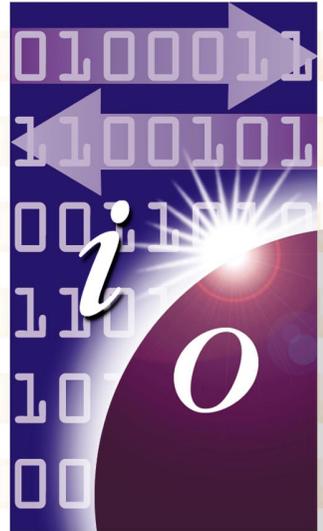




# RAID EzAssist™ v2.00 Configuration Utility

## Quick Configuration Guide







# **RAID EzAssist™ v2.00 Configuration Utility Quick Configuration Guide**

Part Number 775058-00

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## ***Greetings***

This manual describes the RAID EzAssist v2.00 Configuration Utility.

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## About This Manual

This quick configuration guide covers only RAID EzAssist Configuration Utility startup, first time drive configuration, controller configuration, and “flash” upgrades.

For advanced drive and physical device configuration topics as well as all other RAID EzAssist topics, please refer to the *RAID EzAssist Configuration Utility User Reference Guide* (P/N 775029) provided on the Mylex Solutions CD-ROM.

### Conventions

Throughout the manual, the following conventions are used:

 **This Graphic and Text Identifies a Task.**

 **This Graphic and Text Identifies a Subtask Under the Above**

 ***This graphic and text states a particular action to perform.***

**OR**

 ***An alternative action to perform.***



#### 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



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# Chapter 1

## First-Time Configuration

### Welcome!

Welcome to RAID EzAssist™, Mylex Corporation's user friendly configuration and maintenance utility for RAID controllers. This chapter will help you get started step by step doing your first Mylex RAID Controller configuration.

Before you are ready to configure a controller, be sure that you have already done the following according to the instructions in your controller's quick installation or hardware installation guide:

- Installed your Mylex controller(s) in the target system
- Connected appropriate cables between your controller(s) and the set of disk drives which you intend to use with each controller
- Set unique SCSI IDs for each drive on a particular SCSI bus (i.e. attached to each Mylex RAID controller), if necessary
- Terminated each SCSI bus appropriately (not applicable for Fibre channel controllers)

### “Previous” Versus “New” Mylex PCI Controllers

Several features of the RAID EzAssist Configuration Utility differ depending on whether the RAID controller (and thus its firmware) is one of Mylex's *new generation* of controllers, or is an *earlier or previous* controller. Throughout this manual we use the terms **previous controllers** and **new controllers** as follows:

**Previous Controllers.** These include all DAC960P Series controllers (such as the DAC960PDU, DAC960PG, DAC960PJ, etc.), as well as the AcceleRAID™ 150/200/250 and eXtremeRAID™ 1100 (DAC1164P) controllers

**New Controllers.** These include the AcceleRAID 352 and eXtremeRAID 2000 PCI to Ultra 160 SCSI controllers, and the eXtremeRAID 3000 PCI to Fibre Channel controller

## How Do I Configure a Mylex Controller for the First Time?

### Power On Your System.

Regardless of whether an operating system is installed on your computer system, you can run RAID EzAssist from the Mylex controller's BIOS at system boot time.

 **Turn on the system's power switch.**

### Start RAID EzAssist.

As the system boots up, you'll see various messages on the display. Pay special attention when you see a message similar to the following:

```
<Mylex controller ID1> BIOS Version x.xx-xx (Month Day, Year)
Mylex Corporation
```

Shortly after, some additional messages from the Mylex controller are displayed, including:

```
Press <Alt-M> for BIOS Options
```

Next you'll see:

```
Press <Alt-R> for RAID Configuration options
```

 **When you see the prompt, press <Alt-R>.**

If you've pressed <Alt-R> within the allotted time, you'll see:

```
RAID Configuration will start after system initialization completes
No system drives installed
```

If you were too late pressing <Alt-R>, simply reboot and start again.

 **Wait for RAID EzAssist to start.**

---

1. Examples include DAC960, eXtremeRAID 2000, etc.

## □ Get Started.

RAID EzAssist always starts by scanning for Mylex controllers and target drives (Figure 1-1).



Figure 1-1. RAID EzAssist Scans for Controllers and Drives

## ☞ Allow scanning to complete.

Since this is a first-time configuration, you'll see a Notice (Figure 1-2).



Figure 1-2. No Existing RAID Configuration

“Would you like to configure a RAID drive now?”

The answer depends on whether you want to change any of the default parameters and settings for this Mylex RAID Controller. If you are a new or inexperienced user, the default settings will probably suit your needs just fine, so you'll answer Yes.

If you are an advanced user, now's the time to change any controller parameters that you wish-- *before* a RAID configuration is set on the controller, so you'll answer No.

 ***If you want to adjust controller parameters, use the arrow key to select No, then press Enter.***

Please see Chapter 2 for information on changing Global, SCSI, and Startup parameters. Return here when you're done to continue first-time RAID configuration.

 **Note**

After changing controller parameters, select **Configure a RAID Drive** from the main menu to proceed.

 ***If you want to begin configuring your first RAID drive without changing controller options, press Enter with Yes selected.***

**Choose a Configuration Method.**

Three configuration methods are available to you. The table on the next page will help you decide which method is most appropriate for your situation.

*Table 1-1. Selecting a Configuration Method*

<b>Configuration Method</b>	<b>Who Should Use It</b>	<b>What It Does</b>
Automatic	<p>-Novice users with little or no RAID experience.</p> <p>-Users who wish to set up a single array with one logical drive when all available disk drives are of similar size/ capacity.</p> <p><i>-Don't use this if you want to span arrays, use RAID 0 striping, or RAID 0+1 mirroring with striping.</i></p>	<p>Automatically creates ONE array out of all available disk drives on the controller. If disk drives are different capacities, larger disk drives are initialized down to the capacity of the smallest connected disk drive.</p> <p>RAID level is automatically set based on the number of connected disk drives:</p> <p>1 drive = a JBOD</p> <p>2 drives = a RAID 1 mirrored set</p> <p>3 drives = a 3-drive RAID 5 striping with parity configuration</p> <p>4-8 drives = a 3-,4-,5-,6-, or 7-drive RAID 5 striping with parity configuration adding one device as a hot spare.</p>
Assisted	<p>-Users with some knowledge of RAID who wish a step by step configuration approach</p> <p>-Users who want to set up more than one array or logical drive without the detailed control of Custom configuration.</p>	<p>Leads you step by step through a series of questions about what type of RAID configuration you're looking for.</p>
Custom	<p>-Experienced or advanced users who want more complete control over configuration options.</p> <p>-Users with disk drives of multiple capacities who wish to create multiple arrays and logical drives to maximize capacity usage.</p>	<p>Provides detailed control of RAID configuration, including individual selection of physical devices, multiple arrays, multiple logical drives, caching, stripe size, etc.</p> <p>Allows spanning (RAID 10, 30, 50, 0+1+0, etc.).</p>

You choose your configuration method from the Configure RAID Drive screen (Figure 1-3).



Figure 1-3. Choose a Configuration Method

**☞ If you want to do an Automatic configuration, press Enter with Automatic selected.**

Now see “Option 1: Do an Automatic Configuration” for details.

**☞ If you want to do an Assisted configuration, use the arrow key to select Assisted, then press Enter.**

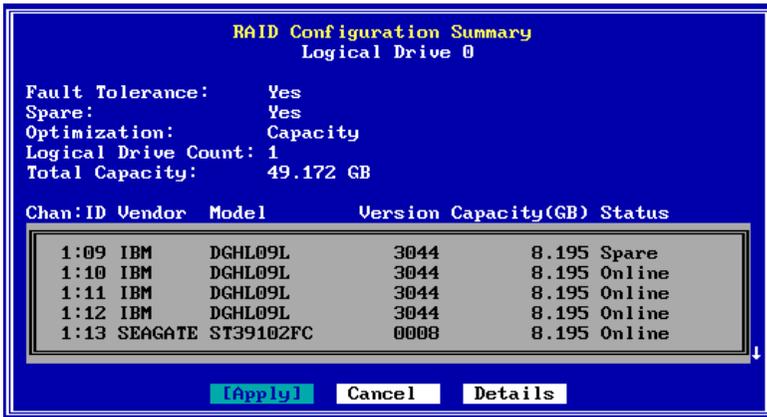
Now see “Option 2: Do an Assisted Configuration” for details.

**☞ If you want to do a Custom configuration, use the arrow key to select Custom, then press Enter.**

Now see “Option 3: Do a Custom Configuration” for details.

**❑ Option 1: Do an Automatic Configuration.**

The RAID Configuration Summary screen is displayed showing the recommended configuration for your system (Figure 1-4).



**Figure 1-4. RAID Configuration Summary Screen**

*Table 1-2. RAID Configuration Summary Fields*

Field	Description
Fault Tolerance	For 1 disk drive = No For 2 or more disk drives = Yes
Spare	For 1-3 disk drives = No For 4-8 disk drives = Yes
Optimization	For 1 disk drive = Performance (no fault tol) For 2 disk drives = Performance For 3 or more disk drives = Capacity
Logical Drive Count	1
Total (Useable) Capacity	Depends on the fault tolerance overhead: For 1 disk drive of n GB = n GB For 2 disk drives of n GB = n GB For 3 disk drives of n GB = 2n GB For 4,5,6,7,8 disk drives of n GB = 2n,3n,4n,5n,6n GB respectively <sup>a</sup>
Disk Drive Identification	Depends on disk drives.

a. With four or more drives, one drive's capacity is used for fault tolerance overhead, and one additional drive is reserved as a spare.

If there are more than five drives in the array, you'll see a small down-arrow next to the disk drive display field.

☞ **(Optional):** *If there is a down-arrow next to the disk drive display field, press PgDn to see the additional disk drives in the array.*

☞ **(Optional):** *Alternate PgUp and PgDn to see the entire list of disk drives in the array.*

☞ **(Optional):** *If you want to see additional configuration details, use the arrow key to select the Details button, then press Enter.*

If you choose to view configuration details, the RAID Configuration Details screen is displayed (Figure 1-5).

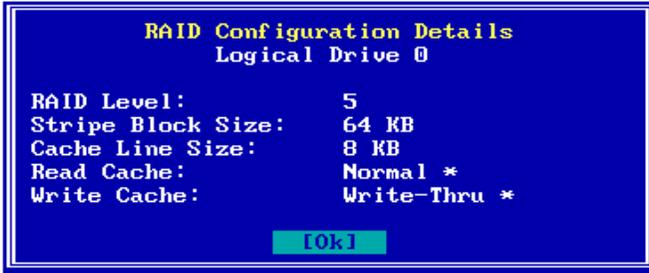


Figure 1-5. RAID Configuration Details Screen

Table 1-3. RAID Configuration Details Fields

Field	Description
RAID Level	For 1 disk drive = JBOD For 2 disk drives = RAID 1 For 3 or more disk drives = RAID 5
Stripe Block Size	For 1 disk drive = n/a For 2 or more disk drives = 64 KB
Cache Line Size	Default = 8K; Tuned to Stripe Block Size
Read Cache	Normal (Mylex default)
Write Cache	Write-Thru (Mylex default)

**Note**

After viewing configuration details, press **Enter** to select OK and return to the RAID Configuration Summary screen.

**To apply the configuration, use the arrow key if necessary to select Apply, then press Enter,**

**OR**

**To cancel the configuration, use the arrow key to select Cancel, then press Enter.**

When you apply the new configuration, RAID EzAssist writes configuration information to the Mylex controller. This takes a few moments, so a message is displayed (Figure 1-6).

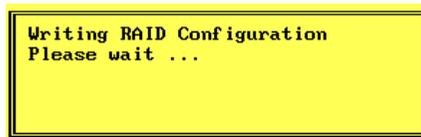


Figure 1-6. Writing RAID Configuration. Please Wait...

**Wait for the configuration information to be written to the controller.**

Next you'll see a Configuration Status screen (Figure 1-7). Your automatic configuration has been completed.

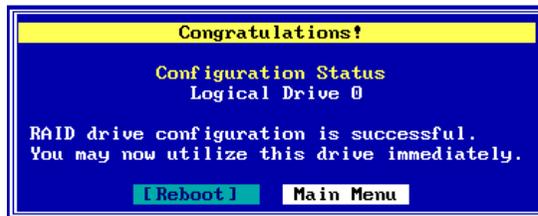


Figure 1-7. Configuration Complete - Reboot or Main Menu

Your next step will be to install the appropriate Mylex Disk Array Controller driver for the operating system you'll be using on the computer in which the Mylex RAID Controller is installed.

- If you have not installed your operating system software yet, and the Mylex controller is your system's primary controller, you will need to install the operating system and the Mylex driver concurrently.
- If the operating system is already installed, the Mylex controller is a secondary controller. You will need to boot your operating system and install the Mylex driver from within the operating system.

In either case, refer to the appropriate operating system chapter in the *Disk Array Controller Software Kit Installation Guide and User Manual* for instructions on primary and secondary controller driver installation. You may also refer to the Mylex controller's quick installation guide if your operating system is NetWare, Windows NT, or Windows 2000.

 **Exit RAID EzAssist by pressing Enter with the Reboot button selected. Begin operating system installation if necessary, or allow your installed operating system to boot.**

## **Option 2: Do an Assisted Configuration.**

The sequence of screens displayed during an Assisted Configuration depends on several factors, such as the number of unconfigured drives on the controller and your responses at each step of the Assisted Configuration process.

## **Fault Tolerance?**

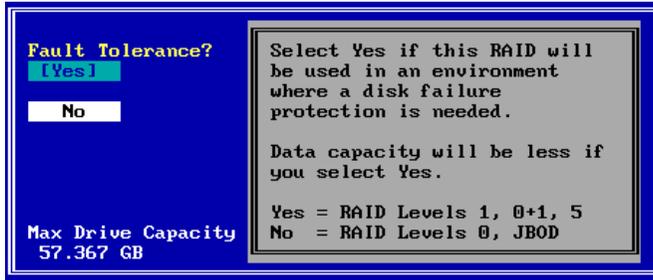
The Fault Tolerance screen is displayed under the following condition:

- Number of Unconfigured Drives on Controller > 1

### **Note**

If you have only one unconfigured drive on this controller, your only configuration option is JBOD, a non fault-tolerant option. You will, therefore, NOT see the Fault Tolerance choice screen.

Assuming your situation meets the condition above, the Fault Tolerance screen is displayed (Figure 1-8).



**Figure 1-8. Do You Want Fault Tolerance?**

In most situations you will want fault tolerance to protect your array in the event of a drive failure. However, if raw performance utilizing maximum available drive capacity overshadows your need for fault tolerance, a RAID 0 (striping) configuration may be more appropriate.

**☞ If you want your array to be fault tolerant, press Enter with Yes selected.**

**☞ If you prefer a RAID 0 striping or a JBOD configuration and fault tolerance is not a consideration, use the arrow key to select No, then press Enter.**

## ■ Spare Drive?

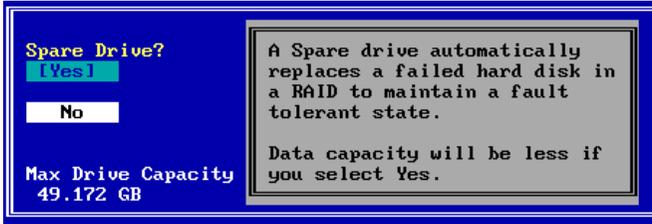
The Spare Drive screen is displayed under the following conditions:

- Fault Tolerance = YES, AND
- Number of Unconfigured Drives on Controller > 3

### ☞ Note

If you have two unconfigured drives on this controller, you'll get a RAID 1 (mirroring) configuration. If you have three unconfigured drives, you'll get a RAID 5 (striping with parity) configuration. In both cases no drive would be available to act as a spare, so you will therefore NOT see the Spare Drive choice screen.

Assuming your situation meets the conditions above, the Spare Drive screen is displayed (Figure 1-9).



**Figure 1-9. Do You Want a Spare Drive?**

A spare drive (hot spare or standby drive) offers an additional level of fault tolerance for existing fault tolerant arrays. If a drive in the array fails, the presence of a spare drive allows the failed drive's data to be rebuilt onto the spare. After rebuild is complete, the array could still accept another drive failure with no loss of data (although there would be degraded performance). It is usually beneficial to reserve a spare drive for the array, if you can afford not to use the capacity of the drive for array data storage.

Reserving a spare drive lowers the total useable capacity of the array by the capacity of that spare drive.

**☞ If you want your array to reserve a spare drive, press Enter with Yes selected.**

**☞ If you prefer not to reserve a spare drive and thereby use all the available drives in the array, use the arrow key to select No, then press Enter.**

## ■ Optimization Priority

The Optimization Priority screen is displayed under the following conditions:

- Fault Tolerance = YES, AND
- Number of Available<sup>1</sup> Drives on Controller > 2

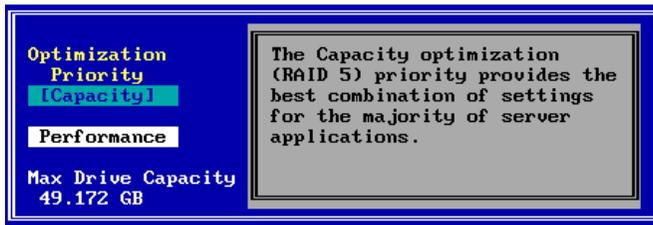
---

1. "Available" drives are both unconfigured AND not reserved as a spare.

**Note**

If you have only two available drives on this controller, you'll get a RAID 1 (mirroring) configuration, which optimizes for performance. You will, therefore, NOT see the Optimization Priority choice screen.

Assuming your situation meets the conditions above, the Optimization Priority screen is displayed (Figure 1-10).



**Figure 1-10. Optimize for Capacity?**

At this point you choose whether available capacity or array performance is the top criterion in your fault tolerant array. If you choose Capacity, you'll be requesting a RAID 5 (striping with parity) configuration. If you choose Performance, you'll be requesting a RAID 0+1 (striping with mirroring) configuration. Both give you the safety of fault tolerance. RAID 5 provides the best combination of settings for most applications and has overhead of only one drive's capacity. RAID 0+1 has a write performance advantage over RAID 5, but since the striped set is mirrored, available capacity is only half of the total capacity in the drive set.

**☞ If you want to optimize your array for capacity, press Enter with Capacity selected.**

**☞ If you want to optimize your array for performance, use the arrow key to select Performance, then press Enter (Figure 1-11).**

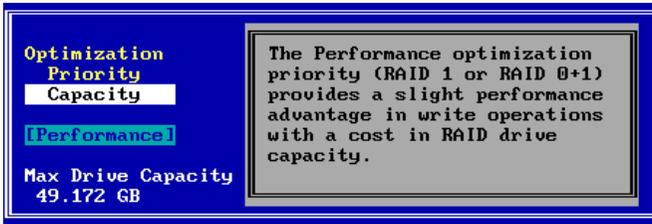


Figure 1-11. Optimize for Performance?

### ■ Logical Drive Count

The Logical Drive Count screen is always displayed in Assisted Configuration. You may divide the available drive space into multiple logical drives, or retain the default of one (1) logical drive.

The Logical Drive Count screen is displayed (Figure 1-12).



Figure 1-12. Logical Drive Count

Each logical drive that you create under Assisted Configuration will have identical capacity and settings (RAID level, caching, etc.). If you wish to set logical drive capacities or settings individually, you must use Custom Configuration. See “Option 3: Do a Custom Configuration.”

**☞ If you want to set only one (1) logical drive, press Enter with Ok selected.**

☞ **If you want to set up multiple logical drives:**

☞ **Press the up arrow key to select the logical drive count field.**

☞ **Type in a number of logical drives to set up.**

☞ **Press the down arrow key to select Ok.**

☞ **Press Enter with Ok selected.**

## ■ Capacity Usage

The Capacity Usage screen is always displayed in Assisted Configuration. You may use all or a part of the total available capacity to set up the specified number of logical drives with the optimization you've selected previously.

The Capacity Usage screen is displayed (Figure 1-13).



Figure 1-13. Capacity Usage

By default, the maximum available capacity is displayed in the Capacity Usage field. If you wish to reserve some of the capacity of your drives to set up future arrays, you may choose a smaller gigabyte (GB) value for the current logical drive set.

☞ **If you want to use the maximum available capacity for these logical drives, press Enter with Ok selected.**

☞ **If you want to reserve some capacity for future use:**

☞ **Press the up arrow key to select the capacity usage field.**

☞ **Type in a number representing the gigabytes (GB) to be used in the current configuration. (This number must be**

*lower than the maximum value displayed.)*

☞ *Press the down arrow key to select Ok.*

☞ *Press Enter with Ok selected.*

## ■ Apply the Configuration to the Controller.

The RAID Configuration Summary screen is displayed (Figure 1-14).

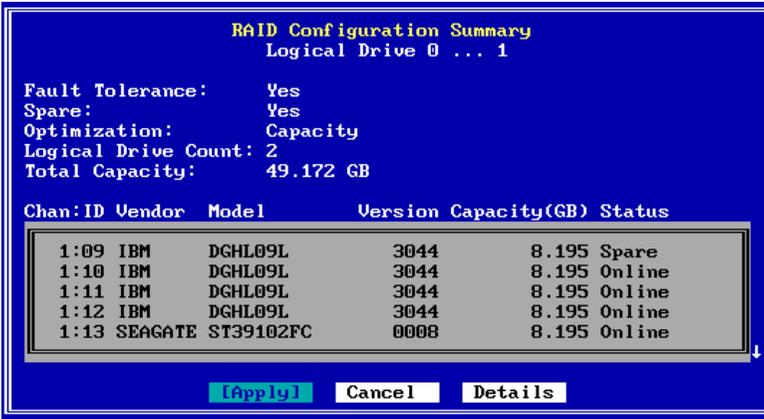


Figure 1-14. RAID Configuration Summary Screen

If there are more than five drives in the array, you'll see a small down-arrow next to the disk drive display field.

☞ *(Optional): If there is a down-arrow next to the disk drive display field, press PgDn to see the additional disk drives in the array.*

☞ *(Optional): Alternate PgUp and PgDn to see the entire list of disk drives in the array.*

☞ *(Optional): If you want to see additional configuration details, use the arrow key to select the Details button, then press Enter.*

If you choose to view configuration details, the RAID Configuration Details screen is displayed (Figure 1-15).

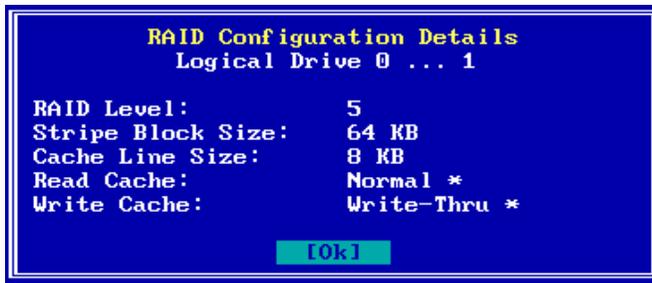


Figure 1-15. RAID Configuration Details Screen

### Note

After viewing configuration details, press **Enter** to select OK and return to the RAID Configuration Summary screen.

 **To apply the configuration, use the arrow key if necessary to select Apply, then press Enter,**

**OR**

 **To cancel the configuration, use the arrow key to select Cancel, then press Enter.**

When you apply the new configuration, RAID EzAssist writes configuration information to the Mylex controller. This takes a few moments, so a message is displayed (Figure 1-16).

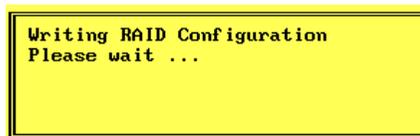


Figure 1-16. Writing RAID Configuration. Please Wait...

 **Wait for the configuration information to be written to the controller.**

Next you'll see a Configuration Status screen (Figure 1-17). Your assisted configuration has been completed.



**Figure 1-17. Configuration Complete - Reboot or Main Menu**

Your next step will be to install the appropriate Mylex Disk Array Controller driver for the operating system you'll be using on the computer in which the Mylex RAID Controller is installed.

- If you have not installed your operating system software yet, and the Mylex controller is your system's primary controller, you will need to install the operating system and the Mylex driver concurrently.
- If the operating system is already installed, the Mylex controller is a secondary controller. You will need to boot your operating system and install the Mylex driver from within the operating system.

In either case, refer to the appropriate operating system chapter in the *Disk Array Controller Software Kit Installation Guide and User Manual* for instructions on primary and secondary controller driver installation. You may also refer to the Mylex controller's quick installation guide if your operating system is NetWare, Windows NT, or Windows 2000.

**Exit RAID EzAssist by pressing Enter with the Reboot button selected. Begin operating system installation if necessary, or allow your installed operating system to boot.**

### ❑ **Option 3: Do a Custom Configuration.**

Custom Configuration gives you full control over the configuration of your disk drives. With Custom Configuration, you can:

- Select individual disk drives to add to the configuration
- Build multiple arrays
- Configure logical drives individually
- Select a specific RAID level
- Select the write caching method (Write-Thru or Write-Back)
- Set the stripe size
- Set logical drive size by physical or logical capacity
- Add capacity to an existing array
- Assign additional spare drives
- Enable spanning to create a configuration of larger drive sets

Once you've selected Custom from the Configure RAID Drive screen, the Custom Configuration main menu is displayed (Figure 1-18).



**Figure 1-18. Custom Configuration Main Menu**

We are setting up a first-time configuration, so we'll use the menu's first option: Configure a New Disk Array.

**☞ *Press Enter with the Configure a New Disk Array option selected.***

## ■ Build Disk Arrays.

The first step in Custom Configuration is to build at least one disk array. This is accomplished from the Disk Array Configuration screen (Figure 1-19).

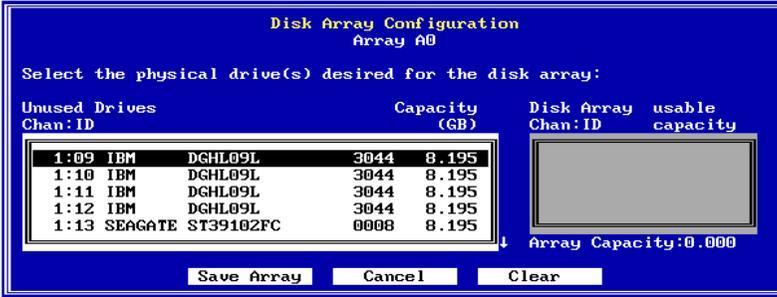


Figure 1-19. Disk Array Configuration Screen

This screen uses the following navigation strategy:

- PgDn and PgUp show you all the available drives if there is a small down-arrow beside the Unused Drives field.
- Inside Unused Drives, arrow keys select a drive, Enter accepts the highlighted drive and adds it to the Disk Array box to the right.
- The Tab key shifts control to the buttons, or from the buttons back to Unused Drives.
- When buttons are in focus, arrow keys select a button and Enter activates the highlighted button.

### **Caution**

The drives you select to comprise the array will all be treated as having the capacity of the smallest selected drive, regardless of the actual capacities. This could lead to wasted drive space. Therefore, try whenever possible to select drives of similar capacity when building an array.

“How many drives should I select for an array?”

The answer depends on the RAID levels you want to be able to choose for the logical drives you’ll set up in that array. See Table 1-4.

*Table 1-4. Required Numbers of Drives By RAID Level*

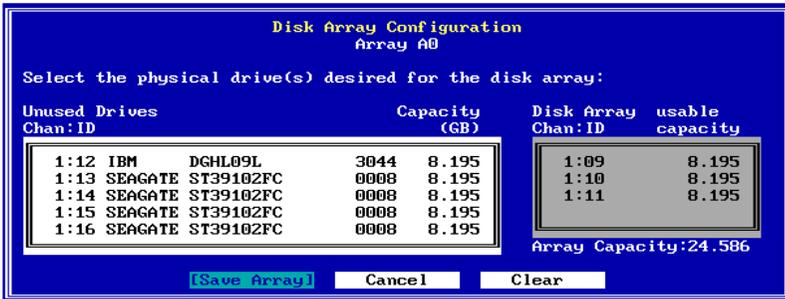
Desired RAID Level	Number of Drives to Select
JBOD (Single Drive)	Exactly 1 drive
RAID 0 (Striping)	At least 2 drives of equal size
RAID 1 (Mirroring)	Exactly 2 drives of equal size
RAID 3 (Parity Drive)	At least 3 drives of equal size
RAID 5 (Striping with Parity)	
RAID 0+1 (Striping with Mirroring)	

☞ **Use the arrow keys to select a disk drive in the Unused Drives field, then press Enter to accept the drive into the disk array.**

☞ **Repeat the step above for as many disk drives as you wish to add to the array.**

☞ **When you've finished adding drives, press the Tab key to switch focus to the buttons.**

Figure 1-20 is an example of how your screen might look after the steps above.



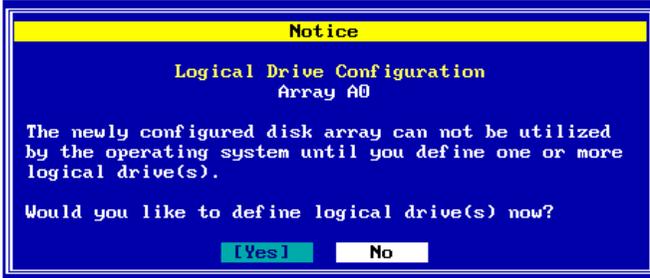
**Figure 1-20. Sample Disk Array Configuration**

☞ **If you're not satisfied with your drive selections, use the arrow key to select Clear, then Press Enter. Press Tab to return to Unused Drives.**

Your selections will be erased and you can try again as described above.

**☞ To save the array you've set up, press Enter with Save Array selected.**

A Notice is displayed at this point as shown in Figure 1-21.



**Figure 1-21. Define Logical Drives or Return to Disk Array Set-Up**

“Do you want to build additional arrays at this time?”

If you want to set up additional arrays, it is convenient to do so at this time before logical drives are defined.

**☞ Note**

If you want to take advantage of “spanning” your configuration across multiple arrays, you must enable spanning FIRST, build the individual arrays, then create logical drives that can make use of the spanned capacity available. See Chapter 2 of the *RAID EzAssist Configuration Utility User Reference Guide* for more complete information about this option.

If you plan on only one array, or if you'd prefer to define logical drives before building any additional arrays, you should move on to define logical drives at this time.

**☞ To build additional disk arrays, use the arrow key if necessary to select No, then press Enter. Repeat the steps described in “Build Disk Arrays.”**

**To define logical drives at this time, use the arrow key if necessary to select Yes, then press Enter.**

## ■ Define Logical Drives.

Logical drives for the array(s) you just set up are defined from the Logical Drive Definition screen (Figure 1-22).

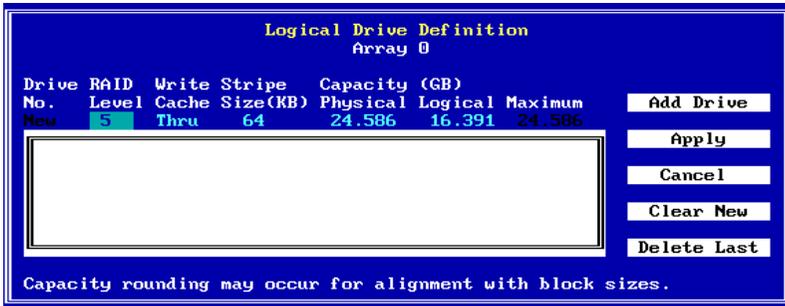


Figure 1-22. Logical Drive Definition Screen

This screen uses the following navigation strategy:

- Arrow keys move among the logical drive definition fields.
- For RAID Level, Write Cache, and Stripe Size(KB) definition fields, the Spacebar brings up a list of valid options. Arrow keys move among the options and Enter selects an option.
- For RAID Level, Write Cache, and Stripe Size(KB) definition fields, the + and - keys cycle through the valid options. When the desired option is visible, use the arrow key to move to another field.
- For Physical Capacity or Logical Capacity definition fields, type a numeric decimal value representing the desired capacity in GB. You may choose one or the other field to adjust.
- The Tab key shifts control to the buttons, or from the buttons back to the logical drive definition fields.
- When buttons are in focus, arrow keys select a button and Enter activates the highlighted button. Arrow keys rotate selections through Add Drive, Apply, Cancel, Clear New, and Delete Last.

Let's start by selecting a RAID level for our first logical drive.

☞ **With the RAID Level definition field selected...**

☞ **Press the + or - key to find your desired RAID level,**

**OR**

☞ **Press Spacebar to display a box of available choices, use the arrow key to select your desired RAID level, then press Enter (Figure 1-23).**

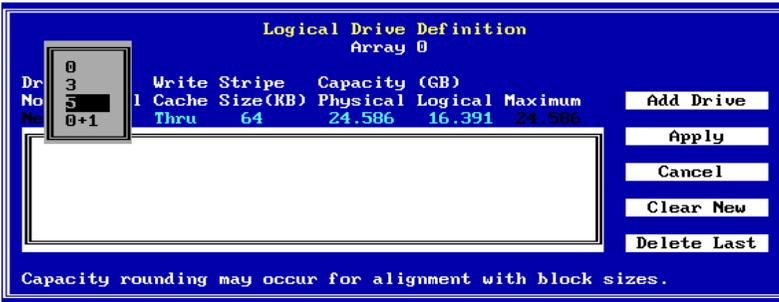


Figure 1-23. Example of a Selection Box

Next, we'll select the write caching strategy for our logical drive.

Write Back caching speeds write performance but risks loss of data in the cache buffer should power fail. Use Write Back only if you have a battery backup unit (BBU) or uninterruptable power supply (UPS) installed to preserve data in the cache.

☞ **Use the right arrow key to select the Write Cache definition field, then...**

☞ **Press the + or - key to find your desired caching method ("Thru" for Write Through, "Back" for Write Back),**

**OR**

☞ **Press Spacebar to display a box of available choices, use the arrow key to select your desired write caching method, then press Enter.**

Next, we'll set the stripe size for this logical drive.

 **Note**

Depending on the controller, available stripe sizes are 8, 16, 32, 64, 128, 256, 512, and 1024.

 **Use the right arrow key to select the *Stripe Size(KB)* definition field, then...**

 **Press the + or - key to find your desired stripe size, OR**

 **Press Spacebar to display a box of available choices, use the arrow key to select your desired stripe size, then press Enter.**

Next, we set a size for this logical drive based on the maximum available capacity.

You can set logical drive size in terms of either physical capacity or logical capacity. Logical capacity takes into account overhead for fault tolerance, spare drives, etc.

If you intend to set up more than one logical drive in this array, then set the capacity for the first logical drive somewhere below the maximum to leave space for additional logical drives.

 **Use the right arrow key to select either the *Physical or Logical Capacity(GB)* definition field, then type a numeric decimal value for the physical or logical capacity to be used in this logical drive.**

 **Note**

Drive capacity may be rounded for alignment with block sizes.

Finally, let's add the logical drive.

Check your settings among the logical drive definition fields to be sure they are what you want.

☞ *If you wish to change any settings, use the arrow key to select the desired definition field and change its value as described earlier.*

☞ *To add the logical drive, press the Tab key to switch focus to the buttons, then press Enter with the Add Drive button selected (Figure 1-24).*

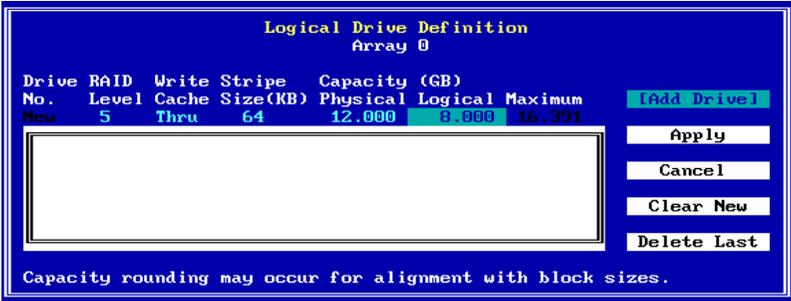


Figure 1-24. Ready to Add the Logical Drive

The logical drive is added to the display box, and focus returns to the logical drive definition field line (Figure 1-25).

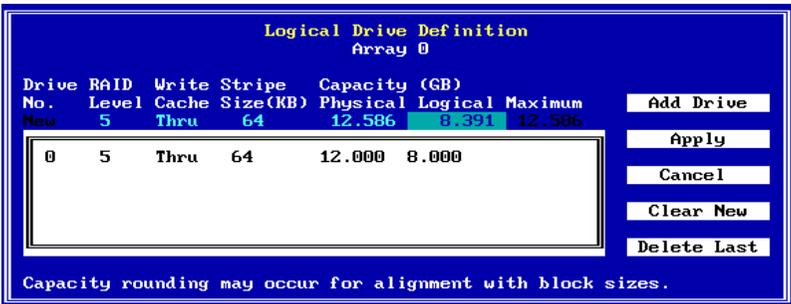


Figure 1-25. Logical Drive Has Been Added

☞ *To define additional logical drives, use the arrow key if necessary to return to the RAID Level definition field. Repeat the steps described in “Define Logical Drives.”*

As long as you haven’t applied the configuration to the controller, you can delete the logical drives you’ve set up and define new ones. RAID EzAssist

lets you:

- Delete the most recent logical drive you've added, OR
- Delete all the logical drives you've added in this logical drive definition session.

**☞ To delete the most recently-added logical drive, press Tab if necessary to switch focus to the buttons, use the arrow key to select Delete Last, then press Enter.**

**☞ To delete all logical drives that you added, press Tab if necessary to switch focus to the buttons, use the arrow key to select Clear New, then press Enter.**

**☞ If you wish, define new logical drives as described in "Define Logical Drives."**

## ■ Apply the Configuration to the Controller.

In order for the disk arrays and logical drives you set up to become a valid, registered configuration, you must Apply the configuration to the controller.

**☞ To apply the configuration, press Tab if necessary to switch focus to the buttons, use the arrow key to select Apply, then press Enter,**

**OR**

**☞ To cancel the configuration, press Tab if necessary to switch focus to the buttons, use the arrow key to select Cancel, then press Enter.**

When you apply the new configuration, RAID EzAssist writes configuration information to the Mylex controller. This takes a few moments, so a message is displayed (Figure 1-26).

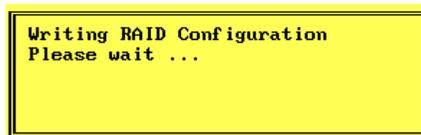


Figure 1-26. Writing RAID Configuration. Please Wait...

**☞ Wait for the configuration information to be written to the controller.**

When the process is complete, RAID EzAssist brings you back to the Disk Array Configuration screen, or Welcome menu if all drives are assigned.

Your next step will be to install the appropriate Mylex Disk Array Controller driver for the operating system you'll be using on the computer in which the Mylex RAID Controller is installed.

- If you have not installed your operating system software yet, and the Mylex controller is your system's primary controller, you will need to install the operating system and the Mylex driver concurrently.
- If the operating system is already installed, the Mylex controller is a secondary controller. You will need to boot your operating system and install the Mylex driver from within the operating system.

In either case, refer to the appropriate operating system chapter in the *Disk Array Controller Software Kit Installation Guide and User Manual* for instructions on primary and secondary controller driver installation. You may also refer to the Mylex controller's quick installation guide if your operating system is NetWare, Windows NT, or Windows 2000.

**☞ Press the Esc key multiple times until you see the screen in Figure 1-27 below.**



**Figure 1-27. Do You Wish to Exit RAID EzAssist?**

**☞ Use the arrow key to select Yes, then press Enter to exit RAID EzAssist. Begin operating system installation if necessary, or reboot your installed operating system.**

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# Chapter 2

## Controller Configuration

You can change certain settings on your controller using RAID EzAssist. Each Mylex Disk Array Controller is shipped from the factory with default settings which have been found to work well in a majority of applications and environments. However, no two environments are the same, and you may want to modify certain settings. The best time to make such changes is prior to doing your first drive configuration on the controller.

This chapter will discuss the following:

- Changing Global Properties
- Changing SCSI Transfer Properties (for Previous Mylex PCI Controllers)
- Changing Startup Properties

The following table is a summary of the specific properties you are able to change along with their default values.

*Table 2-1. Summary of Controller Parameters*

Property Type	Parameter	Default Setting
Global	Automatic Rebuild Management	Enabled
	StorageWorks Fault Management	Disabled
	Background Process Rate (%)	50
	Active Negation (Previous Controllers)	Disabled
	Drive Size Coercion (New Controllers)	Enabled
SCSI Transfer <sup>a</sup>	Bus Speed (MHz)	20MHz
	Tag Queueing	Yes
	Bus Width (8=Narrow, 16=Wide)	Negotiated Value
Startup	Disk Spin Up	By Controller
	Number of Disk Drives per Spin	2
	Initial Delay (seconds)	6
	Delay Between Spins (seconds)	0

- a. For Previous Controllers, SCSI Transfer properties must be set *by controller*. For New Controllers, SCSI Transfer properties of physical devices on the controller can be set individually. Physical device options are not covered in this Quick Configuration Guide. Please refer to the *RAID EzAssist Configuration Utility User Reference Guide*, Mylex P/N 775029.

## How Do I View Controller Configuration Information?

### ❑ Enter the Controller Configuration Screen.

👉 *If necessary, select the controller you wish to configure from the “Welcome to RAID EzAssist” screen,*

**OR**

If you’re using the RAID EzAssist main menu (Figure 2-1):

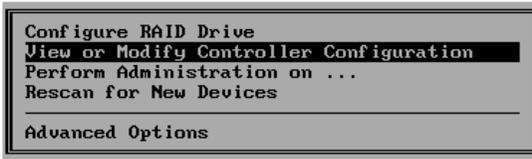


Figure 2-1. View or Modify Controller Configuration

👉 *Use the arrow key to select View or Modify Controller Configuration on the main menu, then press Enter.*

The Controller Configuration screen is displayed showing basic controller configuration information (Figure 2-2).

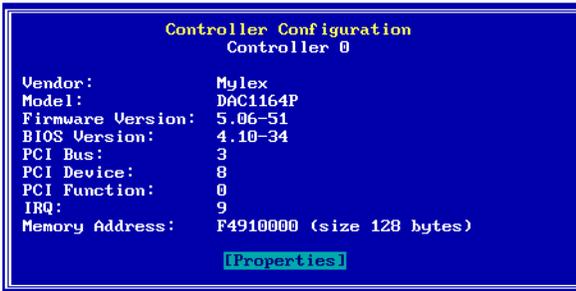


Figure 2-2. Controller Configuration Screen

## How Do I Change Global Properties for a Controller?

### ❑ Enter the Properties Menu.

To view and possibly change Global properties of the controller, you enter the Properties menu from the Controller Configuration screen.

➤ **Press Enter with Properties selected on the Controller Configuration screen.**

The Properties menu is displayed (Figure 2-3).

### 👉 Note

For New Controllers, SCSI properties are set by individual physical device and not by controller, so the “SCSI” option will only appear on the Properties menu for Previous Controllers (such as DAC1164P).

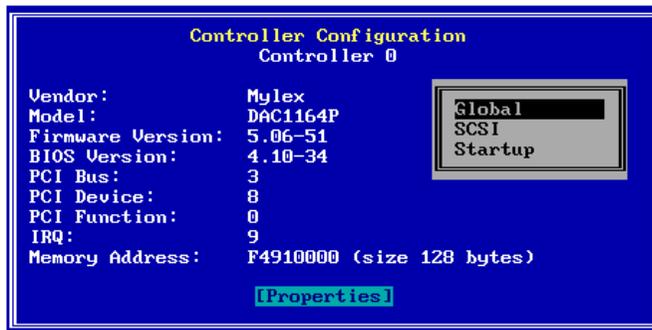


Figure 2-3. Properties Menu Overlays Controller Configuration Screen

### ❑ Enter the Global Properties Screen.

➤ **When the Properties menu is displayed, press Enter with Global selected.**

The Global Properties screen is displayed (Figure 2-4 or Figure 2-5).



**Figure 2-4. Global Properties Screen - Previous Controllers**



**Figure 2-5. Global Properties Screen - New Controllers**

This screen uses the following navigation strategy:

- Arrow keys move among the global property fields.
- The Spacebar brings up a list of valid options. Arrow keys move among the options and Enter selects an option.
- The + and - keys cycle through the valid options. When the desired option is visible, use the arrow key to move to another field.
- The Tab key shifts control to the buttons, or from the buttons back to the global property fields.
- When buttons are in focus, arrow keys select a button and Enter activates the highlighted button.
- At any time you can press Enter to accept the currently visible settings and close the screen.

---

## **View/Modify Automatic Rebuild Management.**

### **Default = Enabled**

The Automatic Rebuild Management option refers to the function of the same name. It detects the removal of a failed drive and performs an automatic rebuild after a replacement drive is installed into a redundant (fault tolerant) logical array (RAID 1, 3, 5, and 0+1).

Automatic Rebuild Management requires hardware compatibility with disk array enclosures that are certified AEMI or SAF-TE compliant.

 ***With the Automatic Rebuild Management field selected...***

 ***Press the + or - key to set the value to Enabled or Disabled as desired,***

**OR**

 ***Press Spacebar to display a box of available choices, use the arrow key to select your desired setting, then press Enter.***

## **View/Modify StorageWorks Fault Management.**

### **Default = Disabled**

The StorageWorks Fault Management option monitors and reports drive failures, background activity completion status, enclosure events, etc. Enable this function only when Digital StorageWorks Fault Management equipment (disk cabinet) is installed. In all other cases this option should remain disabled.



### **WARNING**

**If you enable StorageWorks Fault Management, make sure that Automatic Rebuild Management is disabled.**

 ***Use the arrow key to select the StorageWorks Fault Management field, then...***

 ***Press the + or - key to set the value to Enabled or Disabled as***

*desired,*

**OR**

 **Press Spacebar to display a box of available choices, use the arrow key to select your desired setting, then press Enter.**

**View/Modify Background Process Rate.**

**Default = 50**

The Background Process Rate is a relative indication of how much time the controller devotes to a rebuild, add capacity (MORE), or background initialization operation. Integer values from 0-50 can be defined in multiples of 10. For low priority and high array performance, specify a value of 0. For high background process rate (with reduced array performance during), select 50.

 **Use the arrow key to select the Background Process Rate (%) field, then...**

 **Press the + or - key to select the desired numeric value for background processes,**

**OR**

 **Press Spacebar to display a box of available choices, use the arrow key to select your desired value, then press Enter.**

**Previous Controllers: View/Modify the Active Negation Setting.**

**Default = Disabled**

Enable for cleaner SCSI signal transmissions.

 **Use the arrow key to select the Active Negation field, then...**

 **Press the + or - key to set the value to Enabled or Disabled as desired,**

**OR**

 **Press Spacebar to display a box of available choices, use the**

*arrow key to select your desired value, then press Enter.*

***New Controllers: View/Modify the Drive Size Coercion Setting.***

**Default = Enabled**

Enable to allow drives of similar but not exact capacities to be treated as identical in capacity for the purpose of hot spares, drive replacements, and array configurations.

** *Use the arrow key to select the Drive Size Coercion field, then...***

** *Press the + or - key to set the value to Enabled or Disabled as desired,***

**OR**

** *Press Spacebar to display a box of available choices, use the arrow key to select your desired value, then press Enter.***

***Accept or Cancel Your Global Property Changes.***

** *To accept your Global property changes, press Enter with Ok selected, then press the arrow key to select Yes at the “Save Changes?” screen and press Enter,***

**OR**

** *To cancel any changes you’ve made, press the Esc key, or press the Tab key, the arrow key to select Cancel, then press Enter.***

## How Do I Change SCSI Transfer Properties for a Previous Mylex PCI Controller?

### ❑ Enter the Properties Menu.

To view and possibly change SCSI Transfer properties of the controller, you enter the Properties menu from the Controller Configuration screen.

➡ **Press Enter with Properties selected on the Controller Configuration screen.**

The Properties menu is displayed (Figure 2-6).



Figure 2-6. Properties Menu Overlays Controller Configuration Screen

### ❑ Enter the SCSI Transfer Properties Screen.

➡ **When the Properties menu is displayed, use the arrow key to select SCSI, then press Enter.**

The SCSI Transfer Properties screen is displayed (Figure 2-7).



Figure 2-7. SCSI Transfer Properties Screen

This screen uses the following navigation strategy:

- Arrow keys move among the SCSI transfer property fields.
- The Spacebar brings up a list of valid options. Arrow keys move among the options and Enter selects an option.
- The + and - keys cycle through the valid options. When the desired option is visible, use the arrow key to move to another field.
- The Tab key shifts control to the buttons, or from the buttons back to the SCSI transfer property fields.
- When buttons are in focus, arrow keys select a button and Enter activates the highlighted button.
- At any time you can press Enter to accept the currently visible settings and close the screen.

 **Note**

The Channel and Host ID fields are not changeable.

**View/Modify Bus Speed.**

**Default = 20MHz**

The SCSI Transfer Bus Speed (MHz) function sets the maximum transfer rate for each drive channel. The default setting is 20MHz. This setting produces 20 MB/sec transfers for Fast SCSI and 40 MB/sec transfers for Wide and Ultra SCSI. In general it is not necessary to change this parameter since the controller “negotiates” the supported transfer rate with all of the drives.

 **Note**

Problems communicating with a drive can be caused by several conditions; e.g., improper termination, wrong drive ID setting, SCSI cable is too long, faulty equipment, etc.

However, if you do wish to change this setting...

 ***Use the arrow keys to select the Bus Speed (MHz) field for the desired channel, then...***

 **Press the + or - key to set the desired value,**

**OR**

 **Press Spacebar to display a box of available choices, use the arrow key to select your desired value, then press Enter.**

 **Repeat the steps above for other controller channels if necessary.**

#### **View/Modify the Tag Queuing Setting.**

**Default = Yes**

The Tag Queuing setting controls SCSI command tag queuing support for each drive channel. This allows drives to work on multiple commands at the same time. This function normally remains enabled (Yes). Disable (switch to No) only when using older SCSI drives not supporting command tag queuing.

 **Use the arrow keys to select the Tag Queuing field for the desired channel, then...**

 **Press the + or - key to set the value to Yes or No as desired,**

**OR**

 **Press Spacebar to display a box of available choices, use the arrow key to select your desired setting, then press Enter.**

#### **View/Modify the Bus Width Setting.**

**Default = Negotiated Value**

In general it is not necessary to change this parameter since the controller “negotiates” the supported data bus width.

However, if you do wish to change this setting...

 **Use the arrow keys to select the Bus Width (8=Narrow, 16=Wide) field for the desired channel, then...**

☞ *Press the + or - key to set the value to 16 or 8 as desired,*

**OR**

☞ *Press Spacebar to display a box of available choices, use the arrow key to select your desired setting, then press Enter.*

**Accept or Cancel Your SCSI Transfer Property Changes.**

☞ *To accept your SCSI Transfer property changes, press Enter with Ok selected, then press the arrow key to select Yes at the “Save Changes?” screen and press Enter,*

**OR**

☞ *To cancel any changes you’ve made, press the Esc key, or press the Tab key, the arrow key to select Cancel, then press Enter.*

## How Do I Change Startup Properties for a Controller?

**Enter the Properties Menu.**

To view and possibly change Startup properties of the controller, you enter the Properties menu from the Controller Configuration screen.

☞ *Press Enter with Properties selected on the Controller Configuration screen.*

The Properties menu is displayed (Figure 2-8).



Figure 2-8. Properties Menu Overlays Controller Configuration Screen

## ❑ Enter the Startup Properties Screen.

☞ *When the Properties menu is displayed, use the arrow key to select Startup, then press Enter.*

The Startup Properties screen is displayed (Figure 2-9).



**Figure 2-9. Startup Properties Screen**

This screen uses the following navigation strategy:

- Arrow keys move among the startup property fields.
- For the Disk Spin Up field, the Spacebar brings up a list of valid options. Arrow keys move among the options and Enter selects an option.
- For the Disk Spin Up field, the + and - keys cycle through the valid options. When the desired option is visible, use the arrow key to move to another field.
- For Number of Disk Drives per Spin, Initial Delay (seconds), and Delay Between Spins (seconds) fields, type a numeric value representing the desired setting.
- The Tab key shifts control to the buttons, or from the buttons back to the startup property fields.
- When buttons are in focus, arrow keys select a button and Enter activates the highlighted button.
- At any time you can press Enter to accept the currently visible settings and close the screen.

## ❑ View/Modify the Disk Spin Up Setting.

**Default = By Controller**

The Disk Spin Up setting controls how the SCSI drives in the array are started (spun-up). There are three different Spin-up modes that may be selected by the user.

**By Controller.** This spin-up mode causes the controller to spin-up all connected drives until every drive in the array is spinning. The controller then interrogates each drive and confirms that the drive is ready for use. The interrogation process repeats until all drives have been verified. The default is set to the “Number of Disk Drives per Spin” value at an interval indicated by the “Delay Between Spins (seconds)” value (see below).

**On Power.** This spin-up mode assumes that all drives are already spinning and proceeds to interrogate the drives in the same manner as described for By Controller mode.

**Automatic.** This spin-up mode spins drives automatically.

☞ ***With the Disk Spin Up field selected...***

☞ ***Press the + or - key to set the desired spin method to By Controller, On Power, or Automatic,***

**OR**

☞ ***Press Spacebar to display a box of available choices, use the arrow key to select your desired setting, then press Enter.***

**View/Modify the Number of Disk Drives per Spin Setting.**

**Default = 2**

This specifies the number of drives to spin up at one time. Values range from 1 to 6.

☞ ***Use the arrow keys to select the Number of Disk Drives per Spin field, then type the desired numeric value for the number of disk drives per spin.***

**View/Modify the Initial Delay Setting.**

**Default = 6**

After the controller completes its initialization process, the initial delay value defines the number of seconds before the first disk interrogation

request is issued to the array. Delay values range from 0 to 30 in six second increments.

 ***Use the arrow keys to select the Initial Delay (seconds) field, then type the desired numeric value for the number of seconds of initial delay.***

**View/Modify the Delay Between Spins Setting.**

**Default = 0**

This specifies the number of seconds between consecutive device spin-up cycles.

 ***Use the arrow keys to select the Delay Between Spins (seconds) field, then type the desired numeric value for the number of seconds of delay between spins.***

**Accept or Cancel Your Startup Property Changes.**

 ***To accept your Startup property changes, press Enter with Ok selected, then press the arrow key to select Yes at the “Save Changes?” screen and press Enter,***

**OR**

 ***To cancel any changes you’ve made, press the Esc key, or press the Tab key, the arrow key to select Cancel, then press Enter.***

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## Chapter 3

# Flash Upgrades

In this chapter you'll learn how to use RAID EzAssist to update (Flash) new firmware code to one or more Mylex RAID Controllers, or update the RAID EzAssist BIOS Configuration Utility itself.

### How Do I Update Controller Firmware or the RAID EzAssist Utility?

From time to time Mylex makes available updated firmware or BIOS code with new features or fixes for your controller. RAID EzAssist offers a straightforward way to update ("flash") the new code to your controller.

In addition, you can even use RAID EzAssist to update itself! The same Update Flash Code function can be used to update the BIOS version of RAID EzAssist on your controller.

#### Note

Whether you're updating firmware, BIOS code, RAID EzAssist, etc., you will need to reboot your system for the new code to be in effect.

#### Enter the Advanced Options Menu.

 **Use the arrow key to select Advanced Options on the main menu, then press Enter (Figure 3-1).**



Figure 3-1. Advanced Options

The Advanced Options menu is displayed (Figure 3-2).

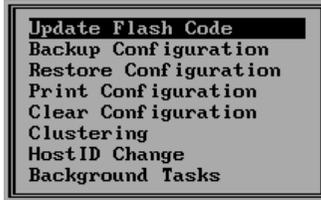


Figure 3-2. Advanced Options Menu

**❑ Choose an Image File for the Update.**

**☞ Have the diskette ready that contains the firmware, BIOS, boot block, or utility image file(s) you want to flash from the root directory, and record the name(s) of the file(s) you'll be flashing.**

**☞ From the Advanced Options menu, press Enter with Update Flash Code selected.**

The Update Flash Code screen is displayed (Figure 3-3). For example:



Figure 3-3. Update Flash Code

**☞ Type the name of the image file and press the Tab key.**

**☞ Insert the diskette into the floppy diskette drive and press Enter with Ok selected to continue.**

A message is displayed while RAID EzAssist reads the image file (Figure 3-4).



Figure 3-4. Reading Image File

**Wait while the image file data is being read.**

The Flash Code Update screen is displayed (Figure 3-5).

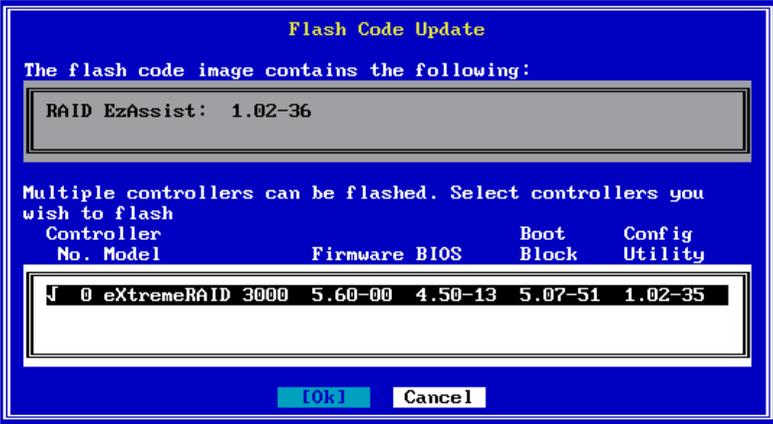


Figure 3-5. Flash Code Update

**Choose Controllers to Update.**

The image file is read from the diskette, then the contents of the image file are displayed in the gray field at the top of the screen.

This screen uses the following navigation strategy:

- PgDn and PgUp show you all the available or selected controllers if there is a small down/up-arrow beside the Controller field.
- Inside the Controller field, arrow keys select a controller. Enter accepts the highlighted controller and adds a check mark, OR deselects a controller that already has a check mark. You may select more than one

controller.

- The Tab key shifts control to the buttons, or from the buttons back to the Controller field.
- When buttons are in focus, arrow keys select a button and Enter activates the highlighted button.

**☞ Use the arrow keys to select a controller you wish to update, then press Enter. Repeat to select additional controllers.**

The currently active controller is selected by default.

### Update the Selected Controller(s).

**☞ After you've selected all controllers to update, press the Tab key to select Ok, then press Enter.**

The Flash Code Update warning is displayed (Figure 3-6).

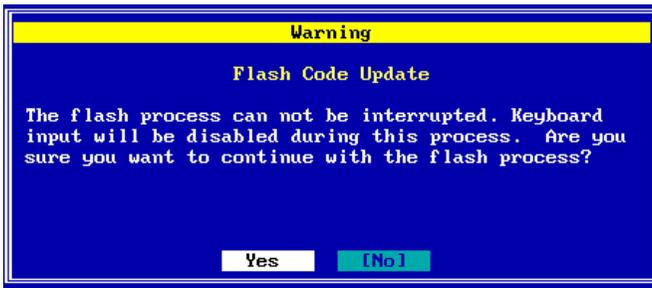


Figure 3-6. Flash Code Update Warning

**☞ To begin the update (flash) process, use the arrow key to select Yes, then press Enter,**

**OR**

**☞ To cancel the update, press Enter with No selected.**

If you selected Yes, the Flash Process Status screen is displayed (Figure 3-7).

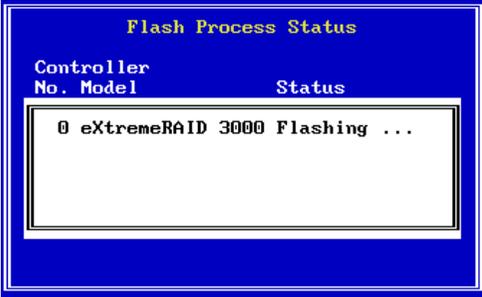


Figure 3-7. Flash Process Status

RAID EzAssist loads the image file information to the controller and stores it.

**⚠️ Wait for the flash image storage to conclude.**

Once the image file has been stored to the controller, RAID EzAssist will automatically program the controller with the new image data. A message is displayed (Figure 3-8).



Figure 3-8. Programming Controller

**⚠️ Wait while the controller is programmed.**

When the process is finished, the Flash Process Status screen will indicate “Flashing done” for each successfully updated controller.







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