PCI Disk Array Controller Drivers

Installation Guide and User Manual

for Software Kit 5

SA67-0047-00
08P4605

PCI Disk Array Controller Drivers

Installation Guide and User Manual

for Software Kit 5

Form Number SA67-0047-00
Part Number 08P4605

Greetings

This manual describes the Mylex PCI Disk Array Controller Drivers.

Requests for technical information about this and other Mylex products should be made to your Mylex authorized reseller or Mylex marketing representative.

Please Notice

Our Policy

Although reasonable efforts have been made to assure the accuracy of the information contained herein, this publication could include technical inaccuracies or typographical errors. Mylex expressly disclaims liability for any error in this information, and for damages, whether direct, indirect, special, exemplary, consequential or otherwise, that may result from such error, including but not limited to loss of profits resulting from the use or misuse of the manual or information contained therein (even if Mylex has been advised of the possibility of such damages). Any questions or comments regarding this document or its contents should be addressed to Mylex at the address shown on the cover.

The following paragraph does not apply to the United Kingdom or any country where such provisions are inconsistent with local law:

MYLEX PROVIDES THIS PUBLICATION “AS IS” WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Some states do not allow disclaimer of express or implied warranties or the limitation or exclusion of liability for indirect, special, exemplary, incidental or consequential damages in certain transactions; therefore, this statement may not apply to you. Also, you may have other rights which vary from jurisdiction to jurisdiction.

Information in this publication is subject to change without notice and does not represent a commitment on the part of Mylex. Changes may be made periodically to the information herein; these changes will be incorporated in new editions of the publication. Mylex reserves the right to make improvements and/or changes at any time in the product(s) and/or program(s) described in this publication.

It is possible that this publication may contain reference to, or information about, Mylex products (machines and programs), programming or services that are not announced in your country. Such references or information must not be construed to mean that Mylex intends to announce, provide, or make available such Mylex products, programming, or services in your jurisdiction.

About This Manual

This installation guide covers the steps involved to install and use the software drivers for Mylex PCI Disk Array Controller Drivers.

For information on defining and setting RAID (Redundant Array of Independent Disks) levels as well as configuration of the array, consult the appropriate *Global Array Manager Client* manual or the *RAID EzAssist Configuration Utility User Reference Guide* or *RAID EzAssist Configuration Utility Quick Configuration Guide.*

Conventions

Throughout the manual, the following conventions are used to describe user interaction with the product:

`bold`	The user must enter the bold text exactly as shown
↵	Press the Enter key
Enter	Press the key labeled “Enter” (or “Delete”, etc.)
File, Run	Select the Run option from the pull-down menu activated when the File menu pad is selected

☛ **Note**

Supplementary information that can have an effect on system performance.

⚠ ***Caution***

Notification that a proscribed action has the *potential* to adversely affect equipment operation, system performance, or data integrity.

WARNING

Notification that a proscribed action will *definitely* result in equipment damage, data loss, or personal injury.

NetWare 2

Windows NT 3

Windows 2000 4

UnixWare 5

Solaris 6

Linux 7

Appendix

Contents

Chapter 1
Introduction

Overview 1-1
NetWare, Windows NT, and Windows 2000 1-1
UnixWare and Solaris 1-2
Linux 1-2
Requirements 1-2

Chapter 2
NetWare

Overview 2-1
Mylex Disk Array Controller Driver Files for NetWare 2-1
Tape, Disk, and CD-ROM Support 2-1
Installing the Controller as the Primary NetWare 4.2 Controller 2-2
Installing the Controller into an Existing NetWare 4.2 System (Service Pack 9) 2-3
Installing the Controller as the Primary NetWare 5.1 Controller 2-5
Using the Bootable CD-ROM to Install NetWare and the Mylex Controller Driver 2-5
Enabling CD-ROM Boot Support 2-5
Installing NetWare 5.1 Drivers (Booting from CD-ROM) 2-6
Installing NetWare and the Mylex Controller Driver if Not Booting from the NetWare 5.1 CD-ROM 2-7
Installing NetWare 5.1 Drivers (Not Booting from CD-ROM) 2-7
Installing the Controller into an Existing NetWare 5.1 System 2-9
Installing the Controller as the Primary NetWare 6 Controller 2-10
Installing NetWare 6 Drivers 2-10
NetWare 6 Bootable CD-ROM 2-11
Installing the Controller into an Existing NetWare 6 System 2-12
Installing Peripherals Under NetWare 2-13

Chapter 3
Windows NT

Overview 3-1
Mylex Disk Array Controller Driver Files for Windows NT 3-1
Installing the Controller as the Primary Windows NT 4.0 Controller .. 3-2
Installing the Controller into an Existing Windows NT 4.0 System 3-4

Chapter 4
Windows 2000

Overview 4-1
Mylex Disk Array Controller Driver Files for Windows 2000 4-1
Mylex Disk Array Controller Drivers for Windows 2000 4-3
Installing the Controller as the Primary Windows 2000 Controller 4-3
Primary (new) Installation 4-3
Secondary (new) Installation 4-3
Secondary (existing) Installation 4-4
A secondary existing installation is when: 4-4
Performing a Primary Installation 4-4
Performing a Secondary Installation 4-6
Mylex Windows 2000 Drivers Installation Procedure 4-7
Updating the Mylex Controller Driver 4-13

Chapter 5
UnixWare

Overview 5-1
Special Notes 5-2
Creating a Driver Diskette for UnixWare 5-3
Installing the Controller as the Primary UnixWare Controller with UnixWare 7.1 5-3
Installing the Controller as the Secondary UnixWare Controller with UnixWare 7.1 5-4
Adding System Drives 5-5
To Primary Controller 5-5
To Secondary Controller(s) 5-5
Updating a Previously Installed Driver 5-5

Chapter 6
Solaris
Overview 6-1
Solaris 7 6-2
How to use the Mylex Supplemental Driver Diskette 6-2
Installing Solaris 7 Using the Solaris Device Configuration Assistant Diskette for a Primary Installation 6-2
Installing Solaris 7 Using the Mylex MDAC Supplemental Driver Diskette for a Secondary Installation 6-4
Solaris 8 6-8
Creating a Driver Diskette for Solaris 8 6-8
How to use the Mylex Supplemental Driver Diskette 6-8
Installing Solaris Using the Solaris Device Configuration Assistant CD-ROM for a Primary Installation 6-8
Installing Solaris 8 Using the Mylex MDAC Supplemental Driver Diskette for a Secondary Installation 6-11
Quick Driver Update Instructions for a Secondary Installation 6-15

Chapter 7
Linux
Overview 7-1
Installing the Disk Array Controller Drivers 7-1

Appendix A
Creating PCI Driver Installation Diskettes
Introduction A-1
Creating Operating System Driver Diskettes A-2

Chapter 1
Introduction

Overview

This manual describes how to install and use the Mylex Disk Array Controller operating system drivers for Mylex PCI Disk Array Controllers.

Mylex Disk Array Controller drivers for all supported operating systems (except Linux) are delivered on a CD-ROM. Drivers for NetWare, Windows NT, and Windows 2000 are also delivered on diskettes.

> ☛ **Note**
>
> This manual assumes that the network administrator will be performing the installation procedures described herein.

NetWare, Windows NT, and Windows 2000

Use one of the following methods to obtain drivers for NetWare 4.2/5.1/6, Windows NT 4.0, or Windows 2000:

- Install drivers directly from the diskettes provided.
- Retrieve the appropriate driver image file from the CD-ROM and create a driver diskette from the DOS image file.
- Insert the CD-ROM into a system running Windows NT or Windows 2000, then click on “Create Software Diskettes” from the RAID Management Software Installation menu. See Appendix A for details.

UnixWare and Solaris

Use the following method to obtain drivers for UnixWare 7.x or Solaris 7/8 for x86:

- Insert the CD-ROM into a system running Windows NT or Windows 2000 then click on “Create Software Diskettes” from the RAID Management Software Installation menu. See Appendix A for details.

Linux

In order to use any of the supported distributions of Linux, you will need to download the driver files from the appropriate web site (see Chapter 7 “Linux”).

Requirements

It is assumed that the hardware installation, the system configuration, and the disk array controller configuration are properly completed. If they are not, please refer to the appropriate Mylex disk array controller hardware installation guide and to the *RAID EzAssist Configuration Utility User Reference Guide* or *RAID EzAssist Configuration Utility Quick Configuration Guide*. Complete the required procedures described in those manuals before proceeding with installation of drivers discussed herein.

The person who will be performing the installation should have Supervisor or Administrator rights for the system onto which these software drivers will be installed.

It may also be necessary to prepare a DOS bootable floppy disk to be able to perform certain procedures described in this manual. Before starting, be sure to read through all applicable instructions to determine the specific requirements for each operating system to be supported.

Chapter 2
NetWare

Overview

This chapter describes installation procedures and the functionality of the Mylex Disk Array Controller drivers for Novell NetWare. The software for the drivers is provided on the appropriate Software Kit distribution diskette and CD-ROM. NetWare 4.2/5.1/6 are discussed in this chapter.

Mylex Disk Array Controller Driver Files for NetWare

All hardware installation, system configuration, and disk array controller configuration must be properly completed before proceeding with the NetWare driver installation. These basic installation procedures follow the Novell Installation manual, with only the few minor differences that are described in this section.

The subdirectory *netware* on the DOS-formatted NT4/NW Drivers Software Kit diskette and on the CD-ROM contains the following:

MDACFSI.HAM The driver to support Mylex Disk Array Controllers with NetWare.

MDACFSI.DDI NetWare installation file for MDACFSI.HAM.

Tape, Disk, and CD-ROM Support

Tape drive support is available to the Mylex Disk Array Controller under NetWare by means of the NWTAPE.CDM. Disk drive support is provided through the SCSIHD.CDM module.

Similar to tape drive support, the controller also supports CD-ROM for use under NetWare. The SCSICD.CDM provides support to the CD-ROM application running on the server. A CD-ROM driver will also have to be loaded. These are included with the Novell NetWare releases.

Installing the Controller as the Primary NetWare 4.2 Controller

If you are installing NetWare 4.2 for the first time, you will not be able to install the controller driver, MDACFSI.HAM to put the SYS volume on the Mylex controller. Service Pack 9 (SP9) is required to install this driver and must be installed after NetWare 4.2 is installed.

To install the Mylex controller as a primary (bootable) controller, you will need a secondary controller (IDE or SCSI) with a disk drive to temporarily hold the SYS volume. Follow these procedures and, if necessary, refer to Novell's documentation for assistance. This procedure assumes the user is familiar with creating volumes in NetWare.

1. Install the boot DOS partition on the Mylex controller.
2. Install NetWare 4.2 and place the SYS volume on the secondary controller. NOTE: If your CD-ROM drive is attached to the Mylex controller, select the DOS drive letter of the NetWare 4.2 CD-ROM when asked for the installation path.
3. Install SP9.
4. Install and load the MDACFSI.HAM driver.
5. Load the INSTALL.NLM utility.
6. Create volume SYS1 on the Mylex controller.
7. Copy the SYS volume from the secondary controller to SYS1 on the Mylex controller.
8. Back up NDS to the C: drive. From the Installation Options choose: Directory options | Directory backup and restore options | Save local DS information prior to hardware upgrade.
9. Rename SYS volume to SYS2 on the secondary controller.
10. Rename SYS1 to SYS on the Mylex controller.
11. Restore NDS from the C: drive. From the Installation Options choose: Directory options | Directory backup and restore options | Restore local DS information after hardware upgrade.

You have completed setting up the Mylex controller as a primary controller. Continue with your server installation setup procedures. The secondary controller with its disk drive is no longer needed and can be removed or used for other applications.

Installing the Controller into an Existing NetWare 4.2 System (Service Pack 9)

If NetWare 4.2 (SP9) is already installed and you wish to add a Mylex Disk Array Controller later, the controller will be a secondary (non-bootable) controller. After installing the controller hardware and configuring a disk array, follow the procedure below to add the necessary controller drivers.

1. With NetWare Server 4.2 (SP 9) loaded and running, load the NetWare program INSTALL.NLM by typing the following at the console prompt:

   : load install

   and press **Enter**.

2. Choose “Driver Options” in the Installation Options menu.
3. Choose “Configure disk and storage device drivers” in the Driver Options menu.
4. Choose “Select an additional driver” in the Additional Driver Actions menu.

   NetWare scans for controllers that do not have drivers already loaded.

5. At the “Select a driver” box, press **Ins** to choose to install an unlisted driver.
6. Insert the DOS-formatted NT4/NW Drivers Software Kit diskette into the diskette drive.
7. Press **F3** to specify the path of the NetWare driver you’re about to install.
8. Change the path line to read:

   A:\netware

   and press **Enter**. NetWare scans for drivers on the floppy diskette in the specified path.

9. In the “Select a driver to install” box, select the appropriate driver for your controller:

   `MDACFSI.HAM | <Controller model number>`

10. Select **Yes** at the confirmation box to install the driver.
11. Press **Enter** to select the default server boot path.

12. Select **Yes** to save a backup of the old or existing driver.
13. Press **Enter** to continue when you see the message that the old driver will be saved.

    NetWare copies the file.
14. What you just backed up was the old or existing .DSK or .HAM file. Repeat Steps 12 and 13 for the .DDI file.
15. Select **No** to decline selection of an additional driver to install unless you are installing more than one Mylex controller at this time.
16. Exit INSTALL.NLM by pressing **Esc** three times, then selecting **Yes** at the “Exit Install?” box.

This concludes installation of the driver files needed to run your Mylex Disk Array Controller under NetWare 4.2.

Installing the Controller as the Primary NetWare 5.1 Controller

If the Mylex Disk Array Controller will be the primary (bootable) controller, you must install the controller driver at the time of the NetWare 5.1 installation. You may carry out NetWare 5.1 and controller driver installations in one of the following ways:

- Boot from the NetWare 5.1 CD-ROM. NetWare's installation program will create and format a partition on your hard drive, OR
- Create and format a DOS partition on your hard drive, THEN insert the NetWare 5.1 CD-ROM and run install.

Refer to the appropriate section below depending on your installation method.

Using the Bootable CD-ROM to Install NetWare and the Mylex Controller Driver

Enabling CD-ROM Boot Support

In order to boot from the NetWare 5.1 CD-ROM, you must first enable CD-ROM Boot Support in the BIOS setup program of the device that controls the CD-ROM drive.

IDE CD-ROM. If the NetWare 5.1 CD-ROM will boot from an IDE CD-ROM drive, set up the system motherboard BIOS boot priority option to assure that the CD-ROM device will be the first bootable device.

Mylex RAID Controller CD-ROM. If your bootable CD-ROM drive is connected to a Mylex controller, follow the steps below to enable CD-ROM boot support.

1. Power on or reboot the system.

   After the Mylex Controller BIOS banner comes up, you will see the following statement:

   ```
   Press ALT-M for BIOS options
   ```

2. Press **ALT-M** immediately.

   The BIOS options menu will be displayed.

☛ **Note**

In order to enable the CD-ROM boot, the controller's BIOS must be enabled.

3. If the controller's BIOS is disabled, press **Enter** to enable the BIOS.
4. Use the arrow key to select "CD-ROM boot disabled" and press **Enter** to enable the CD-ROM boot.
5. Insert the NetWare 5.1 Bootable CD-ROM in the CD-ROM drive.
6. Press **ESC**, then press any key. This will restart the system with the new settings.

   The system will now boot from the NetWare 5.1 CD-ROM.
7. Continue with the instructions described below in "Installing NetWare 5.1 Drivers (Booting from CD-ROM)" .

Third-Party SCSI HBA or RAID Controller CD-ROM. If your bootable CD-ROM drive is connected to a third-party SCSI HBA or RAID Controller, see the documentation that accompanied the controller for instructions on enabling CD-ROM Boot Support.

Installing NetWare 5.1 Drivers (Booting from CD-ROM)

Follow this procedure:

1. Insert the NetWare 5.1 Bootable CD-ROM (if not already inserted).
2. After boot, create a DOS bootable partition. NetWare requires at least a 30 MB partition size, but recommends 50 MB or more, if available.
3. Reboot the system.

   NetWare will start installation to directory C:\NWSERVER.
4. Continue through the prompts until you see the "Device driver detected for this server" screen. Under storage adapters you may see the MDAC.HAM and/or MDACFSI.HAM drivers listed.
5. Select modify | delete, and delete both the MDAC.HAM and MDACFSI.HAM drivers.

   MDAC.HAM is not used for Mylex Software Kit 5. MDACFSI.HAM needs to be replaced with the newer version available on the Mylex Software Kit 5 distribution diskette.

6. Select modify | Storage Adapters .
7. Press **Ins** to add a new driver.
8. Press **Ins** again to add an unlisted driver.
9. Insert the Mylex Software Kit 5 distribution diskette containing the NetWare driver into A:\.
10. Press **Enter** to specify that the driver should be added from the A:\ drive.

    The driver is installed. Upon completion you should see the MDACFSI.HAM driver name and the Mylex controller name listed.
11. Repeat Steps 6 and 7 if you have additional Mylex controllers to install.

    Instead of installing the driver again from the diskette, select the MDACFSI.HAM driver from the driver list for each additional Mylex controller you are installing.
12. Select return to driver summary. Under the storage adapters screen, MDACFSI.HAM should be listed.
13. Select continue. Wait while the driver is loaded.
14. Follow the on-screen instructions to finish NetWare 5.1 installation.

Installing NetWare and the Mylex Controller Driver if Not Booting from the NetWare 5.1 CD-ROM

If you are unable to or choose not to install NetWare by booting from the NetWare 5.1 CD-ROM, you must create and format a DOS partition on your hard drive before beginning NetWare installation.

Use the NetWare Bootable License Diskette or MS-DOS 6.00 to create and format a bootable DOS partition. NetWare recommends a minimum of 50 MB partition size or larger, if space is available.

Installing NetWare 5.1 Drivers (Not Booting from CD-ROM)

Drivers provided in the \DOS subdirectory of the Mylex Software Kit 5 distribution diskette (packaged with the Mylex Disk Array Controller) are required to install NetWare 5.1 from a CD-ROM drive connected to a Mylex Disk Array Controller.

The procedure below assumes that the CD-ROM drivers are available.

1. Boot the system from a newly created DOS boot drive, and then create (or edit) the CONFIG.SYS and AUTOEXEC.BAT files to include the drivers required for accessing the CD-ROM as a logical drive under DOS. The following example assigns the CD-ROM as drive D: under MS-DOS 6.00 or above. CONFIG.SYS contains the statements:

   device = [pathname]\aspidac.sys

   device = [pathname]\btcdrom.sys /D:[devicename]

   AUTOEXEC.BAT contains the statement:

   [pathname]\mscdex /v /m:10 /D:[devicename]

   The device name is that of the specific CD-ROM drive (e.g., MSCD001).
2. Boot the system with the new CONFIG.SYS and AUTOEXEC.BAT, and make sure the NetWare CD-ROM files are accessible under DOS.
3. Create a directory C:\NWUPDATE
   - Copy MDACFSI.HAM and MDACFSI.DDI from the \NETWARE path.

     ```
     Copy A:\Netware\MDACFSI.* C:\NWUPDATE
     ```
4. Follow the standard NetWare 5.1 upgrade or installation procedure, as described in the NetWare 5.1 documentation.

   MDACFSI.HAM will be installed from the C:\NWUPDATE directory.
5. Return to the driver summary by pressing the arrow keys and select the option to continue.
6. NetWare 5.1 will continue the installation.

Installing the Controller into an Existing NetWare 5.1 System

If NetWare 5.1 is already installed and you wish to add a Mylex Disk Array Controller later, the controller will be a secondary (non-bootable) controller. After installing the controller hardware and configuring a disk array, follow the procedure below to add the necessary controller drivers.

1. Copy the drivers, MDACFSI.*, from the distribution media to C:\nwserver\drivers.
2. Start NetWare.

   NetWare scans for controllers that do not have drivers already loaded. The controllers will be detected and the appropriate drivers will be loaded.
3. Select MDACFSI.HAM driver when prompted.

This concludes installation of the driver files needed to run your Mylex Disk Array Controller under NetWare 5.1.

Installing the Controller as the Primary NetWare 6 Controller

If the Mylex Disk Array Controller will be the primary (bootable) controller, you must install the controller driver at the time of the NetWare 6 installation. If you choose to use the NetWare 6 bootable CD-ROM, before continuing, please read the instructions in the section “NetWare 6 Bootable CD-ROM” on page 2-11.

Installing NetWare 6 Drivers

NetWare version 6 is available on CD-ROM. Drivers provided in the \DOS subdirectory of the NT4/NW Drivers Software Kit diskette (packaged with the Mylex Disk Array Controller) are required to install NetWare 6 from a CD-ROM drive connected to a Mylex Disk Array Controller.

The procedure below assumes that the CD-ROM drivers are available and the CD-ROM is accessible from DOS.

1. Copy the drivers (mdacfsi.*) from the Drivers\NetWare directory of Mylex Software Kit 5 CD-ROM, or the \netware directory of the distribution floppy diskette, to the following directory:

   `C:/nwupdate`

2. Click Yes, when you get the message:

   ```
   Continue with load to a new server
   ```

3. Answer the remaining prompts according to your system requirements.
4. Wait for “File copy status” to finish.

Netware drivers are included on the provided disk.

5. Insert the update driver diskette in the floppy drive, press **F3**, select MDACFSI.HAM and press **Enter**. This will install your new Mylex drivers for NetWare 6.
6. Continue to follow the screen prompts, select Mylex driver, and press **Enter**.
7. Wait for “Loading Driver” to finish.

8. Continue loading NetWare by following the screen prompts; be sure to answer the questions according to your system requirements.
9. Choose which volume partition is appropriate for your system.

The NetWare installation will automatically finish. If you have any questions about this installation, you may want to refer to the NetWare Installation Guide.

NetWare 6 Bootable CD-ROM

In order to boot from the NetWare 6 CD-ROM, you must enable CD-ROM Boot Support in the BIOS setup program of the device that controls the CD-ROM drive.

If your bootable CD-ROM drive is connected to a Mylex controller, follow the steps below to enable CD-ROM boot support.

1. Insert the NetWare 6 CD-ROM.
2. Power on or reboot the system.

   After the Mylex Controller BIOS banner comes up, you will see the following statement:

   ```
   Press ALT-M for BIOS options
   ```

3. Press **ALT-M** immediately.

   The BIOS options menu will be displayed.

   ☛ **Note**

   In order to enable the CD-ROM boot, the controller's BIOS must be enabled.

4. If the controller's BIOS is disabled, press **Enter** to enable the BIOS.
5. Use the arrow key to select "CD-ROM boot disabled" and press **Enter** to enable the CD-ROM boot.
6. Press **ESC**, then press any key. This will restart the system with the new settings.

   The system will now boot from the NetWare 6 CD-ROM.

7. Return to the section "Installing NetWare 6 Drivers" and follow steps 4 through 7 to complete your driver installation.

Installing the Controller into an Existing NetWare 6 System

If NetWare 6 is already installed and you wish to add a Mylex Disk Array Controller later, the controller will be a secondary (non-bootable) controller. After installing the controller hardware and configuring a disk array, follow the procedure below to add the necessary controller drivers.

1. Copy the drivers, MDACFSI.*, from the distribution media to C:\nwserver\drivers.
2. Start NetWare.

   NetWare scans for controllers that do not have drivers already loaded. The controllers will be detected and the appropriate drivers will be loaded.

This concludes installation of the driver files needed to run your Mylex Disk Array Controller under NetWare 6.

Installing Peripherals Under NetWare

Non-disk peripheral devices, such as tape or CD-ROM drives, can be installed on any channel of the controller. Each disk or non-disk device will require a unique SCSI ID, different from any other device connected to the same channel.

Each device requires a driver module connecting it to the DAC adapter. These modules are best loaded in the STARTUP.NCF file before the MDACFSI.HAM driver.

The common devices and required modules are:

SCSI disk drives (including Mylex RAID system drives)	SCSIHD.CDM
SCSI CD-ROM	SCSICD.CDM
SCSI tape drive	NWTAPE.CDM
Magneto optical drive	SCSIMO.CDM
DLT tape drive	DLTTAPE.CDM
IDE CD-ROM	IDECD.CDM
IDE disk drive	IDEHD.CDM

1. The appropriate drivers should be loaded before trying to access the non-disk devices.
2. For example, load the following drivers to use a CD-ROM under NetWare (the *cdrom* NLM is supplied by Novell):

   ```
   : load mdacfsi.ham
   : load scsicd.cdm
   : load cdrom.nlm
   : cd mount [volume name]
   ```

   After the CD-ROM is mounted, the volume on the CD-ROM can be mapped from any workstation and accessed.

Chapter 3
Windows NT

Overview

This chapter describes installation procedures and the functionality of the Mylex Disk Array Controller drivers for Microsoft Windows NT 4.0. The software is provided on the appropriate Software Kit distribution diskette and CD-ROM.

This chapter assumes that the network administrator for this site will be performing these installation procedures.

Mylex Disk Array Controller Driver Files for Windows NT

All hardware installation, system configuration, and disk array controller configuration must be properly completed before proceeding with the Windows NT driver installation. These basic installation procedures follow the Windows NT Installation manual, with the differences that are described in this chapter.

The root directory A:\ on the NT4/NW Drivers Software Kit diskette contains the following:

TXTSETUP.OEM	Setup text file (required in root directory) needed for Windows NT installation.
DAC2NT4.SYS	Windows NT Controller driver file for AcceleRAID 160/170/170LP/352, and eXtremeRAID 2000/3000
DAC2NT4.INF	Setup file for DAC2NT4.SYS

Choose the appropriate diskette you made from the CD-ROM to install either the standard and accelerated drivers in one process or just the standard driver. See Appendix A, “Creating PCI Driver Installation Diskettes.” (Remember to stop GAM if you are installing the accelerated driver.)

- Label one diskette “Mylex Accelerated Driver Diskette (Windows NT 4.0)” to install the accelerated and standard drivers in one installation. This diskette contains the accelerated driver, ‘macdisk.sys’.
- Label one diskette “Mylex Driver Diskette (Windows NT 4.0)” to install only the standard driver. This diskette contains the standard driver, ‘dac2nt4.sys’.

Installing the Controller as the Primary Windows NT 4.0 Controller

If the Mylex Disk Array Controller will be the primary (bootable) controller, you must install the controller driver at the time of Windows NT 4.0 installation.

Before proceeding you should have already carried out the following steps:

- Installed the Mylex Disk Array Controller hardware, connected the disk drives to the controller and to each other, set drive SCSI IDs, and terminated the SCSI bus following the instructions in your Mylex Disk Array Controller hardware installation guide.
- Used the Mylex RAID EzAssist Configuration Utility to create a drive configuration and initialized the drives for use following the instructions in your Mylex RAID EzAssist Configuration Utility manual.
- Created your driver diskette(s) for either the accelerated or standard drivers.

To install the controller driver during Windows NT 4.0 installation:

1. Boot the system with the Windows NT 4.0 setup diskette #1.
2. Insert setup diskette #2 when prompted and press **Enter**.
3. Press **Enter** again when prompted.
4. Select **Custom Setup** in the Windows NT Setup screen.
5. Next, choose **S** to skip the automatic detection scan.
6. Choose **S** to specify an additional device.
7. Choose **Other** in the list of supported adapters displayed and press **Enter**.
8. When prompted for the Manufacturer's supplied hardware support disk, insert your NT4/NW Drivers Software Kit diskette (or the Mylex Accelerated Driver Diskette that you made) into the floppy disk drive and press **Enter**.
9. Select the appropriate controller from the list of controllers displayed on this screen and press **Enter**.

10. If you have drivers to install for other controllers (for example, an on-board SCSI or IDE controller to run other devices such as a CD-ROM drive, etc.), repeat Step 6 and Step 7. Then when prompted, insert the manufacturer's supplied hardware support disk, press **Enter**, and select the appropriate driver from the list.

    If you have no other drivers to install, or when you have finished installing other drivers, simply press **Enter** to continue installation.

11. Insert Windows NT 4.0 setup diskette #3 when prompted.

12. Follow the on-screen instructions to continue Windows NT 4.0 installation, inserting the Windows NT CD-ROM into the CD-ROM drive when prompted. Press **Enter** and continue with the next few Windows NT 4.0 installation screens.

13. When prompted again for the "Mylex Driver Diskette (Windows NT 4.0)" diskette, insert the NT4/NW Drivers Software Kit diskette into the floppy disk drive and press **Enter**. (Use the Mylex Accelerated Driver Diskette, if prompted for the accelerated driver.)

    If you installed other drivers from other diskettes, you will be asked to reinsert those diskettes as well.

This concludes Mylex Disk Array Controller driver installation for Windows NT 4.0. Follow the on-screen instructions to complete your installation of the Windows NT 4.0 operating system.

Installing the Controller into an Existing Windows NT 4.0 System

If Windows NT 4.0 is already installed and you wish to add a Mylex Disk Array Controller later, the controller will be a secondary (non-bootable) controller. After installing the controller hardware and configuring a disk array, follow the procedure below to add the necessary controller drivers.

1. Make sure Windows NT 4.0 is up and running.

   ☛ **Note**

   When you are ready to insert the driver diskette, do not install the Accelerated Driver if you will be using Clustering or PCI Hot Plug.

   ☛ **Note**

   If Global Array Manager (GAM) is running and you wish to install the Accelerated Driver, stop GAM first, install the Accelerated Driver, and then restart GAM.

2. Click Start, and select Settings->Control Panel within the Start menu (Figure 3-1).

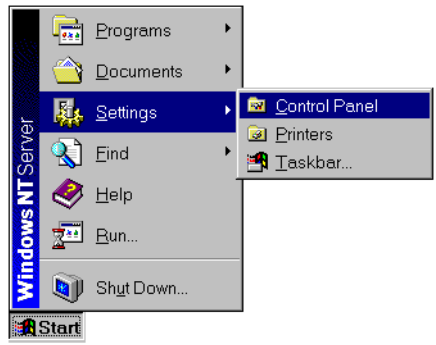

Figure 3-1. Open the Windows NT 4.0 Control Panel

3. From the Control Panel window, double-click the SCSI Adapters icon (Figure 3-2).

Figure 3-2. Control Panel – SCSI Adapters

4. In the SCSI Adapters box, click the Drivers tab to bring the Drivers page to the foreground (Figure 3-3).

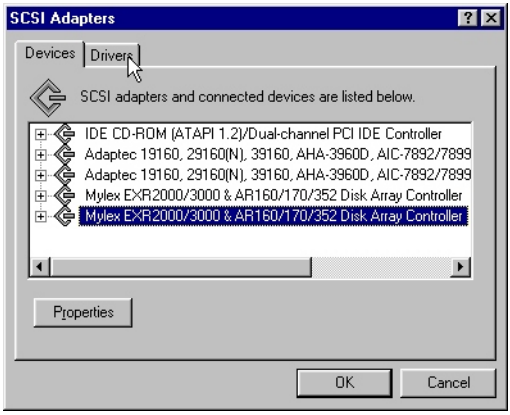

Figure 3-3. SCSI Adapters

5. With the Drivers page in the foreground, click Add. (Figure 3-4).

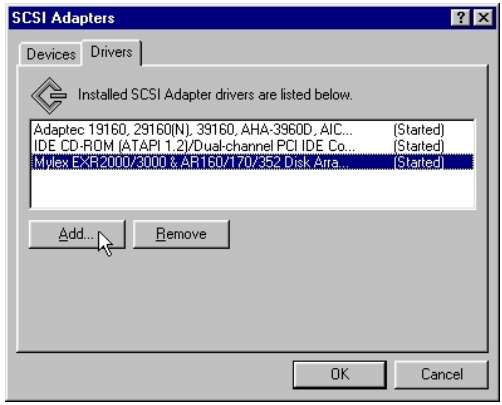

Figure 3-4. Add a New SCSI Adapter

6. The Creating driver list progress bar is displayed briefly (Figure 3-5), and then the Install Driver box is displayed (Figure 3-6).

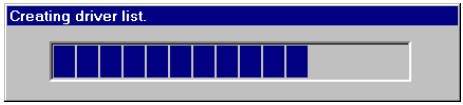

Figure 3-5. Creating Driver List

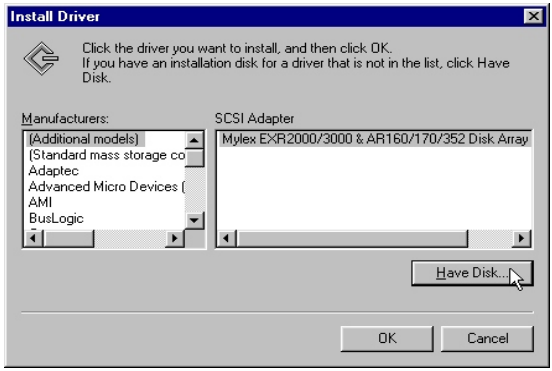

Figure 3-6. Install Driver

7. In the Install Driver box, click Have Disk.

8. Insert either the Accelerated or Standard Drivers Software Kit diskette into the floppy disk drive. (Remember to stop GAM if you are using the accelerated driver.)
   - Do not install the Accelerated Driver if you will be using Clustering or PCI Hot Plug.
9. From the Install From Disk box, change the path to A:\ as shown in Figure 3-7 and click OK.

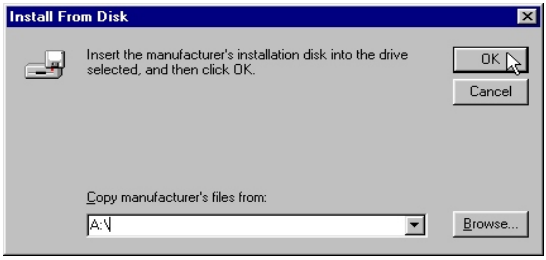

Figure 3-7. Change Path to A:

10. In the Install Driver box, select the appropriate Mylex Disk Array Controller and click OK (Figure 3-8).

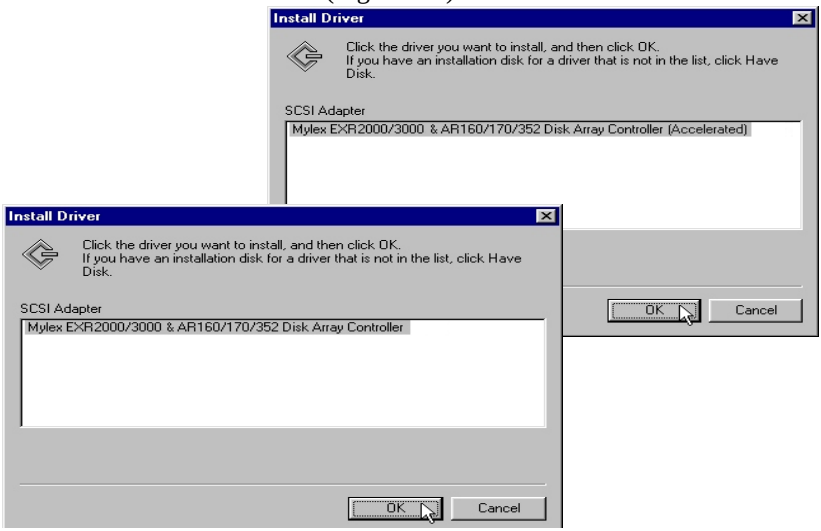

Figure 3-8. Select Mylex Driver for Windows NT 4.0

11. Next, you will see the screen showing that driver files are being copied from the diskette.

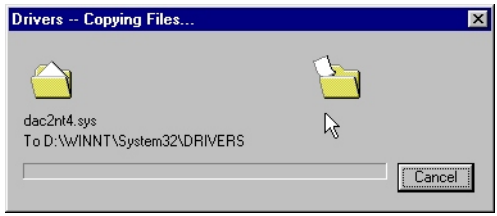

Figure 3-9. Install the New Driver from Diskette

The driver is copied from the diskette. The System Settings Change box is displayed as shown in Figure 3-10.

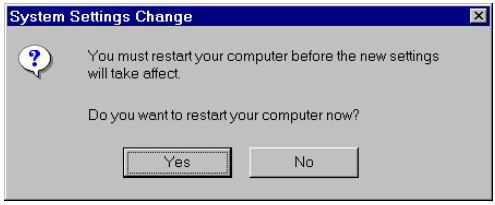

Figure 3-10. Driver Installation Complete

12. Remove the diskette and click Yes to restart Windows NT 4.0 for the new Mylex Disk Array Controller drivers to be available.

Chapter 4
Windows 2000

Overview

This chapter describes installation procedures and the functionality of the Mylex Disk Array Controller drivers for Microsoft Windows 2000. The software is provided on the appropriate Software Kit distribution diskette and CD-ROM.

This chapter assumes that the network administrator for this site will be performing these installation procedures.

Mylex Disk Array Controller Driver Files for Windows 2000

All hardware installation, system configuration, and disk array controller configuration must be properly completed before proceeding with the Windows 2000 driver installation.

The root directory of the Software Kit Windows 2000 driver diskette contains the following:

TXTSETUP.OEM	Setup text file (required in root directory) needed for Windows 2000 installation.
AR160.INF	Setup file required for the AcceleRAID 160/170LP driver
AR170.INF	Setup file required for the AcceleRAID 170 driver
AR352.INF	Setup file required for the AcceleRAID 352 driver
DAC2W2K.SYS	Windows 2000 controller driver file for AcceleRAID 160/170/170LP/352, and eXtremeRAID 2000/3000
EXR2000.INF	Setup file required for the eXtremeRAID 2000 driver
EXR3000.INF	Setup file required for the eXtremeRAID 3000 driver

WARNING

If you are planning to upgrade a SCSI Interrupt Steering Logic (SISL) installation or are planning to install Windows 2000 in a new SISL installation, please contact Mylex Support for this procedure. Do not attempt either procedure until you contact Mylex.

Mylex Disk Array Controller Drivers for Windows 2000

Installing the Controller as the Primary Windows 2000 Controller

Before proceeding you should have already carried out the following steps:

- Installed the Mylex Disk Array Controller hardware, connected the disk drives to the controller and to each other, set the drive SCSI IDs, and terminated the SCSI bus following the instructions in your Mylex Disk Array Controller hardware installation guide.
- Used the RAID EzAssist Configuration Utility to create a drive configuration and initialized the drives for use following the instructions in your Mylex Disk Array Controller Configuration Utility manual.

If you are about to install the eXtremeRAID 2000, eXtremeRAID 3000, AcceleRAID 160/170LP, AcceleRAID 170, or AcceleRAID 352, you must first determine if you are performing a primary or secondary installation. The differences between these installations are described as follows:

Primary (new) Installation

A primary installation is:

- First time installation of Windows 2000 operating system, according to the Microsoft User manual, and
- Mylex PCI RAID controller is the *bootable* device, configured with RAID EzAssist.

Go to “Performing a Primary Installation” on page 4-4.

Secondary (new) Installation

A secondary new installation is:

- First time installation of Windows 2000 operating system, according to the Microsoft User manual, and
- Mylex PCI RAID controller is added as a *non-bootable* device.

First, you should install Windows 2000 onto a disk on an embedded SCSI or IDE controller or SCSI host bus adapter.
Second, go to “Performing a Secondary Installation” on page 4-6.

Secondary (existing) Installation

A secondary existing installation is when:

- Windows 2000 operating system is already installed, and
- A Mylex PCI RAID controller has been added to your system as a *non-bootable* device.
- Go to “Performing a Secondary Installation” on page 4-6.

Performing a Primary Installation

To install an eXtremeRAID 2000, eXtremeRAID 3000, AcceleRAID 160/170LP, AcceleRAID 170, or AcceleRAID 352 controller driver during Windows 2000 installation:

Insert the Windows 2000 bootable[1] CD-ROM into the CD-ROM drive. Windows 2000 will begin the installation process.

☛ **Note**

It is necessary that Mylex’s new controller is recognized by the system before Windows 2000 accesses the Windows 2000 bootable CD-ROM.

☛ **Note**

Generally, if you have any questions regarding the Windows 2000 installation, please refer to the Windows 2000 User Manual for details.

However, here are some special instructions.

1. If the system is unable to boot from the CD-ROM, boot from Disk 1 of the installation disks supplied. The procedure will continue as described in this section, except you will be prompted when you need to insert new diskettes.

1. As soon as the screen turns blue, **press F6** so that the correct driver will be installed for one of these controllers: eXtremeRAID 2000, eXtremeRAID 3000, AcceleRAID 160/170LP, AcceleRAID 170, or AcceleRAID 352.
2. You will see a screen with two options. Respond to the following option:
   To specify additional SCSI adapters, CD-ROM drives, or special disk controllers for use with Windows 2000, including those for which you have a device support disk from a mass storage device manufacturer, press S.
3. Choose **S** to specify an additional device.
4. When prompted for the Manufacturer's supplied hardware support disk, insert your Mylex Windows 2000 Drivers Software Kit diskette into the floppy disk drive and press **Enter**.

   You will see a screen with the following information:

   You have chosen to configure a SCSI Adapter for use with Windows 2000, using a device support disk provided by an adapter manufacturer.

   Select the SCSI Adapter you want from the following list, or press ESC to return to the previous screen.
5. Use the scroll bar (if available) to locate and select one of the following devices:

   Mylex AcceleRAID 160 Disk Array Controller[1]
   Mylex AcceleRAID 170 Disk Array Controller
   Mylex AcceleRAID 352 Disk Array Controller
   Mylex eXtremeRAID 2000 Disk Array Controller
   Mylex eXtremeRAID 3000 Disk Array Controller
6. With the Software Kit diskette still in the floppy disk drive, select your controller and press **Enter.** The driver will load and the installation program will ask you if you want to install any additional drivers.

1. **Important:** Select this device for the AcceleRAID 170LP also.

7. If you have drivers to install for other controllers (for example, an on-board SCSI controller to run other devices such as a CD-ROM drive, etc.), repeat Step 4 and Step 5. Then when prompted, insert the manufacturer's supplied hardware support disk, press **Enter**, and select the appropriate driver from the list.

   If you installed other drivers from other diskettes, you will be asked to reinsert those diskettes, as well, for additional drivers if additional hardware was found.

   If you have no other drivers to install, or when you have finished installing other drivers, simply press **Enter** to continue the installation.

8. Finally, you will be prompted to remove any diskettes and CD-ROMs, and you will be instructed to press **Enter** to reboot the system.

This concludes Mylex Disk Array Controller driver primary installation for Windows 2000 when using eXtremeRAID 2000, eXtremeRAID 3000, AcceleRAID 160/170LP, AcceleRAID 170, or AcceleRAID 352.

Please continue with the Microsoft Windows 2000 Installation Procedure.

Performing a Secondary Installation

If you have reached this point:

- You already have a system with Windows 2000 installed on it.
- You have added an eXtremeRAID 2000, eXtremeRAID 3000, AcceleRAID 160/170LP, AcceleRAID 170, or AcceleRAID 352 into your system.

Mylex Windows 2000 Drivers Installation Procedure

After the system reboots, it will detect new hardware. A brief message will be displayed. There will be no action to take at this point.

Figure 4-1. "Found New Hardware" Message

1. When the "Welcome to the Found New Hardware Wizard" dialog box appears, (see Figure 4-2) click the Next button.

Figure 4-2. Welcome to the Found New Hardware Wizard

2. In the next dialog box (see Figure 4-3), select the option to “Search for a suitable driver for my device,” and then click Next.

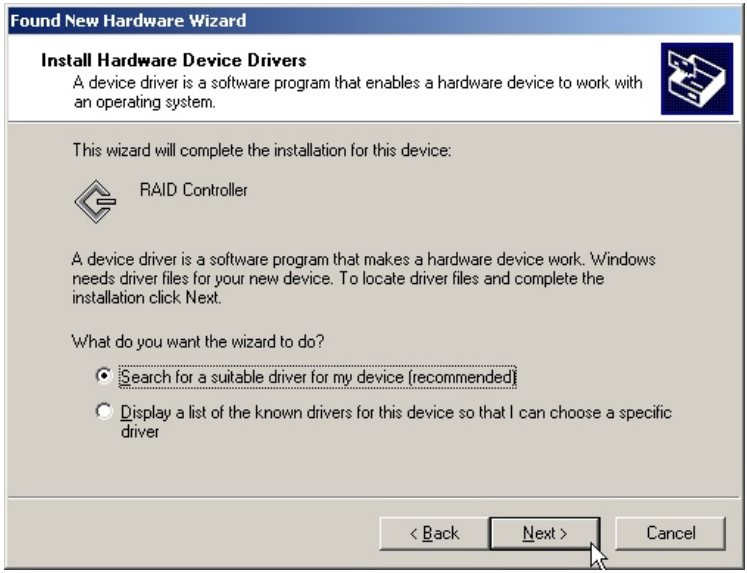

Figure 4-3. Install Device Drivers

3. The “Locate Driver Files” dialog box will appear (see Figure 4-4). Insert the Mylex Windows 2000 Driver Diskette into Drive A, click on the Floppy Disk Drives check box, and then click Next.

   Insert the Windows 2000 Software Kit 5 distribution diskette into the floppy disk drive.

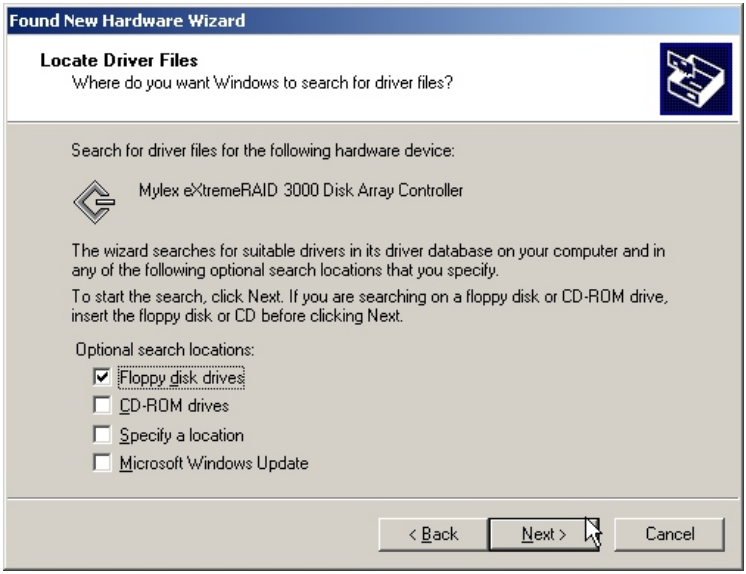

Figure 4-4. Locate Driver Files

4. The “Driver Files Search Results” dialog box will appear (see Figure 4-5). After verifying that the correct device driver was found, click Next.

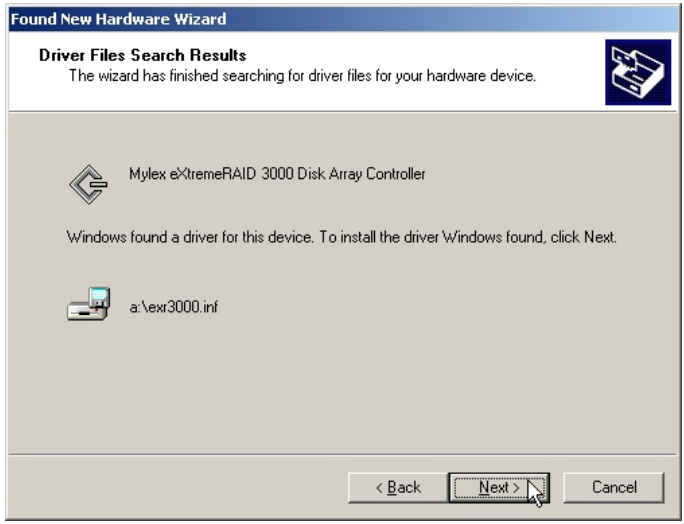

Figure 4-5. Driver Files Search Results

5. If the current version of the Mylex driver you are about to install is too new to have been tested and approved by Microsoft, the driver will not have a digital signature and the Digital Signature Dialog Box shown in Figure 4-6 will appear. If this dialog box appears, click Yes to continue with the installation.

This dialog box will not appear if the driver contains a digital signature.

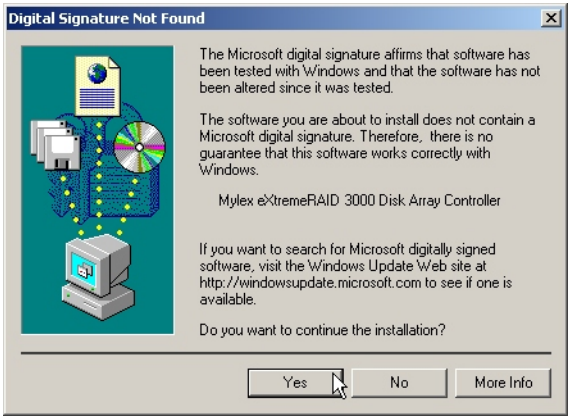

Figure 4-6. Digital Signature Dialog Box

While the driver files are copied, the dialog box in Figure 4-7 will appear to show the progress of this process. This process will complete by itself.

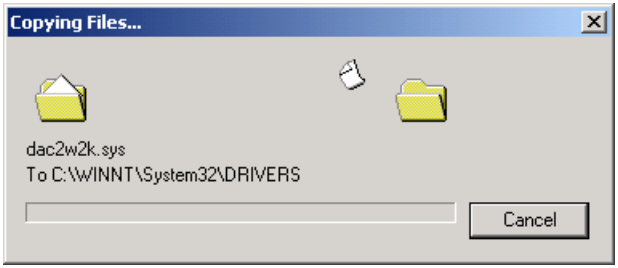

Figure 4-7. Copying the Drivers in Progress

6. Remove the diskette or CD-ROM that may still by in your system and then click on Finish when the “Completing the Found New Hardware Wizard” screen appears (see Figure 4-8).

Figure 4-8. Completing the Found New Hardware Wizard

Verification of the installation of a device supporting GAM installation will briefly appear.

Note

GAM is not installed at this point.

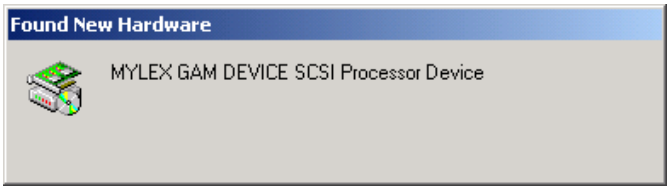

Figure 4-9. A Device that Supports GAM has been Installed

Note

If the system instructs you to reboot, click Yes in order for the newly installed hardware to work properly.

Updating the Mylex Controller Driver

If you have gotten to this point, Windows 2000 should already be installed.

The Windows 2000 CD-ROM comes with an embedded driver for the following controllers: eXtremeRAID 2000, eXtremeRAID 3000, AcceleRAID 160/170LP, AcceleRAID 170, or AcceleRAID 352. The Windows 2000 installation routine installed and used this driver during the Windows 2000 installation. This driver now needs to be updated.

The procedure that follows explains in detail how to update to the new Mylex Windows 2000 Software Kit driver for the controller (mentioned above) that you are installing.

> ☛ **Note**
>
> A Mylex eXtremeRAID 2000 controller is shown as an example. Substitute the name of your controller.

1. Right click on My Computer located on the computer screen desktop.
2. From the drop down menu, select Manage to display the Computer Management screen. Select Device Manager located about half way down the menu items.
3. The “Device Manager” screen will appear (Figure 4-10). Locate the SCSI and RAID controllers line item and double-click on Mylex eXtremeRAID 2000 Disk Array Controller to bring up the next screen.

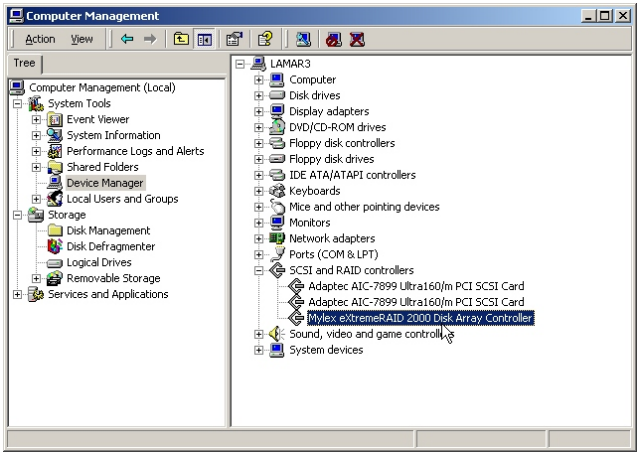

Figure 4-10. Device Manager Screen

4. From the “eXtremeRAID 2000 Disk Array Controller Properties” screen, first click on the driver tab, on the next screen, double-click on Update Driver (Figure 4-11).

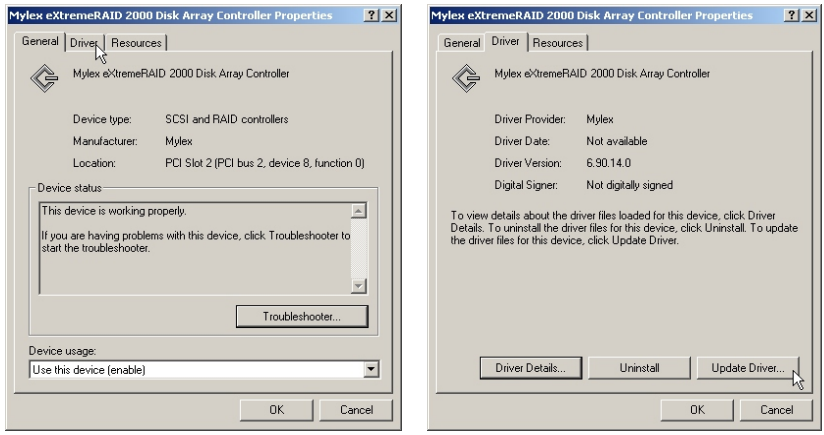

Figure 4-11. Update Driver

You will now have access to the upgrade device capabilities. You will see the Welcome to the Upgrade Device Driver Wizard screen. Click Next. (Figure 4-12.)

Figure 4-12. Welcome Upgrade Device Driver

5. From the “Install Hardware Device Drivers” screen, click on the second choice, Display a list of the known drivers for this device so that I can choose a specific driver. Click Next (Figure 4-13).

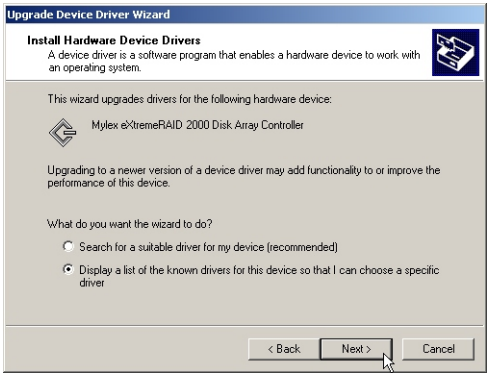

Figure 4-13. List of Known Drivers for Selection

6. From the Select a Device Driver, click on Have Disk (Figure 4-14).

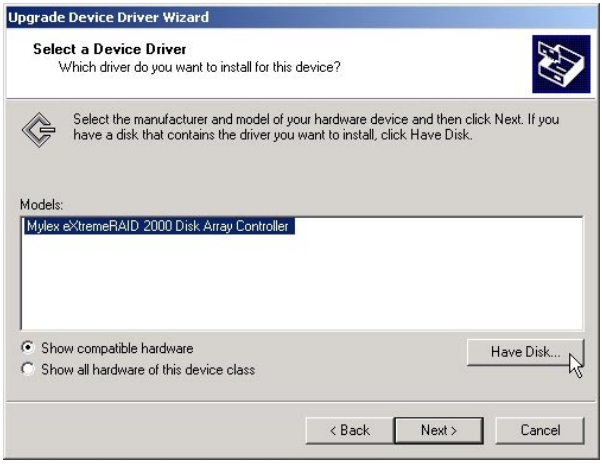

Figure 4-14. Select a Device Driver

7. When you have reached the Install From Disk screen, insert the Software Kit Windows 2000 driver diskette in drive A, check that you are at the A:\ prompt, and click OK. If you are not using drive A, click on Browse to select the driver's location (Figure 4-15).

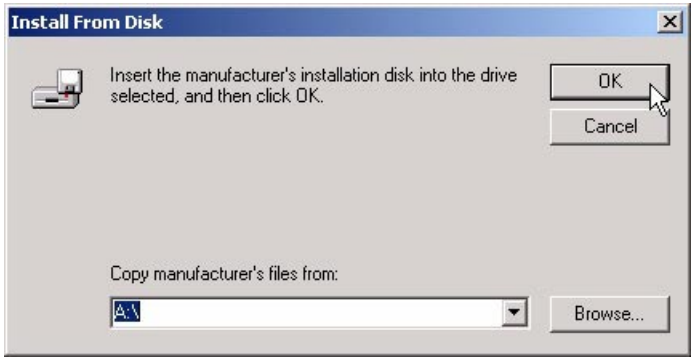

Figure 4-15. Install From Disk

8. From Select a Device Driver, select the appropriate controller to correspond to the controller you installed (Figure 4-16).

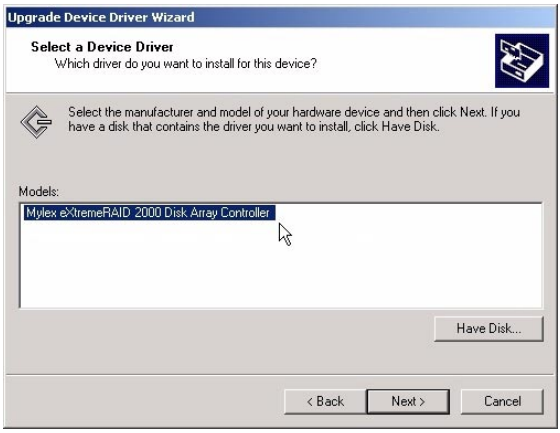

Figure 4-16. Select Driver

9. From the Start Device Driver Installation screen, notice that the name of your controller appears in the screen. Click Next (Figure 4-17).

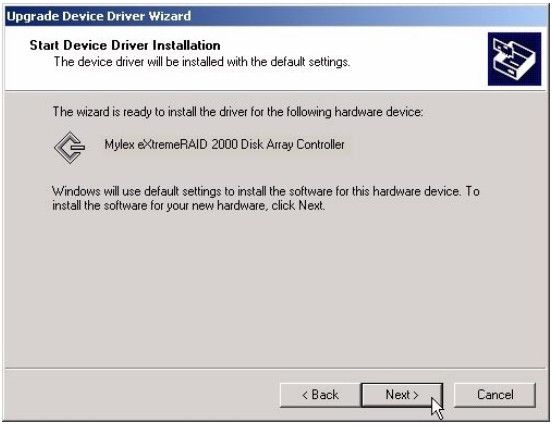

Figure 4-17. Start Device Install

10. If a Digital Signature is Not Found for the driver, the following dialog appears (Figure 4-18). Click Yes to continue.

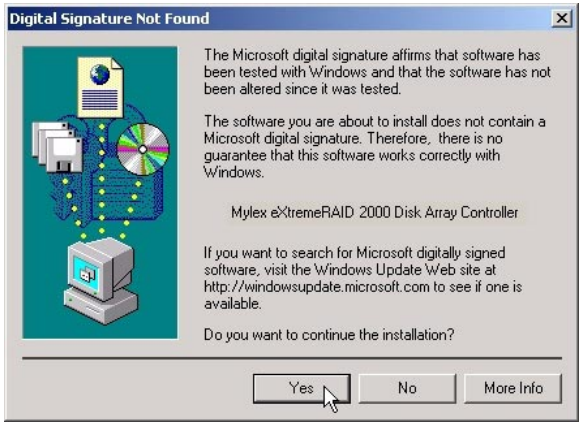

Figure 4-18. Digital Signature Not Found

The next screen informs you that the files are being copied to a local directory. Wait for the display to finish (Figure 4-19).

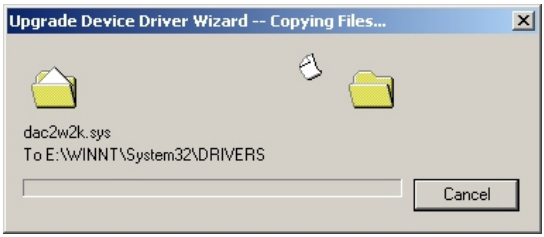

Figure 4-19. Copying Files

11. When the screen, Completing the Upgrade Device Driver Wizard appears, Click Finish (Figure 4-20).

Figure 4-20. Completing the Upgrade Device Driver Wizard

☛ **Note**

If the system instructs you to reboot, click Yes in order for the newly installed hardware to work properly.

Chapter 5
UnixWare

Overview

This chapter describes installation procedures and the functionality of the Mylex Disk Array Controller drivers for UnixWare 7.1. The software is provided on the appropriate Software Kit distribution CD-ROM with a file to create a diskette.

The UnixWare driver for the Mylex Disk Array Controller supports disk drives, tape drives and CD-ROM drives under UnixWare 7.1. The driver supports up to four controllers. Also, the driver supports secondary system drives larger than 8GB.

Special Notes

- In order to install a Mylex multifunction controller, a driver diskette must be created from the CD-ROM. See “Creating a Driver Diskette for UnixWare” on page 5-3.
- If using a Mylex controller as a primary controller[1], refer to “Installing the Controller as the Primary UnixWare Controller with UnixWare 7.1” on page 5-3.
- If using a Mylex multifunction controller as a secondary controller[2], refer to “Installing the Controller as the Secondary UnixWare Controller with UnixWare 7.1” on page 5-4.

1. “Primary” indicates that a controller’s storage device will be the boot device for UnixWare installation.
2. “Secondary” indicates that the controller is not the bootable device for the UnixWare operating system.

Creating a Driver Diskette for UnixWare

Before installing the Mylex Disk Array Controller Drivers for UnixWare, a UnixWare driver diskette must be created according to the instructions in Appendix A, “Creating PCI Driver Installation Diskettes.”

This diskette will be used in both the primary and secondary installation processes and when updating a previously installed driver wherever instructed to insert the “Software Kit UnixWare (dak) driver diskette.”

Installing the Controller as the Primary UnixWare Controller with UnixWare 7.1

If the Mylex Disk Array Controller will be the primary (bootable) controller, follow the instructions below.

1. Follow the instructions in the appropriate Mylex Disk Array Controller manuals to set up the hardware, install the controller, connect the disk, tape, and/or CD-ROM drives, and run the Mylex Disk Array Controller Configuration Utility to create Drive Groups and System Drives.

   ☛ **Note**

   CD-ROM or tape drives may be connected to any channel on the first controller. Do not set the SCSI ID of either CD-ROM drives or tape drives to ID 0.

2. Initialize all the System drives using the RAID EzAssist Configuration Utility.
3. Boot the system from the UnixWare Diskette.
4. Follow the instructions provided in the *UnixWare Installation Handbook*. The Mylex Disk Array Controller driver for UnixWare is included on the Software Kit UnixWare (dak) driver diskette which was made from the Software Kit CD-ROM.
   - During the installation, you will be prompted to either *Install Host Bus Adapter Drivers* or *Continue Installation*.
   - Select *Install Host Bus Adapter Drivers*.

- Insert the Software Kit UnixWare (dak) driver diskette as instructed, and continue with the instructions provided in the *UnixWare Installation Handbook*.
- The controller should be detected automatically during the install process.

5. After the installation of boot files, the system is automatically shut down.

   Use */dev/rct0* and */dev/cdrom/c0b0txl0* (*x* is the CD-ROM SCSI ID number) to access tape and CD-ROM devices after installation.

Installing the Controller as the Secondary UnixWare Controller with UnixWare 7.1

If UnixWare is installed on a Mylex controller, the Mylex Disk Array Controller driver for UnixWare is already installed in the system. Simply install the new Mylex Disk Array Controller hardware.

If UnixWare is installed on a non-Mylex controller, install the Mylex Disk Array Controller driver for UnixWare as follows:

1. Insert the Software Kit UnixWare (dak) driver diskette into the floppy diskette drive, please refer to “Creating a Driver Diskette for UnixWare” on page 5-3.
2. Type the following (match case exactly as shown):

   `pkgadd -d diskette1 dak` ↵

   The new controller driver is installed.

3. Rebuild the Kernel:

   `/etc/conf/bin/idbuild -B` ↵

4. Reboot the system:

   `shutdown -i0 -g0 -y` ↵

Adding System Drives

Use the UnixWare *diskadd* command to add System Drives to the primary controller and to any secondary controllers. For more information, refer to the UnixWare documentation on the *diskadd* utility.

> ☛ **Note**
>
> No UnixWare *Slice* (UNIX file system) can be greater than 2GB.

To Primary Controller

For the second and third System Drive of the primary controller, specify the *diskadd* command as shown below (assuming the Mylex Disk Array Controller is the first or only disk controller):

 # diskadd c0b0t0d1 ## （for the second System Drive）

 # diskadd c0b0t0d2 ## （for the third System Drive)

To Secondary Controller(s)

For the first and second System Drives of a secondary controller, specify the *diskadd* command as shown below (assuming there is no other disk controller):

 # diskadd c1b0t0d0 ## (for first System Drive of the second controller)

 # diskadd c1b0t0d1 ## (for second System Drive of the second controller)

Updating a Previously Installed Driver

To update the controller driver, follow the procedure below:

1. Insert the Software Kit UnixWare (dak) driver diskette in the file server's diskette drive.
2. Type the following (match case exactly as shown):

   pkgadd -d diskette1 dak ↵

   The new controller driver is installed.

3. Rebuild the Kernel:

   /etc/conf/bin/idbuild -B ↵

4. Reboot the system:

   shutdown -i0 -g0 -y ↵

Chapter 6
Solaris

Overview

This chapter provides information and installation procedures for the device drivers for Solaris 7.0 and Solaris 8.0. The software is provided on the appropriate Software Kit distribution CD-ROM with a file to create a diskette.

The Solaris drivers for the Mylex Disk Array Controller support disk drives, tape drives and CD-ROM drives under Solaris 7 and Solaris 8. The drivers support up to 16 controllers. Also, the drivers support secondary system drives larger than 8GB.

Solaris 7

Creating a Driver Diskette for Solaris 7

Before installing the Mylex Disk Array Controller Drivers for Solaris 7, a Mylex MDAC Supplemental Driver Diskette (MDAC Supplemental Diskette) must be created according to the instructions in Appendix A, “Creating PCI Driver Installation Diskettes” on page A-1.

This diskette will be used in both the primary and secondary installation processes and when updating a previously installed driver whenever instructed.

How to use the Mylex Supplemental Driver Diskette

You can use the *Mylex Supplemental Driver Diskette* you just created in the previous section in one of two ways:

- To use new drivers to install or upgrade the Solaris operating environment on a system with new hardware (primary installation), or
- To add new drivers to support (update) new hardware on an already installed booted system (secondary installation).

Installing Solaris 7 Using the Solaris Device Configuration Assistant Diskette for a Primary Installation

The steps below describe how to use drivers on the Solaris Device Configuration Assistant Diskette[1] for a Primary Installation to install Solaris (Intel Platform Edition) on a new system.

These instructions assume that you are installing Solaris 7 onto an x86 system using the Mylex MDAC driver.

Use the appropriate Solaris Device Configuration Assistant Diskette as the boot diskette.

1. Turn on your computer.
2. Insert the Solaris Device Configuration Assistant Diskette into your computer’s disk drive. Also, insert the Solaris Installation

1. The Solaris Device Configuration Assistant Diskette is a boot diskette provided by Sun Microsystems.

CD-ROM. If you have a network installation, verify with your system administrator that the Solaris Network Installation image is available on your network.

3. When the Solaris Device Configuration Assistant screen is displayed, choose the F4 option (on Solaris 7, this is labeled as, F4_Add Driver).
4. Follow the directions on the next screen, the Install Supplemental Drivers screen.
5. Now, remove the Solaris Device Configuration Assistant Diskette from the disk drive, then insert the MDAC Supplemental Diskette.
6. Press **F2** to continue. (F2 means "Continue")

   The Select Solaris System Version screen is displayed. Press **Enter** to choose the Solaris operating system. It will show up as:

   ```
   [ ] Solaris OS 2.7
   ```

7. Select the appropriate Solaris Operating System and press **F2**.
   Two screens will be displayed.
   - The Loading Supplemental Driver Software screen is displayed, along with a progress bar that shows the status of processing the mdac.itu driver. The driver is read into memory and survives long enough for the system to successfully boot to its installation program. The driver loaded is:

     ```
     mdac.itu
     ```

   - The Continue Supplemental Driver Installation screen is displayed when the new driver on the diskette has been processed.
8. Now, remove the MDAC Supplemental Diskette from the disk drive and then insert the Solaris Device Configuration Assistant diskette.
9. Press **F4** to finish the driver installation. You will see the following display:

   ```
   mdac - Device Driver
   ```

   You will see the Bus Enumerating screen with the following message:

   ```
   "Determining bus and gathering hardware
   configuration information" is displayed.
   ```

10. Press **F2** to continue.

> ⚠ ***Caution***
>
> DO NOT REMOVE the Solaris Device Configuration Assistant Diskette from the disk drive until you see the following message displayed in a dialog box:
>
> *Message:* If you want to bypass the device configuration and boot screens when the system reboots, eject the Solaris Device Configuration Assistant/Boot diskette now.

11. Continue with Sun Microsystems' installation instructions and follow the screen prompts.
12. Near the end of the Solaris operating system installation, you will be asked to insert the Mylex Supplemental Driver. Insert the diskette at that time.

    The system will automatically reboot when the Solaris operating system has been completely installed.

Installing Solaris 7 Using the Mylex MDAC Supplemental Driver Diskette for a Secondary Installation

Before you begin to add or update your drivers, check that your newly supported hardware devices are installed and configured according to the instructions in the corresponding Device Reference Page, if any. See Device Reference Manual for Solaris (Intel Platform Edition).

> ☛ **Note**
>
> For a quick driver update process, see "Quick Driver Update Instructions for a Secondary Installation" at the end of this chapter.

These instructions assume that you are working with a x86 system using either the Mylex MDAC driver.

> ☛ **Note**
>
> When the Solaris Intel Platform Edition software is already installed, the simplest way to add new or updated drivers is to install the supplemental driver diskettes as patches on your system.

Follow the steps below for a secondary (existing) installation.

1. Access the root directory. At the # prompt, type

   `cd /`

2. Type the following command to see if the Volume Management software is running on the computer you are updating:

   `ps -ef | grep vold`

   > ☛ **Note**
   >
   > For more information about managing diskettes and drives, see the System Administration Guide for Solaris.

3. If Volume Management is running, temporarily stop it by typing the following command line at the system prompt.

   `/etc/init.d/volmgt stop`

4. Insert the MDAC Supplemental Diskette into the disk drive.

5. Mount the MDAC Supplemental Diskette at the /mnt mount point by typing the following command:

   `mount -F pcfs /dev/diskette /mnt`

   > ☛ **Note**
   >
   > You must mount the MDAC Supplemental Diskette at this point in the file structure to update your computer successfully.

6. Execute the install script on the diskette, using the appropriate Solaris release directory (sol_27 for Solaris 7). For example:

   ```
   # /mnt/DU/sol_27/i86pc/Tools/install.sh -i
   ```

The install.sh script searches for all new or updated drivers on the diskette. When a new or updated driver is found, the following message is displayed:

```
Installing package MYLXmdac
```

At the bottom of the screen, you will see the following message:

```
Installation of <MYLXmdac> was successful.
```

7. When you're done and the install.sh script exits, unmount the diskette by typing the following command lines:

   # cd /

   # umount /mnt

8. Remove the Mylex Supplemental Driver diskette from the disk drive.
9. Reboot your computer, type in the following command lines.

   # touch /reconfigure

   # reboot

10. Turn off your computer, add the new hardware, and turn on your computer again.
11. When the autoboot sequence prompt is displayed, quickly press Escape.

    The autoboot sequence is interrupted. The Solaris Device Configuration Assistant screen is displayed.

12. Press **F2** to continue.

    You will see the Bus Enumerating screen with the following message:

    ```
    "Determining the bus and gathering hardware
    configuration information" is displayed.
    ```

    The Scanning Devices screen is then displayed. System devices are scanned. When scanning is complete, the Identified Devices screen is displayed.

13. Press **F2** to continue.

    You will see the following message:

    ```
    Message: "Loading driver com.bef..." is displayed.
    ```

    The boot Solaris screen is then displayed.

14. On the Boot Solaris screen, select the device controller attached to the device that contains your install medium, in this case the main system disk.

    The following script is displayed when new hardware is found.

    ```
    /etc/bootrc
    ```

15. At the prompt, type: (reboot)

    b -r

    This reboot process concludes the installation of new or updated drivers. When your computer has rebooted, you can use your new hardware.

Solaris 8

Creating a Driver Diskette for Solaris 8

Before installing the Mylex Disk Array Controller Drivers for Solaris 8, a Mylex MDAC Supplemental Driver Diskette (MDAC Supplemental Diskette) must be created according to the instructions in Appendix A, “Creating PCI Driver Installation Diskettes” on page A-1.

This diskette will be used in both the primary and secondary installation processes and when updating a previously installed driver wherever instructed.

How to use the Mylex Supplemental Driver Diskette

You can use the *Mylex Supplemental Driver Diskette* you just created in the previous section in one of two ways:

- To use new drivers to install or upgrade the Solaris operating environment on a system with new hardware (primary installation), or
- To add new drivers to support (update) new hardware on an already installed booted system (secondary installation).

Installing Solaris Using the Solaris Device Configuration Assistant CD-ROM for a Primary Installation

The steps below describe how to use drivers on the Solaris Device Configuration Assistant CD-ROM labeled 1 of 2 for a Primary Installation to install Solaris (Intel Platform Edition) on a new system.

These instructions assume that you are installing Solaris 8 onto an x86 system using the Mylex MDAC driver.

> ☛ **Note**
>
> Solaris 8 installs from a bootable CD-ROM; you must use a bootable CD-ROM drive. Sun Microsystems normally provides two CD-ROMs. Check the CD-ROM directory for the location of the operating system and additional features to be installed.

Use the Solaris Device Configuration Assistant bootable CD-ROM, labeled as 1 of 2. Follow the steps below to perform a primary installation.

1. Turn on your computer.
2. Insert the Solaris Device Configuration Assistant bootable CD-ROM, labeled as 1 of 2, into your computer's bootable CD-ROM drive.
3. When the Solaris Device Configuration Assistant screen is displayed, choose the F4 option.

   You will see the Install Supplemental Drives screen.
4. Now, insert the MDAC supplemental driver diskette in the floppy drive, usually drive A.
5. Follow the directions on the Install Supplemental Drivers screen.
6. Press **F2** to continue. (F2 means "Continue")

   The Select Solaris System Version screen is displayed. The operating system will show up as:

   ```
   [ ] Solaris OS 2.8
   ```
7. Press **Enter** to select the Solaris operating system, press **F2**. Two screens will be displayed.
   - The Loading Supplemental Driver Software screen is displayed, along with a progress bar that shows the status of processing the mdac.itu driver. The driver is read into memory and survives long enough for the system to successfully boot to its installation program. The driver loaded is:

     ```
     mdac.itu
     ```
   - The Continue Supplemental Driver Installation screen is displayed when the new driver on the diskette has been processed.
8. Press **F4** to finish the driver installation. The Identified Device Drivers screen appears.You will see the following display:

   ```
   mdac - Device Driver
   ```

   You will see the Bus Enumerating screen with the following message:

   ```
   "Determining bus and gathering hardware
   configuration information"
   ```

9. Press **F2** to continue. The Solaris Device Configuration Assistant screen appears. Choose the options as needed. If no changes are required, press **F2** to continue.
10. When the light goes out on the floppy drive, remove the MDAC supplemental driver diskette.
11. Continue with Sun Microsystems' installation instructions and follow the screen prompts.

    You will see the bus scanning process and then the Identified Devices screen.
12. Verify that the PCI: MDAC Family of RAID Adapters is showing in the list of devices on this screen.
13. Near the end of the Solaris operating system installation, you will be asked to insert the Driver Update diskette. Insert the diskette at that time, then press **Enter**.
14. When the screen to add additional devices or drivers appears, if you have nothing to add (like video) to your system, answer NO for additional diskettes to be installed.
15. After the system installs the driver from the diskette, the system continues the installation off of the CD-ROM, labeled 1 of 2. When this is completed, the system will automatically reboot.
16. Remove the CD-ROM and the MDAC supplemental diskette to allow the system to reboot from your new Mylex controller.
17. Watch for the prompt to insert the second CD-ROM, named Software 2 on the screen. (The actual CD-ROM is labeled 2 of 2.)
18. Insert the CD-ROM (2 of 2) and click OK.
19. You will see a message "Launching the installer for Solaris 8 Software 2." Follow the screen prompts to continue.
20. Click Skip if you do not need the language CD-ROM.
21. Click the button, Reboot Now.

    Congratulations! You have completed the primary installation of Solaris 8 and its drivers for your new Mylex controller.

Installing Solaris 8 Using the Mylex MDAC Supplemental Driver Diskette for a Secondary Installation

Before you begin to add or update your drivers, check that your newly supported hardware devices are installed and configured according to the instructions in the corresponding Device Reference Page, if any. See Device Reference Manual for Solaris (Intel Platform Edition).

> ☛ **Note**
>
> For a quick driver update process, see "Quick Driver Update Instructions for a Secondary Installation" at the end of this chapter.

These instructions assume that you are working with an x86 system using either the Mylex MDAC driver.

> ☛ **Note**
>
> When the Solaris Intel Platform Edition software is already installed, the simplest way to add new or updated drivers is to install the supplemental driver diskettes as patches on your system.

Follow the steps below for a secondary (existing) installation.

1. Insert the Mylex supplemental diskette into the floppy drive.
2. Access the root directory. At the # prompt, type

   ```
   cd /
   ```

3. Type the following command to see if the Volume Management software is running on the computer you are updating:

   ```
   ps -ef | grep vold
   ```

   You will then see a process screen. On the right side of the screen, notice the string

   ```
   /usr/sbin/vold
   ```

   to see if the Volume Management is running.

   > ☛ **Note**
   >
   > For more information about managing diskettes and drives, see the System Administration Guide for

Solaris.

4. If Volume Management is running, temporarily stop it by typing the following command line at the system prompt.

   /etc/init.d/volmgt stop

5. Insert the MDAC Supplemental Diskette into the disk drive.

6. Mount the MDAC Supplemental Diskette at the /mnt mount point by typing the following command:

   mount -F pcfs /dev/diskette /mnt

   ☛ **Note**

   You must mount the MDAC Supplemental Diskette at this point in the file structure to update your computer successfully.

7. Execute the install script on the diskette, using the appropriate Solaris release directory (sol_28 for Solaris 8). For example:

   ```
   # /mnt/DU/sol_28/i86pc/Tools/install.sh
   ```

   The install.sh script searches for all new or updated drivers on the diskette. When a new or updated driver is found, the following message is displayed:

   ```
   Installing package MYLXmdac
   ```

   At the bottom of the screen, you will see the following message:

   ```
   Installation of <MYLXmdac> was successful.
   ```

8. When you're done and the install.sh script exits, unmount the diskette by typing the following command lines:

   # cd /

   # umount /mnt

9. Remove the Mylex Supplemental Driver diskette from the disk drive.

10. Reboot your computer, type in the following command lines.

    # touch /reconfigure

    # reboot

11. Turn off your computer, add the new hardware, and turn on your computer again.

12. When the autoboot sequence prompt is displayed, quickly press Escape.

    The autoboot sequence is interrupted. The Solaris Device Configuration Assistant screen is displayed.

13. Press **F2** to continue.

    You will see the Bus Enumerating screen with the following message:

    ```
    "Determining the bus and gathering hardware
    configuration information" is displayed.
    ```

    The Scanning Devices screen is then displayed. System devices are scanned. When scanning is complete, the Identified Devices screen is displayed.

14. Press **F2** to continue.

    You will see the following message:

    ```
    Message: "Loading driver com.bef..." is displayed.
    ```

    The boot Solaris screen is then displayed.

15. On the Boot Solaris screen, select the device controller attached to the device that contains your install medium, in this case the main system disk.

    The following script is displayed when new hardware is found.

    ```
    /etc/bootrc
    ```

16. At the prompt, type: (reboot)

    `b -r`

    This reboot process concludes the installation of new or updated drivers. When your computer has rebooted, you can use your new hardware.

    Congratulations! You have successfully completed the a secondary installation of drivers for your Mylex controller.

Quick Driver Update Instructions for a Secondary Installation

> ☛ **Note**
>
> In order to use this quick installation, you will need access to the Common Desktop Environment (CDE) with Solaris 7 or Solaris 8.

When you are working with a CDE, you can update your Mylex drivers with a just a few clicks on the main menus and icons.

Follow the steps below:

1. Insert the MDAC Supplemental Driver diskette in the floppy drive.
2. Access the File Manager screen.
3. From the File Manager screen, click on File to access the pull down menu.
4. Click on “Open Floppy.”
5. Double click on the next series of icons:

   ```
   /DU/Sol_27/i86pc/Tools/install.sh -i (Solaris 7)
   ```

   ```
   /DU/Sol_28/i86pc/Tools/install.sh (Solaris 8)
   ```

6. The Run screen will be displayed. At the bottom of the screen, you will see the following message:

   ```
   “Installation of <MYLXmdac> was successful”
   ```

7. When the installation is complete, close the Run screen and Reboot the system to activate the new updated driver for your Mylex controller.

Congratulations! Using a CDE, you have successfully completed the a secondary installation of drivers for your Mylex controller.

Chapter 7
Linux

Overview

This chapter provides contact information for the Mylex disk array controller drivers needed to support Linux.

Installing the Disk Array Controller Drivers

Go to the following web site to download the appropriate Mylex Disk Array Controller Drivers:

```
http://www.dandelion.com/Linux/DAC960.html
```

The MDAC device driver (Linux DAC960) is now available as version 2.2.10 for Linux 2.2.18 and version 2.4.10 for Linux 2.4.1. This version of the driver supports the following Mylex controllers: AcceleRAID 160/170/170LP/352 and eXtremeRAID 2000 PCI to Ultra 160 SCSI controllers, and the eXtremeRAID 3000 PCI to Fibre Channel controller.

You may want to access the web site, www.kernel.org, for more updates (i.e, how to use kernel 2.1.19).

For instructions on how to install the disk array controller drivers, see the appropriate instructions on the web site and refer to the appropriate Linux OS distribution reference manual.

☛ **Note**

Device driver version 2.2.10 is embedded in Red Hat 7, SuSE 7.1, Caldera 2.4, and Turbo Linux 6.0.

Red Hat 7 uses Linux kernel 2.2.16. The driver version 2.2.10 and patch are available from http://www.dandelion.com/Linux/DAC960.html.

Be sure to use the **kgcc** compiler; see the web page for details.

Appendix A
Creating PCI Driver Installation Diskettes

Introduction

The Mylex Disk Array Controller Operating System Drivers package allows your operating system to run with your Mylex controller. You can create your own driver diskette from the RAID Management Software Installation menu under Windows.

Mylex provides driver diskettes for Windows 2000, Windows NT 4.0, and Netware 4.2/5.1/6. If these are damaged or lost, you can recreate another set of diskettes.

Use this procedure to create driver diskettes for Sun Solaris 7/8 x86, and Unixware 7.1.

Creating Operating System Driver Diskettes

For the procedure below, the CD-ROM must be inserted into a system running Windows NT 4.0 or Windows 2000.

Create a driver diskette in six easy steps:

1. Insert the CD-ROM provided in your Mylex package.
2. From the RAID Management Software Installation menu, click Create Software Diskettes.

Figure A-1. RAID Management Software Installation Menu

3. Click Operating System Drivers.

Figure A-2. Create Driver Diskette Menu

4. Click the appropriate operating system corresponding to the PCI driver installation diskette you wish to create.

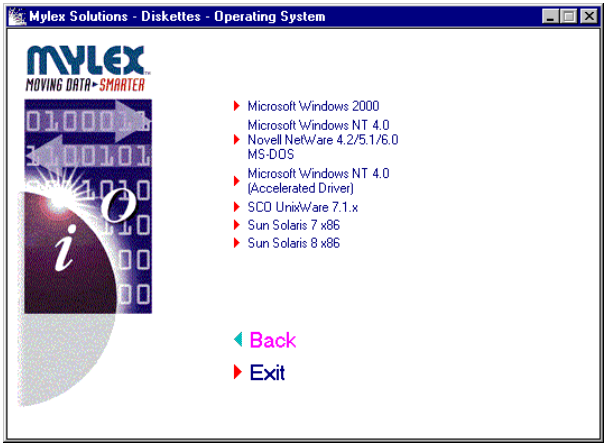

Figure A-3. Appropriate Operating System Menu

5. When the operating system has been selected, you will be prompted with a DOS shell requesting that you insert a blank diskette.

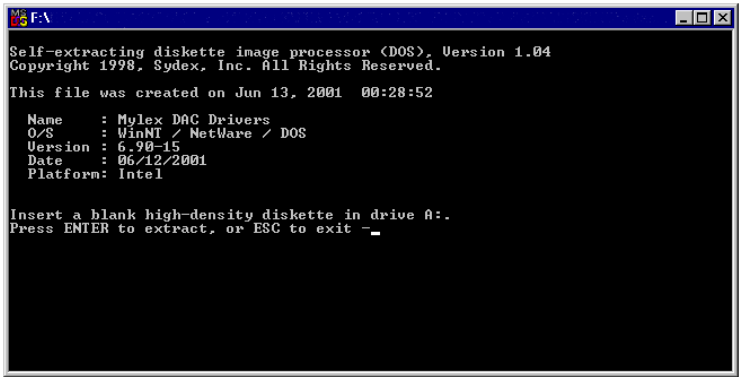

Figure A-4. DOS Shell

6. Insert the blank diskette and press Enter to extract the image onto the diskette.

Use your newly created driver diskettes to install your Mylex controller operating system drivers. Refer to the appropriate chapter in this manual.

CORPORATE OFFICE
34551 Ardenwood Boulevard, Fremont, CA 94555-3607
Tel: 510.796.6100
Domestic Sales Fax: 510.745.8016
International Sales Fax: 510.745.7521
www.mylex.com