Chapter 2 Installation

2.1 Physical

As described briefly in Chapter 1, the IFT-6300 consists of a RAID controller, drive bays and trays, power supplies, fans, and an enclosure.

Packing List

The box that the IFT-6300 came in should have included the following:

- IFT-6300 RAID Subsystem
- Eight (8) Drive Trays
- RAID Management Software CD
- One (1) Null Modem Port Adapter
- One (1) Power Cord

SCSI Models Only:

- One (1) SCSI Cable
- One (1) SCSI Bus Terminator (installed)

Location Diagram

The diagram below indicates the position of controls, switches, ports, indicators, and other physical aspects of the subsystem.

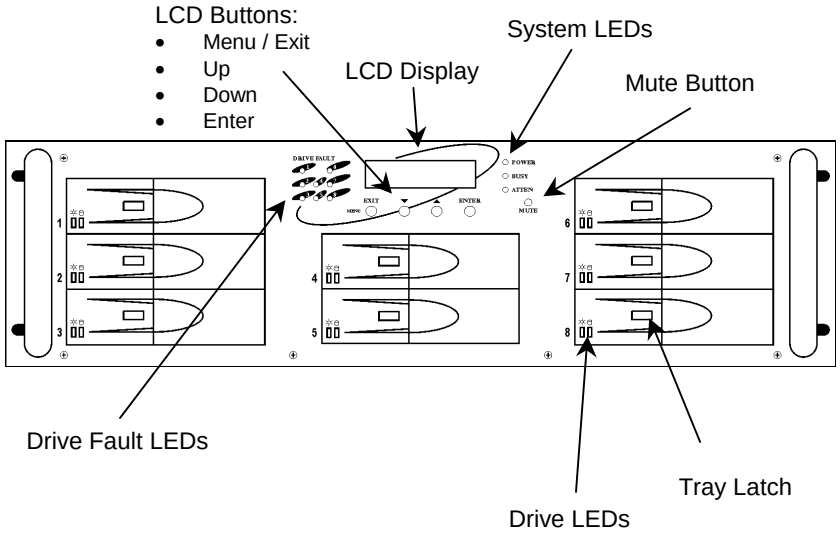


Figure 2-1 : Front Panel

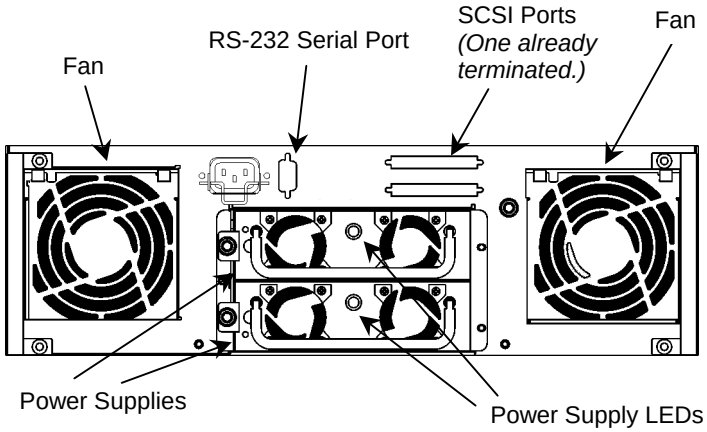


Figure 2-2 : Rear Panel, SCSI Models

Enclosure Features

The enclosure includes features designed to make installation and daily operation both easier and more secure.

- **On/Off Switch** – because data may be in the cache at the moment power is turned off (and would be lost if power was cut at that moment), the controller protects data integrity by not allowing power off until the cache has been completely flushed.
- **Alarm** – whenever a controller, drive, array, or enclosure event occurs, an audible alarm sounds to alert the system user or manager.
- **Mute Button** – when the alarm sounds, the mute button allows you to stop the alarm until the next event.
- **LEDs** – both the controller and each drive have multiple LEDs which provide basic operating status readout. The power supplies each have a single LED which indicates whether or not the power supply is good.
- **Drive Hot-Swap** – in the event of a failure or a need to add a drive (assuming there is an open drive bay), drives can be removed or added without powering down the entire array.
- **Power Hot-Swap** – the power supplies are redundant and can be swapped without powering down the entire array in the event of a failure.
- **Fan Hot-Swap** – the fans are hot swappable so that in the event of a failure, a bad fan can be removed and replaced without needing to power down the array.
- **LCD Status Indications** – the LCD displays the current operating status of all drive bays during normal operations. Error conditions and failures in enclosure devices are also indicated on the LCD as they occur.

- **Tray Latches** – to prevent drives from being accidentally removed, each drive tray has a latch to secure it in place.

Termination (SCSI)

When using SCSI devices, it is always necessary to pay careful attention to termination. A SCSI bus must be properly terminated at both ends. The IFT-6300 SCSI models come with a physical terminator attached to one SCSI port. If the RAID array is the last SCSI device on the bus, simply attach it to the host using the unterminated SCSI port and the enclosed external SCSI cable. *(For information about Fibre connections, see Chapter 6.)*

If you want to daisychain other SCSI IFT-6300 arrays or other SCSI devices to your current SCSI IFT-6300, shut down all SCSI devices on the bus first. Once no devices on the bus are transmitting data, disconnect the terminator, connect the new SCSI device, terminate the bus (if it isn't already), and restart all devices. Note that termination must be on both ends of the SCSI bus, and only on both ends. Most SCSI HBAs have built-in auto-sense termination.

Host Requirements

In order for the IFT-6300 (SCSI models) to be connected to the host computer, the host must have a SCSI host bus adapter (wide or single-ended) installed. Most commonly, a host bus adapter (HBA) is an add-on card that includes external SCSI ports used to connect with SCSI devices, including the IFT-6300 array.

Fibre IFT-6300 models need a fibre HBA installed in the host for the same reasons as given above for SCSI.

In addition to an HBA, host computers that want to use the RAIDGuide Java GUI management software must meet the following minimum configuration: Pentium or above compatible (or equivalent PC or workstation) running Windows NT or Windows 2000. A host computer running RAIDGuide must also either have a network (LAN) card installed and running or MS Loopback Adapter installed and running. (See the end of Section 2.4 for more information.)

If RS-232 terminal management is used, the IFT-6300 is compatible with Solaris (SPARC, x86) and Linux workstations and computers.

2.2 Hard Drives

Now that you are familiar with the subsystem, choosing and installing the correct hard drives in the IFT-6300 is the first step in the installation process.

Guidelines

When choosing which hard drives to install, we strongly suggest that you consider the following:

- **Capacity (MB / GB) –** while it is important that you use hard drives with sufficient capacity for your storage needs, it is equally important that you use drives with the same capacity. RAID arrays use a "least-common-denominator" approach, which is to say that the array can only use the capacity of each drive up to the maximum capacity of the smallest drive. So choose big drives and use the same size.
- **RPM –** Revolutions Per Minute is one measure of hard disk speed. The higher the RPM, the faster the drive because seek times are reduced.
- **MS –** Milliseconds is another common measure of disk speed. MS is the average seek time. Lower numbers indicate faster seek times.
- **ATA/UDMA-66, ATA/UDMA-100 –** The IFT-6300 is an EIDE disk array subsystem designed to work with the latest generation of IDE hard drives. Hard drives used in the IFT-6300 must conform with one of the two standards above.
- **Profile –** The trays and bays of the IFT-6300 are designed for 3.5" wide x 1" high hard drives. It is highly recommended that users not try to use any other size drive.

Supported Hard Drives

The IFT-6300 supports all ATA/UDMA-66 and ATA/UDMA-100 hard drives. Drives from the following companies are, however, recommended by the manufacturer:

- IBM
- Seagate
- Quantum
- Western Digital
- Maxtor

Note that the IFT-6300 supports the use of different IDE drives (by manufacturer, size, speed, and so on) in a single array. The only limitation is that RAID implementation limits the maximum available space on every drive according to the maximum size of the ***smallest*** drive. Any additional space on larger drives in a mixed-drive array will not be used or available.

Other Considerations

The number of IDE drives installed directly relates to the available RAID levels (essentially, more drives equates to more options and higher RAID level availability). Also, with three or more drives, one drive can be used as a spare.

Finally, since a RAID array created using the IFT-6300 can be expanded by adding drives, it is important to consider using fewer large drives initially so that some drive bays will be available for future expansion needs.

Installing In Trays

Each drive bay in the IFT-6300 has a matching drive tray. To install an IDE hard drive in the enclosure, take an empty drive tray, hold the drive upside down and connect the short data and power cables to the drive, then flip the drive over and attach it to the tray using the four screws (steps as shown below):

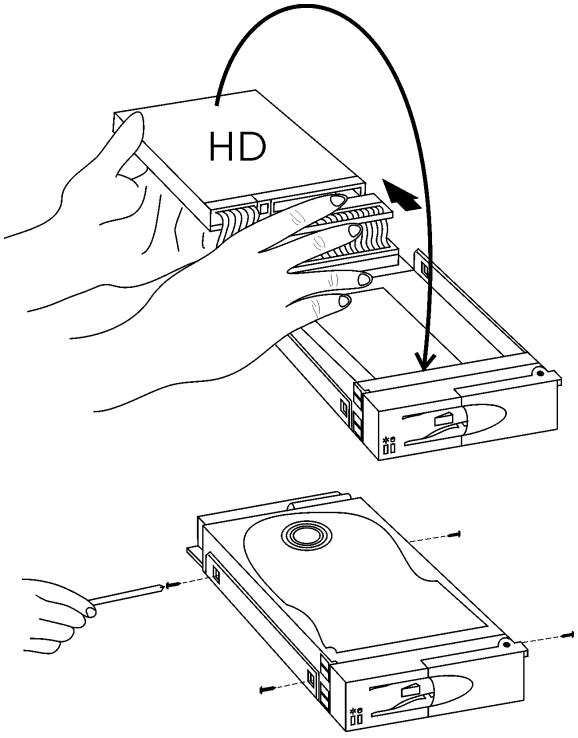


Figure 2-3 : Drive-to-Tray Installation

Once the drive has been installed in a tray, insert the tray into an unoccupied drive bay and secure the tray lock:

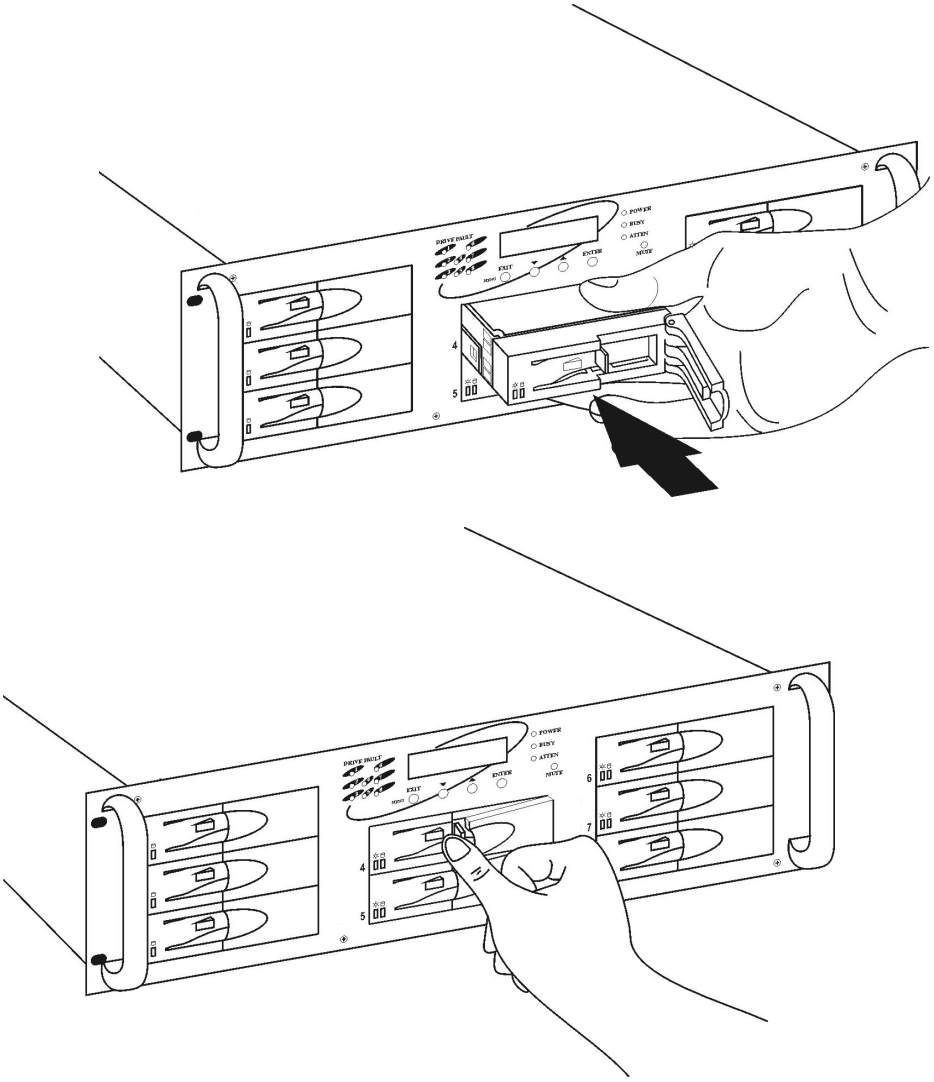


Figure 2-4 : Tray-to-Bay Installation

2.3 RAID Creation

The IFT-6300 RAID controller provides two methods for creating a RAID array: auto setup and manual, both via either the LCD panel or terminal emulation.

Auto RAID Setup

Auto RAID Setup is the simplest way to create a new RAID. The RAID controller will select the optimum configuration based on the number of drives installed.

- **One Drive** – *Not supported*
- **Two Drives** – RAID 0
- **Three Drives** – RAID 5
- **Four Drives** – RAID 5
- **Five Drives** – RAID 5
- **Six Drives** – RAID 5
- **Seven Drives** – RAID 5
- **Eight Drives** – RAID 5

To start the Auto RAID Setup, after physically installing the hard drives, press the **Menu/Exit** button until the main menu appears.

IMPORTANT!
If you don't want to use the default SCSI ID setting, it is highly recommended that you change the setting before creating a new RAID using Auto RAID Setup.

The RAID initialization process can take a long time depending on the size of the hard drives used. Changing the SCSI ID setting requires reinitializing the array, potentially doubling setup time if not done first. *(See Chapter 6 for information on setting a Fibre ID for fibre models.)*

Step 1 : If you would like to manually set the SCSI ID, do it now. The default SCSI ID setting is 0. To set the SCSI ID, display **SCSI ID##** in the LCD, press the **Enter** button, use the scroll bars to choose the ID you want, and press the **Enter** button. Note that the setting will not take effect until after a power reset. To skip this step, press the down arrow. *(See Chapter 6 for information on setting a Fibre ID for fibre models.)*

Step 2 : If you press the down arrow once again, the second item displayed should be "Auto RAID Setup." While Auto RAID Setup is displayed, press the **Enter** button. You will be asked to confirm, select Yes using the arrow buttons and press the **Enter** button.

The LCD will display "Init Parity xx% Please Wait!" When the initialization is complete, the LCD will display the Ready screen and you may now connect a host and use your RAID array.

(See *Section 4.1 Basic Features / Setup Modes* for more information.)

RAID Levels (LCD Menu Select)

Advanced users can also use either the LCD panel or terminal emulation to manually configure a new RAID array.

Step 1 : To use the LCD to create a new RAID array, press the **Exit** button for two seconds to enter the Main Menu.
Step 2 : Press the **Down** button twice to display Menu RAID Setup.
Step 3 : Press **Enter** to select.
Step 4 : Press the **Down** button to display all available RAID options (the IFT-6300 RAID controller will only list RAID options suitable for the number of hard drives installed).
Step 5 : Select the RAID level by displaying it and pressing **Enter**.
Step 6 : Confirm the selection by pressing the **Down** button once to display YES and then press **Enter**.

The LCD will display "Init Parity xx% Please Wait!" When the initialization is complete, the LCD will display the Ready screen and you may now connect a host and use your RAID array.

(See *Section 4.2 Advanced Functions* for more information.)

2.4 Software

Introduction

This section discusses how to install RAIDGuide in your system. Before proceeding with the setup procedure, your system display must (at minimum) be running in 256 color mode or some configuration items will not be visible. RAIDGuide supports Windows NT/2000.

Installation

Follow the steps below to install RAIDGuide on your host computer.

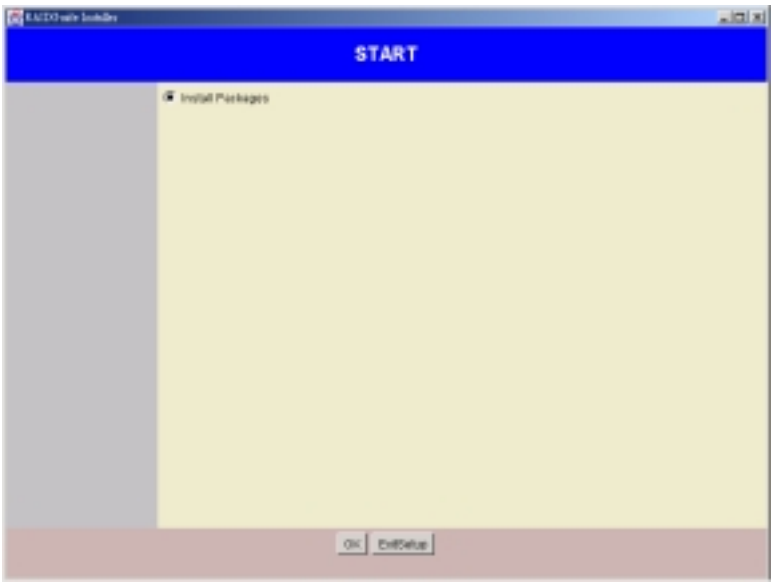
1. Insert the Infortrend RAIDGuide installation CD into your CD-ROM drive.

2. If you are currently running other applications, close them before proceeding with the setup process. This will minimize the possibility of encountering system errors during setup.

3. Go to the Windows subdirectory and run the install batch file (install.bat) to start the installation process. The batch file will open a DOS window and ask first if you want to install Java Runtime Environment (JRE). Press "Y" for yes and then **<Enter>** to install JRE. (JRE is a necessary Java add-on software component that allows RAIDGuide to operate.) Follow the JRE installation process instructions.

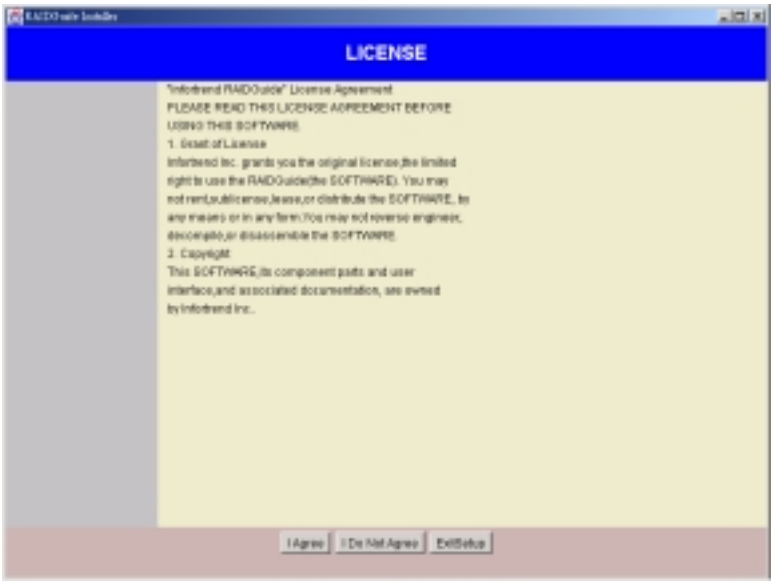
4. Once JRE has been installed, the installation script will then ask if you want to install RAIDGuide. Type "Y" and then **<Enter>** to install the program.

5. Choosing "yes" will start the installation process. Please select ***Install Packages*** and click the **OK** button to continue.

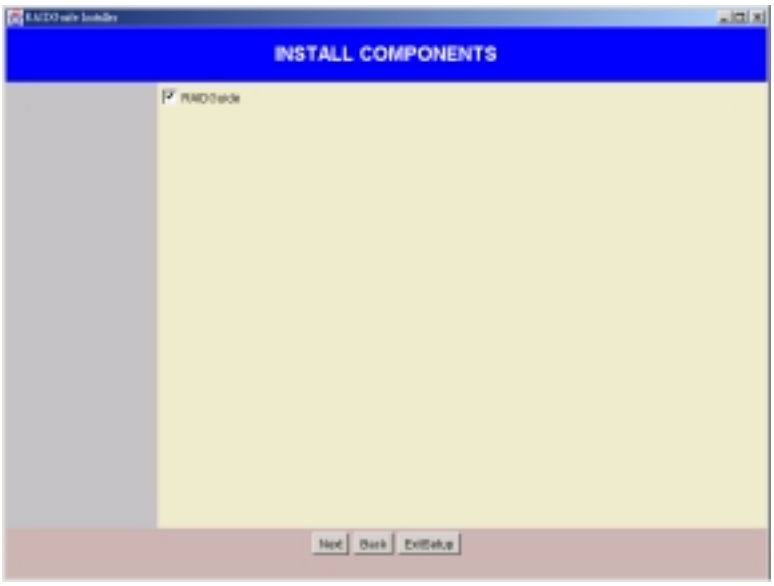


6. Click the **Next** button on the ***Welcome*** screen to continue.

7. Read the contents of the ***License*** and click the ***I Agree*** button to continue.



8. Please select **RAIDGuide** under the **Install Components** step. Then click on the **Next** button to continue.



9. Click on the **Install** button under the ***SELECT PATHS Window*** to start installing the selected components to your system. The installer program will automatically create a new directory for these components. The default directory is:
C:\Program Files\hybrid\bin.

10. Before the installation procedure finishes, it will ask if you want to add shortcuts to your computer. Choosing to add them will put a shortcut icon on your desktop for starting RAIDGuide. Click the **ExitSetup** button on the final screen to finish.

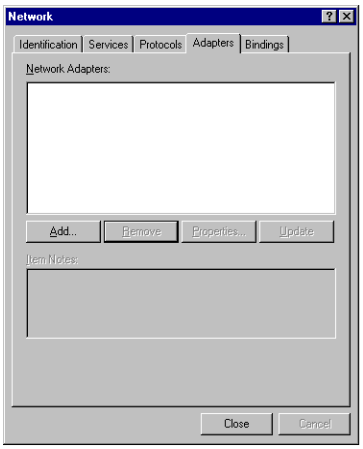
The installation procedure is now complete. You may start managing your RAID array. For information on first time operating instructions, see *Chapter 3, Use.*

MS Loopback Adapter : Windows NT

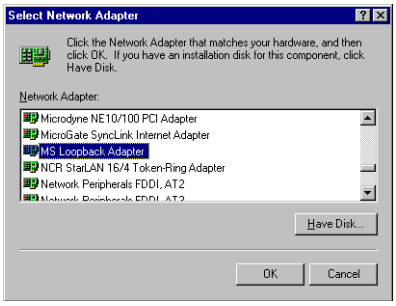
In order to run RAIDGuide, a Windows NT or Windows 2000 host computer must either have a network (LAN) card installed and operating, or must install and run MS Loopback Adapter.

If you want to install MS Loopback Adapter under Windows NT, please do the following and check your Windows documentation (see below for Windows 2000 specific instructions):

Step 1 : Open the **Control Panel**, select **Network**, choose **Adapters**, and click <**Add**>.

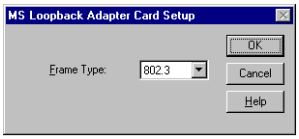


Step 2 : Select **MS Loopback Adapter** from the list of adapters and click **<OK>**.

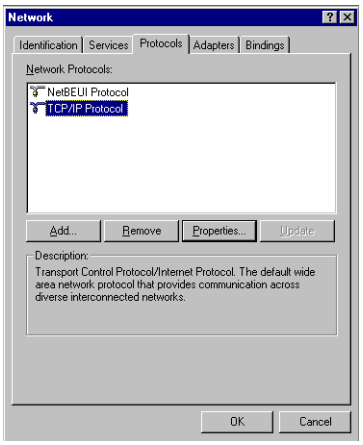


Step 3 : The installation procedure will ask for the location of your Windows install CD. Enter it.

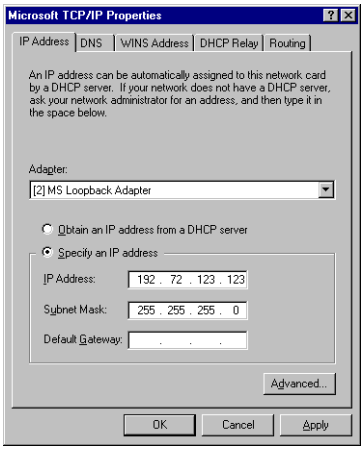
Step 4 : Once the installation is complete, it will prompt you for the **Frame Type**. The default is 802.3, click **<OK>** to choose it.



Step 5 : The **IP address** and **Subnet Mask** settings must now be configured. Under **Network**, choose **Protocols**, select **TCP/IP Protocol**, and click **<Properties>**.



Step 6 : Under **IP Address**, select **MS Loopback Adapter**, then enter an **IP Address** and a **Subnet Mask**. Next click **<OK>** to save.



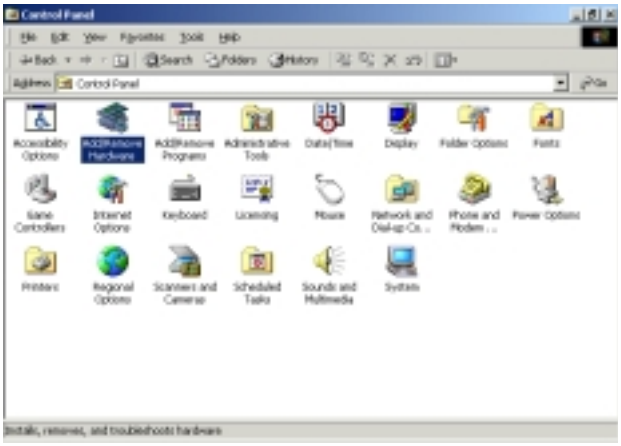
You may now close the Control Panel and use RAIDGuide to operate your RAID array. Note that when prompted by RAIDGuide to enter a host IP address, you should click the **<Local>** button in the pop-up window.

MS Loopback Adapter : Windows 2000

In order to run RAIDGuide, a Windows 2000 host computer must either have a network (LAN) card installed and operating, or must install and run MS Loopback Adapter.

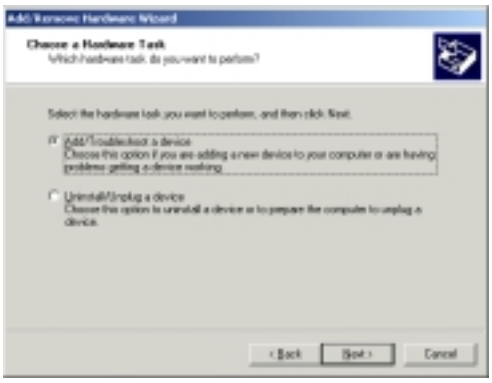
The step-by-step procedure below gives a brief explanation of how to install MS Loopback Adapter under Windows 2000 (see above for Windows NT):

Step 1 : Open the **Control Panel** and select **Add/Remove Hardware**.

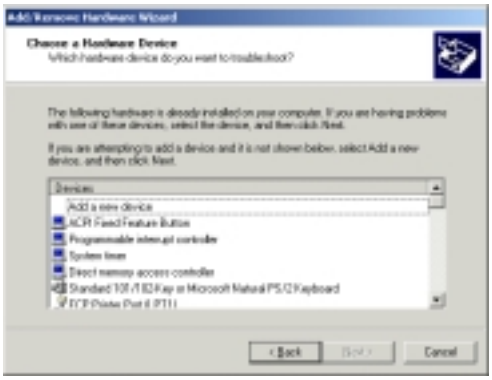


Step 2 : You should see the **Welcome to Add/Remove Hardware Wizard** window, click **<Next>**.

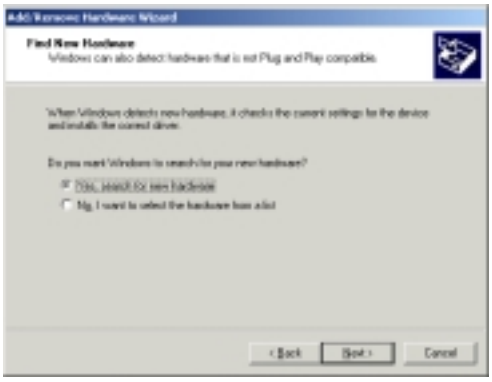
Step 3 : Under **Choose a Hardware Task**, select **Add/Troubleshoot a device,** and click **<Next>**.



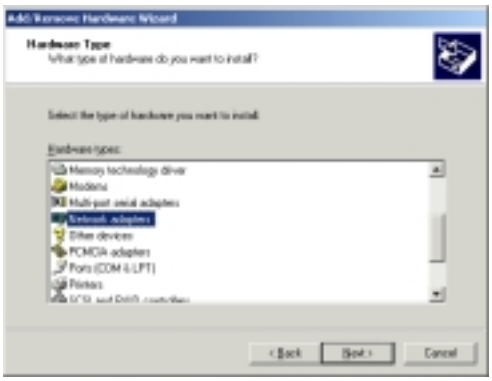
Step 4 : Under **Choose a Hardware Device**, select **Add a new device** in the list, and click **<Next>**.



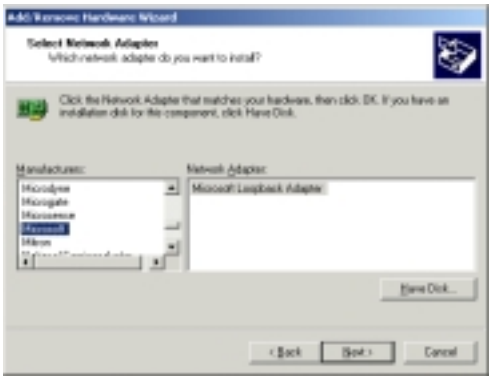
Step 5 : Under **Find New Hardware**, select **No**, and click **<Next>**.



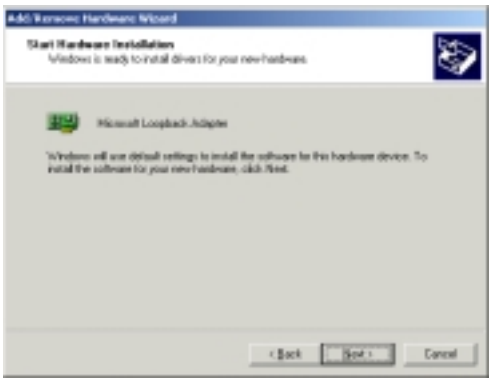
Step 6 : Under the **Hardware Type** list, select **Network Adapters**, and click **<Next>**.



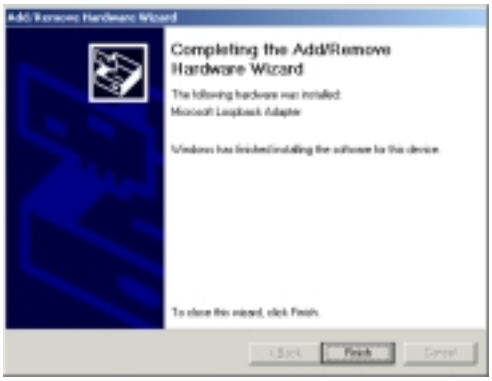
Step 7 : Under **Select Network Adapter**, select **Microsoft** from the left hand list, choose **Microsoft Loopback Adapter**, and click **<Next>**.



Step 8 : At **Start Hardware Installation** click **<Next>** to start installing Microsoft Loopback Adapter.



Step 9 : When the installation process is complete, you should see the **Completing the Add/Remove Hardware Wizard** window, click **<Finish>**.



You may now close the Control Panel and use RAIDGuide to operate your array. Note that when prompted by RAIDGuide to enter a host IP address, you should click the **<Local>** button in the pop-up window.

List of Filenames

Below is a list of key RAIDGuide files installed during the installation process. All files should be found in the **C:\Program Files\hybrid\bin** (default) directory or the directory you chose during the installation.

- **RAIDGuide access:**
  GRM.JAR → executable .jar Java file

Install file:

INSTALL.JAR → executable .jar Java file

Program Updates

As Infortrend's valued customer, you are entitled to free RAIDGuide and system firmware updates. For more information about this service, call Infortrend sales or an Infortrend distributor in your area.