 Mbps PCI Ethernet chipset that supports WOL (Wake on LAN) for better remote site management.

For expandability, the system includes two 64-bit/66 MHz PCI bus slots and four DIMM slots that allow memory installation up to a maximum of 4 GB.

For connectivity, the motherboard provides two USB (Universal Serial Bus) connectors, PS/2 interface for mouse and keyboard, one UART serial port, and four LAN ports.

For its storage features, Altos R500 supports one slim-type CD-ROM drive, one slim-type floppy disk drive and three hot-swappable SCSI hard disk drives.

The system is fully compatible with Windows NT 4.0, Windows 2000 Server, SCO UNIX OpenServer SCO 5.x, SCO UnixWare 7.x and Red Hat Linux 7.x.

FEATURES

- FC-PGA (Flip-Chip Pin Grid Array) 370 processor socket that supports Intel Coppermine D0 Stepping or Tualatin processors running at 133 MHz to 1/1.26 GHz and future generations of Pentium CPUs
- ServerWorks HE-SL chipset which includes the north, south and I/O bridge
- SCSI controller Adaptec AIC-7899 chipset supports dual channel 64-bit LVD Ultra 160 device connection in 64-bit/66 MHz PCI bus
- Onboard 10/100 Mb/s Intel 82550 LAN chip that supports WOL
- Four DIMM sockets that accept 128-, 256-, 512-MB and 1-GB SDRAM (synchronous DRAM) DIMMs for a maximum memory capacity of 4 GB
- Storage support for:
    - One slim-type CD-ROM drive
    - One slim-type floppy disk drive
    - Three hot-swappable SCSI hard disk drives
- Two 64-bit/66 MHz PCI slots
- NS PC87414 Super I/O chipset
- ATI Rage XL video chipset
- System clock/calendar with battery backup
- Auxiliary power connector for ATX power supply

- Advanced Server Management (ASM) and Remote Diagnostic Management (RDM) controller chipsets
- External ports:
  - 2 USB ports
  - PS/2-compatible keyboard port
  - PS/2-compatible mouse port
  - 1 serial port
  - 4 LAN ports (RJ-45)
  - Monitor/VGA port

Acer Altos R500

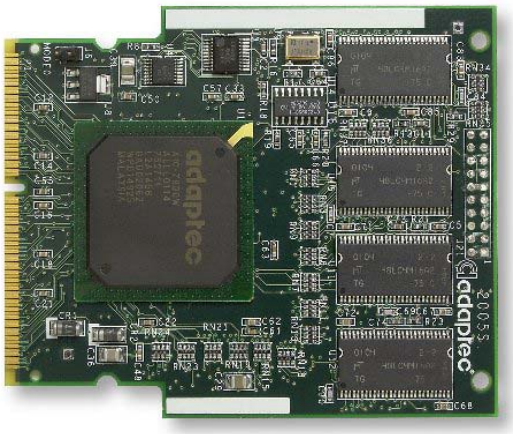
Adaptec SCSI RAID 2005S

Adaptec SCSI RAID 2005S is one of Adaptec's family of zero-channel RAID (ZCR) cards offers the ideal solution for an affordable, flexible upgrade path to advanced RAID. This innovative approach reduces the cost of the RAID controller by eliminating the need for an additional Adaptec SCSI chip on the controller.

This "credit card sized" RAID card plugs into a specially designed small form factor PCI connector (an SO-DIMM connector attached to the PCI bus via Adaptec Embedded RAID Logic (EMRL)). This unique design gives high-density servers advance RAID data protection and performance without sacrificing a PCI slot making it ideal for 1U applications.

FEATURES

- 48 Mbytes onboard ECC SDRAM
- 64-bit/66MHz PCI
- Up to 160 Mbytes/sec per channel
- Adaptec AIC™-7930W microprocessor with hardware XOR
- Supports up to 15 SCSI devices per channel
- 0, 1, 0/1, 5, 0/5, JBOD RAID levels
- Online capacity expansion
- Background initialization (for immediate RAID availability)
- "Credit-card size" controller dimensions: 3.2 in. x 3.8 in. (8 cm. x 9.5 cm.)
- SES/SAF-TE support
- S.M.A.R.T. support
- Hot-swap disk drive support for easy replacement
- Hot-spare disk support with automatic rebuild



Adaptec SCSI RAID 2005S

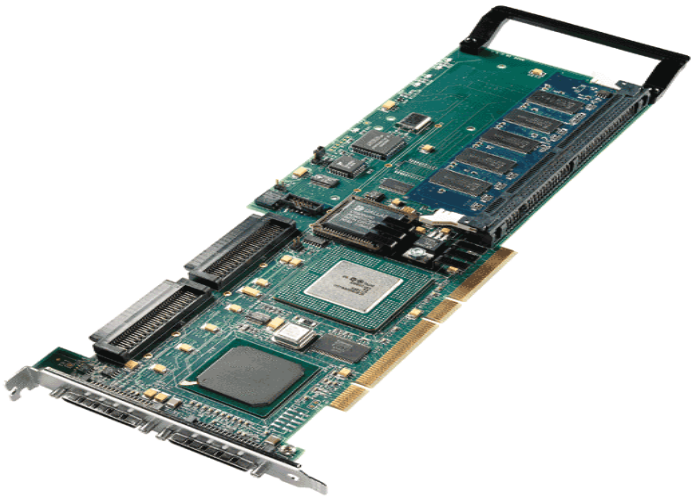
Mylex AcceleRAID 352

The Mylex AcceleRAID 352 is a dual channel PCI to Ultra 160 SCSI RAID controller. Bringing the performance and fault tolerance of RAID to entry-level and mid-range servers, the AcceleRAID 352 is capable of data transfers up to 160MB/s.

The Mylex AcceleRAID 352 is also capable of configuring server cluster, like Microsoft Cluster Server. For Altos R500, it will be used for installing the Microsoft Cluster Server with Altos S300.

FEATURES

- 32 or 64 Mbytes ECC SDRAM
- 64-bit/33MHz PCI
- Up to 160 Mbytes/sec per channel
- Intel i960RN microprocessor with hardware XOR
- Supports up to 15 SCSI devices per channel
- 0, 1, 3, 5, 10, 30, 50, and JBOD RAID levels
- Online capacity expansion
- Background initialization (for immediate RAID availability)
- SES/SAF-TE support
- S.M.A.R.T. support
- Hot-swap disk drive support for easy replacement
- Hot-spare disk support with automatic rebuild
- Clustering support



Mylex AcceleRAID 352

INSTALLATION AND CONFIGURATION

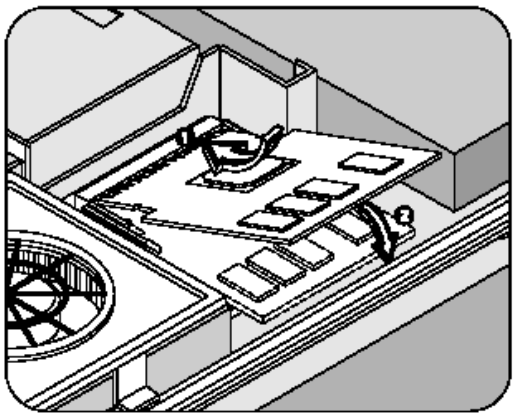
For installation and configuration part, it will include the detailed system configuration methods and suggestions for different applications. For Altos R500, it can install Adaptec SCSI RAID 2005S or Mylex AcceleRAID 352 for configuring RAID volume on Altos S300. So it will include two separate sections to describe the configuration based on each RAID controller.

Altos R500 with Adaptec SCSI RAID 2005S

Installing the Adaptec SCSI RAID 2005S

To install the Adaptec SCSI RAID 2005S on Altos R500:

1. Remove the Altos R500's cover.
2. Locate the RAID card slot on the motherboard.
3. Insert the card diagonally into the slot (**1**), and then gently press down (**2**) until it clicks into place.



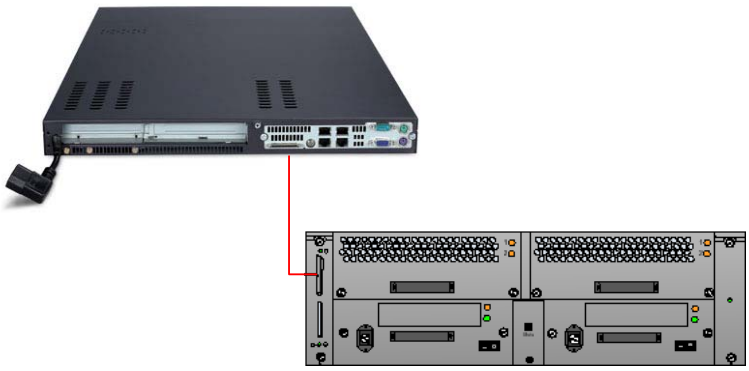
Connecting the Altos R500 to Altos S300

One Ultra160 VHDCI-to-VHDCI SCSI cable is required for this configuration. The length of the SCSI cable may be a maximum of 10 meters in length. When viewed from the rear there should be an ESM installed in one I/O slot and a TSM in the other.

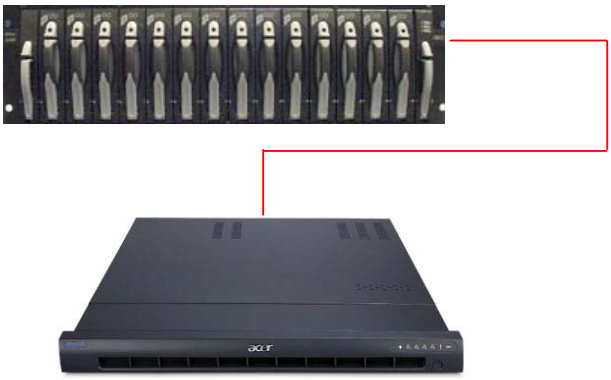
Follow the procedures below to connect the cable (see figure below):

1. Power off the Altos S300 and Altos R500.
2. Attach one end of the SCSI cable to the connector on Altos S300's ESM module.
3. Attach the other end of this cable to Altos R500's external SCSI connector.

Rear View



Front View



Configuring the Adaptec SCSI RAID 2005S

After finishing the hardware installation and connection, you can start to create RAID volume. For Adaptec SCSI RAID 2005S, if you don't create RAID on physical drives, you can still see those drives from the operating system because they will be treated as JBOD disks.

There are two ways for you to create the RAID volumes before you can use them. The first one is by entering the Adaptec SCSI RAID 2005S's BIOS and then configure the RAID volumes as you want, the other one is by using the Storage Manager from Adaptec to configure the RAID.

Configure the RAID volume by entering the BIOS:

Follow the procedures below to configure the RAID volumes on Altos S300:

1. Power up the Altos S300 and Altos R500.
2. After seeing the Adaptec I_2O BIOS banner, press <CTRL+A> to enter the Adaptec SCSI RAID 2005S's BIOS.
3. You can check how many physical drives are connected on bus 0 and bus 1 first before you start the RAID volume creation. For Bus 0, it is designed to connect all three internal drives on Altos R500. For Bus 1, it is designed to connect all external drives on Altos S300.
4. Before you start the RAID creation, you can decide if you need one hot spare drive. The function of the hot spare drive is when one drive failed in one RAID volume; it can be used for re-building this volume automatically.
5. You can choose the drive on Bus 1 SCSI ID 0 to be the hot spare drive if you need it. Expand the Bus 1 menu on the left-hand side window and select the first one drive (1, 0), then press <Alt+A> to open the Action menu and select "Make Hotspare" option. After doing this, this drive will be set as a hot spare drive.
6. For configuring RAID volumes on Altos S300, you can press <Alt+R> to open the RAID menu and then select "Create…" option to open the RAID configuration dialogue box.
7. In the dialogue box, you can see three basic RAID levels: RAID-0, RAID-1, and RAID-5. We don't suggest you to create RAID-0 volume unless you want to create mixed RAID levels, like RAID-10 or RAID-50.
8. For RAID-1 volume, it has best data protection and higher performance, but it will waste half of the physical capacity. If you need to store some valuable data, like database tables or system files, then you can create the RAID-1 volume for them.
9. For creating RAID-1 volume, just select the RAID-1 option on the dialogue box and click "Ok" button. Then you will see an eligible

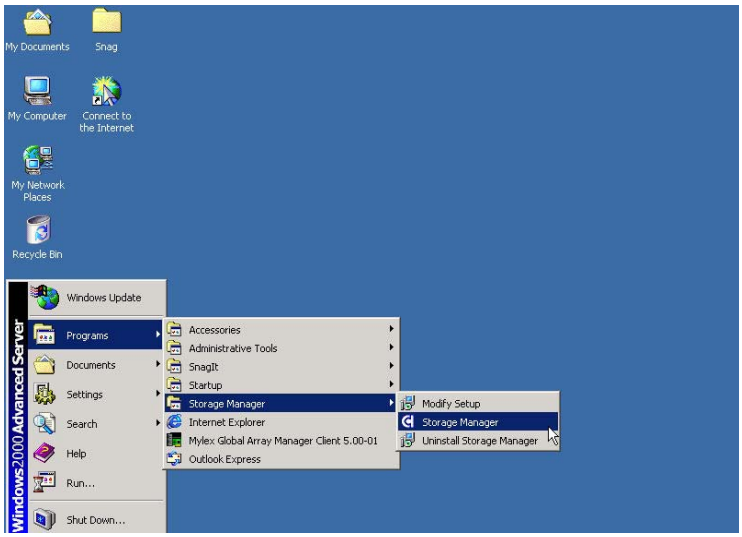
devices list on the right-hand side window. By clicking the <SPACE> key on your keyboard to select these drives you want to include in this RAID-1 volume. You can only select two drives when creating a RAID-1 volume. After that you can click “Done” button and then click “Ok” button to finish this operation.

10. For RAID-5 volume, it is more suitable for storing general files with better data protection. For example, if you want to use the Altos S300 as a storage pool of a file server or email server, you can create the RAID-5 volume for it.
11. For creating RAID-5 volume, just select the RAID-5 option on the dialogue box and click “Ok” button. Then you will see an eligible devices list on the right-hand side window. By clicking the <SPACE> key on your keyboard to select these drives you want to include in this RAID-5 volume. You have to select at least three drives when creating a RAID-5 volume. After that you can click “Done” button to finish this operation.
12. After finishing the hot spare drive setting and RAID volume creation, you have to set the system configuration to make it work. Press <Alt+F> to open the “File” menu and select “Set System Config” option to set it. Then you can exit the BIOS setting and the system will be rebooted automatically.

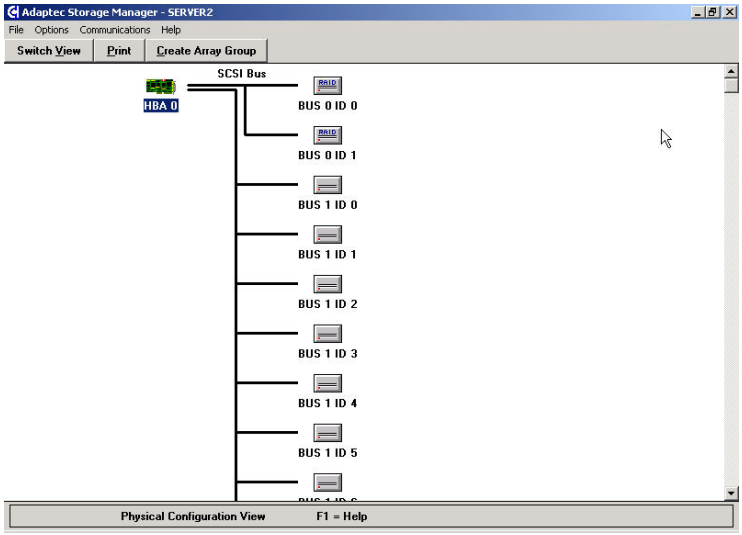
Configure the RAID volume by using the Storage Manager:

On Windows 2000 operating system, you can also use Adaptec's Storage Manager to configure the RAID volumes. Before you can use it, you have to install the Adaptec's Storage Manager first. Then, you can follow the procedures below to configure the RAID volumes, as you need:

1. Power up the Altos S300 and Altos R500.
2. After entering the Windows 2000, you can execute the Storage Manager from Programs\Storage Manager menu.

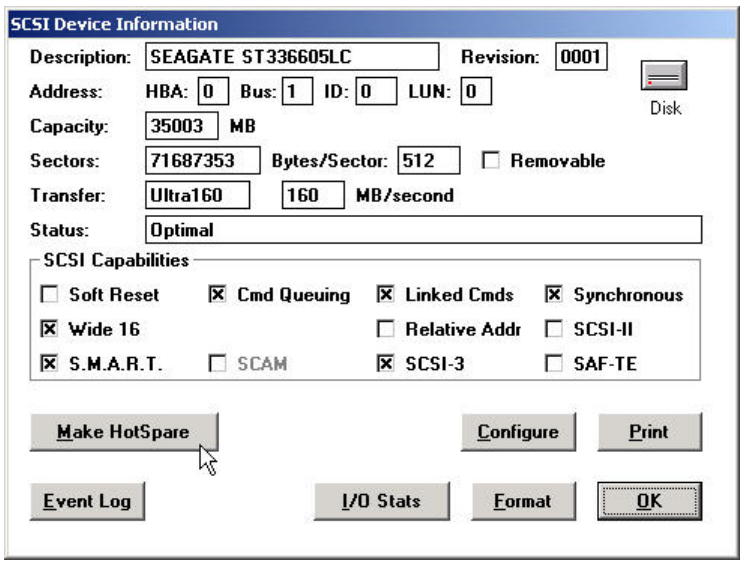


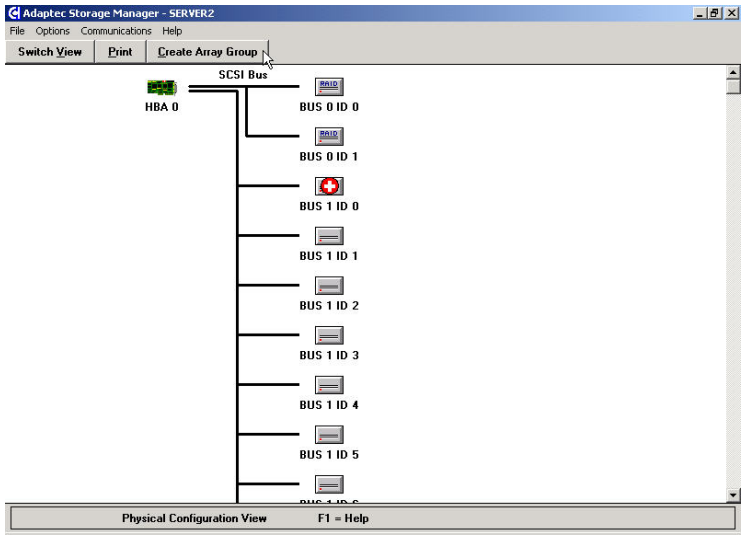
3. You can check how many physical drives are connected on bus 0 and bus 1 first before you start the RAID volume creation. For Bus 0, it is designed to connect all three internal drives on Altos R500. For Bus 1, it is designed to connect all external drives on Altos S300.



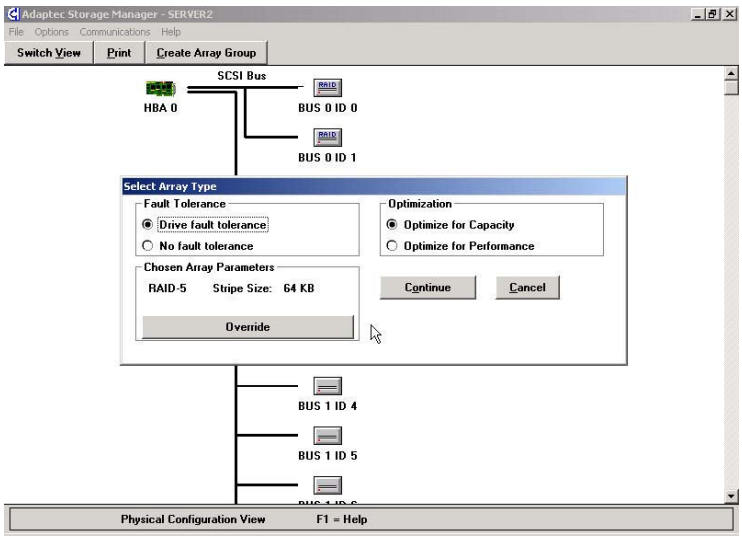
4. Before you start the RAID creation, you can decide if you need one hot spare drive. The function of the hot spare drive is when one drive failed in one RAID volume; it can be used for re-building this volume automatically.

5. You can choose the drive on Bus 1 SCSI ID 0 to be the hot spare drive if you need it. Double-click on “BUS 1 ID 0” icon and then you will see a configuration dialogue box. Click on the “Make HotSpare” button to set this drive as a hot spare drive. After that you will see a Red Cross tag on the original drive icon.





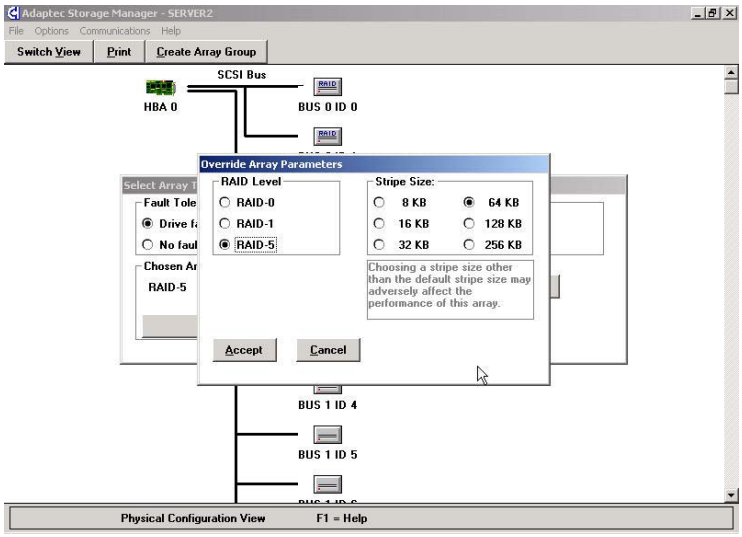
6. For configuring RAID volumes on Altos S300, you can click the “Create Array Group” button to open the RAID configuration dialogue box.



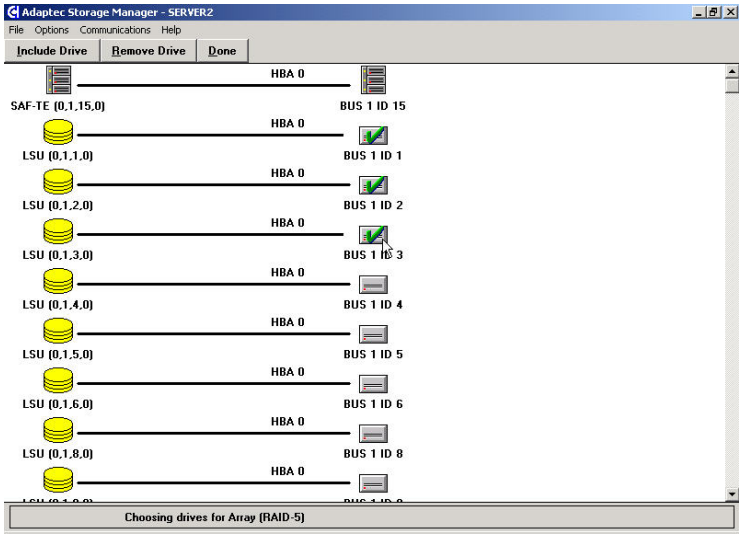
7. In the dialogue box window, you can see three frames on it. The “Fault Tolerance” frame and “Optimization” frame is a simple wizard to help you to make decision of what kind of RAID levels you should create. Please refer to the following table to select the RAID levels.

RAID Levels	Fault Tolerance	Optimization
0	No Fault tolerance	N/A
1	Drive fault tolerance	Optimize for Performance
5	Drive fault tolerance	Optimize for Capacity

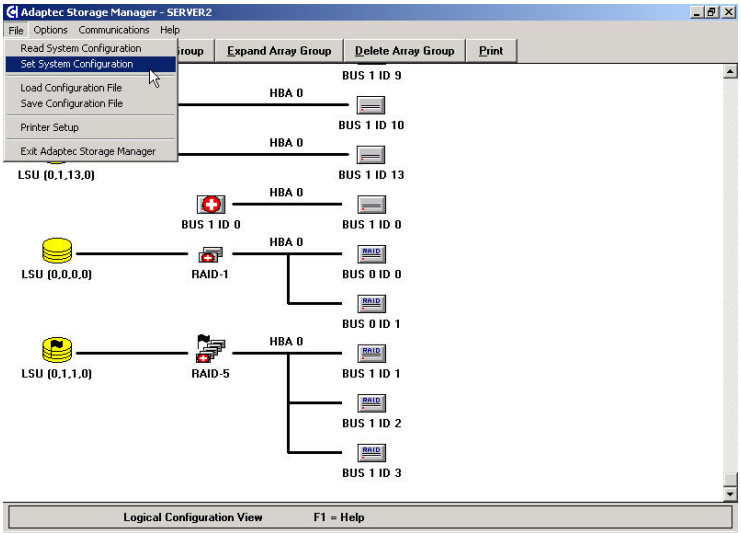
8. Or, you can click on the “Override” button to make the advanced setting.



9. After setting the RAID level, you can click “Continue” button to include the physical drives into this RAID volume. Clicking on the physical drive icons to choose the drives you want to put into this RAID volume, then click on “Include Drive” button to include them. Finally, click on the “Done” button to finish this setting.



10. After finishing the hot spare drive setting and RAID volume creation, you have to set the system configuration to make it work. From “File” menu, select “Set System Configuration” option to set it. Now you create partition on this RAID volume from Windows’ Disk Management.

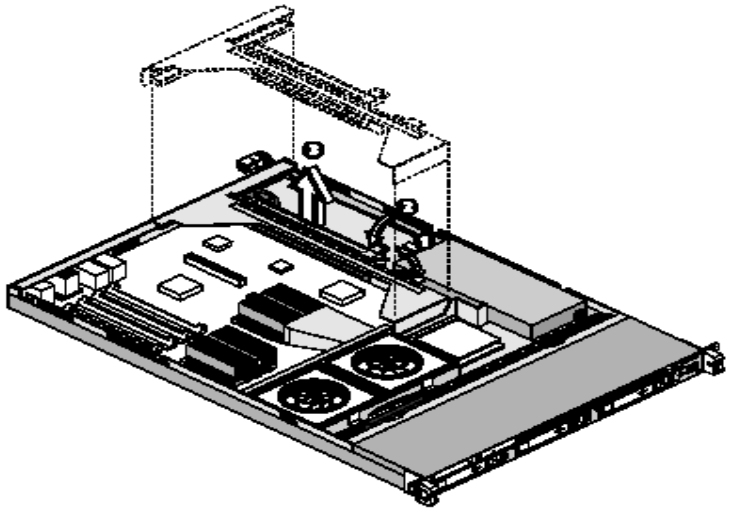


Altos R500 with Mylex AcceleRAID 352

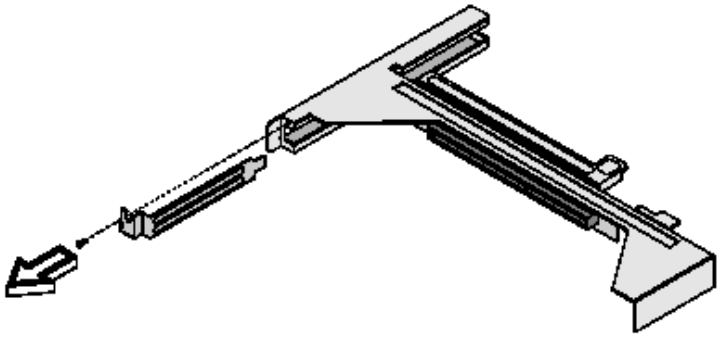
Installing the Mylex AcceleRAID 352

The Acer Altos R500 system has two 64-bits PCI slots allowing installation of two expansion cards. Because Mylex AcceleRAID 352 is a long card, you can only install it on the internal slot bracket nears the CPU. To install the Mylex AcceleRAID 352:

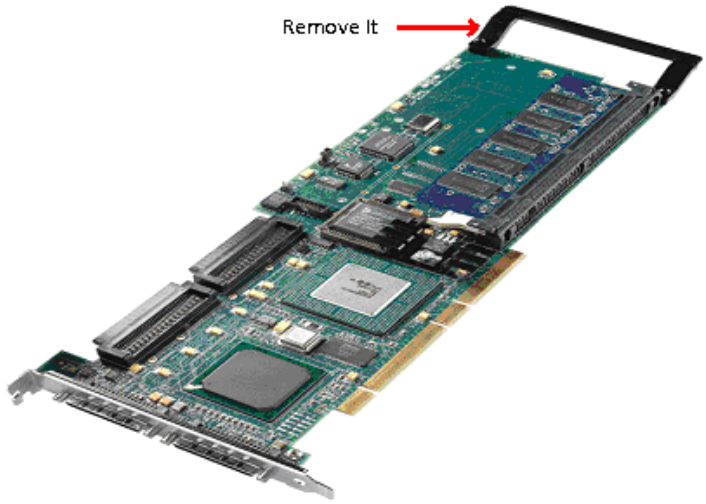
1. Remove the system cover.
2. Open the clips securing the metal bracket to the system housing (1 and 2). Gently pull out the metal bracket from the main board (3).



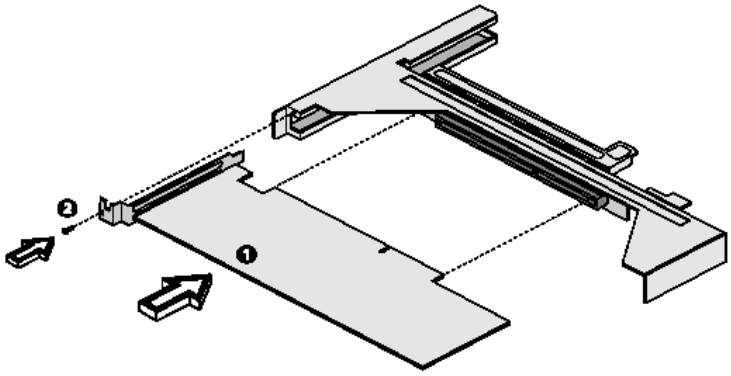
3. Remove the expansion slot bracket on the internal side of the metal bracket. Save the screw for later use.



4. Remove the plastic arm on Mylex AcceleRAID 352.



5. Align then insert the expansion card into the slot bracket.
6. Secure the expansion slot bracket to the metal bracket with the screw you previously removed.



7. Reinstall the metal bracket into the main board system. Make sure that the securing clips are properly close.
8. Replace the system cover.

Connecting the Altos R500 to Altos S300

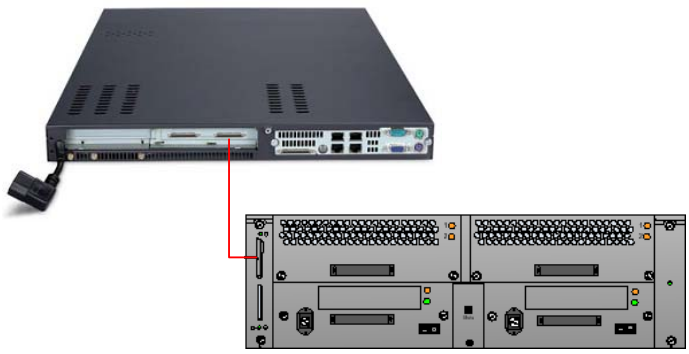
If you only install 7 or below drives in Altos S300, then you can use one Ultra160 VHDCI-to-VHDCI SCSI cable to connect the Altos S300 and Mylex AcceleRAID 352 in single bus mode.

If you install over 7 drives in Altos S300, then you can use two Ultra160 VHDCI-to-VHDCI SCSI cables to connect the dual channels on Altos S300 and Mylex AcceleRAID 352 in split bus mode to get better performance. For this configuration, you can get maximum 320MB/s bus bandwidth. If you are not clear about the difference between single bus mode and split bus mode of Altos S300, please refer to the Acer Altos S300 User's Guide.

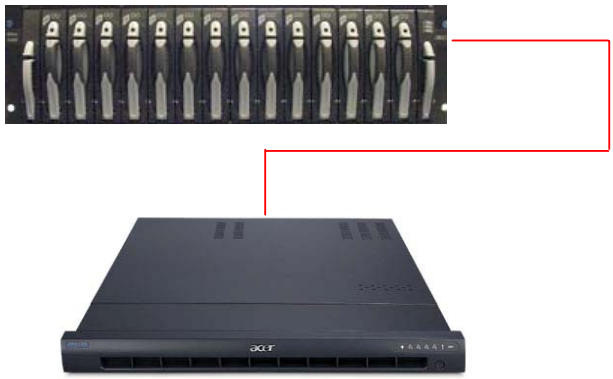
Follow the procedures below to connect the cable in **single bus mode** (see figure below):

1. Power off the Altos S300 and Altos R500.
2. Attach one end of the SCSI cable to the connector on Altos S300's ESM module.
3. Attach the other end of this cable to Mylex AcceleRAID 352's external SCSI connector.

Rear View



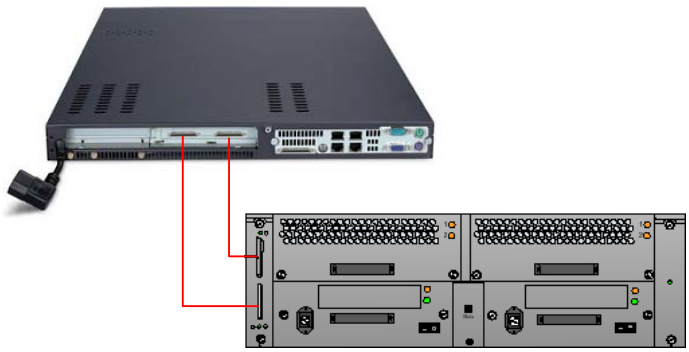
Front View



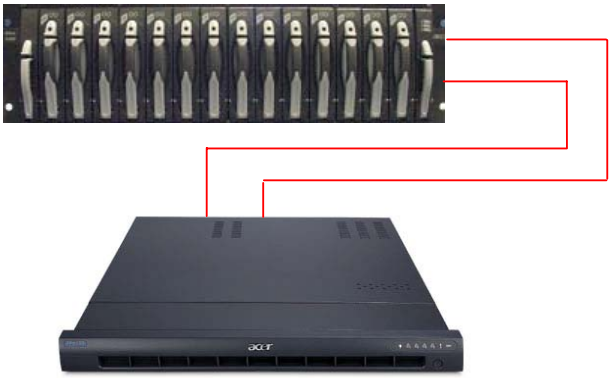
If you want to connect dual channels, you can follow the procedures below to connect the cables in **split bus mode** (see figure below):

1. Power off the Altos S300 and Altos R500.
2. Attach one end of the SCSI cable to the connector on Altos S300's ESM module.
3. Attach the other end of this cable to Mylex AcceleRAID 352's external SCSI connector.
4. Repeat the step 2 & 3 to connect the other SCSI cable.

Rear View



Front View



Configuring the Mylex AcceleRAID 352

After finishing the hardware installation and connection, you can start to create RAID volume. For Mylex AcceleRAID 352, if you don't define RAID level on physical drives, you cannot see those drives from the operating system.

There are two ways for you to create the RAID volumes before you can use them. The first one is by entering the Mylex AcceleRAID 352s BIOS and then configure the RAID volumes as you want, the other one is by using the Global Array Manager (GAM) from Mylex to configure the RAID.

Configure the RAID volume by entering the BIOS:

Follow the procedures below to configure the RAID volumes on Altos S300:

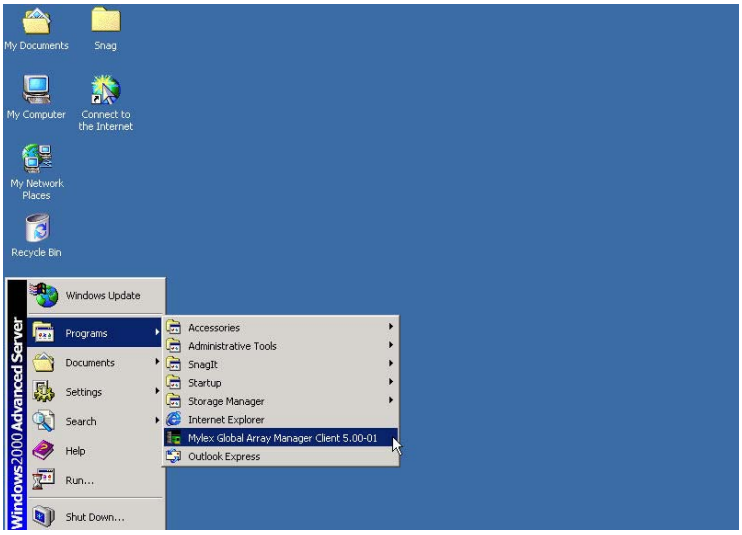
1. Power up the Altos S300 and Altos R500.
2. After seeing the AcceleRAID 352 BIOS banner, press <Alt+R> to enter the Mylex AcceleRAID 352's BIOS.
3. After entering the BIOS, click on the controller you have on the server, then it will scan the SCSI channel automatically and check how many devices are on these two channels. Before you create the RAID volume, you can check how many physical drives are connected on channel 0 and channel 1.
4. Under "Perform Administration on …" menu, you can find the "Physical Device" option. Click on this option and you will see how many drives are on these two channels. In single bus mode, the SCSI ID will be from 0 to 14. SCSI ID 7 is reserved for adapter and SCSI ID 15 is reserved for enclosure service processor. In split bus mode, the SCSI ID will be from 8 to 14 in each of these two channels.
5. Before you start the RAID volume creation, you can decide if you need one hot spare drive. The function of the hot spare drive is when one drive failed in one RAID volume; it can be used for re-building this volume automatically.
6. You can choose the drive on Channel 0 SCSI ID 0 to be the hot spare drive in single bus mode, or Channel 0 SCSI ID 8 to be the hot spare drive in split bus mode. Click on this physical drive and you will see a configuration menu. Click on the "Designate Drive as Spare/Unused" option and then click on the "Global" item to set this drive as the hot spare drive.
7. For configuring RAID volumes on Altos S300, you can select "Configure RAID Drive" menu and press "Enter" key. In it, there are three options for you to create the RAID volumes. The first option "Automatic" will set the hot spare drive and decide the RAID level based on the physical drives you installed on the Altos S300. The second option "Assisted" will guide you step-by-step to configure the RAID level.

8. The third option is “Custom”. By choosing this option, you can have maximum flexibility to configure the Altos S300. After choosing this option, you will see a menu that can let you add the physical drives into an array. Click on the drives you want to add and click “Save Array”. After that you will see a Logical Drive Definition window. Under the RAID Level option, you can press “Space” key to change the RAID level and click on the “Add Drive” button and then “Apply” button to save this configuration.
9. Then, you can follow the same procedures on Step 8 to create other RAID volumes.
10. After finishing the whole settings, you can quit the AcceleRAID 352’s BIOS and restart the system.
11. Like it was mentioned before, if you want to get better performance from the Altos S300 and you install over seven drives in it, then you should connect these two channels from Mylex AcceleRAID 352 to Altos S300 in split bus mode. Because the RAID volume can be striped across these two channels and totally you can get a maximum of 320 MB/s bus bandwidth. In split bus mode, the way to create the RAID volume is the same as in single bus mode.

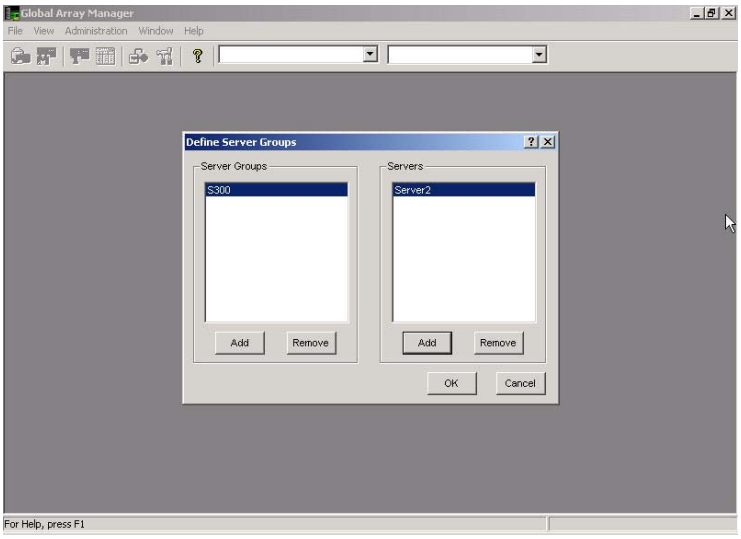
Configure the RAID volume by using the Mylex Global Array Manager:

On Windows 2000 operating system, you can also use Mylex Global Array Manager (GAM) to configure the RAID volumes. Before you can use it, you have to install Mylex GAM first. To execute the Mylex GAM, you have to create a user account "gamroot" and give this account the administrator privilege. Then, you can follow the procedures below to configure the RAID volumes, as you need:

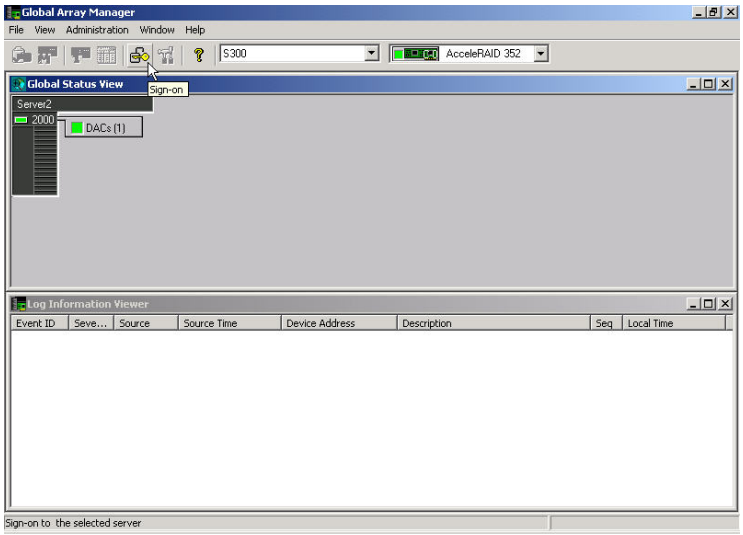
1. Power up the Altos S300 and Altos R500.
2. After entering the Windows 2000, you can execute the Mylex Global Array Manager Client from Programs menu.



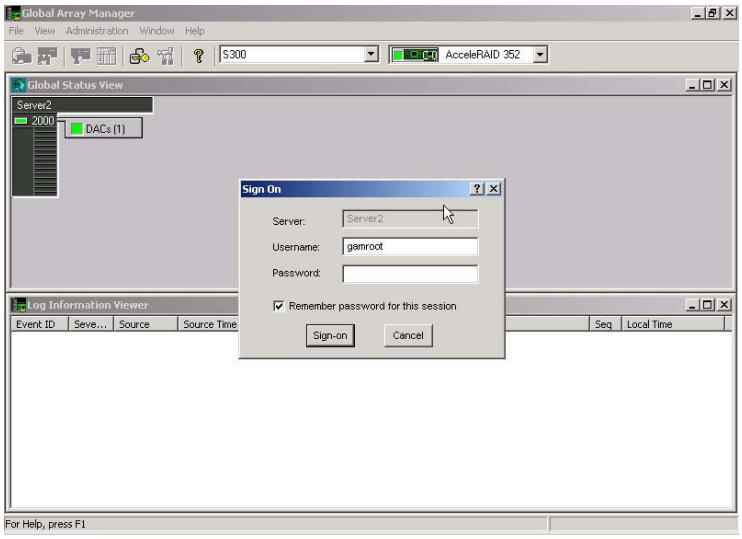
3. After you launch the Mylex Global Array Manager, you will be prompted to create a Server Group and include your server in it. That is because Mylex Global Array Manager is client/server architecture and provides the ability to manage and monitor multiple servers in one central console.



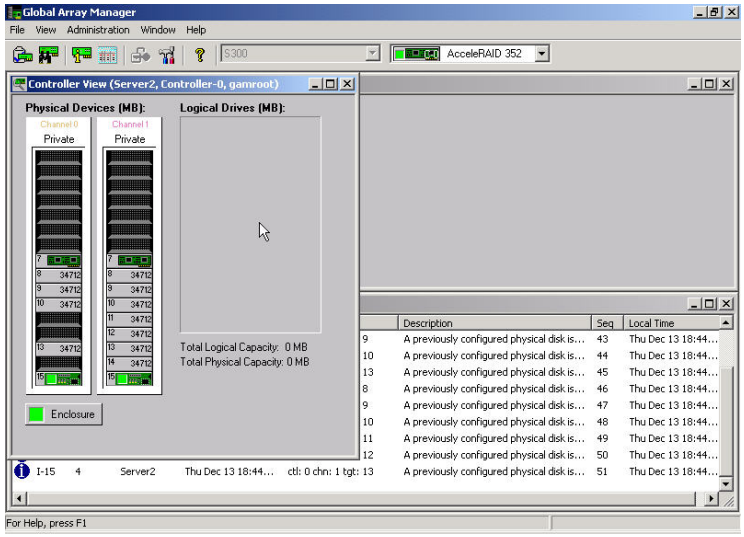
4. After that, you have to sign on this Altos R500 server by clicking the Sign-on icon.



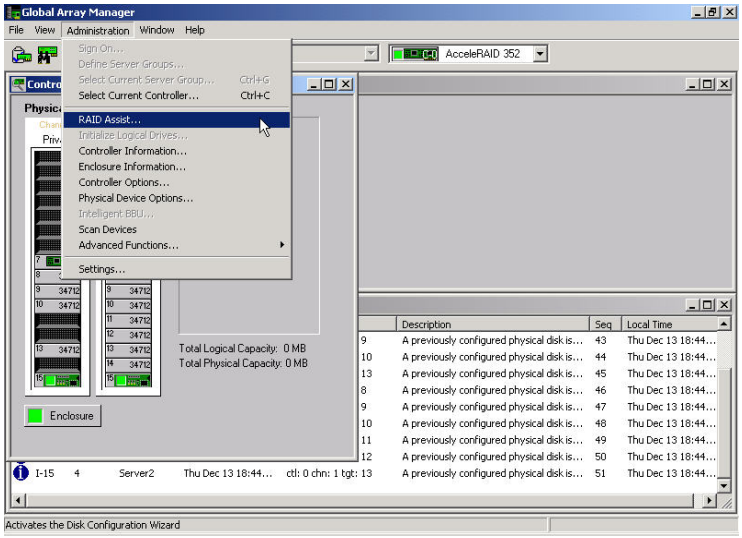
5. Then, enter the “gamroot” as the user name and the password of it.



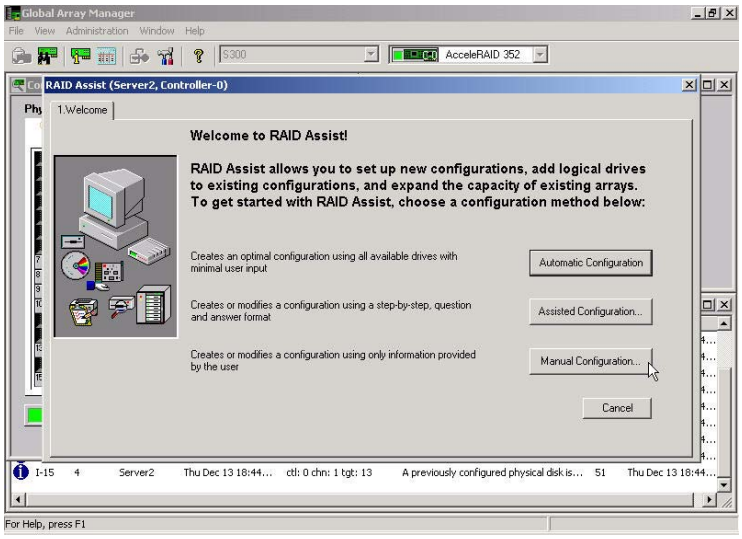
6. After you sign on the server, you can see there are two channels on this Mylex AcceleRAID 352 RAID controller. You can also see how many physical drives are on each channel.



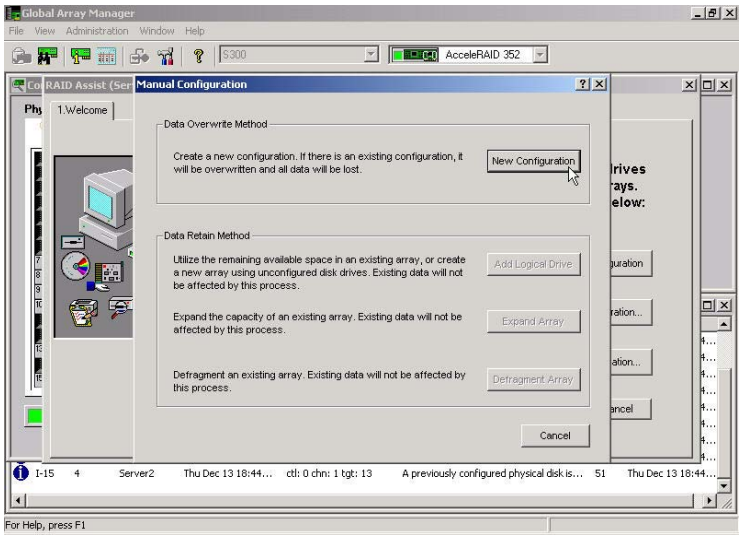
7. To create the RAID volume and set hot spare drive, you have to click on the Administration menu and select “RAID Assist…” option.



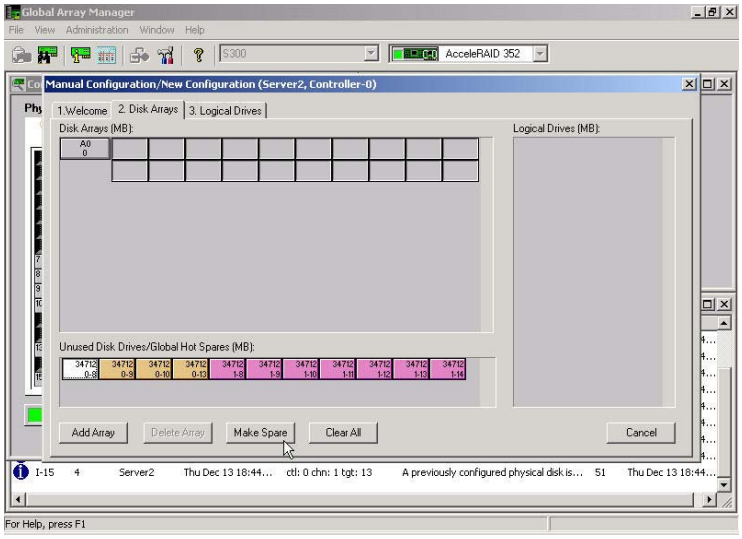
8. Then, the RAID Assist dialogue box will appear and you can choose “Automatic Configuration” option to configure the RAID volumes and hot spare drive automatically. Or, you can choose “Assisted Configuration…” to let it guide you step-by-step to configure your RAID volumes and hot spare drive. But if you want to get the maximum flexibility to configure the Altos S300, you should choose “Manual Configuration…” option.



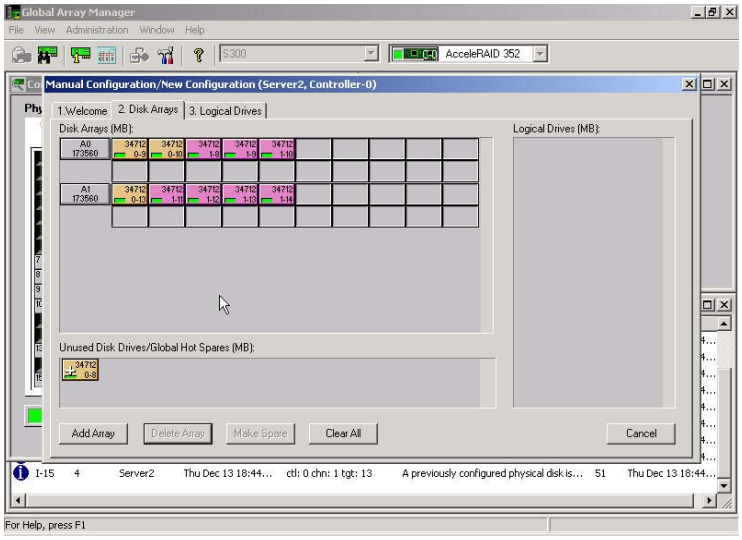
9. Click on the “Manual Configuration” option, you will see a dialogue box. Please click on the “New Configuration” button.



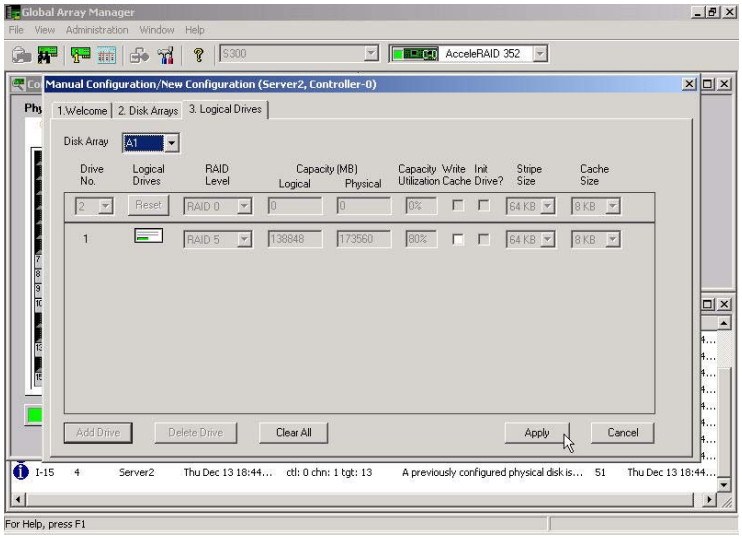
10. If you want to set one drive as the hot spare drive, you can click on the drive icon and click “Make Spare” button. After doing so, you will see there is a white cross tag on the drive icon.



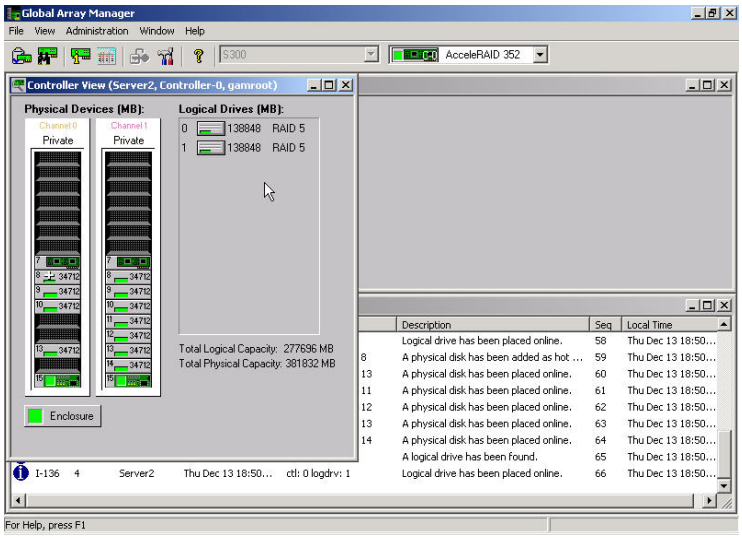
11. For creating new RAID volume, just drag the drive icon to the disk array till you want to create another disk array. Click “Add Array” button when you want to create another disk array.



12. Then, click on the “3. Logical Drives” option and set the RAID level for each disk array. After you finish all the setting, click on the “Apply” button to save your setting.



13. From the Global Array Manager window, you can see the RAID volumes listed in the Logical Drives frame.



14. Now you create partition on these RAID volumes from Windows' Disk Management.

MICROSOFT CLUSTER SERVER INSTALLATION

What is Microsoft's Cluster Service?

A server cluster is a group of independent servers running a Cluster service and working collectively as a single system. Server clustering provides high-availability, scalability, and manageability of resources and applications by grouping multiple servers running Microsoft® Windows 2000 Advanced Server or Windows 2000 Data center Server.

While a Cluster service does not guarantee non-stop operation, it provides availability sufficient for most mission-critical applications. Cluster services can monitor applications and resources, automatically recognize and recover from disk failure or power outages. This provides greater flexibility in managing the workload within a cluster, and improves overall availability of the system.

Before installing the cluster service, the following minimum system requirements must be met:

System Requirements

Servers

- Two Altos R500 as the cluster nodes
- Domain Controller

Cluster Nodes

- Mylex AcceleRAID 352
- Two on-board Intel 82550 NICs
- Hard Drive for Operating System (Microsoft Windows 2000 Advanced Server)

Shared Storage device

- Acer Altos S300
- 36 GB or 73 GB Ultra160 with SCA-2 SCSI interface hard drives for applications of the cluster
- CSM+TSM I/O module

LAN

- Hub/Switch for public network connections and domain controller
- Cross-over network cable or Hub/Switch for interconnection

OS

- Microsoft Windows 2000 Advanced Server on each node
- Service Pack 2 for Microsoft Windows 2000 Advanced Server

Software

- Microsoft Cluster Service
- Mylex AcceleRAID 352 driver version 7.0.2 for Microsoft Windows 2000 Advanced Server

External Cabling to connect subsystem to server boxes

- Two 68pin SCSI cables (VHDCI-to VHDCI cable interface) with maximum 25 meters per cable.

You must configure your network settings and join both nodes into the domain before installing Cluster Service and configure the cluster. Before installation, make sure the following information is available:

- Domain controller on the network
- Each node uses the Mylex AcceleRAID 352 to access the Altos S300 storage
- Each node contains two NICs

The next section shows the necessary configuration for creating a cluster.

System Configuration

The following are Server Cluster system configurations compliant with Microsoft Server Cluster Hardware Compatibility Testing (HCT).

Acer Altos R500 and Altos S300 with Mylex AcceleRAID 352

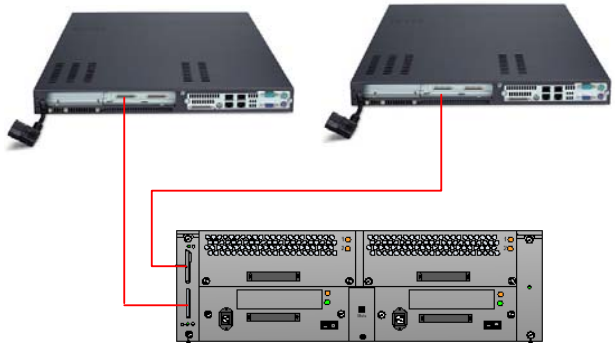
HCT version	HCT 9.502 (HCT 9.5 upgrade to 9.502)
Server Configuration	
Model	2 × Acer Altos R500
OS	Windows 2000 Advanced Server (Service Pack 2)
System BIOS	R01-B5
CPU	2 × PIII 1.0 GHz
Memory	4 × PC133 128MB of SDRAM
Internal Disk Controller	Adaptec SCSI RAID 2005S BIOS: v1.41 F/W: 380E Driver: 5.3.0.2 for Windows 2000 Advanced Server
SCSI Channel Disk Controller	Mylex AcceleRAID 352 RAID controller BIOS: v.6.01-26, Driver: v.7.0.2, Firmware: v.7.00-02
Network Adapter	2 × Intel 82550 onboard
Internal Hard Disk	1 × Seagate ST318406LC (18 GB, Ultra160, 10K RPM)

Share Storage Configuration	
Model	Acer Altos S300
RAID Controller	None (use PCI RAID controller)
I/O Module	CSM+TSM
Hard Disk	13 × Seagate ST336605LC (36 GB, Ultra160, 10K RPM) Use 12 HDD to create 3 logical drives and 1 HDD set as hot spare (2 to RAID-1, 5 to RAID-5, and 5 to RAID-5)
SES/SAF-TE	Two
Others	
Network Switch	1 × Intel Express 530T Switch
SCSI Cable	2 × 68 pin VHDCI-to-VHDCI SCSI cables

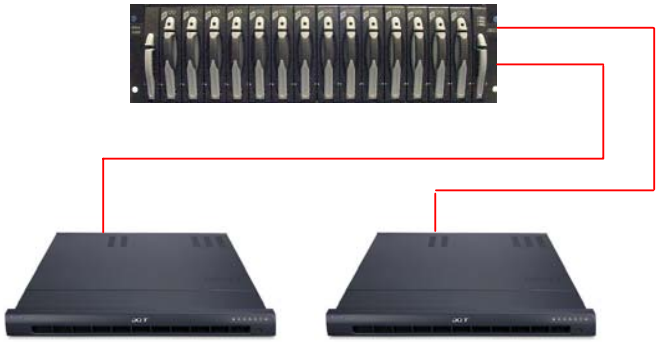
System Overview

The following graphic illustrates what the complete system should look like.

Rear View



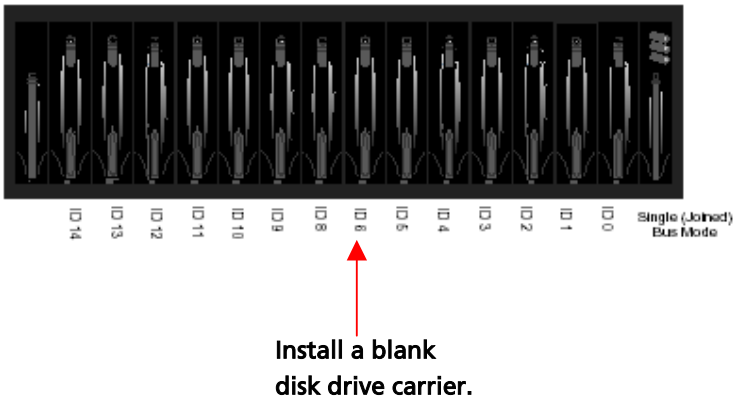
Front View



Installation

Please refer to the "Installing the Mylex AcceleRAID 352" section on page 16 to install this RAID controller into the Altos R500.

For installing the Altos S300, make sure the jumper on JP10 in CSM module is removed (OFF). Also you can only install 13 HDDs in the Altos S300, because SCSI ID 6 and 7 will be reserved for the Mylex AcceleRAID 352 on each cluster node and enclosure service processor on Altos S300 will use SCSI ID 15.



Configuring the Mylex AcceleRAID 352 Controller

After finishing the hardware installation and connection, you have to configure the Mylex AcceleRAID 352 and create RAID volumes for Microsoft Cluster Server and applications.

There are only two settings that you need to make on each of those two cluster nodes. The first one is enabling the cluster ability, and the second one is changing the SCSI ID of this adapter. For node 1, please change the SCSI ID of the adapter to 6; for node 2, please change the SCSI ID of the adapter to 7. For the RAID volume creation, please refer to "Configuring the Mylex AcceleRAID 352" section on page 20 for detailed information.

For making these two settings on Mylex AcceleRAID 352 controller, please follow the procedures below: (We suggest you do the settings in BIOS mode, instead of using Mylex Global Array Manager.)

1. Power up the Altos S300 and Altos R500.
2. After seeing the AcceleRAID 352 BIOS banner, press <Alt+R> to enter the Mylex AcceleRAID 352's BIOS.
3. Select the controller and press <Enter> key.

➲ **Enabling Cluster Mode**

4. From the configuration menu, select "Advanced Options" and press <Enter> key.

5. Select “Clustering” option and press <Enter> key.
6. In the “Clustering Control” dialogue box, enable the clustering function and exit this dialogue box.

➲ **Initiating ID Settings**

7. Then, select “Host ID Change” option and press <Enter> key.
8. In the “HostID Change” dialogue box, select the “HostID for Controller” item and press <Space> key to select the ID you want to change. For node 1, please select “6 – 124” option; for node 2, please select “7 – 125” option, and then click on the “OK” button.
9. After you enable the clustering function and make the SCSI ID change, you can start to create the RAID volume for the Microsoft Cluster Server installation later.

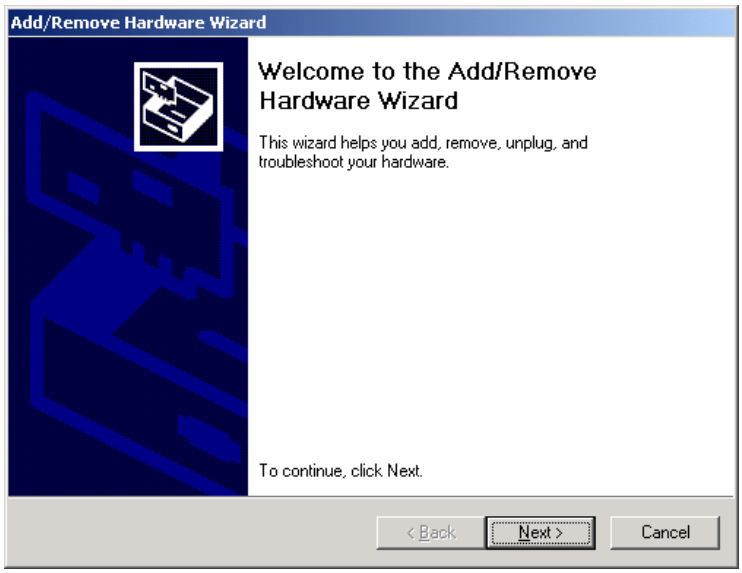
Driver Installations

After the Mylex AcceleRAID 352 controller setting, RAID volumes creation, and Windows 2000 Advanced Server installation on each cluster node. You have to install the drivers for the Mylex AcceleRAID 352 and Altos S300. The procedures below show you how to install these drivers.

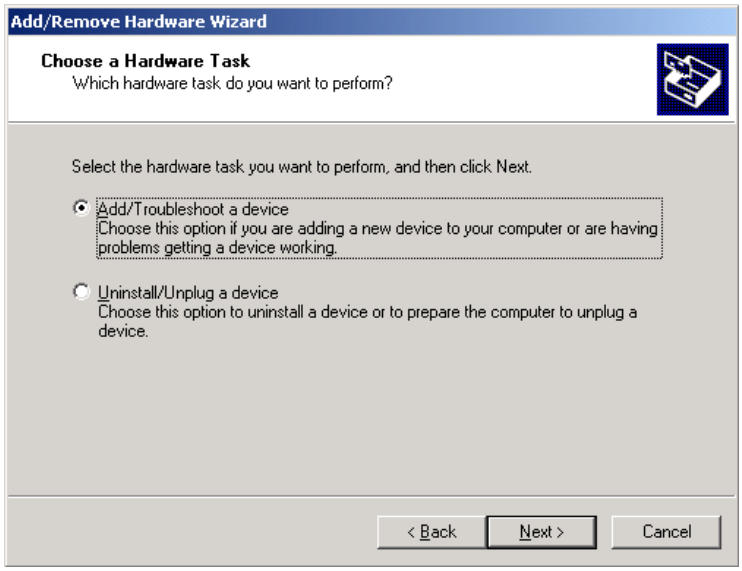
1. After installing the controller into the server and booting Windows 2000 Advanced Server, the following messages appear

2. Click Cancel.
3. Click Start -> Settings -> Control Panel.

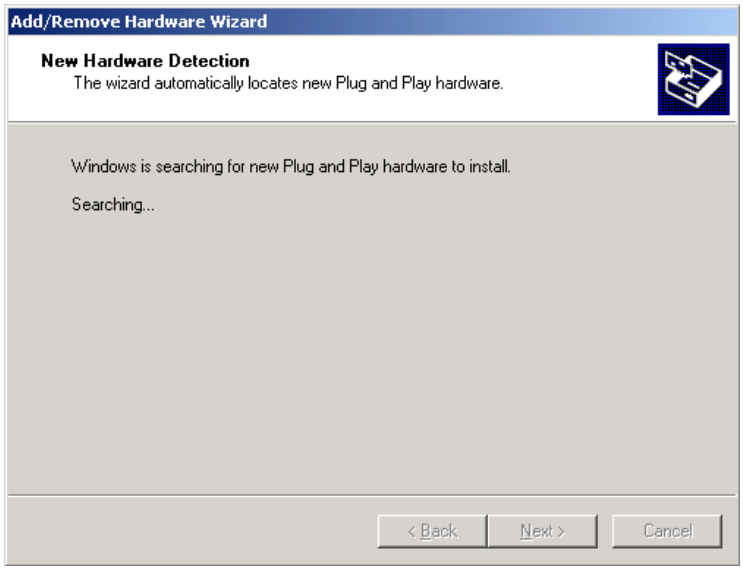
4. Click Add/Remove Hardware. The following dialog box appears:



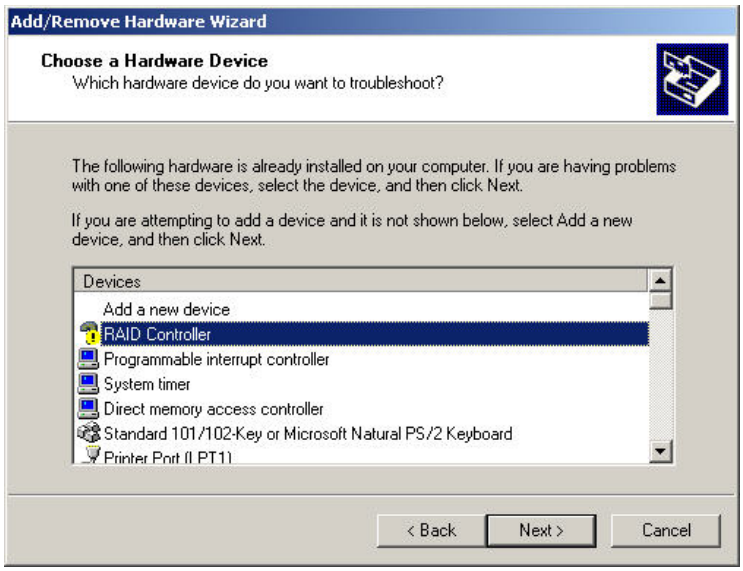
5. Click Next. The following dialog box appears:



6. Select Add/Troubleshoot a device, and click Next. The following dialog box appears:

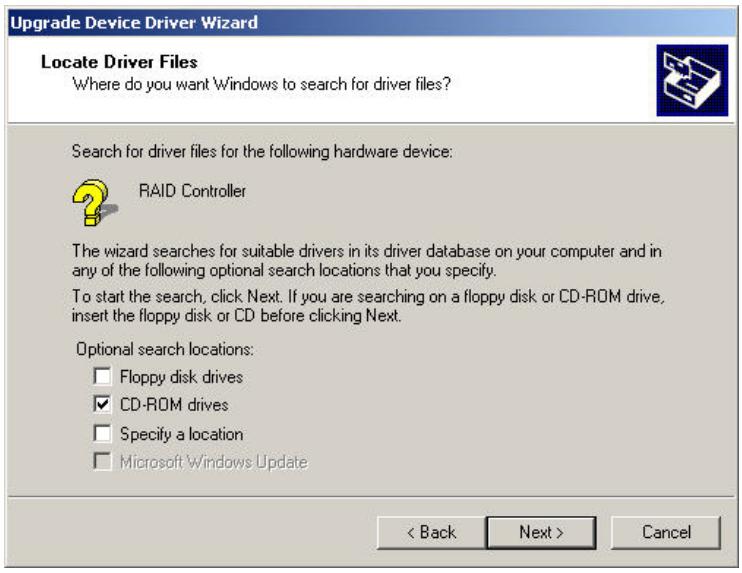


7. Windows begins searching for new Plug and Play hardware to install.
8. Select RAID Controller with exclamation mark "!", and click Next.

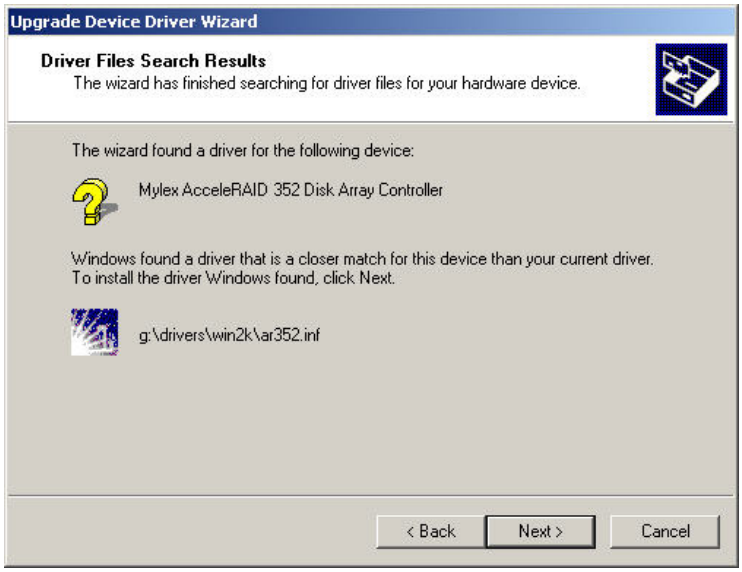


9. Select Search for a suitable driver for my device (recommended), and click Next.

10. Select the locations where you want to search for the drivers and click Next.



11. Windows will automatically find the ar352.inf file to install the Mylex AcceleRAID 352 Disk Array Controller driver. Click Next.



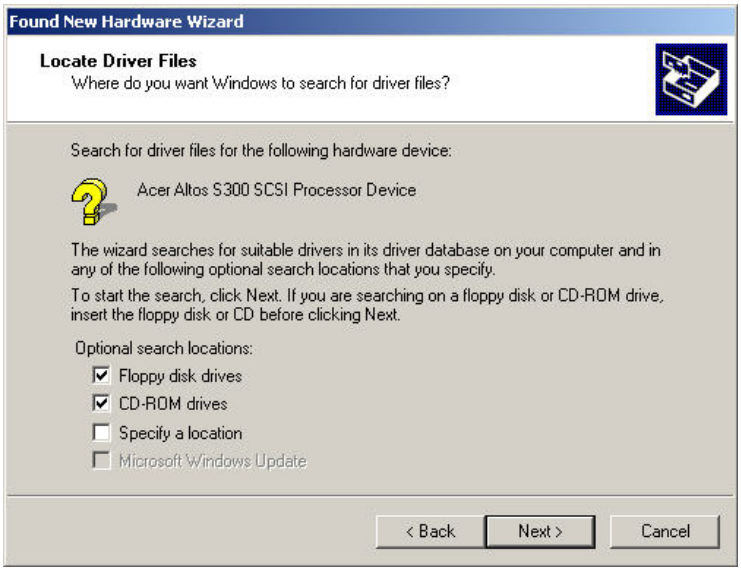
12. Once complete. Click Finish

13. Another device, the Altos S300 SCSI Processor Device is automatically detected. Start installing the AltosS300 SCSI Processor Device driver.

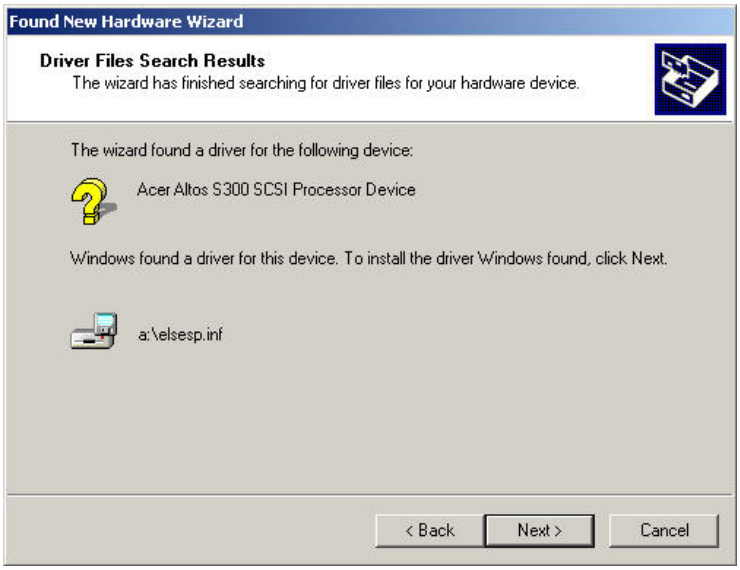
14. Click Next.

15. Select “Search for a suitable driver for my device (recommended)”, and then click Next.

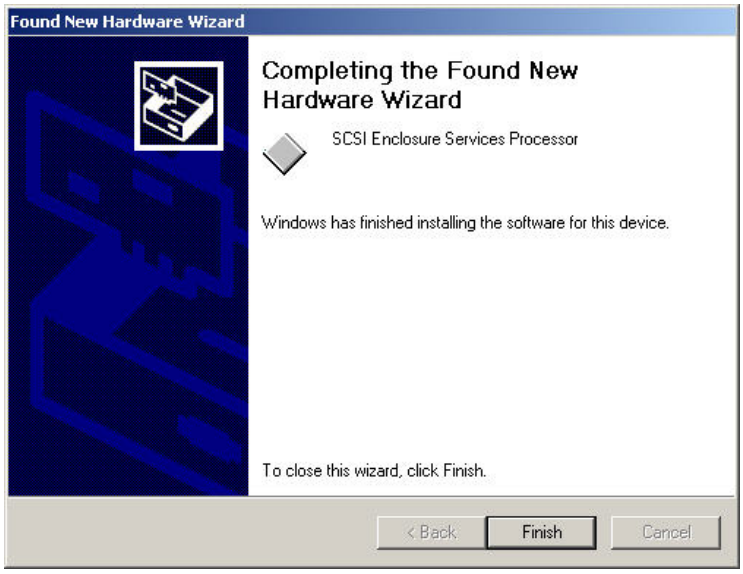
16. Select the locations you want to search. Insert the driver into the floppy disk drive or CD-ROM and click Next.



17. The system will locate the elsesp.inf file to install the Acer Altos S300 SCSI Processor Device driver. Click Next.



18. Click Finish. The drivers are successfully installed.



Cluster Service Installation

1. Make sure the public and private network configurations are complete on both nodes. This enables the public network to be accessed by client machines and the private network can exchange heartbeats.
2. Join the domain to the cluster service.
3. Set up the shared storage (Altos S300). Partition the logical hard disks on the Altos S300 as basic and NTFS partitions. Make sure the drive volume mappings are the same on both nodes.
4. Install the Microsoft Cluster Service on both nodes.
5. Configure the first node. After it runs the cluster service, configure the second node to join the cluster. This completes the cluster service configuration.
6. For a detailed installation and configuration of Microsoft Cluster Service on Acer Altos Server, please refer to another document "Installation and Configuration Guide for Cluster Services running on Microsoft® Windows 2000 Advanced Server using Acer Altos Servers".

FOR MORE INFORMATION

For more detailed information about Acer Altos servers, please refer to: http://www.acer.com
For more information on the Adaptec SCSI RAID 2005S controller, check out Adaptec's web site at: http://www.adaptec.com

For more information on the Mylex AcceleRAID 352 controller, check out Mylex's web site at: http://www.mylex.com

For detailed installation and configuration of Microsoft Cluster Service on Acer Altos Server, please refer to another document "Installation and Configuration Guide for Cluster Services running on Microsoft® Windows 2000 Advanced Server using Acer Altos Servers".

For the latest information on Windows 2000 Advanced Server and Microsoft Cluster Service, check out Microsoft's web site at: http://www.microsoft.com/windows2000/technologies/clustering/default.asp