

XL-RAID SCSI TO S-ATA

Installation Reference Guide

Revision 1.0

Copyright

No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written consent.

Trademarks

All products and trade names used in this document are trademarks or registered trademarks of their respective holders.

Changes

The material in this documents is for information only and is subject to change without notice.

FCC Compliance Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in residential installations. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is not guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television equipment reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- 1. Reorient or relocate the receiving antenna
- 2. Move the equipment away from the receiver
- 3. Plug the equipment into an outlet on a circuit different from that to which the receiver is powered.
- 4. Consult the dealer or an experienced radio/television technician for help

All external connections should be made using shielded cables.



About This Manual

Welcome to your **R**edundant **A**rray of **I**ndependent **D**isks System User's Guide. This manual covers everything you need to know in learning how to install or configure your RAID system. This manual also assumes that you know the basic concepts of RAID technology. It includes the following information :

Chapter 1 Introduction

Introduces you to Disk Array's features and general technology concepts.

Chapter 2 Getting Started

Helps user to identify parts of the Disk Array and prepare the hardware for configuration.

Chapter 3 Configuring

Quick Setup

Provides a simple way to setup your Disk Array.

Customizing Setup

Provides step-by-step instructions to help you to do setup or re-configure your Disk Array.

Chapter 4 Array Maintenance

Updating Firmware

Provides step-by-step instructions to help you to update the firmware to the latest version.

Table of Contents

Chapter 1 Introduction

Chapter 2 Getting Started

2.1	Unpacking the subsystem	2-1
2.2	Identifying Parts of the subsystem	
	2.2.1 Front View	
	2.2.2 Rear View	2-5
2.3	Connecting to Host	2-6
2.4	SCSI Termination	2-7
2.5	Powering-on the subsystem	2-8
2.6	Install Hard Drives	2-9
2.7	Connecting UPS	2-11
2.8	Connecting to PC or Terminal	2-12

Chapter 3 Configuring

3.1	Configuring through a Terminal	3-1
3.2	Configuring the Subsystem Using the LCD Panel	
3.3	M B	3-10
3.4	Web browser-based Remote RAID management via R-Link ethernet	3-15
3.5		3-17
3.6	Raid Set Functions	3-19
	3.6.1 Create Raid Set	3-19
	3.6.2 Delete Raid Set	3-20
	3.6.3 Expand Raid Set	3-21
	3.6.4 Activate Incomplete Raid Set	3-23
	3.6.5 Create Hot Spare	3-25

	3.6.6 Delete Hot Spare	3-25
	3.6.7 Rescue Raid Set	3-26
3.7	Volume Set Function	3-27
	3.7.1 Create Volume Set	3-27
	3.7.2 Delete Volume Set	3-30
	3.7.3 Modify Volume Set	
	3.7.3.1 Volume Expansion	
	3.7.4 Volume Set Migration	
	3.7.5 Check Volume Set	
	3.7.6 Stop Volume Set Check	3-34
3.8	PhysicalDrive	3-35
	3.8.1 Create Pass-Through Disk	3-35
	3.8.2 Modify Pass-Through Disk	3-36
	3.8.3 Delete Pass-Through Disk	3-37
	3.8.4 Identify Selected Drive	3-37
3.9	System Configuration	3-38
	3.9.1 System	3-38
	Configuration	3-40
	3.9.2 U320 SCSI Target Configuration	3-42
	3.9.3 Ethernet Config	3-43
	3.9.4 Alert By Mail Config	3-44
	3.9.5 SNMP Configuration	3-45
	3.9.6 NTP Configuration	3-46
	3.9.7 View Events	3-47
	3.9.8 Generate Test Events	3-48
	3.9.9 Clear Events Buffer	3-48
	3.9.10 Modify Password	3-49
	3.9.11 Upgrade Firmware	3-50
3.10	Information Menu	3-50
	3.10.1 RaidSet Hierarchy	
	3.10.2 System Information	3-53
	3.10.3 Hardware Monitor	3-54
3.11	Creating a new RAID or Reconfiguring an Existing RAID	
Chapter 4	Array Maintenance	

Chapter 4	Array Maintenance	
4.1	Upgrading the Firmware	4-1
Appendix A	A Technical Specification	A-1

Chapter 1

Introduction

The RAID subsystem is a Ultra 320 LVD SCSI-to-Serial II ATA RAID (Redundant Arrays of Independent Disks) disk array subsystem. It consists of a RAID disk array controller and four (4) disk trays.

The subsystem is a "Host Independent" RAID subsystem supporting RAID levels 0, 1, 3, 5, 6, 0+1 and JBOD. Regardless of the RAID level the subsystem is configured for, each RAID array consists of a set of disks which to the user appears to be a single large disk capacity.

One unique feature of these RAID levels is that data is spread across separate disks as a result of the redundant manner in which data is stored in a RAID array. If a disk in the RAID array fails, the subsystem continues to function without any risk of data loss. This is because redundant information is stored separately from the data. This redundant information will then be used to reconstruct any data that was stored on a failed disk. In other words, the subsystem can tolerate the failure of a drive without losing data while operating independently of each other.

The subsystem is also equipped with an environment controller which is capable of accurately monitoring the internal environment of the subsystem such as its power supplies, fans, temperatures and voltages. The disk trays allow you to install any type of 3.5-inch hard drive. Its modular design allows hot-swapping of hard drives without interrupting the subsystem's operation.

Introduction

1.1 Key Features

Subsystem Features:

- Reatures an Intel 80219 64 bit RISC I/O processor
- ∞ Build-in 128MB~256MB cache memory
- OR Ultra 320 LVD host port
- c ⊗ Smart-function LCD panel
- ℜ Supports up to four (4) 1" hot-swappable Serial ATA II hard drives
- CR 250W power supply with PFC
- col High quality advanced cooling fan
- ce Local audible event notification alarm
- Supports password protection and UPS connection
- G Built-in R-Link LAN port interface for remote management & event notification
- ca Real time drive activity and status indicators

RAID Function Features:

- Supports RAID levels 0, 1, 0+1, 3, 5, 6 and JBOD
- cs Supports hot spare and automatic hot rebuild
- ca Allows online capacity expansion within the enclosure
- CR Tagged command queuing for 256 commands, allows for overlapping data streams
- OR Bad block auto-remapping
- A Multiple RAID selection
- colOnline RAID level migration

Introduction

1.2 RAID Concepts

RAID Fundamentals

The basic idea of RAID (Redundant Array of Independent Disks) is to combine multiple inexpensive disk drives into an array of disk drives to obtain performance, capacity and reliability that exceeds that of a single large drive. The array of drives appears to the host computer as a single logical drive.

Six types of array architectures, RAID 1 through RAID 6, were originally defined, each provides disk fault-tolerance with different compromises in features and performance. In addition to these five redundant array architectures, it has become popular to refer to a non-redundant array of disk drives as a RAID 0 array.

Disk Striping

Fundamental to RAID technology is striping. This is a method of combining multiple drives into one logical storage unit. Striping partitions the storage space of each drive into stripes, which can be as small as one sector (512 bytes) or as large as several megabytes. These stripes are then interleaved in a rotating sequence, so that the combined space is composed alternately of stripes from each drive. The specific type of operating environment determines whether large or small stripes should be used.

Most operating systems today support concurrent disk I/O operations across multiple drives. However, in order to maximize throughput for the disk subsystem, the I/O load must be balanced across all the drives so that each drive can be kept busy as much as possible. In a multiple drive system without striping, the disk I/O load is never perfectly balanced. Some drives will contain data files that are frequently accessed and some drives will rarely be accessed.



By striping the drives in the array with stripes large enough so that each record falls entirely within one stripe, most records can be evenly distributed across all drives. This keeps all drives in the array busy during heavy load situations. This situation allows all drives to work concurrently on different I/O operations, and thus maximize the number of simultaneous I/O operations that can be performed by the array.

Definition of RAID Levels

RAID 0 is typically defined as a group of striped disk drives without parity or data redundancy. RAID 0 arrays can be configured with large stripes for multi-user environments or small stripes for single-user systems that access long sequential records. RAID 0 arrays deliver the best data storage efficiency and performance of any array type. The disadvantage is that if one drive in a RAID 0 array fails, the entire array fails.

1-4



RAID 1, also known as disk mirroring, is simply a pair of disk drives that store duplicate data but appear to the computer as a single drive. Although striping is not used within a single mirrored drive pair, multiple RAID 1 arrays can be striped together to create a single large array consisting of pairs of mirrored drives. All writes must go to both drives of a mirrored pair so that the information on the drives is kept identical. However, each individual drive can perform simultaneous, independent read operations. Mirroring thus doubles the read performance of a single non-mirrored drive and while the write performance is unchanged. RAID 1 delivers the best performance of any redundant array type. In addition, there is less performance degradation during drive failure than in RAID 5 arrays.



Introduction

RAID 3 sector-stripes data across groups of drives, but one drive in the group is dedicated to storing parity information. RAID 3 relies on the embedded ECC in each sector for error detection. In the case of drive failure, data recovery is accomplished by calculating the exclusive OR (XOR) of the information recorded on the remaining drives. Records typically span all drives, which optimizes the disk transfer rate. Because each I/O request accesses every drive in the array, RAID 3 arrays can satisfy only one I/O request at a time. RAID 3 delivers the best performance for single-user, single-tasking environments with long records. Synchronized-spindle drives are required for RAID 3 arrays in order to avoid performance degradation with short records. RAID 5 arrays with small stripes can yield similar performance to RAID 3 arrays.



Under **RAID 5** parity information is distributed across all the drives. Since there is no dedicated parity drive, all drives contain data and read operations can be overlapped on every drive in the array. Write operations will typically access one data drive and one parity drive. However, because different records store their parity on different drives, write operations can usually be overlapped.



RAID 6 is similar to RAID 5 in that data protection is achieved by writing parity information to the physical drives in the array. With RAID 6, however, *two* sets of parity data are used. These two sets are different, and each set occupies a capacity equivalent to that of one of the constituent drives. The main advantages of RAID 6 is High data availability – any two drives can fail without loss of critical data.



Introduction

Dual-level RAID achieves a balance between the increased data availability inherent in RAID 1 and RAID 5 and the increased read performance inherent in disk striping (RAID 0). These arrays are sometimes referred to as **RAID 0+1** or RAID 10 and RAID 0+5 or RAID 50.

In summary:

- RAID 0 is the fastest and most efficient array type but offers no faulttolerance. RAID 0 requires a minimum of two drives.
- RAID 1 is the best choice for performance-critical, fault-tolerant environments. RAID 1 is the only choice for fault-tolerance if no more than two drives are used.
- RAID 3 can be used to speed up data transfer and provide fault-tolerance in single-user environments that access long sequential records. However, RAID 3 does not allow overlapping of multiple I/O operations and requires synchronized-spindle drives to avoid performance degradation with short records. RAID 5 with a small stripe size offers similar performance.
- RAID 5 combines efficient, fault-tolerant data storage with good performance characteristics. However, write performance and performance during drive failure is slower than with RAID 1. Rebuild operations also require more time than with RAID 1 because parity information is also reconstructed. At least three drives are required for RAID 5 arrays.
- RAID 6 is essentially an extension of RAID level 5 which allows for additional fault tolerance by using a second independent distributed parity scheme (two-dimensional parity). Data is striped on a block level across a set of drives, just like in RAID 5, and a second set of parity is calculated and written across all the drives; RAID 6 provides for an extremely high data fault tolerance and can sustain multiple simultaneous drive failures. Perfect solution for mission critical applications.



RAID Management

The subsystem can implement several different levels of RAID technology. RAID levels supported by the subsystem are shown below.

RAID Level	Description	Min Drives
0	Block striping is provide, which yields higher performance than with individual drives. There is no redundancy.	1
1	Drives are paired and mirrored. All data is 100% duplicated on an equivalent drive. Fully redundant.	2
3	Data is striped across several physical drives. Parity protection is used for data redundancy.	3
5	Data is striped across several physical drives. Parity protection is used for data redundancy.	3
6	Data is striped across several physical drives. Parity protection is used for data redundancy. Requires N+2 drives to implement because of two-dimensional parity scheme	4
0 + 1	Combination of RAID levels 0 and 1. This level provides striping and redundancy through mirroring.	4

1.3 SCSI Concepts

Before configuring the subsystem, you must first understand some basic SCSI concepts so that the subsystem and SCSI devices will function properly.

1.3.1 Multiple SCSI Format Support

The subsystem support the SCSI interface standards listed below. Note that the data bit and cable length restrictions must be followed.

SCSI Type	Data Bit	Data Rate	Cable Length
SCSI-1	8 Bits	5 MB/Sec	6 m
Fast SCSI	8 Bits	10 MB/Sec	3 m
Fast Wide SCSI	16 Bits	20 MB/Sec	3 m
Ultra SCSI	8 Bits	20 MB/Sec	1.5 m
Ultra Wide SCSI	16 Bits	40 MB/Sec	1.5 m
Ultra 2 SCSI	8 Bits	40 MB/Sec	12 m
Ultra 2 Wide SCSI	16 Bits	80 MB/Sec	12 m
Ultra 160 Wide LVD	16 Bits	160MB/Sec	12 m
Ultra 320 LVD	16 Bits	320MB/Sec	12 m

1.3.2 Host SCSI ID Selection

A SCSI ID is an identifier assigned to SCSI devices which enables them to communicate with a computer when they are attached to a host adapter via the SCSI bus. Each SCSI device, and the host adapter itself, must have a SCSI ID number (Ultra 320 Wide SCSI = 0 to 15). The ID defines each SCSI device on the SCSI bus. If there are more than one SCSI adapter in the Host subsystem, each adapter forms a separate SCSI bus. SCSI IDs can be reused as long as the ID is assigned to a device on a separate SCSI bus. Refer to the documentation that came with your peripheral device to determine the ID and how to change it. The subsystem must be assigned a unique SCSI ID ranging from 0 to 15 for the Ultra 320 LVD SCSI host system. The default value is ID 0.

1-10

1.3.3 Terminators

Based on SCSI specifications, the SCSI bus must be terminated at both ends, meaning the devices that are connected to the ends of the SCSI bus must have their bus terminators enabled. Devices connected in the middle of the SCSI bus must have their terminators disabled. Proper termination allows data and SCSI commands to be transmitted reliably on the SCSI bus. The host adapter and the SCSI devices attached to it must be properly terminated, or they will not work reliably.

Termination means that terminators are installed in the devices at each end of the bus. Some SCSI devices require you to manually insert or remove the terminators. Other devices have built-in terminators that are enabled or disabled via switches or software commands. Refer to the device's documentation on how to enable or disable termination.

1.4 Array Definition

1.4.1 RAID Set

A RAID Set is a group of disks containing one or more volume sets. It is impossible to have multiple RAID Sets on the same disks.

A Volume Set must be created either on an existing RAID set or on a group of available individual disks (disks that are not yet a part of an raid set). If there are pre-existing raid sets with available capacity and enough disks for specified RAID level desired, then the volume set will be created in the existing raid set of the user's choice. If physical disks of different capacity are grouped together in a raid set, then the capacity of the smallest disk will become the effective capacity of all the disks in the raid set.

1.4.2 Volume Set

A Volume Set is seen by the host system as a single logical device. It is organized in a RAID level with one or more physical disks. RAID level refers to the level of data performance and protection of a Volume Set. A Volume Set capacity can consume all or a portion of the disk capacity available in a RAID Set. Multiple Volume Sets can exist on a group of disks in a RAID Set. Additional Volume Sets created in a specified RAID Set will reside on all the physical disks in the RAID Set. Thus each Volume Set on the RAID Set will have its data spread evenly across all the disks in the RAID Set. Volume Sets of different RAID levels may coexist on the same RAID Set.

In the illustration below, Volume 1 can be assigned a RAID 5 level of operation while Volume 0 might be assigned a RAID 0+1 level of operation.

1-12

RAID Set 1 (3 Individual Disks)



1.4.3 Easy of Use features

1.4.3.1 Instant Availability/Background Initialization

RAID 0 and RAID 1 volume set can be used immediately after the creation. But the RAID 3, 5 and 6 volume sets must be initialized to generate the parity. In the Normal Initialization, the initialization proceeds as a background task, the volume set is fully accessible for system reads and writes. The operating system can instantly access to the newly created arrays without requiring a reboot and waiting the initialization complete. Furthermore, the RAID volume set is also protected against a single disk failure while initialing. In Fast Initialization, the initialization proceeds must be completed before the volume set ready for system accesses.

1.4.3.2 Array Roaming

The RAID subsystem stores configuration information both in NVRAM and on the disk drives It can protect the configuration settings in the case of a disk drive or controller failure. Array roaming allows the administrators the ability to move a completely raid set to another system without losing RAID configuration and data on that raid set. If a server fails to work, the raid set disk drives can be moved to another server and inserted in any order.

Introduction

1.4.3.3 Online Capacity Expansion

Online Capacity Expansion makes it possible to add one or more physical drive to a volume set, while the server is in operation, eliminating the need to store and restore after reconfiguring the raid set. When disks are added to a raid set, unused capacity is added to the end of the raid set. Data on the existing volume sets residing on that raid set is redistributed evenly across all the disks. A contiguous block of unused capacity is made available on the raid set. The unused capacity can create additional volume set. The expansion process is illustrated as following figure.





Array - A 120GB

The RAID subsystem controller redistributes the original volume set over the original and newly added disks, using the same fault-tolerance configuration. The unused capacity on the expand raid set can then be used to create an additional volume sets, with a different fault tolerance setting if user need to change.





Array - A 160GB

1-14

1.4.3.4 Online RAID Level and Stripe Size Migration

User can migrate both the RAID level and stripe size of an existing volume set, while the server is online and the volume set is in use. Online RAID level/stripe size migration can prove helpful during performance tuning activities as well as in the event that additional physical disks are added to the RAID subsystem. For example, in a system using two drives in RAID level 1, you could add capacity and retain fault tolerance by adding one drive. With the addition of third disk, you have the option of adding this disk to your existing RAID logical drive and migrating from RAID level 1 to 5. The result would be parity fault tolerance and double the available capacity without taking the system off.

1.4.4 High availability

1.4.4.1 Creating Hot Spares

A hot spare drive is an unused online available drive, which is ready for replacing the failure disk drive. In a RAID level 1, 0+1, 3, 5, or 6 raid set, any unused online available drive installed but not belonging to a raid set can define as a hot spare drive. Hot spares permit you to replace failed drives without powering down the system. When RAID subsystem detects a UDMA drive failure, the system will automatic and transparent rebuilds using hot spare drives. The raid set will be reconfigured and rebuilt in the background, while the RAID subsystem continues to handle system request. During the automatic rebuild process, system activity will continue as normal, however, the system performance and fault tolerance will be affected.

Important:

The hot spare must have at least the same or more capacity as the drive it replaces.

Introduction

1.4.4.2 Hot-Swap Disk Drive Support

The RAID subsystem has built the protection circuit to support the replacement of UDMA hard disk drives without having to shut down or reboot the system. The removable hard drive tray can deliver "hot swappable," faulttolerant RAID solutions at prices much less than the cost of conventional SCSI hard disk RAID subsystems. We provide this feature for subsystems to provide the advanced fault tolerant RAID protection and "online" drive replacement.

1.4.4.3 Hot-Swap Disk Rebuild

A Hot-Swap function can be used to rebuild disk drives in arrays with data redundancy such as RAID level 1, 0+1, 3, 5 and 6. If a hot spare is not available, the failed disk drive must be replaced with a new disk drive so that the data on the failed drive can be rebuilt. If a hot spare is available, the rebuild starts automatically when a drive fails. The RAID subsystem automatically and transparently rebuilds failed drives in the background with user-definable rebuild rates. The RAID subsystem will automatically restart the system and the rebuild if the system is shut down or powered off abnormally during a reconstruction procedure condition. When a disk is Hot Swap, although the system is functionally operational, the system may no longer be fault tolerant. Fault tolerance will be lost until the removed drive is replaced and the rebuild operation is completed.

1-16

Chapter 2

Getting Started

Getting started with the subsystem consists of the following steps:

- ⊲ Identifying Parts of the subsystem.
- ন্থ SCSI Termination.
- ন্থ Install Hard Drives.

2.1 Unpacking the Subsystem

Before continuing, first unpack the subsystem and verify that the contents of the shipping carton are all there and in good condition. Before removing the subsystem from the shipping carton, visually inspect the physical condition of the shipping carton. Exterior damage to the shipping carton may indicate that the contents of the carton are damaged. If any damage is found, do not remove the components; contact the dealer where the subsystem was purchased for further instructions.

The package contains the following items:

Getting Started

- RAID subsystem unit
- One power cord
- One external SCSI cable
- One external null modem cable
- One external UPS cable
- One RJ-45 ethernet cable
- One Active LVD/SE terminator
- Installation Reference Guide
- Spare screws, etc.

If any of these items are missing or damaged, please contact your dealer or sales representative for assistance.



2.2 Identifying Parts of the subsystem

The illustrations below identify the various features of the subsystem. Get yourself familiar with these terms as it will help you when you read further in the following sections.

2.2.1 Front View



- 1. Tray Latch
- 2. Tray Lever
- 3. HDD status Indicator

Parts		Function
HDD fault LEDs	×	Red LED indicates the hard drive is failure.
HDD activity LEDs	Ç	These LED will blink blue when the hard drive is being accessed.
HDD power LEDs		Green LED indicates power is on.

4. Smart Function Panel - Function Keys

Parts	Function
Activity LED	Blue blinking LED indicates controller is activity.

5. LCD display panel

6. Smart Function Panel - Function Keys for RAID configuration

The smart LCD panel is where you will configure the RAID subsystem. If you are configuring the subsystem using the LCD panel, please press the controller button to configure your RAID subsystem.

Parts		Function
Up and Down arrow buttons	▲ ▼	Use the Up or Down arrow keys to go through the information on the LCD screen. This is also used to move between each menu when you configure the subsystem.
Select button	\checkmark	This is used to enter the option you have selected.
Exit button	EXIT	Press this button to return to the previous menu.

7. Environment status

Parts	Function
Voltage warning LED	An alarm will sound warning of a voltage abnormality and this LED will turn red.
Over temp LED 🕽	If temperature irregularity in these systems occurs (HDD slot temperature over 60°C), this LED will turn red and an alarm will sound.
Fan fail LED 🗼	When a fan's rotation speed is lower than 2000rpm, this LED will turn red and an alarm will sound.
Power LED	Green LED indicates power is on.

2.2.2 Rear View



- 1. Power Supply Unit
- 2. AC power input socket
- 3. Power on / off switch

4. Host Channel A

The subsystem is equipped with one host channel. The host channel with two 68-pin SCSI connectors at the rear of the subsystem for SCSI in and out.

5. Uninterrupted Power Supply (UPS) Port

The subsystem may come with an optional UPS port allowing you to connect a UPS device. Connect the cable from the UPS device to the UPS port located at the rear of the subsystem. This will automatically allow the subsystem to use the functions and features of the UPS.

6. Monitor Port

The subsystem is equipped with a serial monitor port allowing you to connect a PC or terminal.

7. R-Link Port : Remote Link through RJ-45 ethernet for remote management

The subsystem is equipped with one 10/100 Ethernet RJ45 LAN port. You use web-based browser to management RAID subsystem through Ethernet for remote configuration and monitoring.

Link LED: Green LED indicates ethernet is linking.

Link speed LED: Orange LED indicates the link speed is 100Mbps. The LED will not blink when the link speed is 10Mbps.

Getting Started

2.3 Connecting to Host

The subsystem supports the Ultra 320 SCSI LVD interface which provides fast 320MB/S data transfer rates using a 16-bit SCSI bus. Installation of the disk array is very similar to the installation of a standard SCSI drive. The SCSI connector accepts the standard 68-pin LVD SCSI connector used on most LVD SCSI devices. Refer to your system and/or SCSI host adapter manual for additional installation procedures that may apply to your system or host adapter.

 The package comes with one external SCSI cable. For host channel SCSI connector at the rear of the subsystem, attach one end of the external SCSI cable to one of the SCSI connectors and the other end to the host adapter's external SCSI connector. (The host adapter is installed in your Host subsystem.)





Note:

1. When one or more SCSI devices are connected, the total length of all cables (internal or external) must not exceed 3 meters (9.8 ft.) to ensure reliable operation.

2. For safety reasons, make sure the Disk Array and Host Computer are turned off when you plug-in the SCSI cable.

2.4 SCSI Termination

One 68-pin wide SCSI connector is provided on the back of the enclosure for connecting the array to the system. These connectors are used in one of two ways:

If the disk array is the only external SCSI device, or is the last external device in a daisy-chained configuration, connect the incoming cable (the one which is attached to the SCSI adapter) to the Host A in connector and install the external SCSI Terminator on the Host A out connector.



If the array is to be placed in the middle of a daisy-chained configuration, connect the incoming cable (the one which is attached to the SCSI adapter) to the Host A in connector and connect the outgoing cable (the one which continues on to other devices) to the Host A out connector. In this case, no terminator is required at the disk array but the last device in the daisy chain must have a terminator.

Correct SCSI termination procedures require that the last devices on the SCSI bus be terminated. If the last device is not terminated, or if devices other than the last are terminated, erratic SCSI bus performance may occur. Typically, the system or host adapter (SCSI card inside the PC) is the first device and is already terminated. When installing the disk array on a SCSI bus with other devices, be sure to observe the above rules with all devices on the SCSI bus. Consult your system and/or host adapter manual for additional information on correct termination procedure.

Getting Started

2.5 Powering-on the Subsystem

When you connect the Disk Array to the Host computer, you should press the ON/OFF Power Supply Switch. It will turn the Disk Array on and the Self-Test will be started automatically.

1. Plug in the power cord or power connector located at the rear of the subsystem.





Note:

The subsystem is equipped with redundant PFC (power factor correction), Full Range power supplies. The subsystem will automatically selector voltage.

- 2. Turn on the power.
- 3. The "Power" LED on the front panel will turn green. After a few moments the LCD should display the following message:



2-8

2.6 Install Hard Drives

This section describes the physical locations of the hard drives supported by the subsystem and gives instructions on installing a hard drive. The subsystem supports hot-swapping allowing you to install or replace a hard drive while the subsystem is running.

- 1. Pull out an empty disk tray. (You can install in any available slot.)
- 2. Take off the bracket before installing hard drive.



- 3. Place the hard drive in the disk tray.
- 4. Install the mounting screws on each side to secure the drive in the mobile rack.





Note:

Insert screws through the front sides of the mounting holes.

Getting Started

- 5. Slide the tray into a slot until it clicks into place. The HDD status LED will turn green on front panel.
- 6. Press the lever in until you hear the latch click into place.
- 7. If the HDD power LED did not turn green, check the hard drive is in good condition.
- 8. If the hard drive is not being accessed, the HDD access LED will not illuminate. The LED blinks only when being accessed.

2.7 Connecting an Uninterrupted Power Supply (UPS)

The subsystem is equipped with a UPS port located at the rear of the system unit. It allows you to connect a UPS fail signal.



Pin	Description
1	Not used
2	UPS Line Fail
3	Not used
4	UPS Common
5	Not used
6	Not used
7	Not used
8	Not used
9	Not used



Note:

UPS connection compliant with NetWare UPS management, smart mode UPS not support.

Getting Started

2.8 Connecting to a PC or Terminal

The subsystem is equipped with a serial monitor port located at the rear of the system unit. This serves as an alternative display when accessing the setup utility.



Pin	Description
1	Data Carrier Detect (DCD)
2	Receive Data (RD)
3	Transmit Data (TD)
4	Data Teminal Ready (DTR)
5	Signal Ground (SG)
6	Data Set Ready (DSR)
7	Ready To Send (RTS)
8	Clear To Send (CTS)
9	Ring Indicator (RI)

Note:

Refer to Chapter 3 for instructions on accessing the setup utility through a PC or terminal, as well as instructions on setting the baud rate, stop bit, data bit and parity of your monitor or terminal. The default setting of the monitor port is 115200 baud rate, non-parity, 8 data bit and no flow control.

Chapter 3

Configuring

The subsystem has a setup configuration utility built in containing important information about the configuration as well as settings for various optional functions in the subsystem. This chapter explains how to use and make changes to the setup utility.

Configuration Methods

There are three methods of configuring the subsystem. You may configure through the following methods:

- VT100 terminal connected through the controller's serial port
- Front panel touch-control keypad
- Web browser-based Remote RAID management via the R-Link ethernet port



The subsystem allows you to access the utility using only one method at a time. You cannot use both methods at the same time.

3.1 Configuring through a Terminal

Configuring through a terminal will allow you to use the same configuration options and functions that are available from the LCD panel. To start-up:

1. Connect a VT100 compatible terminal or a PC operating in an equivalent terminal emulation mode to the monitor port located at the rear of the subsystem.

Configuring



Note:

You may connect a terminal while the subsystem's power is on.

- Power-on the terminal. 2.
- Run the VT100 program or an equivalent terminal program. 3.





Configuring
Connect To	? ×
🦓 RAID	
Eniter details for th	ne phone number that you want to dial:
<u>C</u> ountry code:	United States of America (1)
Ar <u>e</u> a code: [02
Phone number:	
Connect using:	Direct to Com1
	OK Cancel

4. The default setting of the monitor port is 115200 baud rate, 8 data bit, non-parity, 1 stop bit and no flow control.

COM1 Properties			?
Port Settings			
Bits per second:	115200		
<u>D</u> ata bits:	8	•	
<u>P</u> arity:	None	V	
<u>S</u> top bits:	1	•	
Elow control:	None		
Advanced]	<u>R</u> estore Defaul	ts
0	K C	Cancel A	pply

5. Click 🔏 disconnect button.

RAID HyperTerminal								_ 🗆 🗵
The Edit View Call Transfer Help								
16 <u>68 8 8</u> 8								
-								<u>x</u>
Disconnected Auto detect	Auto cesect	SUBCH	CAL2	N F	Solie	Pintati		1.

6. Open the File menu, and then open Properties.



7. Open the Settings Tab.

RATD Properties Y X	
Comes: To [sirtings]	
🦣 ПАЮ Сметан Ico и	
à unityan gun 🗐 trèse Diates et America (11 👘	
Enter the sizes code without the prig-distance pretix.	
An read : 02	
-forest offer	
Anneal array Direction and a	
unity.as	
✓ Use country/region coverand area cover	
E Della or busy	
OF Carried	

8. Open the Settings Tab. Function, arrow and ctrl keys act as: Terminal Keys, Backspace key sends: Crtl+H, Emulation: VT100, Telnet terminal: VT100, Back scroll buffer lines: 500. Click OK.

RATD Properties	X Y X	
even : (Schap) C voide, secure of Mex, sector C voide, secure of Mex, sector C voide, secure of Mexico ba Eachapachay we du C voide of C of M, Speci Constance C voide of C of M, Speci Constance C of C of M, Speci C of C of M, Speci Constance C of C of M, Speci C of C of C of M, Speci C of C of C of C of M, Speci C of C of C of C of C of C of M, Speci C of C of C of C of C of C of C of	ас Сор н 4 Селор .	
40	Canal	

- 9. Now, the VT100 is ready to use. After you have finished the VT100 Terminal setup, you may press " X " key (in your Terminal) to link the RAID subsystem and Terminal together. Press "X' key to display the disk array Monitor Utility screen on your VT100 Terminal.
- 10. The Main Menu will appear.



Keyboard Function Key Definitions

- " A " key to move to the line above
- " Z " key to move to the next line
- " Enter " key Submit selection function
- " ESC " key Return to previous screen
- " L " key Line draw
- "X " key Redraw

Main Menu

The main menu shows all function that enables the customer to execute actions by clicking on the appropriate link.

Main Menu Onick Volume/Raid Selup Haid Sel Function Volume Set Function Physical Drives Raid System Function U329 SESI Funct Config Lthernet Configuration Vice Sustem Functs	{Model N	ame} RNID Controller
Raid Set Function Volume Set Function Physical Drives Raid Sustem Function U320 SCSI larget Config U320 SCSI larget Config Lthernet Configuration		-+
Clear Event Buffer ++	Ruid Set Ennotion Volume Set Function Physical Drives Raid System Function U320 SIS1 Inrget Config Lthernet Configuration View System Events Clear Event Buffer	++



Note:

The password option allows user to set or clear the raid subsystem's password protection feature. Once the password has been set, the user can only monitor and configure the raid subsystem by providing the correct password. The password is used to protect the internal RAID subsystem from unauthorized entry. The controller will check the password only when entering the Main menu from the initial screen. The RAID subsystem will automatically go back to the initial screen when it does not receive any command in twenty seconds. The RAID subsystem password is default setting at **00000000** by the manufacture.

VT100 terminal configuration Utility Main Menu Options

Select an option and the related information or submenu items display beneath it. The submenus for each item are explained on the section 3.3. The configuration utility main menu options are:

Option	Description
Quick Volume And Raid Set Setup	Create a RAID configurations which is consist of the number of physical disk installed
Raid Set Functions	Create a customized raid set
Volume Set Functions	Create a customized volume set
Physical Drive Functions	View individual disk information
Raid System Functions	Setting the raid system configurations
U320 SCSI Target Config	Setting the U320 SCSI configurations
Ethernet Configuration	Setting the Ethernet configurations
Views System Events	Record all system events in the buffer
Clear Event Buffer	Clear all event buffer information
Hardware Monitor	Show all system environment status
System Information	View the controller information

3.2 Configuring the Subsystem Using the LCD Panel

The LCD Display front panel function keys are the primary user interface for the Disk Array. Except for the "Firmware update", all configuration can be performed through this interface. The LCD provides a system of screens with areas for information, status indication, or menus. The LCD screen displays up to two lines at a time of menu items or other information. The RAID subsystem password is default setting at **00000000** by the manufacture.

Function Key Definitions

The four function keys at the top of the front panel perform the following functions :



Parts		Function
Up or Down arrow buttons	•	Use the Up or Down arrow keys to go through the information on the LCD screen. This is also used to move between each menu when you configure the subsystem.
Select button		This is used to enter the option you have selected.
Exit button	EXIT	Press this button to return to the previous menu.

3.3 Menu Diagram

The following tree diagram is a summary of the various configuration and setting functions that can be accessed through the LCD panel menus or the terminal monitor.



Configuring



Configuring



Configuring



Configuring



3.4 Web browser-based Remote RAID management via R-Link ethernet port

Configuration of the internal RAID subsystem with remote RAID management is a web browser-based application, which utilizes the browser installed on your operating system. Web browser-based remote RAID management can be used to manage all the raid function.

To configure internal RAID subsystem on a remote machine, you need to know its IP Address. Launch your web browser by entering http://[IP Address] in the remote web browser.

Important:

The Ethernet default IP is "192.168.001.100". DHCP function is "enable". You can configure correct IP Address through the LCD panel or the terminal "Ethernet Configuration" menu.

Note that you must be logged in as administrator with local admin rights on the remote machine to remotely configure it. The RAID subsystem controller default User Name is "admin" and the Password is "00000000".

	art <u>Ba</u> tionatio	0.9	ar d					
in all water in Ault								💌 (ŵ 35
	•							
• No•-	R. R	AID O	Kana	aer	X	XXXXXXX		
<u>Occale</u>			/ruma;	901				
i Pauleu	Raid Set III							
DaidEw	Ican ser in	erartny						
Radat	H							
<u>Statistet</u> - Fors Set	Ruidá		IDE Clu			lums Set(Ch/ld/Lun)	Volume State	Cupacity
r - Haris Bet Hot Spore	Raid Set # 0	•;	2601		Voine	± 3et € CC (0/C/2)	Inciding(3.3%)	.6.,70D
Hol Spore			2002					
For s Ref			21.03					
sier Danmiere	Red Sc. # 0	J I	2140 ~		Ville	. Set 4 CL (0/0/L)	Nernal	C2.302
Volume Dec								
There is	IDE Channe	els						
e • oftene 2 M								
Fohane Set	Channel	lis	age	Capa	rtty		Vindel	
and St. Shire.	Ch.1	Raid So.	¥ UJ	1:305		HEWROLD LASS		
l Tritu»	0.0	R-id S :	¥ II I	- C.S		H 2010 L U & F		
PostBacgl	08.25	Reid Str	¥ II I	C'A		HISSIS HULKE		
pTare To regi	01.4	caid Sec	¥ II1	• · 6 · ·		L SCOPERATE		
Pass Through								
eni C y								
Called								
LC CULT								
	51							
UST novelende In Deute								
12 Tagesticatie k. Declig Mikal Come	01							
k, Svedig i	8							

Configuring

Main Menu

The main menu shows all function that enables the customer to execute actions by clicking on the appropriate link.

Individual Category	Description
Quick Create	Create a RAID configuration, which is consist of the number of physical disk installed; it can modify the volume set Capacity, Raid Level, and Stripe Size.
Raid Set Functions	Create a customized raid set.
Volume Set Functions	Create customized volume sets and modify the existed volume sets parameter.
Physical Drive	Create pass through disks and modify the existed pass through drives parameter. It also provides the function to identify the respect disk drive.
System Control	Setting the raid system configurations
Information	View the controller and hardware monitor information. The Raid Set Hierarchy can also view through the RaidSet Hierarchy item.

3-16

Configuration Procedures

Below are a few practical examples of concrete configuration procedures.

3.5 Quick Create

Raid Console Mitrosoft Internet B			
	ter Sart Battantin Battant Battant		
Abdress (2) II off Water 1 And			 √ 3> Jr/s
and the last in the second second	=1		
Paratus News			
That Grain	RAID Manage	L XXXXXXXX	
add54 Parates			
Dance Paidler	Ouick Create Raid/Volume Set		
Lines Radial			
Land Land Soft	Total Number Co Disks	4	
Arthur - Ban Set	Select Rad Level	Kod 5 📼	
Crews Hot Spory			
L'Ante Holl Sperg	Mermun Cipatdy Allowed	247.0 ML	
Peacon Tor 23(1	Select Capatity	247.0 CB	
Wheneville Durining	votarce ut alization Mode	Foreground Int. (Faster Completion) 💌	
Crease Victoria Cer			
Eleca Villandhi	Eclose Saint Ciae	€″ ► KBytes	
<u>Modely – obrano 201</u> Obech Foltano Set			
Di s Vinger Se Oler e	Common The Operation		
Toxicil Inte			
Dicare Prov That eggl.	Submit Reset		
Modify Tare To your			
L'Ante Pass Through	Arbee of JPM SDS (64rt) JSA Star	ert .	
Identify Drive	Due to LNISOCULECT (ses not support		
System Cardeal	 astronich (Longle 10, 18 is used the 64-4 up to two tera bytes only. A patch for 	LRA support. The system may detect	
instan.Coulig	 Is all the set of th	terdetek vote ventati för stationfere	
D315251TelpsGcoffe			
EtainRe, Doning	2		
Alert Dr. N. al Course	8		
ENGP Configuration	8		
New Example (17 Borger) 제		
t Maria Araba Arkana. I		1.1	🙆 û .er et
<u> </u>	u suite Murvey. Mononen - Feitt		

The number of physical drives in the raid subsystem determines the RAID levels that can be implemented with the raid set. You can create a raid set associated with exactly one volume set. The user can change the raid level, capacity, Volume Initialization Mode and stripe size . A hot spare option is also created depending upon the existing configuration.

If volume size over 2TB, it will be provided one option "Creater TwoTB Volume Support" Automatically as above menu. There are three model for option "No", "64bit LBA", "For Windows".

Configuring

Greater Two TB Volume Support:

No: still keep the volume size with max. 2TB limitation.

64bit LBA: the max. size 512TB.

For Windows: the max. size 16TB , just use with "basic disk manager " under OS Window 2000, 2003 or XP. Noted that can't be used by with dynamic disk manager.

Tick on the **Confirm The Operation** and click on the **Submit** button in the Quick Create screen, the raid set and volume set will start to initialize.

Note: In Quick Create your volume set is automatically configured based on the number of disks in your system. Use the Raid Set Function and Volume Set Function if you prefer to customize your system.

3-18

3.6 Raid Set Functions

Use the Raid Set Function and Volume Set Function if you prefer to customize your system. User manual configuration can full control of the raid set setting, but it will take longer to complete than the Quick Volume/Raid Setup configuration. Select the Raid Set Function to manually configure the raid set for the first time or deletes existing raid set and reconfigures the raid set. A raid set is a group of disks containing one or more volume sets. The maximum number of RAID Sets that can be created depends on the number of disk channels in the RAID subsystem. For 4 bay RAID Subsystem, four RAID Sets can be created.

3.6.1 Create Raid Set

🛃 Raid Console - Microsoft Internet Explo	1927							_ £ X
Follow Verlay and H	p.							10
	l <u>Gi</u> ttar	n	Br 🗃					
40dress 🕼 III (2199-16-1) 4-2							► (* 3)	ars »
Persia View		DAID /	Vanana	. XXX	XXXXX	ζ		
Ordek Create	000	RAID (manage			•		
Buil2d Natures								
Press DaidEw	Select 1	Die UUK Dith	res Por RALL	l Set				
Da ve Daid est								
Fogures Toris 30	Select	Chaunel	L'apacity			Vindel		
Achievent wood Sid	2	· · ::::::::::::::::::::::::::::::::::	100 PGR	1.08.691.002.2	APOIL			-
Decare Hot Spore								_
Exception Spore		DE 1102	82.3CP	HE-272808071.8				_
Restue Last Set		- C003	82 W P	EDX 251 80 1 1	AP80			
Index when the upper		DD 160	02.0GD	10E/6720000PL	A200			
Dena V. Geologi	Raul Sel	Kirne	Haid Set y	200				1
L'Alere Volence des	104.11.0		I .ue					
Modify Tohans Set								
Show Folime 351	E Cod	Eng The Over	abut					
the off clurks they they?								
Digued June	Suph	il Reset	L					
Creme Post Through								
Hothly ross Emorgia								
Excess Pois-Through								
Edua Cy Delviz								
System Control								
Syn -n Crieft								
USec 535, Corps, Config								
Biatisticiona 📃								
Alat By Mail Config								
2NECP Configuration. New Zwarne/Schule Jeeper								
Accession and a second se								
E Case							b 10. û 🚳	
🏨 Start 🛛 💋 🎒 🖓 Rund Conso	6: Microsu		tw - P = nž				<u>4</u>	тиен

To create a raid set, click on the **Create Raid Set** link. A "Select The IDE Drive For RAID Set" screen is displayed showing the IDE drive connected to the current controller. Click on the selected physical drives with the current raid set. Enter 1 to 15 alphanumeric characters to define a unique identifier for a raid set. The default raid set name will always appear as Raid Set. #.

Tick on the **Confirm The Operation** and click on the **Submit** button in the screen, the raid set will start to initialize.

Configuring

3.6.2 Delete Raid Set

To delete a raid set, click on the **Delete Raid Set** link. A "Select The RAID SET To Delete" screen is displayed showing all raid set existing in the current controller. Click the raid set number you which to delete in the select column to delete screen.

Tick on the **Confirm The Operation** and click on the **Submit** button in the screen to delete it.

Raid Console Microsoft Internet Exp	arer	_ £ ×
For her Viel Exhibition and	1 µ	20
	rt Strano Strag Brak	
kodress 🖉 in diffreent 4-1		• (x 3) Ir/s *
Pendea Varu		
Ordek Preste	RAID Manager XXXXXXXX	
But2d Pasana	Sping The Raid Ser To Delete	1
heare Raid de.		
l e es Deidzet		
Sports Forts 3(1		arity
Achivers wood Sch	@ Rad Set # 00 3 217.0GD	
Decare Hot Specie	C Raté So. # 01 . \$2.50B	
is we that Spore		1
testue J.a.C. Set		
India wine Paradone	[1] Johnson The Operation, VolumeSet in This RadSet Will Also De Deleted	
Dena Vinane Pe		
Celete Victorite des	Submit Deset	
Modify Folians Est		
Nicci Volume Set		
to a Maturne des Uhech		
Distant June		
Irease Page Threads		
loth's russ Encode		
coa Pois Through		
a.2706-7		
des Control		
e -e Carfy		
Sec. 4782, Curso, Config		
Eastle: Course	f	
dat By Mail Corrily	9	
NECP Configuration		
recess children leeper	GI	
art <u>Crane Adda Jeeser</u>		5 . or et

3-20

3.6.3 Expand Raid Set

Use this option to expand a raid set, when a disk is added to your system. This function is active when at least one drive is available.

Raid Console Microsoft Internet Explanation	101					- E 2
ECH. VH EXHLERED	p.					19
	l <u>Bi</u> tari	3 B a				
40dress (2) II :/// 99/101 1 :41/						• 🤃 🕹 🖬 🔹
1						
Purdua Nora			VVV	VVVVV		
List Cacate	Km	RAID Manag	yer AAA	ллллл		
Britist Braden						
Crease Raid Cor	Select Th	e Raid Set For Raid I	Expansion			
L'Arc Radad						
Inpan La Cist	Nelect	Ratif Set Name	Member Dista		Caparity	
Art was Take Set	2		2	217.0GD		
Crease Holidogra			-			
Edite Hol Spar						
Record For a Set	Submi.	Rese.				
Whereign Paratices						
Greate Victoria det						
Exception and the						
Flodaly + of, mr S /I						
Check - of any 295						
Dr. g. W. nurs Del Phores						
Physical Intes						
Duria Prov Through						
Modily Tare Proceeds						
Extension Through						
Liner 200						
Spine Cashal						
1921 Config 1921 Config						
Brick Serie						
Abri By Kigi Ceena						
PHMP Configuration						
Nov 75 resolute Briger						
Elements for sease						😸 û .er et
📕 Start 🛛 🎊 🗐 🖓 Rad Ka su	Az Microsu	Maria ar ar - Fabr			. , ,	🗳 1 1924

To expand a raid set, click on the **Expand Raid Set** link. Select the target raid set, which you want to expand it.

Tick on the available disk and **Confirm The Operation**, and then click on the **Submit** button in the screen to add disks to the raid set.



Note:

1. Once the Expand Raid Set process has started, user cannot stop it. The process must be completed.

2. If a disk drive fails during raid set expansion and a hot spare is available, an auto rebuild operation will occur after the raid set expansion completes.

Configuring

the set was revenue tools	**						
4-1av:-⇒ - © ि औ © अ		ns Children	E. 74				
fatters 🛃	_					- ya	1.00
	-						
Parotica Mass.		DAID	Hanama	XXXXXXX	XX		
CurkCorne	- Im	RAID (managei	АЛАЛАЛ	14		
Ladad Paulans							
Constant/	RAID	F quuisium un	: Ruid Set & D	A: Member Disks : 3			
When the sec							
Erron Red 3r.							
A three to show the	Select	Charmel	Capacity		Model		
Constant range a							
Mersi runpa a	2	IDE CION	87 3.35	MEST2101061.4310			
Average Averages							
Vibracial Dearbory							_
Constra Tecomo Sect	M Car	Ser The Open	-0.0				
Editor Tooma Edit		_					
Mind by Weiners Set. General Values 37.	5.b1	nt Peset					
Mar - thready Deels							
Tronte di Datere di							
Construction of the							
Which Press In might							
Were Peer In 1975							
Loundy Dave							
Sub-Hadal							
Types Capital							
USE OF THE PARTY OF THE							
sthe sets traffic							
Aut B- Mallouffe							
25 V. Configuration Free EventsGL to Bernary							
Charles and a strength of the							
1						Internet	

For some som resorder forb	*ty				
4-1wa - ⇒ - © ि जी ∰क	even für Telenings (Gill Rection	E. /4			_
California 🔄					▼ 20 1 **
					- C
Paratan Bara	PAID OF	anager XXX	XXXXX		
Courte Convolu-		allayer mar			
hdiSe Andra					
Incute Red So.	Rold Set A 00 : Total C	lizka – 4. Disks Before Fa	pousion – 8		
Dauto Radiant					
Depart Large 74	Changes (the Colored S	whithuse Ducture Raid Mason	unden 'l		
Auti-de Rad 3r.	Cuanee the routine a	compare outing said expo	Liston :		
Inde Ho. Fran					
Date He, Page	Volume Name	Kaid Lavel		Surfpe Size	
	v chime Set 🕈 10	Radú 💌	14 - Kulvier		
Resour Reiz Set		1	In a market		
han a far henne ar					
Dreate - that water	MES NO Rose				
Devela - those det					
Moril- Fuline 34					
Check Walk re Yel					
Size Promotion Courts					
Pageo d Boor					
Inche Fess Terror and					
Morill-Fast Tato, and					
Douts Fras Toro, an					
Manfatte Conve					
Swan, Lingol					
3-atua Loufia					
LITER THE STORE SHOWING					
Enally logic	-				
Also I v Materia					
TOMP Configuration					
Vision wanted time Leena	1				
NULL REAL AND A DESCRIPTION OF A DESCRIP	9				
1					Internet

Migrating occurs when a disk is added to a raid set. Migration status is displayed in the raid status area of the Raid Set information when a disk is added to a raid set. Migrating status is also displayed in the associated volume status area of the volume set Information when a disk is added to a raid set.

3-22

3.6.4 Activate Incomplete Raid Set

When one of the disk drive is removed in power off state, the raid set state will change to Incomplete State. If user wants to continue to work, when the RAID subsystem is power on. User can use the Activate Raid Set option to active the raid set. After user complete the function, the Raid State will change to Degraded Mode.

To activate the incomplete the raid set, click on the **Activate Raid Set** link. A "Select The RAID SET To Activate" screen is displayed showing all raid set existing in the current controller. Click the raid set number you which to activate in the select column.

🛃 Raid Console - Microsoft Internet Ex	péarer						- E 2
For his Viel Ewals, and	4 p						
	art <u>Sa</u> tari	- 3 B- 3					-
Abdress (2) in all Water (1, 4-)						▼ ⊗ 3	Jr of
-	•						-
Parada a Manas		DAID off	VVV	VVVVV			
Unit Ocale	Km	RAID Manag	ger AAA	ллллл			
AddSel Panalou							
Deves DaidEve	Seler: Ib	e Raid Set To Activ	ale				
L'Ante Radigat							_
lap and La 5 Get	Select.	Roid Set Nome	Mender Hisks		1 Separate		_
Arthur - Tani Set	0	Rsi1 Σ1 ≠	7	40.015			_
Crewe Hot Spore	0	Rad 6st 7 1.	1	82.00E			
E Sinc Hol Spore	1	1		1			
Prison Toris 3(1	Buchrit	Foral					
Whenesian Dependence	33.00	-2007					
Crease Victoria Dec							
Ricca Villandhi							
Glodely - oltrana 2 rd							
Check Foliane Set 2015 March St. Share							
Thereof These							
Modify Tare To rega							
Electric Pass Through							
Identify Drive							
Spher Carled							
(water.Coully							
1021 COST In proConfig							
Etaniko, Donije	5						
Alert Dr K al Course	21						
ENGIP Configuration	0						
Vice Exmis Of Cir Borger	- i						
ēj						b w.C 🙀	
Start M 🚳 🔄 💽 Read to	sult Marosu.	Margardinan ser - Para	•			a	L ST AM

Configuring

Click on the **Submit** button in the screen to activate the raid set that has removed one of disk drive in the power off state. The RAID subsystem will continue to work in degraded mode.

ionsole Microsoft Internet Er						
··→·@[2]@·	art <u>Gi</u> terio	(3-1+ G+)	8			
 In all water in each 						دي ٿي 💌
	•					
a Warva		AID Allen		XXXXXXXX		
Tre ste	um u	AID Owand	ager	лалалала		
havana (
Rađ še.	Raid Set H	ieu an chry				
Daid est						
	Ruid	Ser THE D	lunuels	Volume Set(CheldeLon)	Volume State	Copperily
12.000 Std	Rud Section	0 2001	2	shure Set # 00 (0000)	Treestdes	247 BCR
Hot Space		21:02				
Hot Spore		21/03				
1.4.1.9d		7añod				
be Paulone	<u> </u>					
Vicence A	IDE Change					
the state of the s	IDI Challe	903				
Tolans Sat						
Folime 3/1	Chanael	Usage	Capad		Model	
clume the timeds	02.1	Reid Ser # 0.1	7 · C15	H 578 111 A 1		
anne -	02.5	Reid Ser # 0.1	C'-	H S78 111 X 1		
Page Through	<u>10 - 1</u>	Crid Set # 0.1	• · 6 · ·	1.5735 PER A15		
read Decage	01.4	9766	• C · ·	1.45726 PEELWYR		
Pois Through						
y 2647						
Centinel						
Gree						
St. Day & Config						
et Courte	81					
y Mail Config Configuration	81					
	0					
rame/Mida Jeepar						
rancúdula Jeapar	•					🙆 û .er et

3-24

3.6.5 Create Hot Spare

When you choose the **Create Hot Spare** option in the Raid Set Function, all unused physical devices connected to the current controller appear: Select the target disk by clicking on the appropriate check box. Tick on the **Confirm The Operation**, and click on the **Submit** button in the screen to create the hot spares.

The create Hot Spare option gives you the ability to define a global hot spare.

🚰 Rad Console - Microsoft Internet b	aplurer						. 8 ×
File Fell Mass Frances Tools	701						100
← ≫o+ · → · ② වි ථි ②>	kardh 📷 Faco	ites 🎲 Booy	R: 3				
Address 🛃 144 (/152/155/10/44)						• // Go	urls *
	-						
Punnim Mas	1 👧		"	VVVVVVV	vv		
Duich Creste	- Km	RAID (<i>M</i> anage	r XXXXXXX	лл		
lindist immine							
Create Raid Bat	Select	The IDE Driv	ves i prillot à	in are			
Delate Raicipet							
Expand Raid Set	Nelect	Channel	Capacity		Mindel		
Activate Real Set	APIACE	(nannei	Capacing		MINNEL		_
Cristian - al Bjore	R	ID (0.9607	15.4G3	H3M-011.A-307015			
Delete lict Spare	I E	107 CH04	-51G	IBM OTLA 307015			
Rescue Tais Str		112.559.001	1.313	1000 7118- 20.5 7			
Where is Proclam							_
Cecute Robarto Sot	🗵 🖸 Co	time The Ope	retion				
Delete Polane Set							
Month Found Lab	Submi	: Resst					
Check Volume Sec							
Sam Volume Sec.12. off							
Bayind Lim							
Decite Pero Theorigh							
Modify Pass Tarouga							
Decite Page Through							
Identify Dr.ws							
Swime Denned							
Stoplem Config							
C330 SC3C Tange, Config							
Edward all Comilla	88						
WorkBy M. (Dirality,	881						
SALP Configuration	23						
View Zvents/Minte Deepe.	22						
The second state of the se	•					1 100 11	
e)						📄 🎯 Ente nec	
🏙 Start 🛛 🚮 🈂 🗊 🖉 Rard Cu	neule - Phones	u 🎢 a este no	t spare - Paint			<u>n</u>	1.54 API

3.6.6 Delete Hot Spare

Select the target Hot Spare disk to delete by clicking on the appropriate check box.

Tick on the **Confirm The Operation**, and click on the **Submit** button in the screen to delete the hot spares.

Configuring

3.6.7 Rescue Raid Set

If you try to Rescue Missing RAID Set, please contact our engineer for assistance.



3-26

3.7 Volume Set Function

A volume set is seen by the host system as a single logical device. It is organized in a RAID level with one or more physical disks. RAID level refers to the level of data performance and protection of a volume set. A volume set capacity can consume all or a portion of the disk capacity available in a raid set. Multiple volume sets can exist on a group of disks in a raid set. Additional volume sets created in a specified raid set will reside on all the physical disks in the raid set. Thus each volume set on the raid set will have its data spread evenly across all the disks in the raid set.

3.7.1 Create Volume Set

The following is the volume set features:

1. Volume sets of different RAID levels may coexist on the same raid set.

2.Up to 16 volume sets in a raid set can be created by the RAID subsystem controller.

To create volume set from raid set system, move the cursor bar to the main menu and click on the **Create Volume Set** link. The **Select The Raid Set To Create On It** screen will show all raid set number. Tick on a raid set number that you want to create and then **click** on the Submit button.

The new create volume set allows user to select the Volume name, capacity, RAID level, strip size, SCSI ID/LUN, Cache mode, tag queuing and Max Sync Rate.

Configuring



Volume Name:

The default volume name will always appear as Volume Set. #. You can rename the volume set name providing it does not exceed the 15 characters limit.

Raid Level:

Set the RAID level for the Volume Set. Highlight Raid Level and press Enter.

The available RAID levels for the current Volume Set are displayed. Select a RAID level and press **Enter** to confirm.

Capacity:

The maximum volume size is default in the first setting. Enter the appropriate volume size to fit your application.

Greater Two TB Volume Support: If volume size over 2TB, it will be provided one option "Creater TwoTB Volume Support" Automatically.

No: still keep the volume size with max. 2TB limitation.

3-28

64bit LBA: the max. size 512TB, for Unix or Linux.

Due to LSI53C1030T does not support 16byte CDB for 64bit LBA, vendor specific 12byte CDB is used for 64bit LBA support. The system may detect up to two tera bytes only. A patch driver is needed to enable the system to detect over two tera bytes. Please contact your vendor for supporting.

For Windows: the max. size 16TB, just use with "basic disk manager" under OS Window 2000, 2003 or XP. Noted that can't be used by with dynamic disk manager.

Initialization Mode:

Set the Initialization Mode for the Volume Set. Foreground mode is faster completion and background is instant available.

Strip Size:

This parameter sets the size of the stripe written to each disk in a RAID 0, 1, 0+1, 5, or 6 logical drive. You can set the stripe size to 4 KB, 8 KB, 16 KB, 32 KB, 64 KB, or 128 KB.

A larger stripe size produces better-read performance, especially if your computer does mostly sequential reads. However, if you are sure that your computer does random reads more often, select a small stripe size

Note: RAID level 3 can't modify strip size.

Cache Mode:

The RAID subsystem supports Write-Through Cache and Write-Back Cache.

Tag Queuing:

The Enabled option is useful for enhancing overall system performance under multi-tasking operating systems. The Command Tag (Drive Channel) function controls the SCSI command tag queuing support for each drive channel. This function should normally remain enabled. Disable this function only when using older SCSI drives that do not support command tag queuing

Max SCSI Speed:

The RAID subsystem supports 320 MB/sec as the highest data transfer rate.

SCSI Channel/SCSI ID/SCSI Lun:

SCSI Channel: The RAID subsystem supports one SCSI Channel.

Configuring

SCSI ID: Each SCSI device attached to the SCSI card, as well as the card itself, must be assigned a unique SCSI ID number. A Wide SCSI channel can connect up to 15 devices. The RAID subsystem is as a large SCSI device. We should assign an ID from a list of SCSI IDs.

SCSI LUN: Each SCSI ID can support up to 8 LUNs. Most SCSI host adapter treats each LUN like a SCSI disk.

3.7.2 Delete Volume Set

To delete Volume from raid set system function, move the cursor bar to the main menu and click on the **Delete Volume Set** link. The **Select The Volume Set To Delete** screen will show all raid set number. **Tick** on a raid set number and the Confirm The Operation and then **click** on the Submit button to show all volume set item in the selected raid set. **Tick** on a volume set number and the Confirm The Operation and then **click** on the **Submit** button to delete the volume set.



Configuring

3.7.3 Modify Volume Set

To modify a volume set from a raid set:

(1). Click on the **Modify Volume Set** link.

(2). Tick on the volume set from the list that you wish to modify. Click on the **Submit** button.

The following screen appears.

Use this option to modify volume set configuration. To modify volume set attribute values from raid set system function, move the cursor bar to the volume set attribute menu and click on it. The modify value screen appears. Move the cursor bar to an attribute item, and then click on the attribute to modify the value. After you complete the modification, tick on the **Confirm The Operation** and click on the **Submit** button to complete the action. User can modify all values except the capacity.

3.7.3.1 Volume Expansion

Volume Capacity (Logical Volume Concatenation Plus Re-stripe)

Use this raid set expands to expand a raid set, when a disk is added to your system. (refer to section 3.6.3)

The expand capacity can use to enlarge the volume set size or create another volume set. The modify volume set function can support the volume set expansion function. To expand volume set capacity value from raid set system function, move the cursor bar to the volume set **Volume capacity** item and entry the capacity size.

Tick on the **Confirm The Operation** and click on the **Submit** button to complete the action. The volume set start to expand.

Configuring

Fil: Fil Yaw Francis Tools 牛>set · ⇒ · ② 하 값 ②	Seach 🔄 Facaltes 🎲 Ison 🔤 🔒		
ddress 🗿 144 7/152/155/10/42)			• ∲Go Urk
Paratan Man Dalah Sasar Hadist Inoman Datak Raje Sat	RAID Manage		
Delete Raic iser Departet Raic Bet	Millarue Marne	Volume Spt # 00	
Activate Read Set In the met Balance	Maz Capatity Allowed	1250.0 CB	
leiste Dict Spare	Volume Capacity	100 c-B	
lencue Taio Ber	Volume initialization More	Foregrand Init (Ex-let Condelian) 🔻	
Where See Proceeding	V dune Rold Level	Red C -	
Dente Zocura Lat Access Socura Cat	Wohume Strine 3 ze	64 💌 Kayas	
Los in France Let he de Volume Bel	Solume Capte Mode	Wile Back	
Carlo Volcame Rev. 27 arch	Eligged Corona tal Ciliating		
Bayinal Raine Texts: Pose Theory and	Van SCH Spend	320ML/Ses *	
for free Larriga	SUS, Channel (CSI ID/SUEI Lun		
Delete Pase Through dentify Dr.ve]
Svelan Dennel	🗖 Confirm The Operation		
<u>krotem SionEg</u> 1330-3665 Tan <u>tes Con Sp</u> (Field Confér	Suprit Repot		
Vier, Ry M. H. Greing GMCP: Configuration			
Piew Zvents/Mote Desps.			

3-32

3.7.4 Volume Set Migration

Migrating occurs when a volume set is migrating from one RAID level to another, a volume set strip size changes, or when a disk is added to a raid set. Migration status is displayed in the volume status area of the RaidSet Hierarchy screen when one RAID level to another, a Volume set strip size changes or when a disk is added to a raid set.

Raid Console - Microsoft Enternet to	-					
File Fell Move Frances Tank						
⊭≫a* • ⇒ • @ो 🗗 🕃 ≈	saich 🔚 Factorites	👹 Bich 🔤 🖗	3			
ddress 🛃 144 (/152/155/10/40)						💌 🖓 Go 📋
	-					
neure-crophe.			v	vvvvvv		
Rescue Raid Set	Km B	AID <i>Ch</i> ana	ager 🗛	XXXXXXX		
VitanceSiz Practices			_			
n h Constant	Raid Set Ib	ierarc hy				
elote Rotanio Sot						
lot By Volume Set						
as ik Volvme Sei	Raid			ulume Set(Child/Lun)	Volucie Slate	Cupacity
e o Volume Sex Cheal:	Eard Sct # 0		Vola	<u>25 Cot#CO (0/0/C)</u>	Migreang(7.5%)	247.003
presal Rome		2002				
In Prior Through		.7H03				
edy Fase Theory		Ch047				
ste Dass Thiough						
ntify Dr.ws	IDE Clann					
the Commol	IDE CIAMA	015				
stemConfig						
0 10 20 Target Config	Channel	Usage	Capacity		Model	
sellet Config	CELL	7x49et#01	23.375	TIESTROSCET ABOU		
or By Med Config.	CE.02	LL \$ to: kak	83.305	HDS /320SUPLA38U		
MP Denogrande au	CLJ3	such Set A CU	\$2.335	HES (2S02CPLA38C		
w Avents/Made Roopt-	CEDE	Da 19et≜ (1	23.375	FIESTRADE PT ABO		
treate Trof Event at Sweat Duffer	<u> </u>	1		1		
ar ewan berrei Arfy Easgavez						
inage Finnware						
dan Cur a file-						
with the second se						
olis. Himarian						
don i forsulari						
rizzora Manilar						
	-					
re						😭 Inte ne:
tart 🛛 🍏 🥰 🚉 🗌 🖉 Kärd Cur	miller Mannan S	Durables - Paint	Sincet	on-Paint		-

Configuring

3.7.5 Check Volume Set

To check a volume set from a raid set:

(1). Click on the Check Volume Set link.

(2). **Tick** on the volume set from the list that you wish to check. Tick on Confirm The Operation and click on the **Submit** button.

Use this option to verify the correctness pf the redundant data in a volume set. For example, in a system with dedicated parity, volume set check means computing the parity of the data disk drives and comparing the results to the contents of the dedicated parity disk drive. The checking percentage can also be viewed by clicking on RaidSet Hierarchy in the main menu.

Kard Console - Microsoft Enternet Explore	±r						- 8 ×
File Fell Mass Frances Tools rep-							1
∔>ad• → · ② ⑤ 🗂 🕄 ②t>ent	Facaltes	🎲 Booy 🖓 - :	3				
Address 🛃 (0.4)/152/155/10/40							uris *
		AID allow	V	VVVVVVV			
Laudk Creme	Mm B	AID (Mana	ager 🗛	XXXXXXX			
RaidAd Funning	-						
Scente Rajo Est							
Defete vanise.	Raid Set H	ierarchy					
Econd Said 3a							
A Invale Ro Black	Raid			Volume Set(Ch/Id/Lun)	Voluue State	Capacity	
Create Elet Spare	Rhić Set # 1		Vah	me Set # 00 (0/070)	Cherising (SS 215)	100 YC-D	_
Decite Hut Sugar		Ch02					
how us had 3		Cat3					_
Value of San Press Inno		0501					
Grente Pourne Ent							
Defaile of theme and	1DE Chann	elx					
Mindely Verlagen Met							_
Obriti: Volume Net	Channel	Lsage	Capacity		Model		-
Stop Volume Set Cheek	tati	Eaic Sct # JL	S2 BCB	EDS/2518J./LA250			- 1
Physical Brites	758.2	Raie Set & JU	20 3GB	E.08/03/81/2L/230			
Greate Pase Through	2003	Raić Set ≢ 10	\$2.30-B	110/37/3080PL a 380			-
Murie (y Hone Through)	Tal.4	Eaic Sct # JL	\$2.3CB	EDS/25181, "LA250			- 1
Delite Penalitheningh		coat bet in be	100 000	1.1.0.19003. 042.90			
hintes and							- L
System Learned							
Agalem Confee L'MESON Forget Confeg							
EtkoeNot Config							
Also Dy Mai Config							
EDIMP Configuration							
View Events/Mate Beater							
						😭 liste net	

3.7.6 Stop VolumeSet Check

Use this option to stop the Check Volume Set function.

3-34

3.8 Physical Drive

Choose this option from the Main Menu to select a physical disk and to perform the operations listed below.

3.8.1 Create Pass-Through Disk

To create pass-through disk, move the mouse cursor to the main menu and click on the **Create Pass-Through** link. The relative setting function screen appears.

Disk is no controlled by the internal RAID subsystem firmware and thus cannot be a part of a volume set. The disk is available to the operating system as an individual disk. It is typically used on a system where the operating system is on a disk not controlled by the RAID firmware. User can also select the cache mode, Tagged Command Queuing, Max SCSI speed and SCSI channel/ SCSI_ID/SCSI_LUN for this volume.

🚰 Raid Console - Microsoft Internet IX	-						.8×
File Fill Move Frances Tools							10
ୁ⊭≫ଟ · ⇒ · @ ମିଘି ଔ>	earch 🔄 Fact	akes 🎲 Booy	18-3				
Address 🛃 144 (/192/156/10/44)						-	🖗 Go 🔤 Units 🐴
	-						
Domini Mese		DAID	Hanana	XXXX	XXXXX		
(,nuek ()rette	100	RAID (wanagei	AAAA	AAAAA		
Raid Sel Foroino							
Greate Raio Eat	Select	the 1DC drive	For Pass Thr	auch			
Def-factorized.		all fe d diri		- apar			
Enon.d Rain 34.			1	1			
A. Incate Roc 1264	Select	Channel	Capacity		Model		
Dieste Dot Span							
Decis Het Scare	6	IDE CALA	\$2505	RESERVED LA	200		
how would							
Value of Sa. Press brees							
Greete Polane Set	Enler.	Pass Through	Disk Athibah	۲ L			
166-16-877 mis 2-1							
Markely Verlaged Ref. Operate 2 obtaine Net.	- di m	. Carlo Mole			Wite Back		
Step Volume Set Check							
Physical Brites	20220	Commond Qu	en og		Enabled 💌		
Greate Pass Through	Max 9	CBI Speed			320M 999ec 🖛		
Municity House Through	2022	diament (1961) i	5 4135				
Definite PenaliThenugh							
like his his							
system Dennel		alim Ale Oper	ajon.				
Agalom ComBo			_				
1 1940 SUS Forget Config	_ Sucr	rit Reset					
EtkosNot Config	a —						
Alse: Dy Mail Coufig SDIMP Configuration							
View Events Mate Bester	88						
The second second	-						
e 						🔄 🔤 🖄 İnke re	
🏙 Start 🔤 🍏 🈂 🖏 🛛 🛃 Kard Lu	nsule - Miurus	um Miniaeicr	· Psink				🕮 SICAM

Configuring

3.8.2 Modify Pass-Through Disk

Use this option to modify the Pass-Through Disk Attribute. User can modify the cache mode, Tagged Command Queuing, Max SCSI speed and SCSI channel/ ID/LUN on an existed pass through disk.

To modify the pass-through drive attribute from the pass-through drive pool, move the mouse cursor bar to click on **Modify Pass-Through** link. The Select The Pass Through Disk For Modification screen appears tick on the Pass-Through Disk from the pass-through drive pool and click on the **Submit** button to select drive.

The Enter Pass-Through Disk Attribute screen appears, modify the drive attribute values, as you want.

🚰 Raid Console - Microsoft Internet Expl		. 8 ×
El: Fil Miss Francis Tools a	1	10 A
] ⊨ >e4 + ⇒ + ⊘ \$] [2] (2)>ee	h 🔟 Feorites 🎲 Bacy 🔤 🗃	
Address 🛃 (0.4.)/152/155/10/40		💌 🖓 Go 🛛 Unis 🎌
Entete Hint Spore		
Rescue Raid Set	R RAID Manager XXXXXXXX	
Wirnsiet Punning	W INTE Overlager	
Charle Scheme Bet		
Puleto Veluciae Set	Enter Pasa Through Disk. Athibate	
Modify Volvme Set		
Check Pours Lat	C104 22 3375 FD52722080P1-A000	
Stop Polane Set Check		
Reyncal Darce		1
Or out a Brook Charactery	Vohane Cashe Blode 🔹 💌	
Modify Poss Through	Taggoé Command Quoung 🛛 🛛 Hitali eo: 💌	
E slete Fass Tarouga	Xiac 80 St Speen 320 MB/300 -	
Identify Drive		
Spales Fontrol	8081 Shame 2031 ID 2081 Fan 🛛 🔍 🔍 🕐 👔 💌	
System Scafig		
U222 S 251 Taiget Coofig	Configs The Operation	
EtherNet Coufig	L Commo des Opsicolor	
Abot By Mail Car 5p		
SNMP13 a Began and Marat Received Oracle Sector	Suor I Resel	
General a Test Evant		
Gien Drent Duffer		
Modify Password		
Upire le Français		
Recard Conduction		
biumén I o		
Ra Det Histard, z		
Swear Information		
Hitedwore Michael		
😢 Done		📄 🙀 Dike net
📲 Start 🔤 🍏 🈂 🕄 🖉 Kard Cure	🖶 - Milanuson, 🎢 a este cess tra cuch - Paint	🕮 200 MA

3-36

3.8.3 Delete Pass-Through Disk

To delete pass-through drive from the pass-through drive pool, move the mouse cursor bar to the main menus and click on **Delete Pass Through** link. After you complete the selection, tick on the **Confirm The Operation** and click on the **Submit** button to complete the delete action.

3.8.4 Identify Selected Drive

To prevent removing the wrong drive, the selected disk LED will light for physically locating the selected disk when the *Identify Selected Drive* is selected.

To identify the selected drive from the drives pool, move the mouse cursor bar to click on **Identify Selected Drive** link. The Select The IDE Device For identification screen appears tick on the IDE device from the drives pool and Flash method. After completing the selection, click on the **Submit** button to identify selected drive.

: Fill Max Francis Tools						
ාන් - ⇒ - බ වි යි බ	Dearch 🔄 Fac	raikes 🎲 Boory	8.3			
kess 🛃 http:////sz.156.30.44						• (∛Go I
nntin Man		DAID		- VVVVVV	vv	
ich Create	- In	RAID (<i>m</i> anage	xxxxxx	лл	
Set Immuna						
(Raie Bat	E. A.	Select The IDE Device For Identification				
e Raiciset	2516C	The IDE Dev	ARE FOR THEM			
nd Raid Sec						
ate Radi Set	Selec	t Channel	Capacity		Madel	
c = c1 Sport	۰	IDE C201	32 2 3 3	TID 3728000PLA080		
e liet Spare	0	IDE Ch02	82.203	HD 3732360PLA320		
e Taic Ber	0	IDE Catta	82305	HDC/2030PLA30		
Ser Proclane	0	10/5 Child	\$2,135	HID S708060PLA380		
Volume Bot						
Pocume Set		_				
V Fourie Set	(3.4)	m Reset				
Volume Se.			_			
Colume Sec. 23, sub-						
al luim						
c Pero Theor gh						
Sy Ease Tarouga						
e Pase Through						
iin Dana						
n Denuel						
m ConEp						
SG3C Tanes, Cor Se						
(Tal.C.mR.)	33					
By M. (Denling	81					
P Configuration	- 23					
Zvents/Mute Deeps.	81					
	-					😭 Dite re:
						j jag unde met

Configuring

3.9 System Configuration

3.9.1 System Configuration

To set the raid system function, move the cursor bar to the main menu and click on he **Raid System Function** link. The Raid System Function menu will show all items. Select the desired function.

H: Fil May Francis Tools	•		1
	Search 🔚 Factorites 🎲 Iston 🛼 😅		
idress 🛃 http:///sz.156.10.40			💌 🖉 Go 🛛 Urlis
	-		
Pondon Maw	RAID Manager	XXXXXXXX	
Naich Cresse	W INTE Chanager		
lindSet Ismmina			
eente Raie Sit	System Configurations		
Delette Raic per			
Spand Raid Set	Sacre n Deeper Setting	Enchor •	
otheate Raul Set	Background Task Fronty	Fah(8, %)	
in tract Brok			
leiste Hot Spars	Tenninal Port Configuration	Sand Rate 1920 💽 Shop Birs 1 💌	
eorue Taio Bet	JECD/RALD Consignation	CAD -	
Where Str. Procedure	Mio SATA Mode Supported	8575300 HVC 0 •	
ecuto Voluento Sist			
leinte Rolumn Ent	LILTD Lizad Altazó Cacha	E nab ac	
Low to Ferraria Lat	Stagger Protes On Control	L.r. E	
<u>herk Volume Se.</u> Grav Volume Se. (11 och	HPD SMARI Status Foling	E tablec 💌	
Burind Line	Dille Capacity Transaliva Mode	No rancaren 💌	
fectic Pero Theory and	End (capacity realization reade	pro infrance -	
foctiv Exce Tarouga			
locate Pass Through	Corfine The Operation		
dentify Dr.ws			
ivetas Cesuel	Sulmit Rev.2		
Stotem SpanCo			
STOOD S 2002 1330 SC31 Tanes, Con.Se			
Forffal (Code)			
Vor. By M. (Domby			
OLOP Configuration.	33I		
iew Zvents/Mute Deeps.	8		
Concern The Manual			📽 Crite ne:

System Beeper Setting:

The Alert Beeper function item is used to Disabled or Enable the RAID subsystem controller alarm tone generator.

RAID Rebuild Priority:

The Raid Rebuild Priority is a relative indication of how much time the controller devotes to a rebuild operation. The RAID subsystem allows user to choose the rebuild priority (ultraLow, Low, Medium, High) to balance volume set access and rebuild tasks appropriately. For high array performance, specify a Low value.

3-38
Terminal Port Configuration:

Speed setting values are 1200, 2400, 4800, 9600, 19200,38400, 57600, and 115200.

Stop Bits values are 1 bit and 2 bits.

Note: Parity value is fixed at None.

Data Bits value is fixed at 8 bits.

JBOD/RAID Configuration

The RAID subsystem supports JBOD and RAID configuration.

Maximum SATA Mode Supported:

The 8 SATA drive channel can support up to SATA II, which runs up to 300MB/s. NCQ is a command protocol in Serial ATA that can only be implemented on native Serial ATA hard drives. It allows multiple commands to be outstanding within a drive at the same time. Drives that support NCQ have an internal queue where outstanding commands can be dynamically rescheduled or re-ordered, along with the necessary tracking mechanisms for outstanding and completed portions of the workload. RAID subsystem allows user to choose the SATA Mode: SATA150, SAT150+NCQ, SAT300, SATA300+NCQ.

HDD Read Ahead Cache:

This option allows the users to disable the cache of the HDDs on the RAID subsystem. To some HDD models, disabling the cache in the HDD is necessary to prove the RAID subsystem functions correctly.

Stagger Power On Control:

This option allows the power supplier to power up in order each HDD on the RAID subsystem. In the past, all the HDDs on the RAID subsystem are powered up altogether at the same time. The power transfer time (lag time) from the last HDD to the next one can be set within the range of 0.4 to 6.0.

HDD SMART Status Polling:

The RAID subsystem can read HDD temperature information through the SMART function. This option allows the users to enable the repeat to scan the HDD temperature. This function is default enabled.

Configuring

Disk Capacity Truncation Mode:

This RAID subsystem use drive truncation so that drives from differing vendors are more likely to be able to be used as spares for each other. Drive truncation slightly decreases the usable capacity of a drive that is used in redundant units.

Multiples Of 10G: If you have 120 GB drives from different vendors; chances are that the capacity varies slightly. For example, one drive might be 123.5 GB, and the other 120 GB. This drive Truncation mode **Multiples Of 10G** uses the same capacity for both of these drives so that one could replace the other.

Multiples Of 1G: If you have 123 GB drives from different vendors; chances are that the capacity varies slightly. For example, one drive might be 123.5 GB, and the other 123.4 GB. This drive Truncation mode **Multiples Of 1G** uses the same capacity for both of these drives so that one could replace the other.

No Truncation: It does not truncate the capacity.

3.9.2 U320 SCSI Target Config

To set the U320 SCSI Target function, move the cursor bar to the main menu and click on the **U320 SCSI Target Config**.

Channel 0 QAS:

The Enabled option supports Quick Arbitration and Selection (QAS). QAS reduces the overhead of control release on the SCSI bus from one device to another. This improvement reduces command overhead and maximizes bus utilization. Select the desired function.

3-40

Down To U160 IF U320 Unstable:

When Ultra320 signal transfer quality becomes terrible or bad, the RAID subsystem will auto-speed down the transfer rate to Utra160 from Ultra320 in order to keep the data transfer from being broken due to bad or poor SCSI signal transfer quality.

Two TB CDB Selection:

12 Bytes CDB allows the RAID subsystem to support Over-2TB under Windows Server 2003 (Must pre-install SP1 and driver) and Linux (Must pre-install Linux patch).

16Bytes CDB allows the RAID subsystem to fully support Over-2TB without any extra files or drivers pre-installed under Linux and Windows. (Must use U320 and could not down to U160 if U320 unstable)

🚰 Cannot find server - Microsoft Internet is	plurer		. 8 ×
The Edit View Tevorites Tools Help			
(#Esc · # · 🔘 🖗 🖄 (\$ecc)	刻Texatives @Media (語) 昆小 🗃		
Adoress 👰 0,p.//152/158/10/42			▼ Piso Unis *
Puoritor More	RAID Manager	XXXXXXXX	
lindSet isomme			
Orothe anid Site	11320 SCSI Target Configurations		
Delete Raid set			
Expand Raid Sci	Charnel 0 Q AS	Tootled 💌	
Activate Red Set	Down To U160 HU320 Unstable	=natied =	
Contract Bion	Two TB CDB Selection	12 Eyles ODE	
Delate Het Spaar	Two in a control come card	Les increa	
Rescue Raic Ber			
Where for Proclass	 Continuitine Operation 		
Cecute Volume Bot			
Delete Volume Det	Schuhi Filea		
Mostly Venue Let			
Check Volume Set			
34 to Yohame Sec. 21 sold			
Bayind Line			
Cente PenalThenugh			
Morely Fass Torough			
Dente Pase Through			
Identify Dr.ws			
Switzen Commod			
Stortem Config			
C30 CGC Later: Cordie			
E E officie Conference 📅			
Allor, By M. (Denlog			
S 464 P. Genergrambon			
View Zvents Minte Boopts			
Million Contraction and Contra			a Maria

Configuring

3.9.3 EtherNet Config

To set the EtherNet function, move the cursor bar to the main menu and click on he **EtherNet Config**. The Raid System EtherNet Function menu will show all items. Select the desired function.

Cannot find server - Microsoft t		-		- 8 ×
The Edit Very Tavorites Tool				1
) Search	· 図Tavettes @Meda (語) 马- 〇		
Adoress 🗿 (0,0,0/152,158 10 42)				💌 🖗 Go Unis 🗠
	-			
		RAID Manager XXX	XXXXX	
Puncters Marcu	1.11	W INNI Covanager		
Cuice Decale	- 11			
Rold Sci Punctions	7 H.	Ether Net Configurations		
Create Rad Set	- II			
E let: Per 15-1		DHCP Praction	Disal: ec 💌	
Reported Ren 1244		- International Action of the Company		
Added to word 3		Local IP Address (Used If DHC.) Disabled)	1.22 165 1.0	93
Create Hot Spare		Contesting TFLAddress (Case4 TF DHCP, D-while4)	102 160 1	
E-late H. d. Stone		Scince, Massler Jacid LTDHCP Disakled:	255 255 255	
Pesser PertSet		SCHER, MARK (SECULE PROFE PLANALING)	200 200 200	c i
Velocated Fermions	a 🛛	10TTP Port Muniber (7132-3151 Is Reserved)	30	
Create Scheme Set		Telustistationales (ALCS, S191 to stellar vel)	23	
11 July Sylicenciket		realer son stander (ricelister is roetersed)		
Mindully Unitative Net		SMTT Port Funker (7168, 819) is Reserved)	25	
Check Volume Set Stor: Volume Set Check		Carrent	1.02.165.110.50	
francel line	7 H.	Ciment Galeway IP Address	1.92.163.1.1	
Cisale Fact Tanoaca	- II	C ment Sal net Mar's	233.055.253.0	
M nully Prove Ten age		Tther Net V & C Address		
Dicleto Fass Cherough		Tither Net VIAC Address	C 1- C3 65 77	
Editory Part Calo again				
Supley (critrol	7 H.	D Confirm The Oberstein		
System Config	- II			
U220 SCRI Tragel Config		Submit Record		
Ethericet Scutis	- 55			
Alart Dy Mail Config				
20102 Confinements				
Street Reservice Marca many an Operation of the street of				
(Free				🙋 Tilania

3-42

3.9.4 Alert By Mail Config

To set the Event Notification function, move the cursor bar to the main menu and click on the **Alert By Mail Config**. The Raid System Event Notification Function menu will show all items. Select the desired function. When an abnormal condition occurs, an error message will be email to administrator that a problem has occurred. Events are classified to 4 levels (urgent, serious, warning, message).

Lannat find server - Marasaft Internet Baplarer		_ 0
〜Eas、・中 · ② ② 登 登Searn 図Texates @Meda :	9 B. A	
Address 📳 (Cpp/152.158 10 42)	- Pio	uri
		1
	Manager XXXXXXXX	
RAID C	manager AAAAAAAA	
Paulin Ken		_
Ouid: Create SMTP Server Conf	izuration	
lindSet immen	•	_
SMTF Server IP A4.	áress 1.00 .35 .4 .100	- 1
Dente Auc set	438	
Expand Raid Set Athrate Rud Set Mail Address Confi		_
Activate Re.1Set Mail Address Confi	gerations	
Definite Web Server		
Seader Name price	Mai Address : ner@nen com	
Vitrastr Parties	Parageord	_
Decate Victoria Sat		
Delete Polume Bet	earel Mar \ Advess - proceedige rower combe	_
Mos dy Venue Set		_
Ohenk Wohane Sea	Mar. Address .	
Sam Yolume Sec. 71 och Mail 16 Dismo3 :	Mai Address :	
Borind Rains	Ma' Address	-
Carote Rend Unitingn	IOLA C.L.I.F.XX	
Moddy Fass Turouga		_
Deute Pase Through	.uuniimuseuse	
Identify Dr.m.		_
Swins Connol C D table Doent Ma		
Spatem Config U300 Cost Target Config	aboation Send Only Trajent Seen.	
E & effort Config	Effection Send Urger And Senious Even)	
Alloc By M. (10) miles C. Warning Error 15-	oldination Send Unsert, Serious And Warring Dreat	
SNMP Georganism	ation Send All Event	-
View Zventa/Mote Boopts		

Configuring

3.9.5 SNMP Configuration

The SNMP gives users independence from the proprietary network management schemes of some manufacturers and SNMP is supported by many WAN and LAN manufacturers enabling true LAN/ WAN management integration.

To set the SNMP function, move the cursor bar to the main menu and click on he **SNMP Configuration**. The Raid System SNMP Function menu will show all items. Select the desired function.

Rad Lonsole - Microsoft Internet Equ File Foll Max Francis Tools -			.8
	n nh ⊠Fecaltes (3)itson, Re-⊒		
datess 🛃 http://www.com.net.org	a Micrae March 165 3		▼ 🖓 Go Urks
20100 ST 101 Y 1221001 Y-D	0		(a) [a)
Pannim Mass		VVVVVVVV	
Pullah Creste	RAID Manager	λλλλλλλ	
lindët komme			
Tecto Raid Bat			
Delate Raio set	SNMP Trap Configurations		
Departed Calif. Set			
Activate Radi Set	SNMP Trac 12 Address #1	192 100 10 42 / a.# [123	2
in the set Sport	SMMP Trac ⊃ Address ♥2		
Selete Hot Spare	SNIVIP Trate IP Address #3		
escue Tais Bat	SHARI THEY TO ADDIESS WE	E E E D Frank M	
Charles See Francisco			
ecate Volume Set	SNMP System Configurations		
Deute Ploane Est			
Locity Fourie Les	Commanity public		
heat Volume Sea			
a to Volume Sec.19. with	sysCentral f		
Suprinal Raises	svs.Aame U		
lectic Pero Theoryth			
for the Large a	syst-percien f		
Nexts Pase Through			
dentify Dr.ws	SNMP Trap Natification Configurat	ions	
ivelan Denuel	<u>_</u>		
Statem Config	O De MA SNIMP Theo	No SNMP Trap WILBE Seat	
1350 SGST Tanges, Con Sig	Senors Linux Manifester	S and Only Serious Event	
Forthal Conflic Vers By M. (10) only			
SILP Senigration	C Error le otdisation	Send Sectors And Ecolo Event	
liew Zvents/Mute Despe.	O Warning Notification	Send Serie is, Error on d Warring Even.	
	llian concer	lease of the second	🔹 Cote met

SNMP Trap Configurations: Type the SNMP Trap IP Address. The Port default is 162.

SNMP System Configuration:

Community: The default is Public.

(1)sysContact.0; (2)sysLocation.0; (3)sysName.0: SNMP parameter (31 bytes max). If this 3 categories are selected during initial setting then when an error occurs SNMP will send out a message that includes the 3 categories within

3-44

the message. This allows user to easily define which RAID unit is having problem. Once this setting is done, alert by mail configuration will also work in the same way.

SNMP Trap Notification Configurations: Select the desired function.

After you complete the addition, tick on the **Confirm The Operation** and click on the **Submit** button to complete the action.

3.9.6 NTP Configuration

NTP stands for *Network Time Protocol*, and it is an *Internet* protocol used to synchronize the clocks of computers to some time reference. NTP is an *Internet* standard protocol. You can directly type your NTP Server IP Address to have the RAID subsystem can work with it.

To set the NTP function, move the cursor bar to the main menu and click on he **NTP Configuration**. The Raid System NTP Function menu will show all items. Select the desired function.

ess 🛃 http://sz.ussau.eg	ĝisedi Alfonites (ĝilen) 문서 그	▼ ∯65 U
and First With the second second		(•••].•
nation Mone		
de Specie	RAID Manager XXXXXXXX	
uläit lummmu		
ate Raid Set	MIP Server Configurations	
ete David set		
end David Set Inrete Pasid Set	MUP Server IP Address VI 0 0 0 0	
nter dag ber		
ete Cot Space	STP Carver IP Address #3 0 . C . C 0	
ere Lor optie orie RadiSet		
	Time Zone Configuration	
have for Paraclane	I Inte Bone Comparaton	
ale Volume Sot		
ete Volume Set	🔪 🕐 (SMT 12:00)International Date Line West	
<u>dify Volume Sec</u> (.L.Volume Sec	A damates To ship State Tradec 💌	
p Velanie S-1 (Zienz		
	Current Time 2006/1/5 17/21/02	
seinel Reim	SUP daser kei det	
ale Part Through		
difeTess Through	Confirm The Operation	
ete Pass Thuoudi		
nile Den	Suant Resat	
ins. Denuel		
сын Ссибр		
erifiel Gunfu		
n By Ms. Chinny MF Cambigant on		
F Configuration		
w Zvents, Mute Deepe.		

Configuring

3.9.7 View Events

To view the RAID subsystem controller's information, move the mouse cursor to the main menu and click on the **System Information** link. The Raid Subsystem events Information screen appears.

Choose this option to view the system events information: Time, Device, Event type, Elapse Time and Errors. The RAID system does not built the real time clock. The Time information is the relative time from the client machine power on.

⊨>se*•⇒•@]][2][@]	Search 📷 Factorites 🎲 Istory	R-3			
idress 🛃 144 (/192/156/10/44)					• 🖗 🛛 📃
ecaeticeopar					
leaste lict Spag	R RAID C	Hannan X	XXXXXXX		
ere de Raio 35.	Im RAID (manager 1	BBBBBB		
Victoria Ser Manufacture					
tente Volume Bat					
laiste Pocaris Est fanz la Vicioria Sat	System Events infor	rastion			
August Science 2005 Fred & Universities					
a to Column Rev. 14, p.0	Tirae	Device	Event Type	Elapse Time	Errors
Businal Raine	2002 \$ 10 15.25 45	IDE Commer 4	Faithfrough Diss Dealed		
teste Dass Thiot ah	2007-5-10 15:20 54	Raie SH # JU	Cicale RadSci		
fos de Esse Taroura	2002-5-10 15:20 40	Raie SH # JU	Delete RaieSe.		
Webs Pace Through	2012-5-00151243	Vocase Set# 00	Concide Chros	000112	U
dentify Drive	2032-5-10 15:11 33	Vulgar Sel # J0	Sec. Marshing		
iyelan Dwanel	20.35-5-10.15:11.23	Volume Krt# III	Complete lest	CJ0:CJ:Se	
cotem ClanEla	20.35-5-10 15:10 27	Vourse Set # JU	Start Initiatz:		
300.203 Faips Corchy	203-3-10 15:10 27	Vourse Set # Jil	Create Volume		
E rH d C mH e	203-3-10131027	Rais Sot # JU	Create RedSet		
Der By Dini Config MdP Configuration					
iew Events Pdute Denos.	2005-5-10 15:5:18	Raud Sot # DC	E aleta RaiéSes		
ensuate Task Event	2005-9-10 19:7:50	Volumo Rot # 00	Create Veliano		
lear Briefs Bullier	2005-5-10 15:7:43	Raić Sot # 00	Creato RadSet		
finitily Formand	2005-5-10 15:7:26	Raić Sot # 00	E ploto Raté£ct		
rende Firnwere Jestar: Controlles	2005-9-10 19:3:27	Volume Cet# 00	Create Volume		
Manutia	2005-9-10 19:3:21	Raid Set # 00	Ezoand Raid3st		
oreStr. Hierorther	2005-9-10 19:5:1	Raid Set # 00	Create RadSet		
ystem Information	2016-5-10 19/5/62	Raid Set # 00	Fielete RaidSet		
lax mars Monitor	2016-9-10 19:552	Volume 2-st # 30	Complete Vignate	01011-011	
	S 1010 C 10 14 67 2	27-1	The of Community of		

3-46

3.9.8 Generate Test Events

If you want to generate test events, move the cursor bar to the main menu and click on he **Generate Test Events**. Tick on the **Confirm The Operation**, and click on the **Submit** button in the screen to create the hot spares. Then click on the **View Events/Mute Beeper** to view the test event.

Rand Lonsole - Microsoft Internet Explorer File Fold Mose Franciss Tools Folg		- #
⊨bedr ⇒ @ ि) [ी @jearch ⊠∏ravattes @jisson, हि-≦	3	
	-	urks
datess 🛃 104 (152,153,10,42)	▼ (² G)	ures
Auntin Man		
hish Cresse RAID Mana	ger XXXXXXXX	
	901	
n franké f		_
elate Said set Do You Win. To Generate Test	(Seen.?	
mound Raid Sec		_
ctivate RudSet Comma The Operation		
n-b-ril Spar-		_
entrinet Sport Submit Resal		
escue Taic Bet		
These for Pan class		
ente Kolenn Ant		
Actor Pottante Bot		
loc for Venue Set		
hank Vohune Sey		
la o Volume Ses Fluid.		
Cigneral Barry		
in the Prior Through		
for By Ease Through		
Paste Pase Thiough		
dentify Dr.w.		
orthy Farmal		
tostem Config		
310 EGST Target Config		
And Int Config		
Car, By Med Chedge		
MMP Danag mile m		
iew Zwentz/Adute Boopes		
ensuare Dest Event		
Les Baser Buille	📹 Inte re:	
Start 🛛 🕼 🌾 🗊 🖉 Raid Louisule - Micrussul, 🖓 ethernet config - Pain		te ara

Configuring

+ bedr + ⇒ + @ \$ 1 [2] @ (detress @ H4+ /(192.1553.0.42) (detress with 511 (detress with 511 (rests [154.55are	Dearch 🔚 Factorites 🎲 Isto	2 R 3			
digite and Str					
directe and Str					- ကိုလ ၂
	-				
	RAID	Monogar X	XXXXXXX		
-late H at Score		wanayer			
our Pertect					
	System Reents Info	mation			
Wanted Familian					
and a bulletine Set	2 Time	Device	Event Type	Elapse Tirae	Errors
hele Sa Serre Bel				Trabae Tura	LITORS
ndify Volume Net. web Volume Bat	/004-4-111/5941	H/W Mantter	Test Daest		
on Rohme Bet Check					
aprical linese			1		
sata Fasi, Tonuaca					
addly Pass (Fee ag)					
elete Fass Through					
lentally Derive					
pales (entrol					
ester Config					
220 SOUTHigh Config					
her/Jet Doufig					
lart Dy Mail Config					
TMP Configuration					
e a Kvender ^{ov} die megier					
rund for the rd					
len: Evont Buffer					
odify Passwerd					
ograde Tinnware					
estart Controller				1.	
al contrativa.	Next Page				
addlet Illiciarchy					
	*11			1	
III and an an inference of	onsule - Miuruson Petrerre			, j u - 2	.ene ≝2.20

3.9.9 Clear Events Buffer

Use this feature to clear the entire events buffer information.

3.9.10 Modify Password

To set or change the RAID subsystem password, move the mouse cursor to **Raid System Function** screen, and click on the **Change Password** link. The Modify System Password screen appears.

n 1	0
.3-4	~
•	0

The password option allows user to set or clear the raid subsystem's password protection feature. Once the password has been set, the user can only monitor and configure the raid subsystem by providing the correct password.

The password is used to protect the internal RAID subsystem from unauthorized entry. The controller will check the password only when entering the Main menu from the initial screen. The RAID subsystem will automatically go back to the initial screen when it does not receive any command in ten seconds.

To disable the password, press **Enter** key only in both the **Enter New Password** and **Re-Enter New Password** column. Once the user confirms the operation and clicks the **Submit** button. The existing password will be cleared. No password checking will occur when entering the main menu from the starting screen.

🚰 Kaul Lunsole - Microsoft Internet Replaner	- <u>2</u> ×
El: Ed. Max. English Todo reg	1
] + bedr + → - @ 3) @ @beach ⊨Frontes @ Boon R	
Address 🛃 164 (152,156,10,42)	▼ 🖉 Go Urls *
Distri-rtSpin 👘 👘 👘 👘 👘	
Gescue Taix Set RN RAID Manager XXXXXXX	A
Ydaneša Paulies	
Conduction 2.1	
Debte 7 stant 8 st Modify System Pase over	
Moddy Scians Sei	
Linter Oriental Password	
She a Valume Set Cheal;	
Investigation	
On the Ana Thrankho External In New Property of d	
Morely Fase Torougo	
Identify Days	
System Config US20 1002 Target Config	
Chevit Config	
A ar By M-1 2 mfg	
Add P Dering and in	
View Avents/Mate Britste	
Demonster Tool Event	
Clear Breat Deffer	
Mor the Exercise	
Character Figure 200	
boolar.Cor.a.0b-	
Information	
Kaiu3s, Hierar, av	
System (Torrole m	
Herdwers Monitor	
	к. к.
e	🔰 🔤 Internet
🕼 Start 🔄 🥰 😂 🕼 Kard Lune de - Planesa, 🎢 Undiec - Paint	👼 स २. <i>१</i> ७

3.9.11 Upgrade Firmware

Please reference the section 4.2 for more information.

Configuring

3.10 Information Menu

3.10.1 RaidSet Hierarchy

Use this feature to view the internal raid subsystem current raid set, current volume set and physical disk configuration.

Mand Console - Microsoft Internet Ex	ulurar							_ E 2
John and the restrict tools	*tµ							
] - tuve - ⇒ - 🎯 जि 🖽 🖏 अ	wer 🔟 Teacher	(\$ to .]]	- 4					
Address 🔄							- (* A)	1.00
1000000000000	-							
Date He, Star		//		373	WWWWWWW			
Resear Reiz det	Kin R	AID ON a	inager	A	XXXXXXX			
han bar bar hannan								2
Deale - thoras de	Raid Set Li	ierauchy						
Deate Full and Ba Models - state des								_
Houry - Hune Get	Ruid	Rul 11)	E Chunnels	- 10	uluus Set(Ch-Id-Lun)	Valume State	Caparity	
drop Webure Zelo Trech	B-6270-47				10 S 1 A 01 (1001)	Po y-d a	267.0.35	
Devial John		ch.:				1 al anna		
Checker and Checker		0.03						- 11
						_		
Heads we used		./ale	d					
toolal sectomore								
Media Drive	LDIC Cliants	nis						
Syme Leant								_
Z-atua Loufia	Channel	Usage	Capa	der		Model		
E 1780 O 2011 N gels frante E 2007 A 1 Junifie	1200	Lat: Set 7 .0			L9:20.0.2LA:0.			
Also Ly Materiale	75.07	F-112 to 4 10			HP273818101 4381			
THMP Configuration.	1200	Lui: Set ₹ 10			L8 /20101/LA:01			
Vise we lighting Leeps		Fro	87.33E		HD273818101 4381			- 11
Sugar Tot Scot	<u>2504</u>	1-1:	8.2.95		-127/88 /1 M/8			_
Disk Devictories								
Moril's Passent								
Lige stem mass								
Restor Canadas								
Inter abor								
Lordie L worky								
3-atora Indiana anna								
Lis Stals Horene	_							
£15	-						Colornet	- 2
			1.00					
📲 Start 🗍 😭 🍰 🛼 🗍 🍎 Rad Luc	inale Microsol. 7	Y]		n			£.	and AV

To view the raid set information, move the mouse cursor to the right column and click on the **Raid Set #** link. The Raid Set Information screen appears.

💁 Rad Console - Microsoft Enternet Explor	rur		_E.	ĸ
The second reserves tools the	v			c
states - → · ② [1 · 3] @river	10	4		7
Galaxia 🔄			₹ ₂ %30 1.50	*
				-
Date He. Star	· · · · · ·	VVVVVV	VVV	
Resour Reinfort	K RAID Offan	ager XXXXXX		
30 Mar a 51 Marrian		-		ą
Deale - that water	Ruid Set Information		1	1
Date Falling 34				1
Modely - that was	And Set a true	Lei: Set # 0.		1
<u>These Course Set</u> Ship Web is Sets Treeb	paar vervierne Minder Tzeks	A A A A A A A A A A A A A A A A A A A		1
· · · · · · · · · · · · · · · · · · ·				1
Device Bots	Lota, Raw Calcabity	126,752		1
Devile and Trendy	Full Rev. Peperty	10.35		1
Musity and Transfer	jäin Meinber Lisz Size	52 DGS		1
Invelation Connega	Real S. L.Sta	Paysia		1
Martin Drive				1
Synam Longrol				ł
3-aton Loufia				1
Litate All is Departed				1
Enville Jonfie				1
also type the store				1
ZNMP Configuration Vision was the Mirroll exposi-				1
burgar Test Synd				1
Class Draw Lotte				1
Muril- Frankruid				1
Life stern man				
Fistor Cineda				
Infan abar				
Lorder L womber				
3-stora Indiana and				
La Grastionere				
				4
C 1			🙀 Triverwit	
😹 Start 🗍 🏠 🎒 🖏 🗍 🎽 Rad Lunsol	k Marasa. 🞢	¥n	🗸 metav	I

Configuring

To view the disk information, move the mouse cursor to the right column and click on the **CH #** link. The Disk Information screen appears. The SMART Attribute (Threshold) Is A Normalized Value, The Value Is The Larger The Better. If The Attribute Value Is Smaller Than The Threshold Value, The Disk Is In Unstable State.

The second second second look			
4= have - ⇒ - 😂 🗊 🖽 🖏 %	wer 🔟 ter en (3 krie 7 e 🖓		
Colores 🛐			■ 2 ³ a 1 m ³
1000.000.000	-		
Date Ho. Fran	DAID Allow	er XXXXXXXX	
Resour Reiz Bet	Manag	er AAAAAAA	
Ja kana Sa kaana ar			
Create - thank det	UL Drive Information		
Death Full and Ball Marinty - share deat			
Houry - Hare Set	PS Zoro I		
Stop Volume Zela Trech	Sodel Hame	11.5.20.0.7LA.0.	
Destal Box	Signal Harch 1	PERSONAL CHINA	
Dreake and Thready	Ammae Lev	F/curde.A	
Month are friday	Zok Z-p-mty	22335	
Incide and Stranger	Current Salva Xode	SATA:0.0.0000.0ethcf:	
Martin Dainy	Surpland Ratter Mide	SaTA300+9170 (Dethics:	
Syrani, Lineral	Direc Sta	HORNAL	
Z-atua Loufia	- meant Court		
Fight 5 Strick Departments	Multa From Group	-	
Encoling Longia	SXAA, Issa: And Iste	100/120	
Also Fly Matshore SIMP Configuration	SWART BALL THE KING	03(24)	
View werk-bline Leepe	SXAA, Realection Court	10.52	
Surger Test Synd	SWART Sink South South		
Diss Deep Loths	P VART S 12 TO 1 B-la SXAA, Ginn Astiss	0.55	
Moril-Fassered		100(6.)	
Lize stein mess	MART 2-Heave Roma	H 57H 4 (
Restor Canadas	the Color of the basis' marcheder	is A floating Vaue. The value is the L	summer fifther a method
latar abar		he for the Daniel Value, the Walter of the Daniel	
Lordie Forming B-storal diagrams			
La Gra altourne			
	-		-
L 15			

To view the volume set information, move the mouse cursor to the right column and click on the **Volume Set #** link. The Volume Set Information screen appears.

💁 Hard Console - Microsoft Enternet E	aplorar			_ E ×
the second reserves tools	*dy			
্ব=hwa - ⇒ - @ যি এই 🕸 থ	www. 🔟 terrer ()) krie 🗍	₹ Δ		
Gidewis 🔄				≖ (*2α ji~e ≫
-15085-a102-585	•			
Date Ho. True		· · · · · · · · · · · · · · · · · · ·	VVV	
Resour Reiz Set	KAID ON	anager XXXXXX	144	
70 ka a 50 kaana a		-		-
Create - nhane det	Volume Set Julianation	ł		
Davis Full in: 3c.		-		
Modely - those det	i⊽ Lau ≾n Hern	Morris Sci 4 10		
<u>These Tooms Set</u> Ship Volume Sets Treak		1		
	Aud Set is time	Rai: Set #0.		
Deptud John	V Lun Cagariy	347.0.3B		
Davide Sectionaries	SCS: Colorin	Low.		
specify see lineage	And Level	kai: p		
twels, see through	Str.pe Size	12e.1Lyte:		
Maria Drive	drac Circ	M. Oriz		
Syvan, Linard	V uću: Tzeks	4		
Z-aton Lonfin	Cache Xode			
Loans on the Property		Witte Data		
Excellection file when the Mark Config	Ligger Qreving	Lacke:		
SIMP Configuration	Stat: SUSI Space:	221.00E/385		
Vive wash-trinal eeps	Current SCSI Speet	Azvas		
Journal of Tool Street	v chrme State	Legraded		
Disk Prend offs		1.1		
Modily Presented				
Lycase in man				
Restor Canadan				
lelereter				
Lordie L worky				
3-stora hulling a store				
La Stalationne	-			-
E 11+				📩 📩
38 Start 🛛 😭 🥵 😂 🗍 🖗 Rad D		·	1 , ,	B otter
	Interest Interest	1		- and -

Configuring

3.10.2 System Information

To view the RAID subsystem controller's information, move the mouse cursor to the main menu and click on the **System Information** link. The Raid Subsystem Information screen appears.

Raid Console - Microsoft Internet Expl			_ <u>_</u> _
Fil: Fel Max Frences Tails -			1
4+ >ad+ + ⇒ + ⊘ 3) ∰ (@ >ee	th 🖃 Facaltes 🎲 Iston 💀	- 3	
4ddress 🛃 1444 //152/155/30/442			■ ² ₁ Go Uris
Delate Het Spart	DAID offer	nager XXXXXXXX	
Rescue Raid Set	KAID ON a	nager AAAAAAAA	
YthmeSt Pauchen:			
On Def Carl 2.1	Baid Subsystem Informati		1
Delote Volumo Sot	ALLO SEGSYSTEET HEOFICED		
Mod By Volume Set Thank Volume Set			
She o Volume Set Chool:	Controller Name	FE:0+63.4	
L'hyweit fines	Finanza e Version	MT 39 2005-18-6	
Contra Principale	BOOT ROM Version	V. 39 2005-12-6	
Modely Face Through	MP1 Firmware Version	13,220	
Dente Pass Thiough	Serial 17 rates	A 547/TEA OPE 100145	
dentify Dr.ws	Joit Sprigt #		
Souther Fermal	Main Fragescar	ACOMITATECC'S	
Arstem Config			
U320 10 20 Target Config	CDU DCache Sine	32EPyles	
Education of the Config	CFU L'Cathe Size	J2KBytes / write Back	
Alar, By Med Prenty	Spiteal Menavey	128MB (2002EL	
3464P Deneganken Verwickents/Make Response	Current IP Address	192 168.15 155	
New Avents Mate Bright	II .		
Clear Sweat Doffer			
Monity Passan			
Currage Firsware			
Konlar (Cur. a ill-r			
Information			
EaleSt. History			
Sealon climatem			
Hendwards Minnellon			
			📫 Crite ne:

Use this feature to view the raid subsystem controller's information. The controller name, firmware version, serial number, main processor, CPU data/Instruction cache size and system memory size/speed appear in this screen.

3-52

3.10.3 Hardware Monitor

To view the RAID subsystem controller's hardware monitor information, move the mouse cursor to the main menu and click the **Hardware Monitor** link. The Hardware Information screen appears.

de Mex Fe-onfes Toos Ee		1
- + - ③ ダ 全 - Qasadi Linearus (Bhausy Lin 音		
🗃 stypol 92. uk. 12)		≥ 3°₩ LA
-		
THE RAID Manager	XXXXXXXXX	
	Алалала	
shaka		
chara Sw. Chara Sw. Hausterners, Mondener, Inferenzation		
t-treated		
Sana Kas	212	
Interstations Hower Scoper Law	12 220 2	
Data I war sight tw	102.4	
From South = 5.57	33.7.7	
DDR Suppress (2.19)	2621 1	
UPU Tate Vacupe (100)	1.34	
Selle Crutility	124.2	
Score F we Soul-	CV.	
	2000 G.F.M	
12002a 3350cm Facil, 350cm	Arts	
6 Hall-1 mon-ta	Nex:	
Hapa Terrer-La	25	
re keper	2.5	
Li del sententore	5 57 -	
san an a		
dista.		
anly		
- contract of the second se		
•PC-6		

The Hardware Monitor Information provides the temperature, fan speed (chassis fan) and voltage of the internal RAID subsystem. All items are also unchangeable. The warning messages will indicate through the LCD, LED and alarm buzzer.

Item	Warning Condition
Controller Board Temperature	> 60 Celsius
HDD Temperature	> 60 Celsius
System Fan Speed	< 1900 RPM
Power Supply +12V	< 10.8V or > 13.2V
Power Supply +5V	< 4.75V or > 5.25V
Power Supply +3.3V	< 3.135V or > 3.465V
DDR Supply Voltage +2.5V	< 2.375V or > 2.625V
CPU Core Voltage +1.3V	< 1.235V or > 1.365V
SATA Chip +1.2V	< 1.14V or > 1.26V

Configuring

3.11 Creating a New RAID or Reconfiguring an Existing RAID

You can configure raid sets and volume sets using **Quick Create** or **Raid Set Functions/Volume Set Functions** configuration method. Each configuration method requires a different level of user input. The general flow of operations for raid set and volume set configuration is:

Step	Action
1	Designate hot spares/pass-through (optional).
2	Choose a configuration method.
3	Create raid set using the available physical drives.
4	Define volume set using the space in the raid set.
5	Initialize the volume set and use volume set in the HOST OS.

3-54

Chapter 4

Array Maintenance

This chapter describes more information about your Disk Array. The following items are describes in detail.

෬ Updating Firmware

4.1 Upgrading the Firmware

Upgrading Flash Firmware Programming Utility

Since the RAID subsystem controller features flash firmware, it is not necessary to change the hardware flash chip in order to upgrade the RAID firmware. The user can simply re-program the old firmware through the RS-232 port. New releases of the firmware are available in the form of a DOS file at OEM's FTP. The file available at the FTP site is usually a self-extracting file that contains the following:

XXXXVVV.BIN Firmware Binary (where "XXXX" refers to the model name and "VVV" refers to the firmware version)

README.TXT It contains the history information of the firmware change. Read this file first before upgrading the firmware.

These files must be extracted from the compressed file and copied to one directory in drive A or C.

Array Maintenance

Establishing the Connection for the RS-232

The firmware can be downloaded to the RAID subsystem controller by using an ANSI/VT-100 compatible terminal emulation program or Remote web browser management. You must complete the appropriate installation procedure before proceeding with this firmware upgrade. Whichever terminal emulation program is used must support the ZMODEM file transfer protocol.

Configuration of the internal RAID subsystem web browser-based remote RAID management. Web browser-based RAID management can be used to update the firmware. You must complete the appropriate installation procedure before proceeding with this firmware upgrade.

Upgrading Firmware Through ANSI/VT-100 Terminal Emulation

Get the new version firmware for your RAID subsystem controller. For Example, download the bin file from your OEM's web site onto the c:

1. From the Main Menu, scroll down to "Raid System Function"

2. Choose the "Update Firmware", The Update The Raid Firmware dialog box appears.



Array Maintenance

3. Go to the tool bar and select Transfer. Open Send File.

Vi JHODŽRA Cl ROTD Re Iran Ha Maximum Emul	
Ph Mute The Alert Alert 8 Fl Change Hpde Vi JHOD/84 Cl RATD Re Iron Ho Maximum Emul	
	nsfer File From Terminal lator Dy Zmodem Protocol Five Ctrl X Ta Aburt >>
Dudate Destart Couled	oller

4. Select "ZMODEM modem" under Protocol. ZMODEM as the file transfer protocol of your terminal emulation software.

5. Click Browse. Look in the location where the Firmware upgrade software is located. Select the File name:

"6160FIRM.BIN" and click open.



Array Maintenance

6. Click Send. Send the Firmware Binary to the controller

📴 Raid HyperTerminal His In Kaw Cal Instalar Pap		
<u>12 83 08 2</u>		1.4
Hain Nonu	(Model Name): 1941.1) Control Lor Zandan Na asadar Raji	
Du Ro <u>Raid S</u> Vo Ph Nute T	San ya Cariba-HHAkadab Lad san (Fanka) San San Security (Fanka)	
I torn I torn Vi JBOD/R Cl RAID R Ha Naminu Sy Terminu	Lapson 0.0.1. Levaning 0.0.17 Throughout 11/FU cos	
Restar	Carnel sported	
ПатомКеу От П2:Ио	ve Cursor, Enter:Select. ESC:Escape, L:Line Draw, M:Redra	
Concil mass partici-	IT ST - K I (2020), (2020) MUM Capture (Print sono	1

7. When the Firmware completes downloading, the confirmation screen appears. Press **Yes** to start program the flash ROM.



4-4

Array Maintenance

8. When the Flash programming starts, a bar indicator will show "Start Updating Firmware. Please Wait:".

	(Model Name) RAIII Control Ic	*
		•
	4 1 11	
'	lain Henu	
)n	
- i	10	
	h Hute The Alert Beeper	
	Rent Beeper Setting I Change Password A UBD/RAID Function	
- i	/i JBDD/KRID Function	
)1 - BATD Rebuild Priority Ja - Hasingn	
	Sy Terminal Start Updating Firmware, Plea	se Wmit
	Bester L Captroller	
	Restart Controller	

9. The Firmware upgrade will take approximately thirty seconds to complete.

10. After the Firmware upgrade is complete, a bar indicator will show "Firmware Has Been Updated Successfully".





NOTE:

The user has to reconfigure all of the settings after the firmware upgrade is complete, because all of the settings will default to the original default values.

Array Maintenance

Upgrading Firmware Through Web Browser Management

Get the new version firmware for your RAID subsystem controller.

1. To upgrade the RAID subsystem firmware, move the cursor to **Upgrade Firmware** link. The **Upgrade The Raid System Firmware** screen appears.

2. Click Browse. Look in the location where the Firmware upgrade software is located. Select the File name:

"6160FIRM.BIN" and click open.

3.Click the Confirm The Operation and press the Submit button.



4. The Web Browser begins to download the firmware binary to the controller and start to update the flash ROM.

Array Maintenance

5. After the firmware upgrade is complete, a bar indicator will show "Firmware Has Been Updated Successfully"

🛃 Raid Console - Microsoft Internet Explo			. 8 ×
Fi Fi Vix Sportes Tals et	1		191
ሩ teck - 🔿 - 🔘 🖗 🖉 Quice o	h 🖂 Facates 🎲 Booy 🔤 🗳		
Accress 🛃 1 (1.5) (1.82, 166, 10, 42)			uris *
E stets Hut Some	DAID AVALANCE VVVVVVVV		
Presa, Pin Bal	RAID Manager XXXXXXXX		
telescold business			
Create Valuate Set			
E-data to here Sat			
Minkly VidameRe. Oteolek Scienci Sch			
Stop Volume Set Cheele			
Thenical Inter	Furnissane Las Been Updated Studiesshilly		
	Restart Controller Is Regulard For New Princes are To Take Effect		
Create Face Tiarcaga			
M nkily Parks (Friday)			
Diffets Foss 1 hereign			
Healthy Drive			
Synten, Candrol			
Swam Danky			
1921809175-geb0568g			
EtherSet Config Alert Dy Mail Config			
String Configuration			
View Byenie Official Sector			
SIJ42 Configuration			
View Bweats/Mute Deeper			
Generals Test Event			
Clear Even., Buller			
M old's Parswird			
Huge la fenser			
Posted Controller			
Terrandian 🔅			
Re Del menand z			
e	,	😭 Inte ne:	
🛃 Start 🛛 🏠 🈂 🖓 Raid Lunov	b. Manaa		e ur Ma
Determining the rest in the search press			C 24 (M)

Array Maintenance

Appendix A

Technical Specification

RAID processor	Intel 80219 RISC 64-bit
RAID level	0, 1, 3, 5, 6, 0+1 and JBOD
Cache memory	128-256MB DDR SDRAM on board
No. of channels (host+disk)	1+4
Host bus interface	Ultra 320 Wide LVD
Data transfer	Up to 320MB / sec
Back Plane Board	S-ATA II
Hot swap disk bays	4
Hot swap power supply	250W w/PFC
Cooling fan	1 (blower)
On-line expansion	Yes
Multiple RAID selection	Yes
Failed disk auto rebuild	Yes
Array Roaming	Yes
Bad block auto-remapping	Yes
Online RAID level migration	Yes
Audible alarm	Yes
Host Independent	Yes
Failed drive indicators	Yes

Technical Specification