



GIGA-BYTE Technology CO., LTD.

GigaStorATX User Functional Guide

Version 1.1

GSATX11F01



© 2006 GIGA-BYTE Technology CO., LTD. All Rights Reserved

GIGA-BYTE Technology CO., LTD. makes no warranty of any kind with regard to this material, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. GIGA-BYTE Technology CO., LTD. shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this material.

This document contains proprietary information, which is protected by copyright. No part of this document may be photocopied, reproduced, or translated into another language without the prior written consent of GIGA-BYTE Technology CO., LTD.

The information is provided "as is" without warranty of any kind and is subject to change without notice. The only warranties for GIGA-BYTE products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. GIGA-BYTE shall not be liable for technical or editorial errors or omissions contained herein.

Copyright © 2006 GIGA-BYTE Technology CO., LTD.™

Trademarks

Adobe® and Acrobat® are trademarks of Adobe Systems, Incorporated.

Java™ is a U.S. trademark of Sun Microsystems, Incorporated.

Microsoft Windows is a U.S. registered trademark of Microsoft Corporation.

Oracle® is a registered U.S. trademark of Oracle Corporation, Redwood City, California.

UNIX® is a registered trademark of The Open Group.

All other brand or product names are or may be trademarks or service marks, and are used to identify products or services, of their respective owners.

iStor Networks, Inc.
7585 Irvine Center Drive
Suite 250
Irvine, CA 92618

Safety Information



There is a danger of a new battery exploding if it is incorrectly installed. Replace the battery pack only with the same or equivalent type recommended by the manufacturer. Do not dispose of the battery along with household waste. Contact your local waste disposal agency for the address of the nearest battery deposit site.

This product also uses a lithium coin cell battery. The lithium coin cell battery is a long-life battery, and it is very possible that you will never need to replace it. However, should you need to replace it, consult your service documentation. Do not dispose of the battery along with household waste. Contact your local waste disposal agency for the address of the nearest battery deposit site.

Following are the safety agency certifications that the GigaStorATX controller is designed to meet when installed and operated in an appropriately certified enclosure:

- UL 60950
- CSA 22.2, No. 60950
- EN 60950
- IEC 60950

Compliance Information

Meets EMI and Safety preliminary testing. Final testing will be determined upon complete solution compliance testing.

Notice of Export Controls

Export of technical data contained in this document may require an export license from the United States government. Please contact GIGA-BYTE Technology CO., LTD. for any export compliance questions.

Document Revision Level

Revision	Date	Description
GSATX10F01	November 2005	Initial Release
GSATX11F01	March 2006	Revision 1, supersedes and replaces GSATX10F01

Changes in this Revision

- Section 2.6: Revised the GigaStorATX shutdown procedure.
- Section 3.1: Made minor changes to the Overview section.
- Section 4.1.2: Revised the procedure for creating volumes manually.
- Section 5.2.1.2: Revised the IP addresses used as examples in this procedure.
- Section 6.9: Revised the procedure for setting the spare count.

Preface

This User Functional Guide is intended for storage managers and administrators responsible for configuring and maintaining the GigaStorATX.

This User Functional Guide assumes that the user:

- Is computer literate.
- Is familiar with operating Web browser software and working in a windowing environment.
- Has a basic understanding of storage products and concepts.

Typographic Conventions

The following conventions and icons are used in this User Functional Guide.

Notes

Notes provide information that deserves special attention. Notes are preceded by the following icon:



Cautions

Cautions contain information which, if not followed, can cause damage to the GigaStorATX. Cautions are preceded by the following icon:



Warnings

Warnings contain information which, if not followed, can cause damage to the GigaStorATX and to the person installing it. Warnings are preceded by the following icon:



Contact Information

For more information about the GigaStorATX or GIGA-BYTE Technology CO., LTD., please contact us using the following methods:

- **Web site:** Our Web site contains valuable information about our products. We encourage you to visit us at <http://www.gigabyte.com.tw>.

Contents

Chapter 1	Introduction.....	15
1.1	GigaStorATX Management Console.....	16
1.2	Configuration Roadmap.....	16
Chapter 2	Getting Started.....	17
2.1	Setting Up the GigaStorATX.....	18
2.2	Launching the GigaStorATX Management Console.....	19
2.3	Defining User Accounts.....	21
2.4	Understanding the Main Screen.....	21
2.4.1	Menu / Tool Bar Area.....	22
2.4.2	Resources Pane.....	23
2.4.3	Main Display Area.....	24
2.4.4	Footer.....	26
2.5	Changing the Default IP Address.....	27
2.6	Shutting Down the GigaStorATX Management Console.....	28
2.7	Shutting Down the GigaStorATX.....	29
Chapter 3	Understanding Terminology and Concepts.....	31
3.1	Overview.....	32
3.2	Storage Pools and Drives.....	33
3.3	Volumes.....	33
3.4	Spare Count.....	36
3.5	Tasks.....	36
Chapter 4	Managing Volumes.....	39
4.1	Creating a Volume.....	40
4.1.1	Creating Volumes Automatically.....	40
4.1.2	Creating Volumes Manually.....	44
4.2	Modifying Volume Configurations.....	47
4.3	Expanding a Volume.....	47
4.4	Deleting Volumes.....	49
4.5	Performing a Parity Scan on a Volume.....	50
4.6	Performing a Media Scan on a Volume.....	51
Chapter 5	Working with Initiators, Targets, Network Portals, and LAGs.....	53
5.1	Adding Initiators.....	54
5.2	Working with Network Portals.....	55
5.2.1	Creating a Network Portal.....	55
5.2.2	Modifying Network Portal Parameters.....	57
5.2.3	Deleting Network Portals.....	58
5.3	Working with LAGS.....	59
5.3.1	Creating LAGs.....	59
5.3.2	Modifying LAG Parameters.....	61
5.3.3	Configuring Physical Ports.....	63

5.3.4	Deleting LAGs.....	64
5.4	Creating iSCSI Target Nodes.....	65
5.5	Logging on to the iSCSI Initiator Computer	69
Chapter 6	Performing Additional Activities.....	73
6.1	Managing User Accounts.....	74
6.1.1	Setting Up User Accounts	74
6.1.2	Deleting User Accounts	76
6.2	Changing the GigaStorATX Date and Time	76
6.3	Enabling or Disabling SSL.....	78
6.4	Changing the iSCSI Port Number	79
6.5	Setting the Default Task Priority	80
6.6	Performing Cache Activities	81
6.6.1	Setting Cache Mode.....	81
6.6.2	Flushing Cache.....	82
6.7	Managing GigaStorATX Configurations	83
6.7.1	Saving the GigaStorATX Configuration	83
6.7.2	Restoring the GigaStorATX Configuration	84
6.7.3	Restoring Factory Defaults	85
6.8	Modifying System TCP/IP Settings.....	86
6.9	Setting the Spare Count.....	88
6.10	Setting the System Battery Policy	89
6.11	Restarting the GigaStorATX.....	91
6.12	Creating Scheduled Tasks.....	92
6.13	Adding, Viewing, and Deleting IP Route Tables	94
6.14	Changing the CHAP Secret	96
6.15	Saving the Event Log.....	97
Chapter 7	Viewing GigaStorATX Screens	99
7.1	GigaStor Screens	100
7.1.1	Viewing Enclosure Information	100
7.1.2	Viewing Log Messages	102
7.1.3	Viewing GigaStorATX Tasks.....	104
7.1.4	Viewing Server CIM Information	107
7.1.5	Viewing Firmware Image Information	108
7.2	Blade A Base Pool Screens	109
7.2.1	Viewing Information about the Storage Pool	110
7.2.2	Viewing Storage Pool Tasks.....	111
7.2.3	Viewing Information about Volumes in the Blade A Base Pool.....	113
7.2.4	Viewing Information about Drives in the Blade A Base Pool	117
7.3	Network Entities Screens	118
7.3.1	Viewing Target Node Information	118
7.3.2	Viewing Volume Access Information	119
7.3.3	Viewing Initiator Access Information	120
7.3.4	Viewing Network Portal Information.....	121
7.3.5	Viewing LAG Port Information	122
7.3.6	Viewing Connection Information	123
7.4	Initiator Resource Screens	124
7.4.1	Viewing Initiator Information	124

7.4.2 Viewing LUN Map Information	125
7.5 Viewing Ethernet Port Information	126
Appendix A Summary of Menus and Commands	127
A.1 File Menu	127
A.2 View Menu	128
A.3 Storage Menu	129
A.4 Network Menu	130
A.5 iSCSI Menu	130
A.6 Help Menu	131
Appendix B Upgrading Firmware.....	133
Appendix C Acronyms and Abbreviations	135
Index	137

List of Figures

Figure 2.1. GigaStorATX Log in Screen.....	19
Figure 2.2. GigaStorATX Management Console Main Screen.....	20
Figure 2.3. Parts of the GigaStorATX Management Console Main Screen.....	21
Figure 2.4. Menu/Tool Bar Area	22
Figure 2.5. Resources Pane	23
Figure 2.6. Main Display Area	25
Figure 2.7. Example of the Main Display Area Showing Blade A Base Pool Information.....	25
Figure 2.8. Example of Message in the Footer	26
Figure 2.9. Configure Out of Band Port Dialog Box	27
Figure 3.1. Internal Structure of a Volume.....	34
Table 3.2. Ways to Organize Volumes	34
Figure 4.1. Create Volume Wizard Screen - Select Volume Type to Create Screen	41
Figure 4.2. Create Volume Wizard Screen - Access and Efficiency Settings Screen	42
Figure 4.3. Manual Create Volume Wizard - Select Volume Type to Create Screen.....	44
Figure 4.4. Manual Create Volume Wizard - Select the Drives Screen.....	46
Figure 4.5. Expand Volume Dialog Box.....	48
Figure 4.6. Expand Volume Message	48
Figure 4.7. Delete Volume Confirmation Message	49
Figure 4.8. Successful Volume Deletion Message.....	49
Figure 4.9. Scan Successfully Started Message	50
Figure 4.10. Scan Successfully Started Message	51
Figure 5.1. Add Initiator Wizard - Create Initiator Screen.....	54
Figure 5.2. Create Network Portal Wizard - Set the IP Address Screen	57
Figure 5.3. Assign Portals for Target Node Wizard Screen.....	58
Figure 5.4. Create Link Aggregation Group Wizard - LAG Parameters Screen.....	60
Figure 5.5. Create Link Aggregation Group Wizard - Add/Delete Ethernet Ports Screen.....	61
Figure 5.6. Modify Lag Parameters Dialog Box	62
Figure 5.7. Add/Remove Ethernet Ports for LAG Wizard - Add/Delete Ethernet Ports screen	63
Figure 5.8. Create iSCSI Node Wizard - Enter iSCSI Node Information Screen.....	65
Figure 5.9. Create iSCSI Node Wizard - Enter iSCSI Node Information Screen with CHAP Secret Field Shown.....	66
Figure 5.10. Create iSCSI Node Wizard - Configure iSCSI Node Parameters Screen	66
Figure 5.11. Create iSCSI Node Wizard - Initiator List Screen.....	67
Figure 5.12. Create iSCSI Node Wizard - Volume Access Right Screen.....	68
Figure 5.13. Discovery Tab on the iSCSI Initiator Properties Dialog Box	69
Figure 5.14. Targets Tab on the iSCSI Initiator Properties Dialog Box	70
Figure 5.15. Log on to Target Dialog Box.....	70
Figure 5.16. Example of Disks Shown in the Computer Management Screen	71
Figure 6.1. User Accounts Screen.....	74
Figure 6.2. Add New User Dialog Box	75
Figure 6.3. GigaStor Date and Time Dialog Box	77
Figure 6.4. Restart System Message	77
Figure 6.5. Enable/Disable SSL Dialog Box	78
Figure 6.6. Modify iSCSI Port Dialog Box.....	79
Figure 6.7. Set Default Task Priority Dialog Box	80
Figure 6.8. Set Cache Mode Dialog Box	81

Figure 6.9. Set Cache Mode Dialog Box	82
Figure 6.10. Save GigaStor Dialog Box	83
Figure 6.11. Restore GigaStor Configuration Dialog Box	84
Figure 6.12. Configuration Restore Message	84
Figure 6.13. Restore Factory Defaults Message	85
Figure 6.14. Restore to Factory Defaults Succeeded Message	85
Figure 6.15. Modify System TCP/IP Settings Dialog Box	86
Figure 6.16. Set Spare Count Dialog Box	88
Figure 6.17. Battery Policy Dialog Box	90
Figure 6.18. Scheduled Task Wizard - Volume and Operation	92
Figure 6.19. Scheduled Task Wizard - Select Date and Time Screen	93
Figure 6.20. View Route Table	94
Figure 6.21. Adding a Route Table	95
Figure 6.22. Set CHAP Secret Dialog Box	96
Figure 6.23. Open Dialog Box	97
Figure 7.1. Enclosure Information Screen	101
Figure 7.2. Log Messages Screen	102
Figure 7.3. Example of a Log Messages Details Box	103
Figure 7.4. Tasks Info Screen	104
Figure 7.5. Example of a Task Message Details Box	105
Figure 7.6. Task Popup Menu	106
Figure 7.7. CIM Server Info Screen	107
Figure 7.8. Firmware Image Info Screen	108
Figure 7.9. Storage Group Information	110
Figure 7.10. Tasks Info Screen	111
Figure 7.11. Example of a Task Message Details Box	112
Figure 7.12. Example of Volume Information for a Volume Named Zeus	114
Figure 7.13. Tasks Info Screen	115
Figure 7.14. Example of the Task Message Details Dialog Box	116
Figure 7.15. Drive Information Screen	117
Figure 7.16. Target Node Info Screen	118
Figure 7.17. Volume Access Info Screen	119
Figure 7.18. Initiator Access Info Screen	120
Figure 7.19. Portals Info Screen	121
Figure 7.20. Example of a LAG Port Info Screen	122
Figure 7.21. Connection Information Screen	123
Figure 7.22. Initiator Information Screen	124
Figure 7.23. LUN Map Information Screen	125
Figure 7.24. Physical Port Information	126
Figure B-1. Firmware Upgrade Message	133
Figure B-2. Example of the Open Dialog Box	133

List of Tables

Table 3.1. Types of Storage Pools	33
Table 4.1. Volume Organization and Members Based on Redundancy and Access Bandwidth Weight	42

Chapter 1 Introduction

This chapter provides an introduction to the GigaStorATX management console.

Topics in this chapter include:

- Section 1.1, GigaStorATX Management Console on page 16
- Section 1.2, Configuration Roadmap on page 16

1.1 GigaStorATX Management Console

The GigaStorATX management console is a Java-based, Web-enabled application that provides comprehensive and unified storage network management capabilities of the GigaStorATX Storage Controller.

The GigaStorATX management console is integrated with the GigaStorATX Storage Controller, allowing you to manage GigaStorATX storage using today's popular Web browsers, without having to install additional drivers or software. The GigaStorATX management console also provides an intuitive interface that lets you create storage pools, allocate storage resources to servers, and direct storage network traffic using Virtual LAN (VLAN) zones simply by pointing and clicking your mouse.

1.2 Configuration Roadmap

The following steps summarize the procedures for configuring and managing storage on the GigaStorATX. For more information about a step, refer to the section shown in the step.

1. Make sure the GigaStorATX Storage Controller is installed, cabled, and powered on. Refer to Section 2.1.
2. Log in to the GigaStorATX management console. Refer to Section 2.2.
3. If necessary, change the default Internet Protocol (IP) address and reboot the console. Refer to Section 2.2.
4. Create one or more volumes on the disks attached to the GigaStorATX Storage Controller. Refer to Section 4.1.
5. Create one or more iSCSI initiator nodes. Refer to Section 5.1.
6. Create one or more network portals. Refer to Section 5.2.
7. Create one or more iSCSI target nodes. Refer to Section 5.
8. Perform an iSCSI log on to the iSCSI initiator. Refer to Section 5.5.
9. At the end of your session, shut down the GigaStorATX management console and Storage Controller. Refer to Section 2.5.

Chapter 2 Getting Started

This chapter describes the initial setup procedure for the GigaStorATX.

Topics in this chapter include:

- Section 2.1, Setting Up the GigaStorATX on page 18
- Section 2.2, Launching the GigaStorATX Management Console on page 19
- Section 2.3, Defining User Accounts on page 21
- Section 2.4, Understanding the Main Screen on page 21
- Section 2.5, Changing the Default IP Address on page 27
- Section 2.6, Shutting Down the GigaStorATX Management Console on page 28
- Section 2.7, Shutting Down the GigaStorATX on page 29

2.1 Setting Up the GigaStorATX

Before using the GigaStorATX management console, verify that the GigaStorATX is properly installed, cabled, and powered on. This includes:

- Installing the GigaStorATX in an enclosure.
- Installing the system and buffer memory DIMMs.
- Connecting to the Storage Area Network (SAN).
- Attaching one or more SATA drives.
- Connecting the battery pack.
- Setting the GigaStorATX headers and jumpers.
- Connecting a personal computer (PC) with an installed Network Interface Card (NIC) to the GigaStorATX management port (J8).



If this PC will also act as the iSCSI initiator, it must have two NICs installed.

- Connecting the battery pack connects to the 3-pin locking connector (J35).
- Connecting the GigaStorATX to a wall outlet that conforms to the installed power supply.



For more information about performing these steps, refer to the GigaStorATX Beta Enclosure Guide.

2.2 Launching the GigaStorATX Management Console

To launch the GigaStorATX Management Console:

1. Power-up the GigaStorATX Storage Controller.
2. Once the GigaStorATX is powered-up, start a Web browser, such as Microsoft® Internet Explorer, on the PC.
3. In the browser's address bar, type the following default IP address for the GigaStorATX management console and press the Enter key:

192.168.1.1

The GigaStorATX console management Log in screen appears (see Figure 2.1).

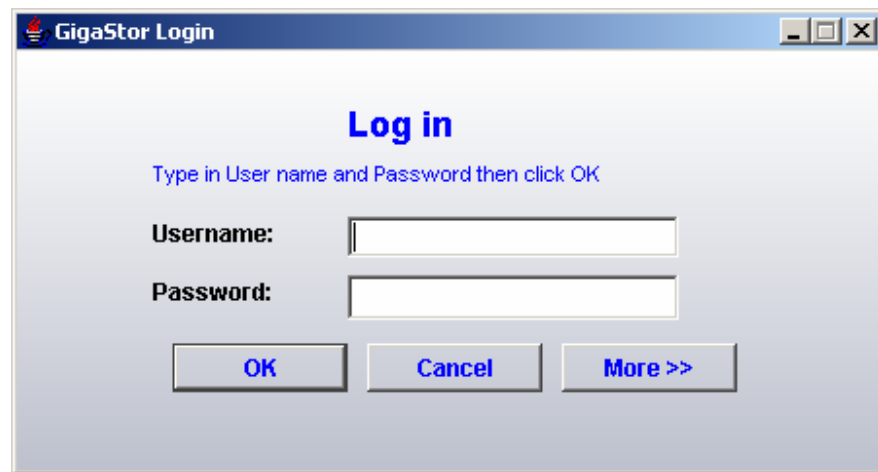


Figure 2.1. GigaStorATX Log in Screen



If the GigaStorATX management console does not start automatically return to the `HTTP://192.168.1.1` browser window and click on the [click here](#) link. If you are having problems starting the GigaStorATX Management Console you may need to install and or reinstall Java and/or Java Web start by clicking the lower [click here](#) link.



The IP address on your PC's NIC must be on the same IP subnetwork (192.168.1.x) as the management port.

4. Enter your username and password in the appropriate text boxes. The first time you log in, you must use the default username (**admin**) and password (**admin**).



If desired, you can click the **More** button to view the IP address you will be connecting to and change it if necessary.

5. Click the OK button. A screen appears with a progress bar as the connection is being made to the GigaStorATX. Once the connection is made, the main screen appears (see Figure 2.2).

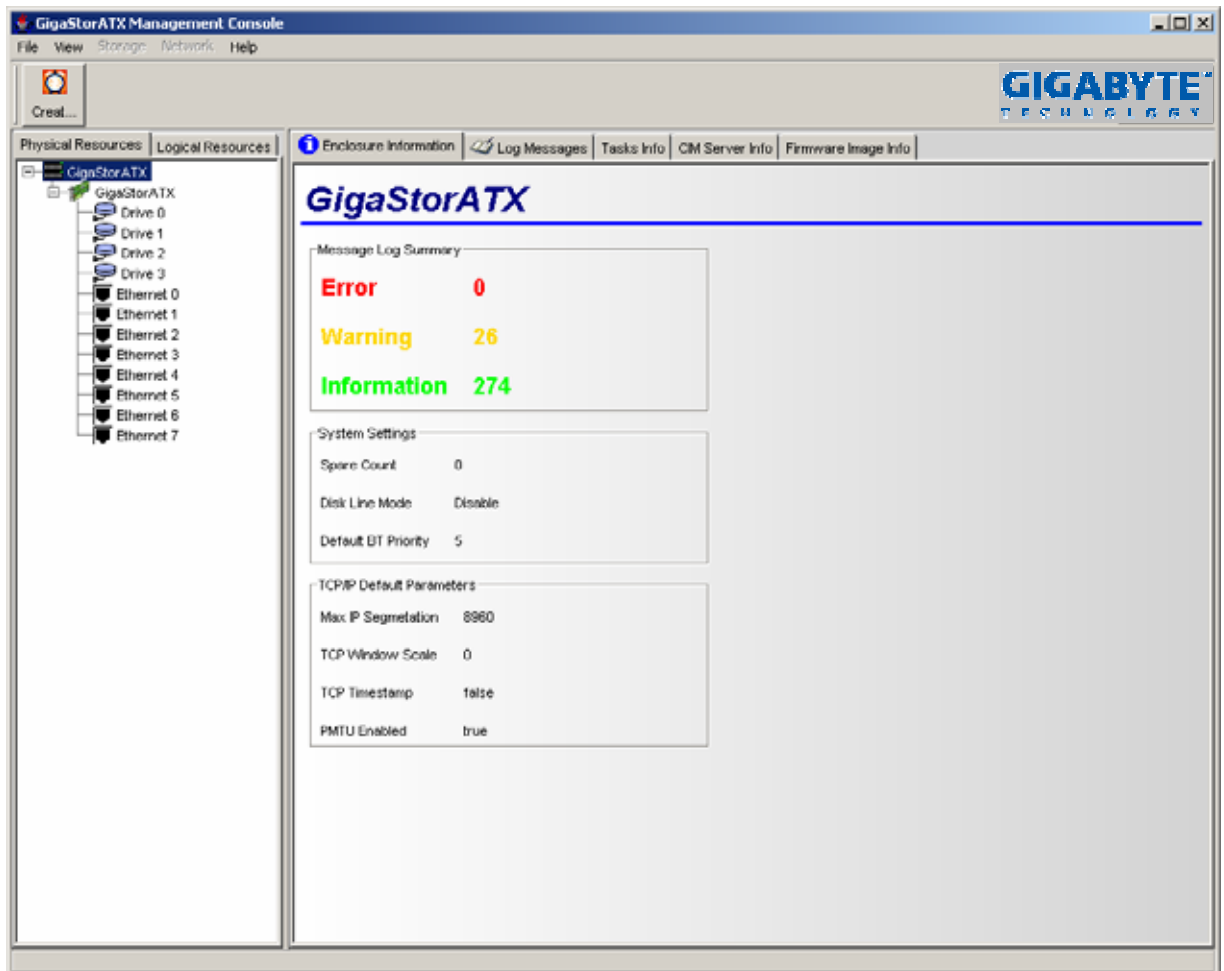


Figure 2.2. GigaStorATX Management Console Main Screen

2.3 Defining User Accounts

Before a user can access the GigaStorATX management console, a user account must be set up for the user. When you set up a user account, you can specify whether the user can manage storage and/or add users and define their permissions. For more information, refer to Section 6.1.

2.4 Understanding the Main Screen

Figure 2.3 shows the areas of the GigaStorATX management console main screen. The following section describes the areas indicated in Figure 2.3.

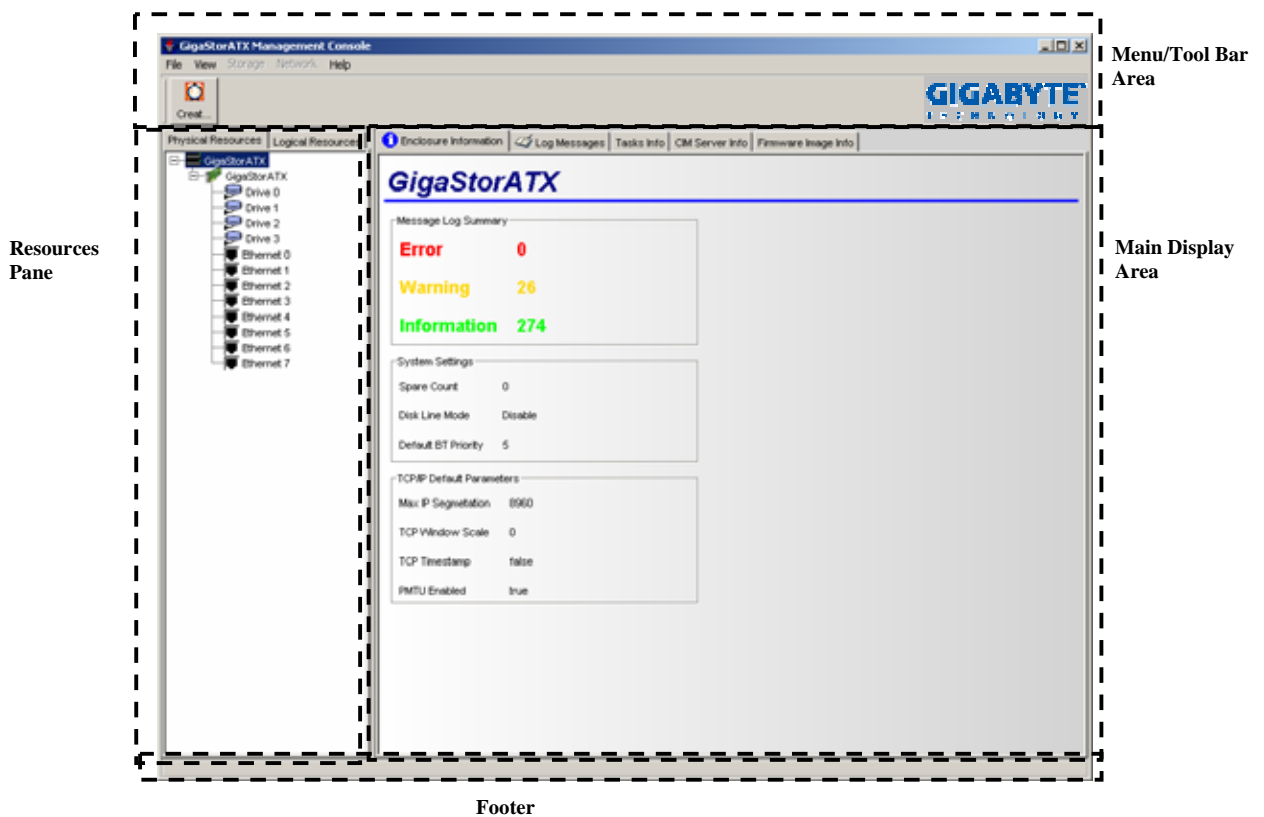


Figure 2.3. Parts of the GigaStorATX Management Console Main Screen

2.4.1 Menu / Tool Bar Area

The Menu/Tool Bar Area appears at the top of the GigaStorATX management console window. This area contains the following components (see Figure 2.4):

- **Title bar.** The title bar shows the name of the application. On the right side of the title bar are the standard Windows buttons for minimizing, maximizing, and closing the GigaStorATX management console application.
- **Menu bar.** The menu bar is located below the title bar. The menu bar contains the menus you can select to perform a range of storage tasks. The GigaStorATX management console provides the following menus:
 - File
 - View
 - Storage
 - Network
 - Help

Depending on the activity you are performing, some menus may be gray and unavailable. For a description of the options in each menu, refer to Appendix A.

- **Tool bar.** The tool bar is located below the menu bar. The tool bar provides convenient shortcuts for menu options and other operations. The tools that appear on the tool bar vary, depending on the task you are performing.

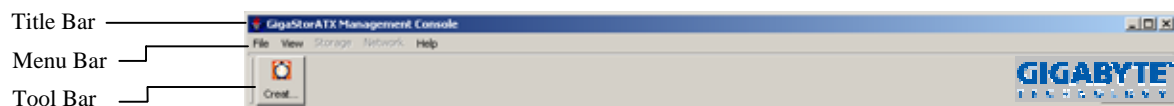


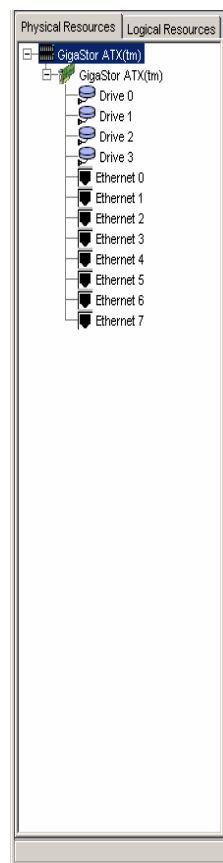
Figure 2.4. Menu/Tool Bar Area

2.4.2 Resources Pane

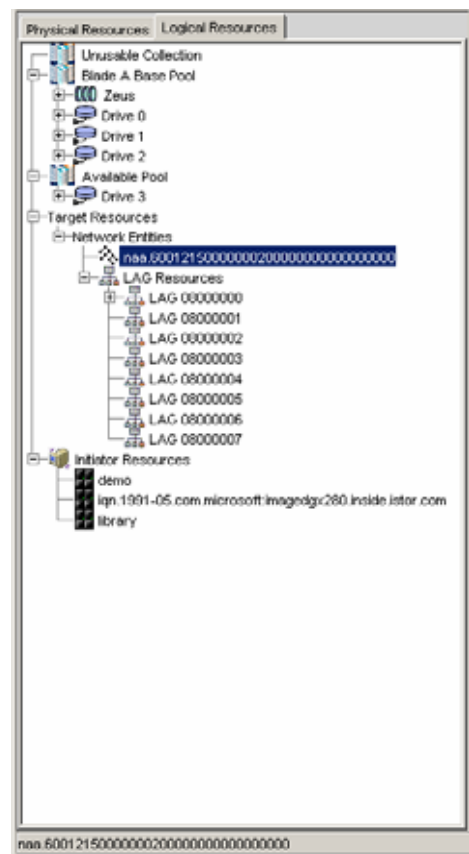
The resources pane appears along the left side of the GigaStorATX management console window (see Figure 2.5). This pane can show either physical resources (such as drives and Ethernet connections) or logical resources (such as iSCSI initiator, iSCSI target, and LAG resources), depending on whether the **Physical Resources** tab or **Logical Resources** tab is selected.

These tabs work the same way Windows Explorer works. A plus sign (+) next to an item, for example, means that the item contains subitems. To expand the item and see the subitems, either double-click the item or click the plus sign next to it. When an item is expanded, a minus sign (-) replaces the plus sign next to the item. Click the minus sign to collapse the item.

In this Guide, you will see references to the “active tab.” The active tab is the tab that is on top (in front) of the other tab. Only one tab can be active at a time. To switch between the **Physical Resources** tab and the **Logical Resources** tab, click the tab name.



Example of Physical Resources Tab






Example of Logical Resources Tab

Figure 2.5. Resources Pane










2.4.2.1 Physical Resources Tab

The **Physical Resources** tab contains the following entities:

- The GigaStorATX Storage Controller () .
- The physical drives attached to the GigaStorATX Storage Controller () .
- The Ethernet ports on the GigaStorATX Storage Controller () . To enhance viewing, the port icons are color coded (black = port is offline, green = port is online).

2.4.2.2 Logical Resources Tab

The **Logical Resources** tab contains the following entities:

- **Unusable Collection** () . Shows drives that have been pulled out of the GigaStorATX Storage Controller. Initializing a drive from this location moves the drive to **Available Pool**, where it is rebuilt automatically.
- **Blade A Base Pool** () . Shows the volumes () and drives () that have been created.
- **Available Pool** () . Shows the available drives () that can be added to the storage pool. The first time the system starts, all drives appear in the **Available Pool**.
- **Target Resources**. Shows the network entities () and Link Aggregation Groups (LAGs) () that have been created.
- **Initiator Resources**. Shows the iSCSI initiators () that have been created.

2.4.3 Main Display Area

Some items in the **Physical Resources** and **Logical Resources** tabs have storage or system information associated with them. When you click such an item, the storage or system information is displayed in one or more “tabbed” screens in the main display area. The tabbed screens resemble index cards. If you click the top GigaStorATX item in the left pane of either the **Physical Resources** tab, for example, four tabs appear in the main display area (see Figure 2.6). You can then click the tab to view the information on it.

For more information about the screens that can appear in the main display area, refer to Chapter 7.

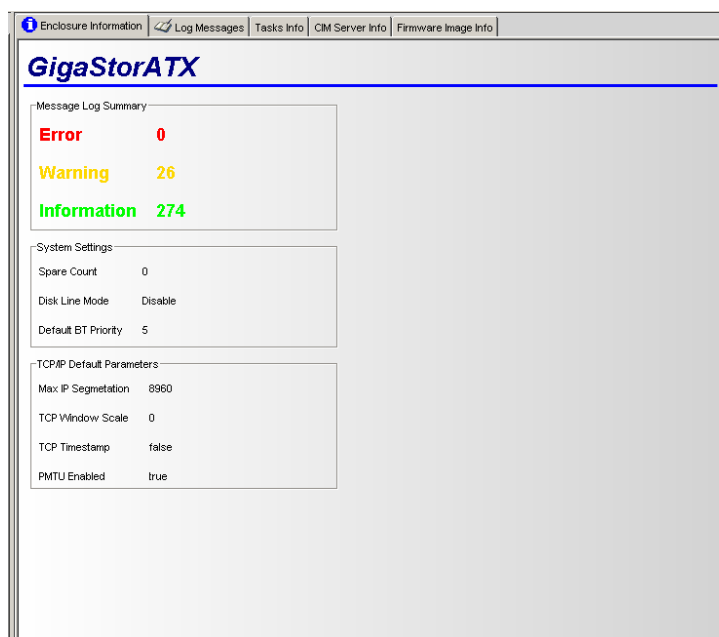


Figure 2.6. Main Display Area

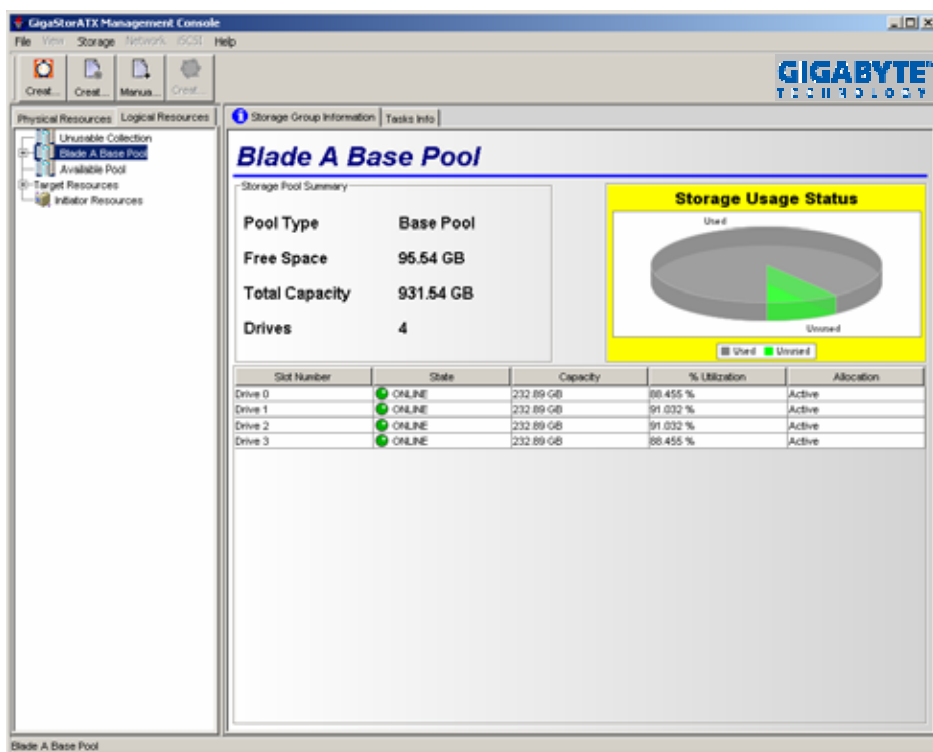


Figure 2.7. Example of the Main Display Area Showing Blade A Base Pool Information

2.4.4 Footer

The footer appears at the bottom of the GigaStorATX management console window. The footer shows status information when appropriate. If you select **Blade A Base Pool** in the Logical Resources tab, for example, the words **Blade A Base Pool** appear in the footer (see Figure 2.8).

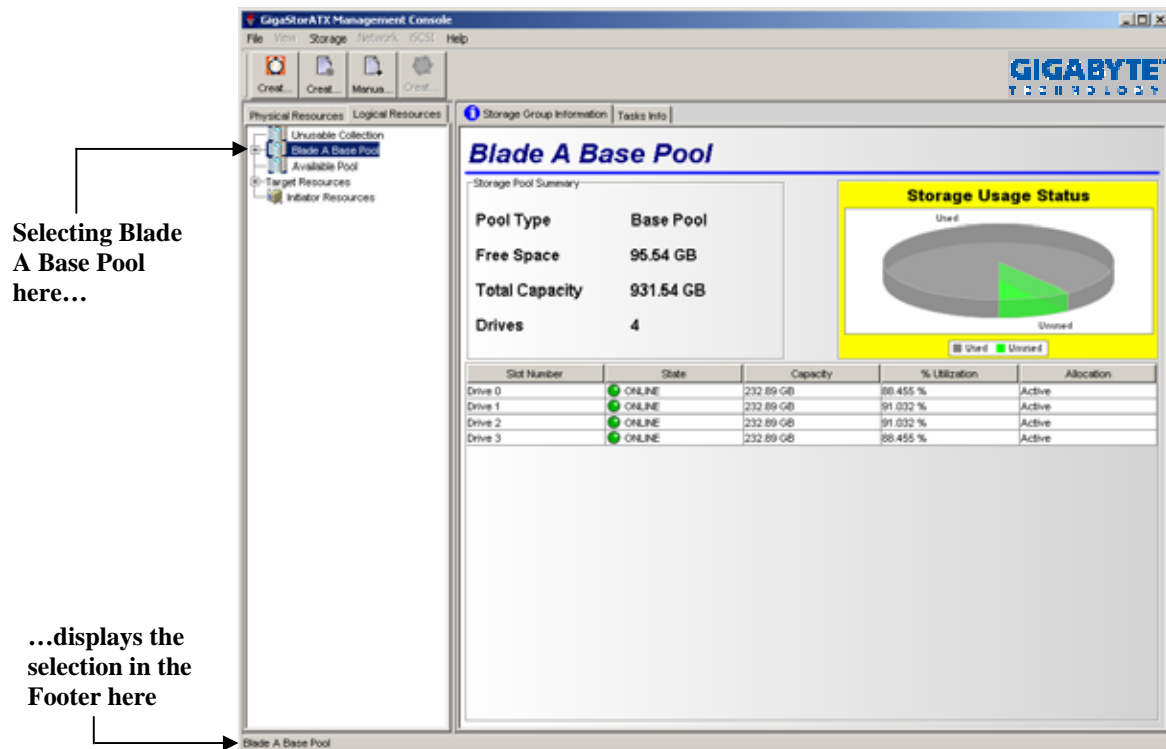


Figure 2.8. Example of Message in the Footer

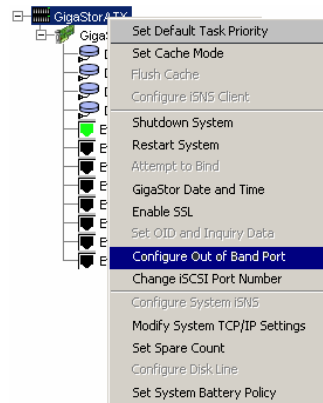
2.5 Changing the Default IP Address

The GigaStorATX management console comes with the following default IP address:

192.168.1.1

If you are using a different subnet, use the following procedure to change the IP address. As part of this procedure, you can also change the subnet mask, hostname, and gateway settings. If you change these settings, you must restart the GigaStorATX Storage Controller for the new settings to take effect.

1. Click the GigaStorATX icon at the top of the **Physical Resources** tab.
2. Perform one of the following steps:
 - On the **File** menu, click **Configure Out of Band Port**.
 - Right-click and click **Configure Out of Band Port**.



Either step displays the Configure Out of Band Port dialog box, with the current settings shown (see Figure 2.9).

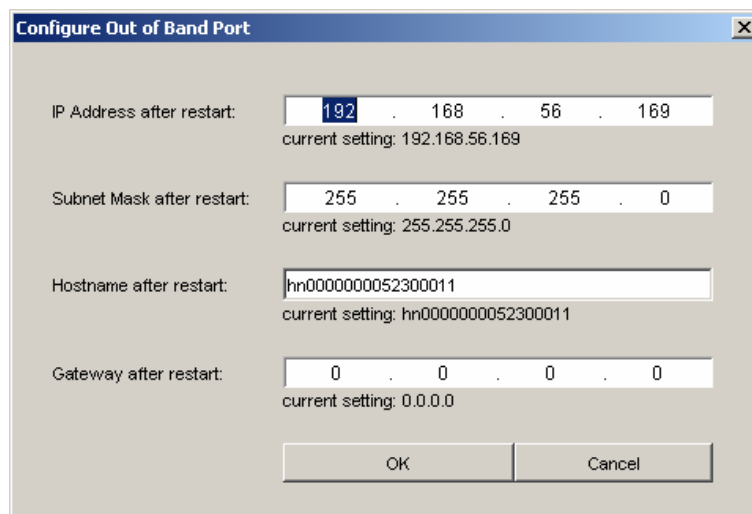


Figure 2.9. Configure Out of Band Port Dialog Box

3. Complete the fields in the dialog box:
 - **IP address after restart.** Enter an available IP address that will take effect after the GigaStorATX.
 - **Subnet Mask after restart.** Enter the subnet mask that will take effect after the GigaStorATX.
 - **Host name after restart.** The GigaStorATX is assigned a default host name. If desired, you can change this name to one that is meaningful to you.
 - **Gateway after restart.** Enter the gateway that will take effect after the GigaStorATX.



For convenience, the current settings appear below the fields where you enter the new settings.

It is important for you to remember the new IP address, as you will need it for subsequent logins to the GigaStorATX management console. We recommend that you write the IP address on a piece of paper and store it in a safe place in case you need to refer to it in the future.

4. A message is displayed that the GigaStorATX management console will now exit. Click **OK** to remove this message.
5. A second message is displayed that the GigaStorATX has been shutdown. Click **OK** to remove this message.
6. On the **File** menu, click **Restart**. When the confirmation prompt *"Do you want to restart the system?"* appears, click **Yes**.
7. Wait for the GigaStorATX Storage Controller to become ready.
8. After the GigaStorATX has become ready and reboot is complete, launch the browser, enter the IP address you saved from step 2, and click **Go** on the browser. The Login Screen initializes and the User Name and Password must be re-entered.

2.6 Shutting Down the GigaStorATX Management Console

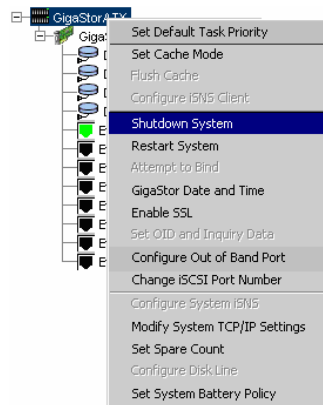
To shut down the GigaStorATX management console, use the following procedure.

1. Click the **Physical Resources** tab.
2. Perform one of the following steps:
 - On the **File** menu, click **Exit**.
 - Click the Close control on the title bar.

2.7 Shutting Down the GigaStorATX

At the end of your session, use the following procedure to shut down the GigaStorATX management console. When you shut down, the GigaStorATX Storage Controller powers off automatically.

1. Log off from all initiators.
2. Click the GigaStorATX icon at the top of the **Physical Resources** tab.
3. Perform one of the following steps:
 - On the **File** menu, click **System Shutdown**.
 - Right-click and click **System Shutdown**.



Either step displays a message that asks whether you are sure you want to shut down the system.

4. Click **Yes** to shut down the system (or click **No** to keep the system running). If you clicked **Yes**, your management console session ends and the GigaStorATX Storage Controller is powered off.

Chapter 3 Understanding Terminology and Concepts

This chapter provides a background on managing virtual storage and explains key terms and concepts associated with virtual storage.

Topics in this chapter include:

- Section 3.1, Overview on page 32
- Section 3.2, Storage Pools and Drives on page 33
- Section 3.3, Volumes on page 33
- Section 3.4, Spare Count on page 36
- Section 3.5, Tasks on page 36

3.1 Overview

The purpose of the GigaStorATX is to virtualize disk storage for use by a customer's host computers (servers). At its front end, the GigaStorATX uses the iSCSI protocol over Ethernet to connect to the customer's servers. At its back end, the GigaStorATX connects to a bank of Serial ATA (SATA) disk drives.

The GigaStorATX performs its virtualization task by presenting volumes that the servers see as disks or drives, depending on the server operating system's terminology. Volumes are created by organizing blocks of storage from the SATA disk drives.

iSCSI is an end-to-end storage block protocol that makes it possible to transfer storage data reliably over any IP-based network, including the Internet. The iSCSI drafts and RFCs are published by the IETF, but based on the SCSI specifications from the ISO's Technical Committee Ten (T10), the ANSI-accredited body responsible for developing and maintaining the core SCSI standard. To the committee, iSCSI is another SCSI transport and just as officially sanctioned (though technically it's a superset of SCSI, providing additional functionality through unique commands and data formats used for secondary services such as authentication).

From the network's perspective, iSCSI is just another service that runs over TCP/IP. It can use the same networking stack as other applications, with clients requesting data from servers. The main difference is that its function is more specialized. Whereas other Layer 7 protocols such as SMTP are agnostic toward the technologies used at their endpoints, iSCSI is designed as a way to extend an existing storage technology across IP networks.

For iSCSI purposes, the SCSI protocol is conceptually similar to TCP/IP's client/server architecture. Every SCSI link involves a host adapter, called an initiator, and a storage device, called a "target." The customer's server will act as the initiator and the GigaStorATX will act as the target. A local SCSI bus usually connects a single initiator to up to seven targets, but a SAN allows an unlimited number of each. The initiator's iSCSI stack packs SCSI commands and data into IP packets, which are then unpacked by the target for processing as if they had originated locally.

The iSCSI protocol defines two types of iSCSI Nodes:

- The initiator node
- The target node

The iSCSI initiator node consists of a name and a set of properties. The server's operating system provides software to define and configure its iSCSI initiator node. The GigaStorATX serves as one or more iSCSI target nodes. Section 5.3 describes how to use the GigaStorATX management console to define and configure iSCSI target nodes. Within each iSCSI target node, one or more volumes can be accessed, using a Logical Unit Number (LUN), by one or more iSCSI initiator Nodes. Each iSCSI target node can have up to 256 LUNs. In the GigaStorATX, the LUNs available in one target node are independent from the LUNs in other target nodes.

The server (iSCSI initiator) “sees” the volumes by using the GigaStorATX’s target node name and a LUN. This combination creates a “circuit” between the Server operating system’s “disk drive letter” (or Dynamic Volume) and the GigaStorATX volume. The GigaStorATX is designed to allow flexibility by granting specific initiator nodes access to specific target nodes. One initiator can be given access to multiple target nodes, with different security mechanisms to protect different applications. Access to volumes is controlled by the target node’s list of allowed LUNs.

3.2 Storage Pools and Drives

Storage space is managed on the GigaStorATX through storage pools. The placement of a drive in a storage pool controls the way that drive can be used. There are three types of storage pools (refer to Table 3.1).

Table 3.1. Types of Storage Pools

Storage Pool	Usage
Available Pool	Disk drives available for use, but with no data stored on them at this time. A spare drive is normally kept in the available pool, so the drive is available for use should any other drive fail.
Blade A Base Pool	Disk drives currently being used to hold Volume data or ready to be used to hold volume data.
Unusable Collection	Two types of drives appear in the Unusable Collection: <ul style="list-style-type: none"> Drives not available for use either because they have already failed and have not been removed from the enclosure Drive inserted into the GigaStorATX that were found to be used previously by a GigaStor.

When a new system is installed, all new drives are placed in the available pool. The drives remain in the available pool until they are needed for use in a volume or moved by the Administrator.

3.3 Volumes

A volume is a set of blocks of storage that are organized and presented for use by a customer’s server (an iSCSI initiator node). Every volume must be associated with a storage pool, which limits the drives that can be used to hold data for that Volume (only drives in that pool can be used for this volume). Only the Blade A Base Pool can be used for volumes.

The iSCSI initiator node sees the volume as a contiguous series of numbered blocks, called Virtual Logical Block Numbers (VLBNs), in the same way that it would see the storage space on a single disk drive. The GigaStorATX constructs a volume from extents, where each extent is a block of storage from a single drive. A volume typically consists of extents from several drives. A volume of n blocks is shown in Figure 3.1.

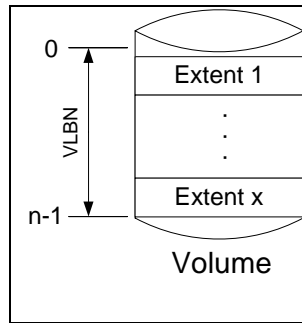


Figure 3.1. Internal Structure of a Volume

Volume can be organized in several ways (refer to Table 3.2)

Table 3.2. Ways to Organize Volumes

Organization	Definition	Redundant	Striped	Storage Cost
JBOD	One copy of the data is written to the selected Extents.	No	No	1x
Mirror	Two copies of all data are written to independent Extents.	Yes	No	2x
Stripe	Distributes one copy of the data among several drives to improve the speed of access.	No	Yes	1x
Stripe Mirror	Distributes the data among several drives and then keeps a mirror copy of the blocks on each drive	Yes	Yes	2x
Parity	Distributes one copy of the data among several drives and adds parity blocks spread throughout the volume to protect against the loss of any single drive.	Yes	Yes	1x-1.5x

For organizations that are **striped**, the data distributed among multiple drives is organized in a series of “stripes”. Each stripe consists of a fixed number of blocks on each drive. The fixed number of blocks used on each drive is called a “chunk.” This can be viewed as an array where each row is a stripe and each column is a drive. The term “Member” is defined as the number of columns in this array. The GigaStorATX can allocate the required space very flexibly (i.e., an entire member does not need to reside on a single drive). Within each member, extents can be obtained from as many drives as necessary.

Organizations that are **redundant** provide protection against loss of data in the event of a failure of any one drive. This adds a storage cost in that some storage will be used for redundancy rather than for customer data. Redundancy requires that the volume data be stored on separate drives, so that data integrity is maintained in the event of a drive failure.

For a **parity** organization, the GigaStorATX distributes the volume into the array described for a stripe organization, and reserves one chunk from each stripe to hold the parity information. The parity information provides redundancy without having to keep a complete copy of the data. If any single drive fails, the parity calculation mechanism can be applied to the data on the remaining drives to provide full access (reading and writing) of all data.

Further, the parity calculation mechanism can be used to recreate the data with fresh parity protection onto a new drive to re-gain redundancy. However, this protection comes at a cost: the storage requirement for the volume is increased by one member. For example, if a 10 GB striped volume was distributed among four members, each member would need 2.5 GB of space. To make a parity volume of 10 GB using four members, for instance, each member would need 3.33 GB of space: one chunk in each stripe would be used to hold parity. In other words, to hold the space for parity in a 4-member volume, the GigaStorATX needs to use 1/3 more space than the initiator can access. From another point of view, 1/4 of the space used by that volume is not available to the initiator. The 10 GB volume can also be created using 2.5 GB members if five members are used.

As a result, the additional storage cost for a parity volume of four members is 25% (i.e., 25% of the space is not user data, but redundancy data). For a 5-member parity volume, the additional cost is 20%.

For a **mirror** organization, the GigaStorATX divides the volume into two members, each of which contains one full copy of the data. Each member must be allocated on separate drives. The cost of a mirror volume is that data must be stored twice (i.e., for a volume of size x bytes, the GigaStorATX needs $2x$ bytes, or 100%).

For a **stripe mirror** organization, the GigaStorATX distributes volume into members, as in a striped organization, and then doubles the number of members to allow for the second data copy. As in a mirror organization, the storage cost is double.

For each volume, the GigaStorATX must determine the organization and the size of the volume. For striped organizations, the GigaStorATX must further determine the chunk size, and the number of drives across which the data is to be divided.

There are two way to create a volume in a GigaStorATX:

- Automatically: The Administrator answers questions about the required redundancy, size, and usage characteristics of the volume. The GigaStorATX then determines the remaining parameters needed to allocate the storage space and create the volume.
- Manually: The Administrator selects the organization and all other parameters described above and selects the drives that can be used for the volume. The GigaStorATX then finds the storage space on the given drives to allocate and create the Volume.

Disk space is assigned to a volume in extents. The extents that make up a volume can be seen on the GigaStorATX Management Console. The extents are organized into members. The definition of a member varies with the organization:

- For a striped organization, a member is defined above.
- For a mirror organization, there are two members, one for each copy of the data.
- A stripe mirror organization has a member for each stripe, as defined above, plus a second member (for each stripe) to hold the data copy. Therefore, if a stripe mirror organization has x stripes, it has $2x$ members.

3.4 Spare Count

The GigaStor Administrator can designate a spare count, which is a number of drives to be kept available in case a drive that holds volume data fails. The spare count default is 0, meaning that no drives are reserved. If the spare count was 1 in an enclosure with 12 drives installed, 11 drives could be used by the GigaStorATX for automatic volume creation and one drive would remain in the available pool. As volumes are created, drives would be moved from the available pool into the pool in which the volume is created, up to 11 drives. Should any of those drives fail, the 12th drive would become available to be used in any rebuild task that requires a drive (the rebuild task is described in Section 3.5).

3.5 Tasks

The GigaStorATX can automatically or, at the Administrator's demand, perform activities that take time and consume the controller's resources. The Administrator can control, to some degree, when tasks are performed. Any task can be suspended and resumed by the Administrator. Some tasks can be cancelled and some can be scheduled on a recurring, periodic interval. All tasks can have their priority changed, which controls the amount of resources the GigaStorATX devotes to a task.

The GigaStorATX can perform the following tasks:

- **Initialize a Volume:** Some volume organizations (e.g., parity) require Initialization. The Initialization task performs this action. This task can be performed while an initiator is accessing (reading and writing) data. An Initialization task can be suspended and resumed, but cannot be cancelled.
- **Rebuild:** When a drive fails, every redundant volume that occupied space on that drive can be rebuilt.
 - For mirror protection, data can be copied from the remaining copy.
 - For parity protection, data can be recreated from the remaining data and parity information.

In either case, when the GigaStorATX finds replacement space on another drive, it performs one Rebuild task for each extent that used space on the failed drive. If replacement space is not available on the drives in the pool associated with the volume, and one or more drives exist in the available pool, a drive is obtained from the available pool and automatically moved to the volume's pool. A Rebuild task can be suspended and resumed, but cannot be cancelled.

- **Grow (or Expand) Volume:** The Administrator can expand the size of a volume. If the volume's organization requires initialization, the initialization of the new space is performed with a Grow task. A Grow task can be suspended and resumed, but cannot be deleted. An initiator can access the new space while the Grow task is being performed.
- **Media Scan:** The Administrator can scan a non-parity volume for media errors by starting a Media Scan task. This task reads every block in the volume to ensure there are no errors. If there are errors, this task fixes them if possible. A Media Scan task can be cancelled, suspended, and/or resumed by the Administrator. It can also be scheduled for a future time and/or at a recurring interval.

- **Parity Scan:** The Administrator can scan a parity volume for errors by starting a Parity Scan task. This task reads every block in the volume looking for errors as described for Media Scan to ensure that parity is correct. If parity errors are found, this task corrects the errors. A Parity Scan task can be cancelled, suspended, and/or resumed by the Administrator. It can also be scheduled for a future time and/or at a recurring interval.

Chapter 4 Managing Volumes

The first step in creating a storage pool is to create volumes for the amount of storage you will need on the drives attached to the GigaStorATX Storage Controller. This chapter describes how to create volumes.

Topics in this chapter include:

- Section 4.1, Creating a Volume on page 40
- Section 4.2, Modifying Volume Configuration on page 47
- Section 4.3, Expanding a Volume on page 47
- Section 4.4, Deleting Volumes on page 49
- Section 4.5, Performing a Parity Scan on a Volume on page 50
- Section 4.6, Performing a Media Scan on a Volume on page 51

4.1 Creating a Volume

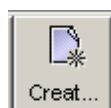
Adding volumes defines what volumes are accessible through the target. Using the GigaStorATX management console, you can create volumes automatically or manually.

- The automatic method provides the fastest way to create volumes. This method provides a Create Volume Wizard that lets you create a volume step-by-step using a series of friendly screens. For more information, refer to Section 4.1.1.
- The manual method provides greater flexibility than the automatic method, allowing you to customize and fine-tune volumes. For more information, refer to Section 4.1.2.

4.1.1 Creating Volumes Automatically

To create volumes automatically with the Create Volume Wizard, use the following procedure.

1. In the **Logical Resources** tab, click **Blade A Base Pool**.
2. Perform one of the following steps in the **Logical Resources** tab:
 - Click the **Create Volume** button on the toolbar:



- On the **Storage** menu, click **Create Volume**.
- Right-click **Blade A Base Pool** and click **Create Volume**:



Any of these steps starts the Create Volume Wizard and displays the Select Volume Type to Create screen (see Figure 4.1).

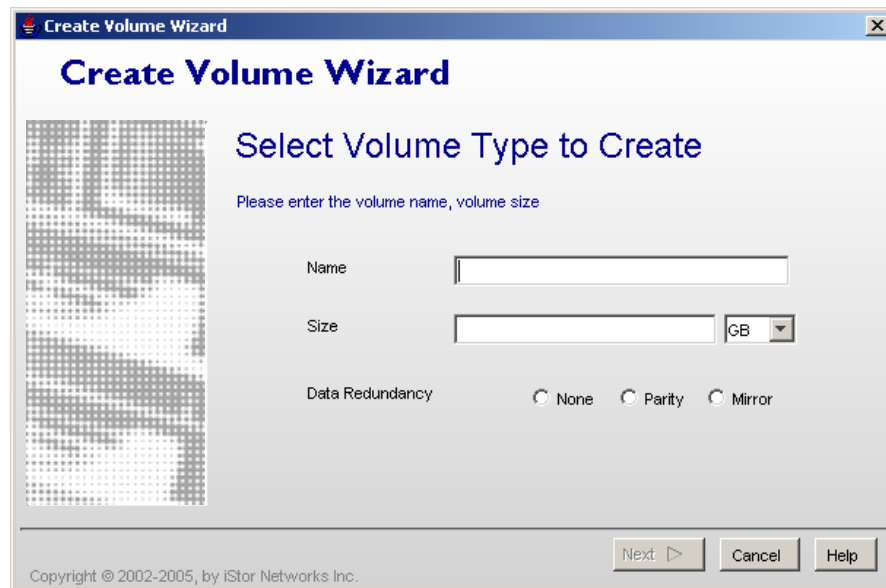


Figure 4.1. Create Volume Wizard Screen – Select Volume Type to Create Screen

3. Complete the fields in the screen:
 - **Name.** Enter the name of the volume you are creating.
 - **Size.** Enter the size of the volume you are creating. Use the drop-down box to select the volume capacity:

GB	B = bytes
B	KB = kilobytes
KB	MB = megabytes
MB	GB = gigabytes
GB	TB = terabytes
TB	



All volumes must be at least 1 MB in size.

- **Data Redundancy.** Select whether the volume will have no data redundancy or parity or mirror redundancy. For an explanation of these selections, refer to Chapter 3.
4. Click the **Next** button. The Access and Efficiency Settings screen appears (see Figure 4.2).

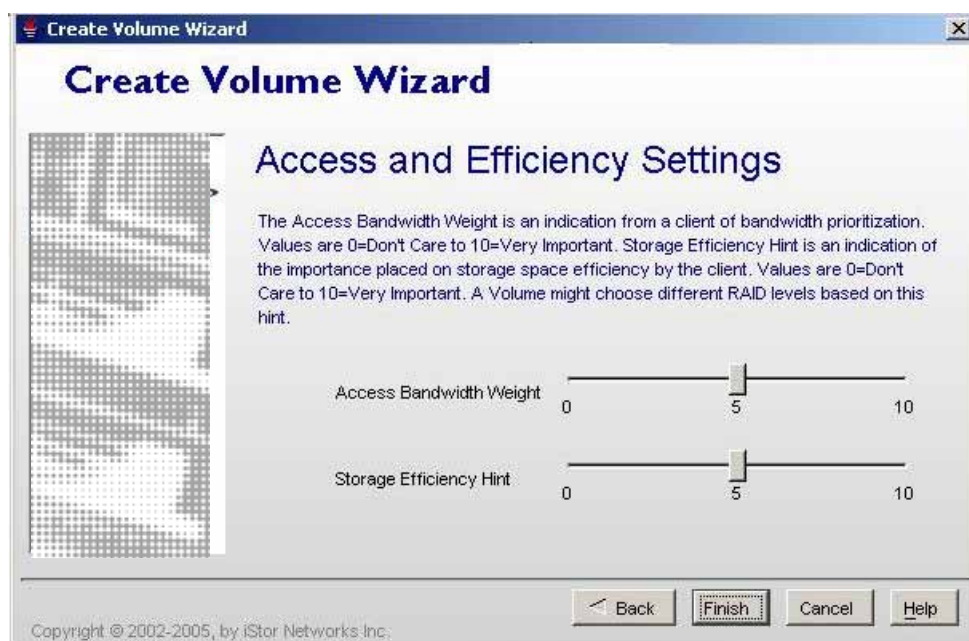


Figure 4.2. Create Volume Wizard Screen – Access and Efficiency Settings Screen

5. Use the slider bars to select the access bandwidth and storage efficiency (if displayed) desired for this volume. The values allowed for each ranges from 0-10. Their meaning, and usage is as follows:
 - **Access Bandwidth Weight:** This setting is a measure of how much bandwidth the volume will use (i.e., how much initiator I/O activity can be expected for the volume). A large number indicates more I/O. It also means the Administrator wants the initiators to achieve fast access to the volume, compared to the other volumes stored on the GigaStorATX. A large value causes the GigaStorATX to choose a larger number of stripe members. The method used by the GigaStorATX to select the organization and number of members is described in Table 4.1.

Table 4.1. Volume Organization and Members Based on Redundancy and Access Bandwidth Weight

Redundancy	Access Bandwidth Weight Value		
	0	1	Large Values
None	JBOD organization (1 member)	Stripe organization with 2 members	Stripe organization with more members
Mirror	Mirror organization (2 members)	Stripe Mirror organization with 2 stripe members	Stripe Mirror organization with more stripe members
Parity	Parity organization with 3 members	In combination with the Storage Efficiency Hint, this selects Parity organization with more members	



In the Stripe Mirror organization, there are always two members for each stripe member to allow for the duplicate copy of the data.

- **Storage Efficiency Hint:** When **Parity** is selected for **Data Redundancy**, this additional setting allows the Administrator to further tailor the GigaStorATX's selection of the member count. A large value tells the GigaStorATX that the Administrator wants to use disk space more efficiently (i.e., use less space for redundancy data). As a result, a large value for this hint requests a larger number of members (which costs less space for parity overhead).

Both **Access Bandwidth Weight** and **Storage Efficiency Hint** can be left at their default settings of 5. These settings produce good volume organizations for each redundancy setting that use some, but not for all GigaStorATX's drive resources.

If you change the default value for either setting, the number of members chosen for the volume depends on the number of drives available at the time the volume is created. Small settings tend to use a small number of members. As the setting values increase, the number of members will increase slowly. When the values reach their maximum, the GigaStorATX will use all possible drives in the volume's pool and the Available Pool for a volume. (The spare count is the only limit to the number of drives that can be obtained from the available pool).



If you selected **None** or **Mirror** for **Data Redundancy**, the **Access and Efficiency Settings** screen contains only the **Access Bandwidth Weight** setting.

6. Click the **Finish** button. The main screen reappears and the volume you created appears under **Blade A Base Pool** in the **Logical Resources** tab.



A plus sign appears next to **Blade A Base Pool**. Click it to see the volume you created.

4.1.2 Creating Volumes Manually

You use the Manual Create Volume Wizard to create volumes manually. The following steps describe this procedure.

1. In the **Logical Resources** tab, click the plus sign next to **Blade A Base Pool**. All drives available for volume creation appear under **Blade A Base Pool**.
2. In the **Logical Resources** tab, click the plus sign next to **Available Pool**. All the drives attached to the GigaStorATX Storage Controller that do not yet have volumes appear under **Available Pool**.
3. If drives to be used for this volume are not already in the Blade A Base Pool, those drives need to be moved to that Pool. To do this, drag one of the desired drives from **Available Pool** to **Blade A Base Pool**. Repeat this step for each additional drive that you want included in the volume.
4. In the **Logical Resources** tab, click **Blade A Base Pool**.
5. Perform one of the following steps in the **Logical Resources** tab:
 - Click the **Manual Create Volume** button on the toolbar:



- On the **Storage** menu, click **Manual Create Volume**.

The Manual Create Volume Wizard launches and the Select Volume Type to Create screen appears (see Figure 4.3).

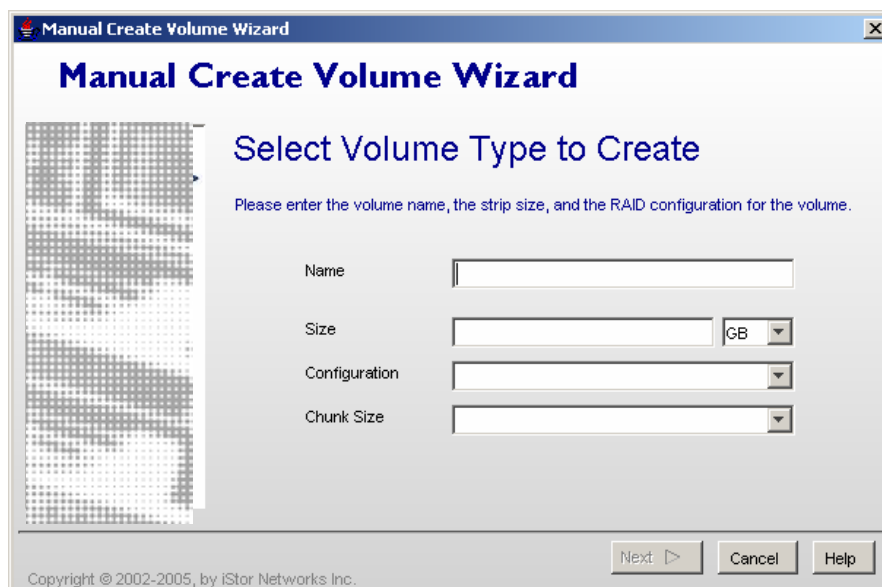


Figure 4.3. Manual Create Volume Wizard - Select Volume Type to Create Screen

6. Complete the fields in the screen:

- **Name.** Enter the name of the volume you are creating.
- **Size.** Enter the size of the volume you are creating. Use the drop-down box to select the volume capacity:

GB	B = bytes
B	KB = kilobytes
KB	MB = megabytes
MB	GB = gigabytes
GB	TB = terabytes
TB	

- **Configuration.** Select the desired organization:

Configuration	<div>JBOD</div> <div>Stripe</div> <div>Mirror</div> <div>Stripe Mirror</div> <div>Parity</div>
---------------	--

Table 3.2 defines the volume organizations.

- **Chunk Size.** Select the size of each chunk from one of the commonly used chunk sizes shown:

Chunk Size	<div>32K</div> <div>64K</div> <div>128K</div> <div>256K</div>
------------	---



If you selected **JBOD** or **Mirror** as your configuration setting, the **Chunk Size** setting is gray and unavailable.

7. Click the **Next** button. The Select the Drives screen appears (see Figure 4.4).

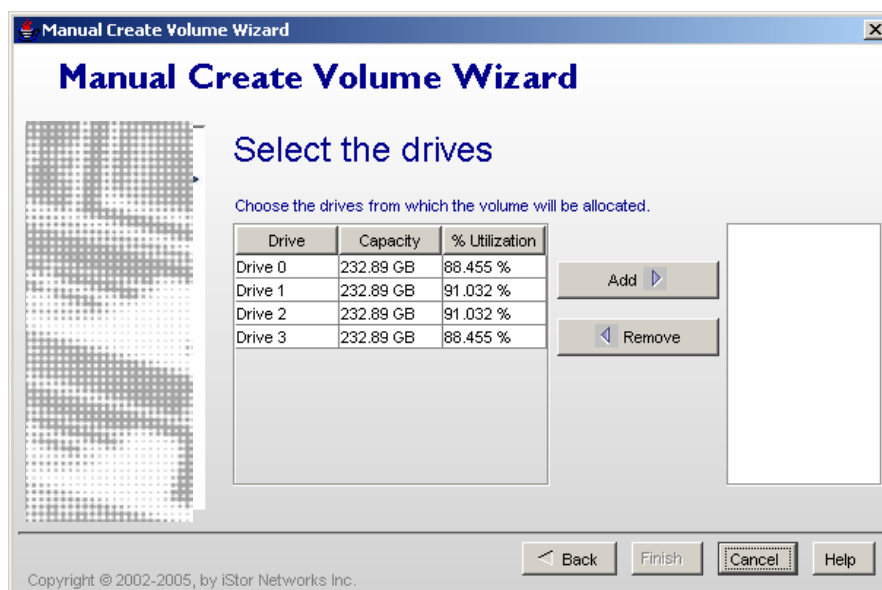


Figure 4.4. Manual Create Volume Wizard - Select the Drives Screen

8. In the left box, select the drives from which the volume will be allocated, then click the **Add** button. Observe the following guidelines when selecting drives:
 - JBOD volumes support a minimum of 1 drive and can span across additional drives if the capacity required exceeds that which a single drive can provide.
 - Stripe Mirror volumes support an even number of drives, from 4 to 16.
 - Parity volumes support 3 to 16 drives.
 - Mirror and striped volumes support 2 to 16 drives.



You can select more than one drive in the left box:

- To select contiguous drives in the left box, click the first drive; then hold down the Shift key and click the last drive. All drives between the first and last drives are selected.
- To select noncontiguous drives in the left box, click the first drive; then hold down the Ctrl key and click each additional drive you want to select.
- To remove the selection from a drive in the left box, hold down the Ctrl key and click the drive.



If you want to remove a drive from the right box, click the drive in the right box and click **Remove** to return the drive to the left box.

9. Click the **Finish** button. The main screen reappears and the volume you created appears under **Blade A Base Pool** in the **Logical Resources** tab. The drives that make up your volume appear in the main display.



If you select an unacceptable configuration, the **Finish** button remains gray and unavailable until you correct the configuration. Examples of unacceptable configurations are selecting an odd number of drives for a Stripe Mirror configuration, selecting 1 or 2 drives for a parity volume, and selecting 1 drive for a Mirror configuration.



If you specify a volume larger than the selected drives can support, an error message appears after you click the **Finish** button. Click **OK** to remove the message, then repeat this procedure and specify a smaller volume.

4.2 Modifying Volume Configurations

There may be times when you need to change the configuration settings you specified for a volume. To modify a volume's configuration, use the following procedure.

1. In the **Logical Resources** tab, click the volume whose configuration settings you want to change.
2. Perform one of the following steps:
 - On the **Storage** menu, click **Reconfig Volume**.
 - Press the right mouse button and click **Reconfig Volume**.

Either step starts the Manual Create Volume Wizard and displays the Select Volume Type to Create screen (see Figure 4.1).

3. Review the settings in the displayed screen and change them if necessary. If you need help, refer to Section 4.1.2.
4. Click the **Finish** button.

4.3 Expanding a Volume

There may times when you want to add capacity to a volume. In these cases, you can expand a volume to increase to add more physical capacity.

To expand a volume, use the following procedure.

1. In the **Logical Resources** tab, click the volume whose capacity you want to expand.
2. On the **Storage** menu, click **Expand Volume**. The Expand Volume appears (see Figure 4.5).

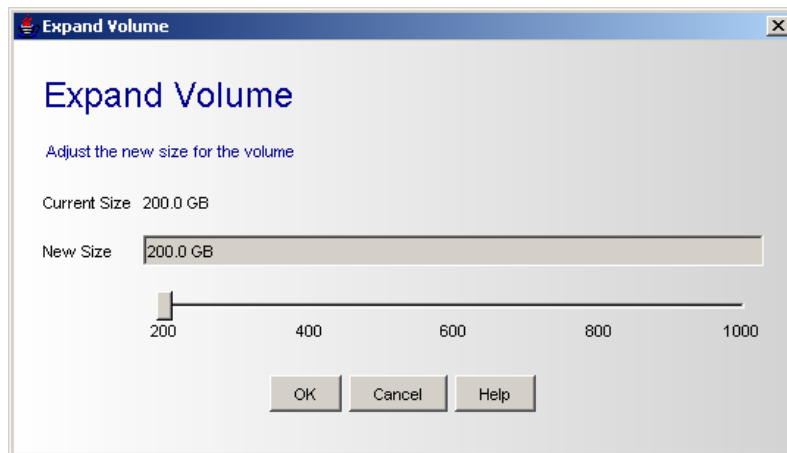


Figure 4.5. Expand Volume Dialog Box

3. Use the **New Size** slide bar to increase the size of the volume.
4. Click **OK**. The message in Figure 4.6 appears.

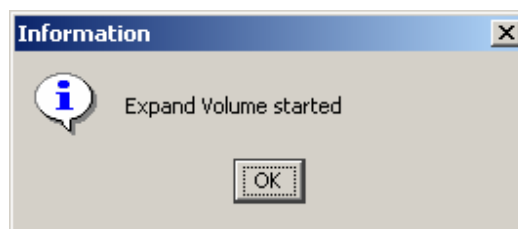


Figure 4.6. Expand Volume Message

5. Click **OK** to remove the message.

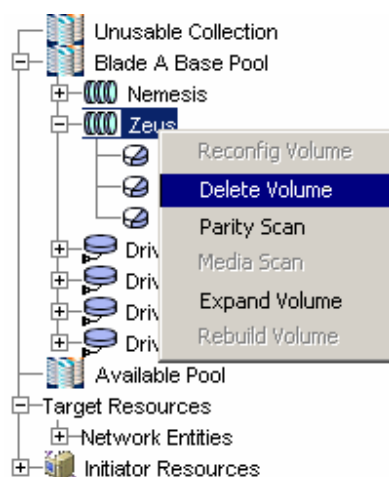


If the selected volume cannot support the size you specified, an error message appears. If this occurs, specify a smaller size.

4.4 Deleting Volumes

If you no longer need a volume, use the following procedure to delete it.

1. In the **Logical Resources** tab, click the volume you want to delete.
2. Perform one of the following steps:
 - On the **Storage** menu, click **Delete Volume**.
 - Press the right mouse button and click **Delete Volume**.



Either step displays the message in Figure 4.7.

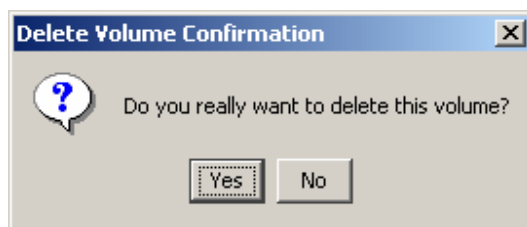


Figure 4.7. Delete Volume Confirmation Message

3. Click **Yes** to delete the volume. (Or click **No** to keep the volume.) If you clicked **Yes**, the message in Figure 4.8 appears.

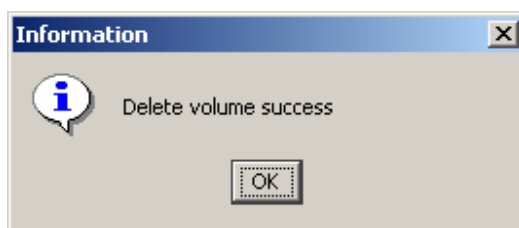


Figure 4.8. Successful Volume Deletion Message

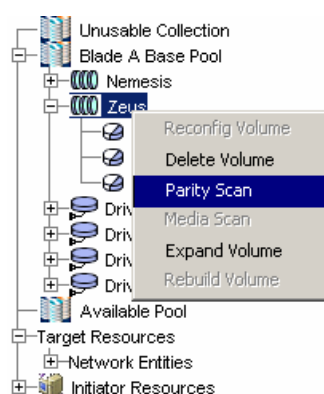
4. Click **OK** to remove the message.

4.5 Performing a Parity Scan on a Volume

Using the GigaStorATX management console, you can scan a parity volume for errors. This task reads every block in the volume looking for errors as described for Media Scan to ensure that parity is correct. If parity errors are found, this task corrects the errors.

To perform a parity scan on a volume, use the following procedure.

1. Click the volume on which you want to perform the parity scan.
2. Perform one of the following steps:
 - On the **Storage** menu, click **Parity Scan**.
 - Right-click and click **Parity Scan**



Either step starts the scan operation and displays the message in Figure 4.9.

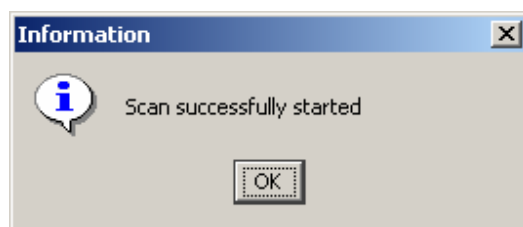


Figure 4.9. Scan Successfully Started Message

3. Click **OK** to remove the message.

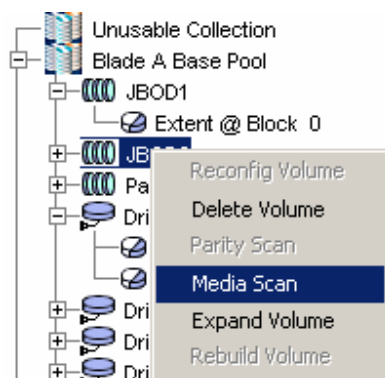
After you start a parity scan task, you can use the Tasks Info screen to view the progress of the scan operation (refer to Section 7.2.3.2).

4.6 Performing a Media Scan on a Volume

Using the GigaStorATX management console, you can scan a JBOD, stripe, stripe mirror, or stripe mirror media volume for errors. This task reads every block in the volume looking for errors as described for Media Scan to ensure that the media is correct. If media errors are found, this task corrects the errors.

To perform a media scan on a volume, use the following procedure.

1. Click the volume on which you want to perform the media scan.
2. Perform one of the following steps:
 - On the **Storage** menu, click **Media Scan**.
 - Right-click and click **Media Scan**



Either step starts the scan operation and displays the message in Figure 4.10.

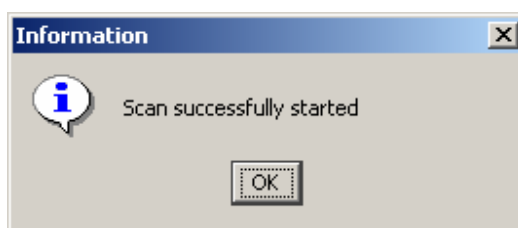


Figure 4.10. Scan Successfully Started Message

3. Click **OK** to remove the message.

After you start a media scan task, you can use the Tasks Info screen to view the progress of the scan operation (refer to Section 7.2.3.2).

Chapter 5 Working with Initiators, Targets, Network Portals, and LAGs

This chapter describes how to work with iSCSI initiators, iSCSI targets, and network portals.

Topics in this chapter include:

- Section 5.1, Adding Initiators on page 54
- Section 5.2, Working with Network Portal on page 55
- Section 5.3, Working with LAGs on page 59
- Section 5.4, Creating iSCSI Target Nodes on page 65
- Section 5.5, Logging on to the iSCSI Initiator Computer on page 69

5.1 Adding Initiators

The following procedure describes how to add iSCSI initiators. Adding initiators defines what initiators have access to the target. You add iSCSI initiators by running the Add Initiator Wizard.

1. Perform one of the following steps in the **Logical Resources** tab:
 - Click **Initiator Resources**. Then, on the iSCSI menu, click **Add Initiator**.
 - Right-click **Initiator Resources** and click **Add Initiator**.



Either step starts the Add Initiator Wizard and displays the Create Initiator screen (see Figure 5.1).

A screenshot of a dialog box titled 'Add Initiator'. Inside the dialog, the title 'Create Initiator' is displayed in a large blue font. Below the title, a blue instruction text says 'Please enter the Initiator name, and CHAP secret'. There are three text input fields: 'Initiator Name', 'Password:', and 'Confirm Password'. At the bottom of the dialog, there are three buttons: 'OK', 'Cancel', and 'Help'.

Figure 5.1. Add Initiator Wizard – Create Initiator Screen

2. Complete the fields in the screen:
 - **Initiator Name**. Enter the name of the iSCSI initiator you are creating.
 - **Password (optional)**. To use Challenge Handshake Authentication Protocol (CHAP) authentication when connecting to an iSCSI target, type the password that will be used during mutual CHAP authentication when an initiator authenticates a target. For security, each typed character appears as an asterisk (*).
 - **Confirm password**. If you typed a password, retype the same one in this field. For security, each typed character appears as an asterisk (*).
3. Click the **OK** button. The main screen reappears and the iSCSI initiator you created appears under **Initiator Resources** in the **Logical Resources** tab.



If a plus sign appears next to **Initiator Resources**, click it to see the iSCSI initiator you created.

5.2 Working with Network Portals

This section describes how to work with network portals.

5.2.1 Creating a Network Portal

After you create an iSCSI initiator, you can create a network portal for the LAG. The network portal is the physical Ethernet port attached to the host.

Creating a network portal is a 2-step process:

1. Ascertain the IP address of the iSCSI initiator. Refer to Section 5.2.1.1.
2. Assign the IP address to the LAG. Refer to Section 5.2.1.2.

5.2.1.1 Ascertaining the IP Address of the iSCSI Target

The following procedure describes how to obtain the IP address of the iSCSI target using the Windows Command Prompt window.



As an alternative to this procedure, you can use the Microsoft Initiator iSCSI software GUI to locate the IP address of the iSCSI target. For more information, refer to the documentation that came with Microsoft iSCSI initiator software.

1. Click the **Start** button, point to **Programs**, point to **Accessories**, and click **Command Prompt**. A Command Prompt window opens.
2. Type **ipconfig** and press Enter.
3. Find the IP address of the iSCSI target and write it on a piece of paper (you will need to refer to it later in this procedure).
4. Type **exit** and press Enter to close the Command Prompt window.

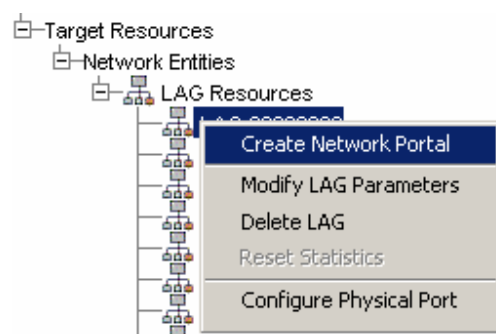
After you ascertain the IP address of the iSCSI target, you can assign that address to a network portal (refer to Section 5.2.1.2).

5.2.1.2 Assigning an IP Address to a Network Portal

After you ascertain the IP address of the iSCSI target, you can assign an IP address to the network portal. The network portal and iSCSI target must have different IP addresses, but be on the same subnet; that is, the first three octets in their IP addresses must be the same, with the last octet being unique. For example, the IP address of the network portal might be 192.168.1.115, while the IP address of the iSCSI target might be 192.168.1.110.

To assign an IP address to a network portal, use the following procedure.

1. In the **Logical Resources** tab, click the plus sign next to **Target Resources**.
2. Click the plus sign next to **Network Entities**.
3. Click the plus sign next to **LAG Resources**.
4. Under **LAG Resources**, click a LAG.
5. Perform one of the following steps:
 - On the **Network** menu, click **Create Network Portal**.
 - In the **Logical Resources** tab, right-click a LAG and click **Create Network Portal**.



Either step starts the Create Network Portal Wizard and displays the Set the IP Address screen (see Figure 5.2).



Figure 5.2. Create Network Portal Wizard – Set the IP Address Screen

4. Complete the fields in the screen:
 - **IP Address.** Enter the IP address for the network portal. The IP address must be unique and must be on a different subnet than the management port. However, the IP address must be on the same subnet as the iSCSI initiator. For example, if the subnet for the iSCSI initiator is 182.148.1.90, you can assign the network portal an IP address of 182.148.1.91. In essence, you only need to change the last octet (the value following the third period) so it is different than the IP address of the iSCSI initiator.
 - **Subnet mask.** Enter a subnet mask for the network portal or press the Tab key to automatically set the default subnet mask to 255.255.255.0.
5. Click the **Finish** button.

5.2.2 Modifying Network Portal Parameters

There may be times when you need to change the IP address or subnet mask for a network portal. To modify a network portal's configuration settings, use the following procedure.

1. In the **Logical Resources** tab, click the network portal whose configuration settings you want to change.
2. Perform one of the following steps:
 - On the **Network** menu, click **Modify Network Portal IP Address**.
 - Press the right mouse button and click **Modify Network Portal**.

Either step starts the Assign Portals for Target Node Wizard screen (see Figure 5.3).

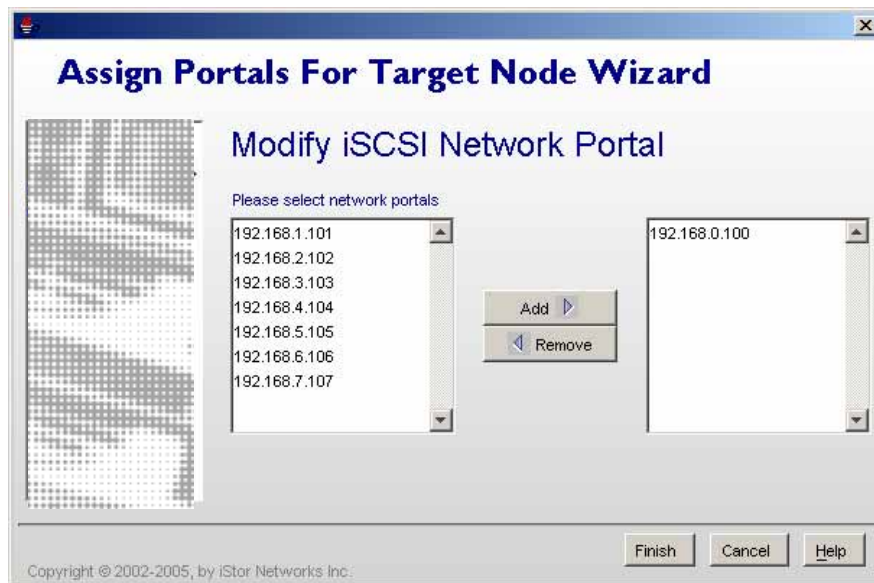


Figure 5.3. Assign Ports for Target Node Wizard Screen

2. To add network portals, select one or more portals in the left box and click **Add** to move them to the right box. Adding portals defines how the target is accessed.
3. To remove one or more network portals, select them in the right box and click **Remove** to move it to the left box.
4. When you finish modifying the network portals, click the **Finish** button.

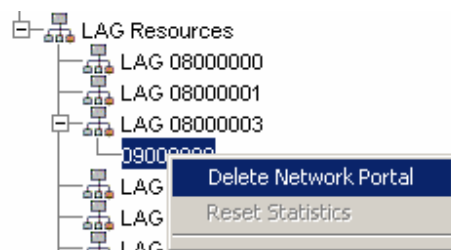
5.2.3 Deleting Network Portals

If you no longer need a network portal, use the following procedure to delete it.



A warning message does not appear before you delete a network portal. Therefore, be sure you do not need the network portal before you delete it.

1. In the **Logical Resources** tab, click the network portal you want to delete.
2. Perform one of the following steps to delete the network portal:
 - On the **Network** menu, click **Delete Network Portal**.
 - Right-click and click **Delete Network Portal**.



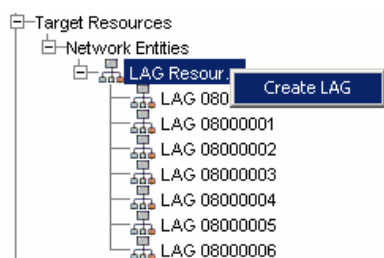
5.3 Working with LAGS

A LAG is a group of two or more physical network links bundled together to appear as a single link. A LAG provides for increased bandwidth and load balancing. The following section describes how to create, modify, and delete LAGs.

5.3.1 Creating LAGs

By default, the GigaStorATX comes with a maximum of eight LAGs. If you should delete one or more LAGs, you can use the following procedure to create LAGs.

1. In the **Logical Resources** tab, click the plus sign next to **Target Resources**.
2. Click the plus sign next to **Network Entities**.
3. Click **LAG Resources**.
4. Perform one of the following steps:
 - On the **Network** menu, click **Create LAG**.
 - Right-click and click **Create LAG**.



Either step starts the Create Link Aggregation Group Wizard and displays the LAG Parameters screen (see Figure 5.8).

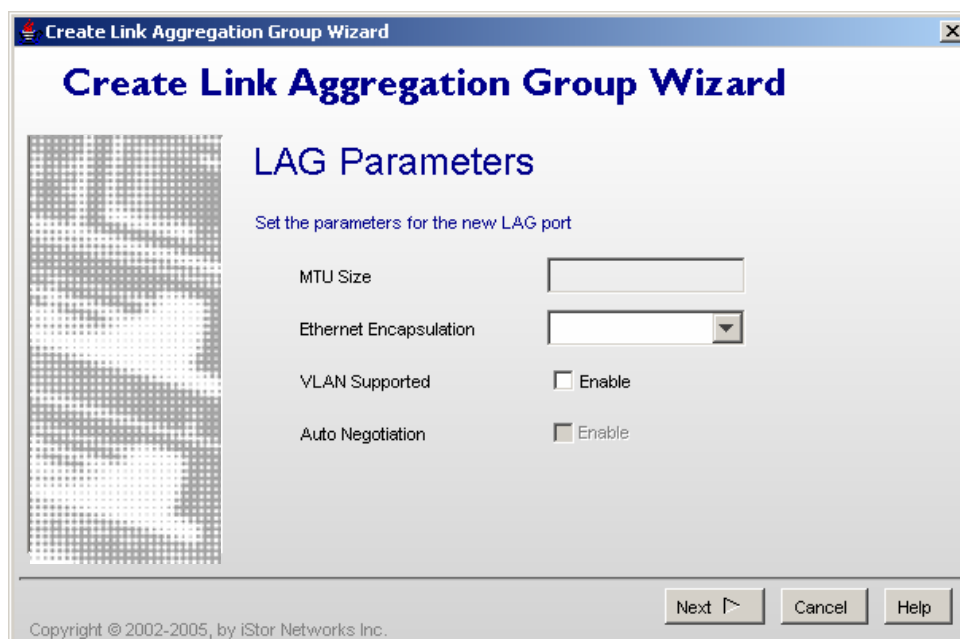


Figure 5.4. Create Link Aggregation Group Wizard - LAG Parameters Screen

5. Complete the fields in the screen:
 - **MTU Size.** This is a read-only field.
 - **Ethernet Encapsulation.** Select the Ethernet encapsulation method used to fetch of packets from upper-layer protocols, and place header and footer information around the data before it traverses the network. The choices are **Ethernet CSMA/CD** and **IEEE 802.3ad**.
 - **VLAN Supported.** Check this box if you want the LAG to support a Virtual Network (VLAN).
 - **Auto Negotiation.** This option is unavailable.
6. Click the **Next** button. The Add/Delete Ethernet Ports screen appears (see Figure 5.5).

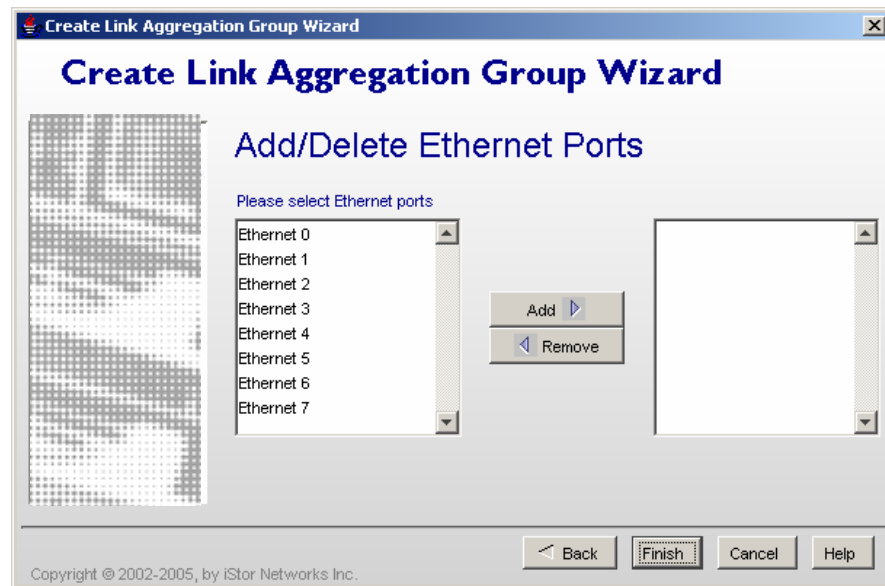


Figure 5.5. Create Link Aggregation Group Wizard - Add/Delete Ethernet Ports Screen

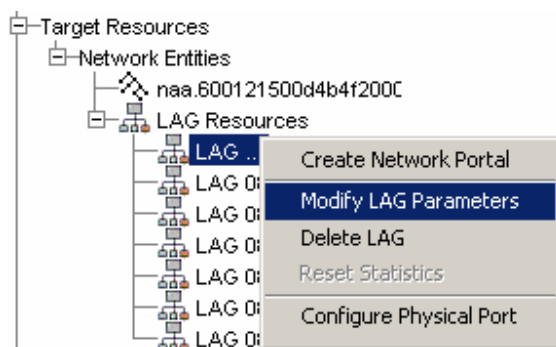
7. To add Ethernet ports, select one or more ports in the left box and click **Add** to move them to the right box.
8. To remove one or more Ethernet ports, select them in the right box and click **Remove** to move it to the left box.
9. When you finish adding Ethernet ports, click the **Finish** button.

5.3.2 Modifying LAG Parameters

There may be times when you need to modify LAG parameters. Using the GigaStorATX management console, you can view the Maximum Transmission Unit (MTU) size and requested speed.

To modify LAG parameters, use the following procedure.

1. In the **Logical Resources** tab, click the LAG whose parameters you want to change.
2. Perform one of the following steps:
 - On the **Network** menu, click **Modify LAG Parameters**.
 - Right-click and click **Modify LAG Parameters**.



- Either step displays the Modify LAG Parameters screen appears (see Figure 5.6).

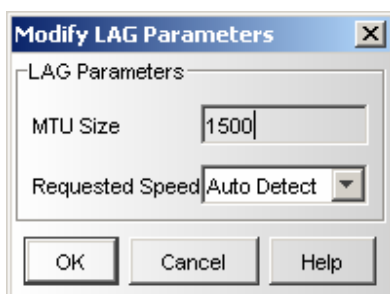


Figure 5.6. Modify Lag Parameters Dialog Box

- Complete the fields in the dialog box:
 - **MTU Size.** This value specifies the maximum size of a packet that can be transferred in one frame over a network.
 - **Requested Speed.** This value indicates the requested speed for transmitting and sending packets. The choices are **Auto Detect**, **100 Mbps**, and **10 Mbps**.
- Click **OK**.

5.3.3 Configuring Physical Ports

To configure physical ports, use the following procedure.

1. In the **Logical Resources** tab, click a LAG whose physical port you want to configure.
2. On the **Network** menu, click **Config Physical Port**. The Add/Remove Ethernet Ports for LAG Wizard starts and the Add/Delete Ethernet Ports screen appears (see Figure 5.7).

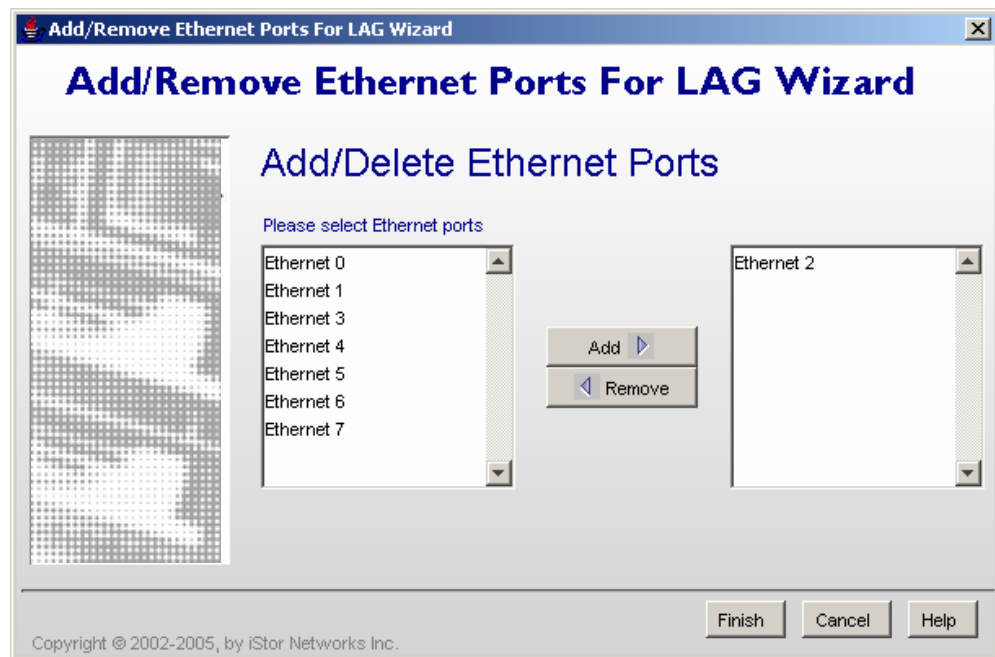


Figure 5.7. Add/Remove Ethernet Ports for LAG Wizard - Add/Delete Ethernet Ports screen

3. To add Ethernet ports, select one or more ports in the left box and click **Add** to move them to the right box.
4. To remove one or more Ethernet ports, select them in the right box and click **Remove** to move it to the left box.
5. When you finish adding Ethernet ports, click the **Finish** button.

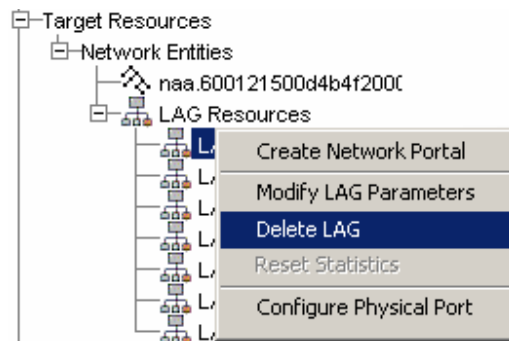
5.3.4 Deleting LAGs

If you no longer need a LAG, use the following procedure to delete it.



A warning message does not appear before you delete a LAG. Therefore, be sure you do not need the LAG before you delete it.

1. In the **Logical Resources** tab, click the LAG you want to delete.
2. Perform one of the following steps:
 - On the **Storage** menu, click **Delete LAG**.
 - Right-click and click **Delete LAG**.



Either step deletes the selected LAG.

5.4 Creating iSCSI Target Nodes

After you create one or more volumes, iSCSI initiators, and LAGs, you have all the prerequisites to create an iSCSI target node.

To create an iSCSI target node, use the following procedure.

1. In the Logical Resources tab, click Target Resources or Network Entities.
2. Perform one of the following steps:
 - On the iSCSI menu, click **Create iSCSI Target Node**.
 - Right-click and click **Create iSCSI Target Node**.



Either step starts the Create iSCSI Node Wizard and displays the Enter iSCSI Node Information screen (see Figure 5.8).

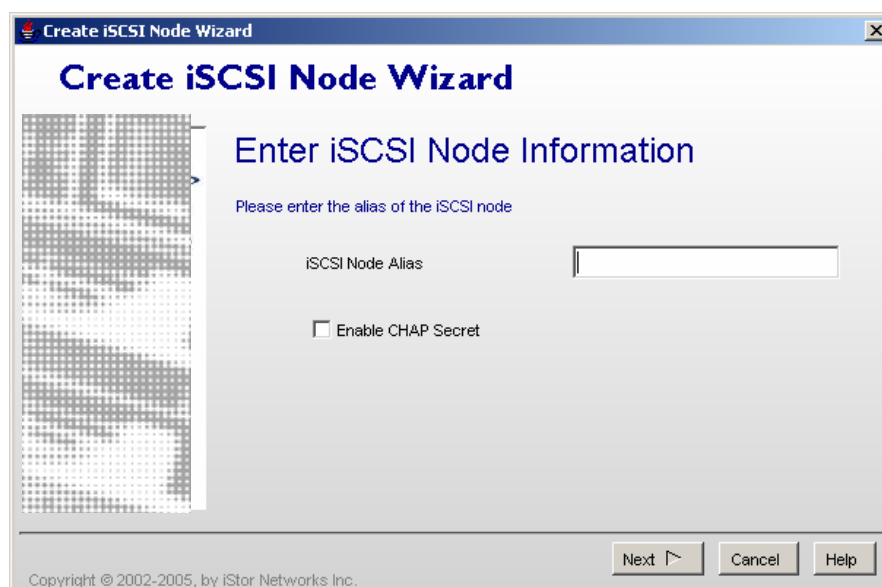


Figure 5.8. Create iSCSI Node Wizard - Enter iSCSI Node Information Screen

3. Complete the fields in the screen:
 - **iSCSI Node Alias (optional)**. An alias string can also be associated with an iSCSI node. The alias lets an organization associate a user-friendly string with the iSCSI name.
 - **Enable CHAP Secret (optional)**. To use CHAP authentication when connecting to an iSCSI target, check this box to enable the CHAP secret. Then, in the **CHAP Secret** field (see Figure 5.9), type the password that will be used by the target to authenticate an initiator.



The CHAP secret is case sensitive. For security, each typed character in the CHAP secret appears as an asterisk (*). If you decide not to specify a CHAP secret now, you can do so in the future using the **Set CHAP Secret** command in the **iSCSI** menu (refer to Section 6.14).

Create iSCSI Node Wizard

Create iSCSI Node Wizard

Enter iSCSI Node Information

Please enter the alias of the iSCSI node

iSCSI Node Alias:

☒ Enable CHAP Secret

CHAP Secret:

Next > Cancel Help

Copyright © 2002-2005, by iStor Networks Inc.

Figure 5.9. Create iSCSI Node Wizard - Enter iSCSI Node Information Screen with CHAP Secret Field Shown

4. Click Next. The Configure iSCSI Node Parameters screen appears (see Figure 5.10).

Create iSCSI Node Wizard

Create iSCSI Node Wizard

Configure iSCSI Node Parameters

Please configure iSCSI Node Parameters

Session Settings | Connection Settings

Session Values

First Burst Length: Max Outstanding R2T:

Default Time To Wait: Max Connections:

Default Time To Retain: Immediate Data:

< Back Next > Cancel Help

Copyright © 2002-2005, by iStor Networks Inc.

Figure 5.10. Create iSCSI Node Wizard - Configure iSCSI Node Parameters Screen

5. Accept the default settings in the **Session Settings** and **Connection Settings** tabs and click **Next**. The **Initiators List** screen appears (see Figure 5.11).

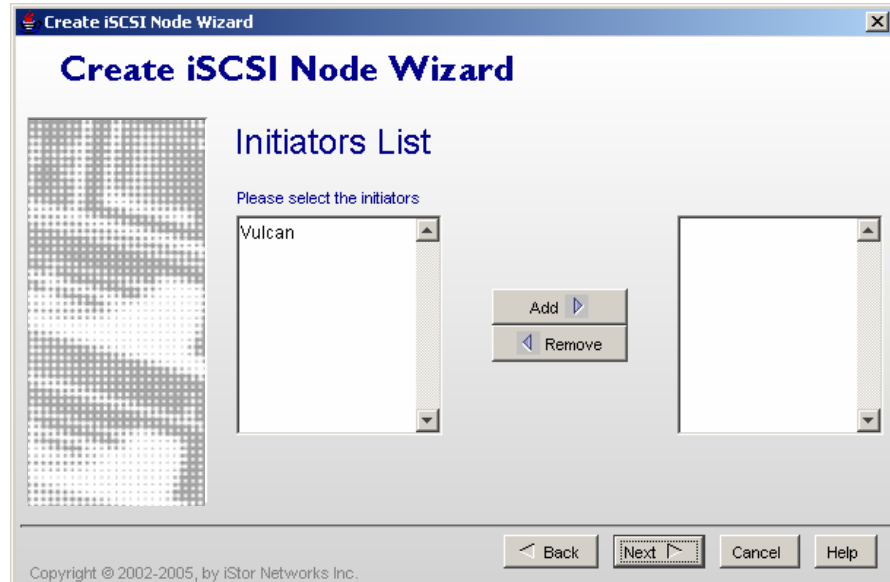


Figure 5.11. Create iSCSI Node Wizard – Initiator List Screen

6. The left box lists all the iSCSI initiators you have defined. Click the iSCSI initiator(s) in this list that are allowed to access the volumes through the target network portals whose IP addresses you selected in the previous screen.
7. Click **Add** to move the selected iSCSI initiator(s) to the right box.



If you want to remove an iSCSI initiator from the right box, click the iSCSI initiator in the right box and click **Remove** to return the iSCSI initiator to the left box.

8. Click **Next**. The **Volume Access Right** screen appears (see Figure 5.12).

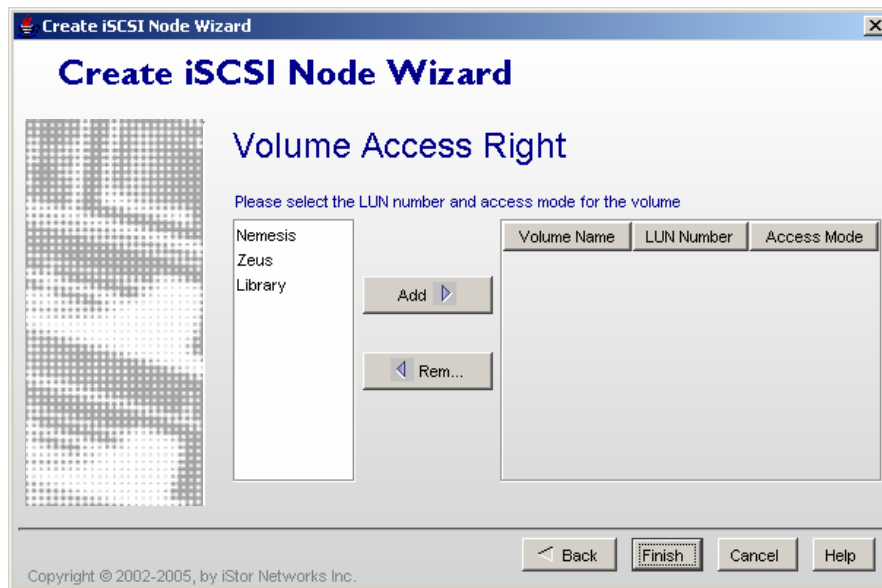


Figure 5.12. Create iSCSI Node Wizard – Volume Access Right Screen

9. The left box lists all the volumes you have created. Click a volume in this list, then click **Add** to move the selected volume to the right box.



You can select more than one volume in the left box:

- To select contiguous volumes in the left box, click the first volume; then hold down the Shift key and click the last volume. All volumes between the first and last volumes are selected.
- To select noncontiguous volumes in the left box, click the first volume; then hold down the Ctrl key and click each additional volume you want to select.
- To remove the selection from a volume in the left box, hold down the Ctrl key and click the volume.



If you want to remove a volume from the right box, click the volume in the right box and click **Remove** to return the volume to the left box.

10. Click **Finish**.

5.5 Logging on to the iSCSI Initiator Computer

After you create a volume (Section 4.1), create an iSCSI initiator (Section 5.1), create a network portal (Section 5.2), and create iSCSI target nodes (Section 5), use the following procedure to log on to the Microsoft iSCSI initiator.

1. Connect the appropriate GigaStorATX Storage Controller Ethernet port to the NIC in the iSCSI initiator computer using an Ethernet RJ-45 cable.
2. Start the Microsoft iSCSI initiator application:
 - Click the **Start** button.
 - Point to **Programs**.
 - Point to **Microsoft iSCSI Initiator**.
 - Click **Microsoft iSCSI Initiator**.

When Microsoft iSCSI Initiator starts, the iSCSI Initiator Properties dialog box appears.

3. Click the **Discovery** tab.
4. Click **Add** to add a target portal. The Add Target Portal dialog box appears.
5. If your iSCSI target node is registered in a DNS that the iSCSI initiator computer can access, enter the DNS name of the computer. If not, enter the IP address of the target network portal that this iSCSI initiator will use to access the requested volumes.
6. Click **OK**. The IP address you entered (192.168.1.115 in the example in Figure 5.13) appears in the Discovery tab.

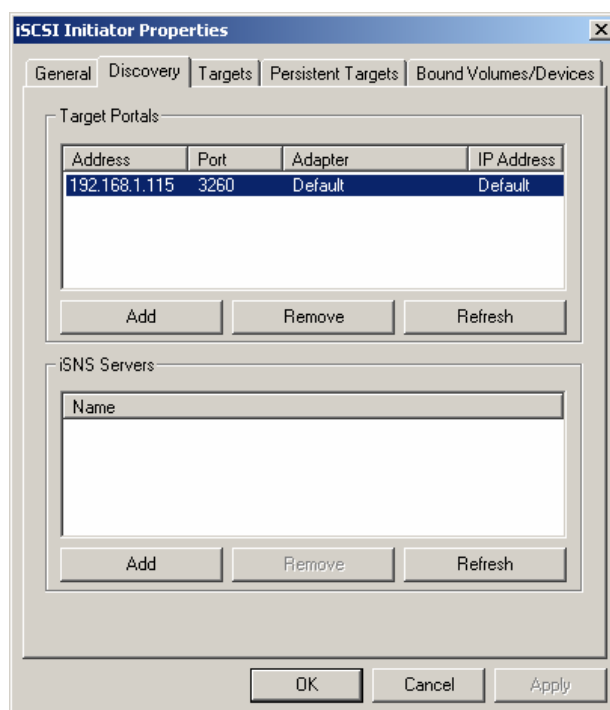


Figure 5.13. Discovery Tab on the iSCSI Initiator Properties Dialog Box

6. Click the **Targets** tab (see Figure 5.14). Notice that the iSCSI initiator software lists the target node name. It found this name after you entered the IP address or DNS name of the iSCSI target node.

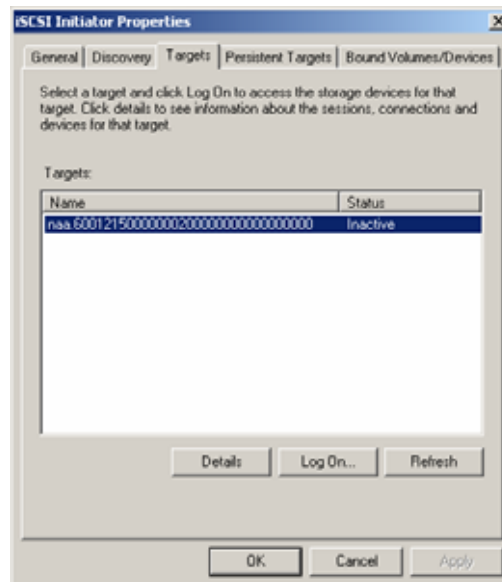


Figure 5.14. Targets Tab on the iSCSI Initiator Properties Dialog Box

7. Click **Log On** to display the Log On To Target dialog box (see Figure 5.15).

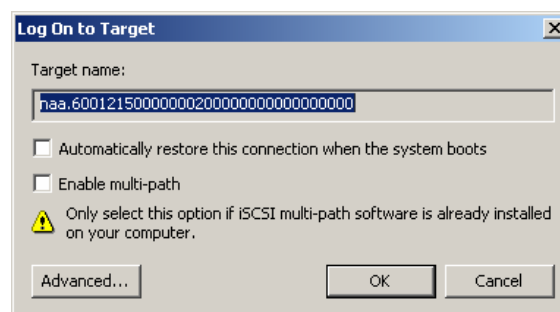


Figure 5.15. Log on to Target Dialog Box

8. To connect to the iSCSI target node, click **OK**. Tab over to the Active Sessions page to assure that you are connected to the iSCSI target node.

If desired, click **Programs > Administrative Tools > Computer Management** and verify that the disk you have configured is shown in the Computer Management screen. In Figure 5.16, Disk 2 was added through the GigaStorATX management console. You can also right-click over the new drive and click **Create Partition** from the right-click menu to create a partition on the drive. For more information, refer to your Windows documentation. Tim?

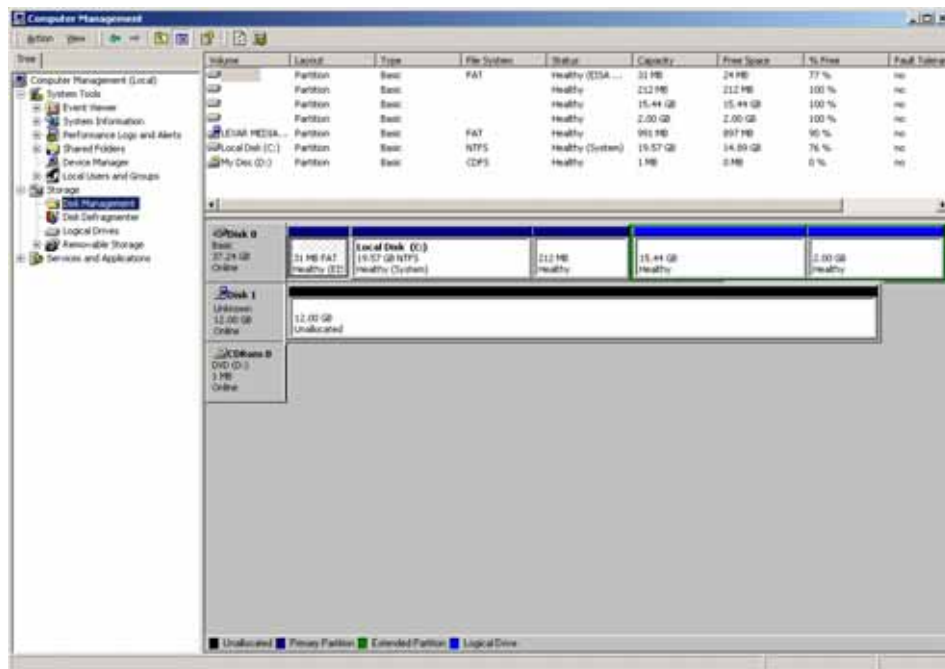


Figure 5.16. Example of Disks Shown in the Computer Management Screen

Chapter 6 Performing Additional Activities

This chapter describes how to perform various console activities.

Topics in this chapter include:

- Section 6.1, Managing User Accounts on page 74
- Section 6.2, Changing the GigaStorATX Date and Time on page 76
- Section 6.3, Enabling or Disabling SSL on page 78
- Section 6.4, Changing the iSCSI Port Number on page 79
- Section 6.5, Setting the Default Task Priority on page 80
- Section 6.6, Performing Cache Activities on page 81
- Section 6.7, Managing GigaStorATX Configurations on page 83
- Section 6.8, Modifying System TCP/IP Settings on page 86
- Section 6.9, Setting the Spare Count on page 88
- Section 6.10, Setting the System Battery Policy on page 89
- Section 6.11, Restarting the GigaStorATX on page 91
- Section 6.12, Creating Scheduled Tasks on page 92
- Section 6.13, Adding, Viewing, and Deleting IP Route Table on page 94
- Section 6.14, Changing the CHAP Secret on page 96

6.1 Managing User Accounts

A user account must be set up for each user who wants to access the GigaStorATX management console. The user account consists of the following:

- A unique user name and password.
- Determine whether a user can manage storage and/or add or edit user accounts.

Initially, the GigaStorATX comes with a single user account called admin. By default, the admin user has permission to manage storage and add and edit user accounts. The admin account cannot be deleted.

When the admin user sets up a user account, he can specify whether the other user accounts can also manage storage and add/edit user accounts. These two permissions operate independently, so the admin could, for example:

- Permit a user account to manage storage, without being able to add or edit user accounts.
- Permit a user account to add or edit other user accounts, without being able to manage storage.
- Prevent a user account from managing storage and adding and editing user accounts. With this setting, the user can only view information on the GigaStorATX management console screens. The user would not be able to change any settings on the screens.

6.1.1 Setting Up User Accounts

To set up user accounts, use the following procedure.

1. Be sure the **Physical Resources** tab is the active tab.
2. On the **View** menu, click **User Accounts**. The User Accounts screen appears, with a list of the user accounts that have been defined (see Figure 6.1).

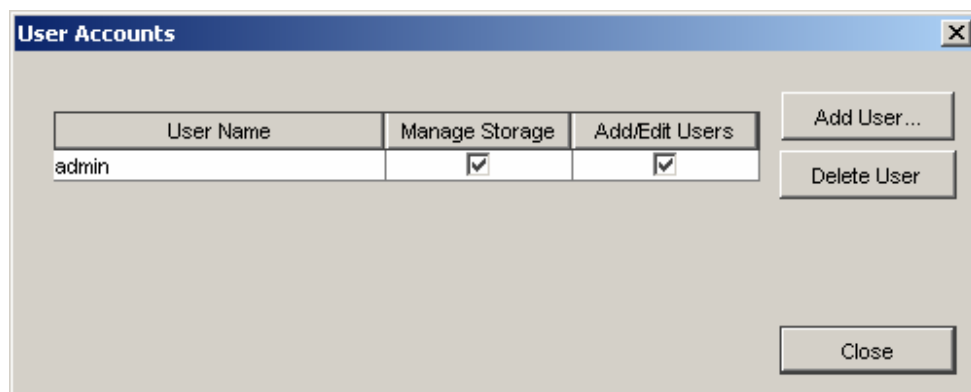


Figure 6.1. User Accounts Screen

3. Click the **Add User** button. The Add New User dialog box appears (see Figure 6.2).

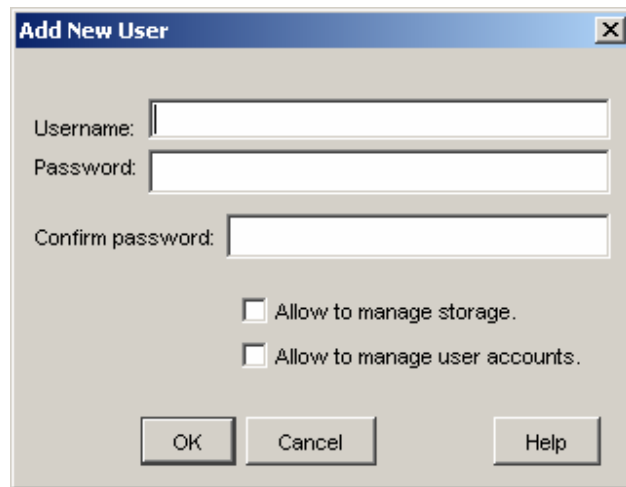


Figure 6.2. Add New User Dialog Box

3. Complete the fields in the dialog box:
 - **Username.** Enter the name of the user whose account you are creating.
 - **Password.** Enter the password for this user account. This is the case-sensitive password the user must specify when logging in to the GigaStorATX management console.
 - **Confirm password.** Retype the same case-sensitive password you typed in the Password field.



For security, each typed character in **Password** and **Confirm password** appears as an asterisk (*).

- **Allow to manage storage.** Check this option if you want this user to be able to manage storage on the GigaStorATX.
- **Allow to manage user accounts.** Check this option if you want this user to be able to define and modify user accounts.



If you do not check **Allow to manage storage** and **Allow to manage user accounts**, the user will be able to view the GigaStorATX management console screens, but will not be able to change storage settings or add/modify user accounts.

4. Click **OK**. The user you defined appears in the User Accounts screen.
5. Click the **Close** button to exit the User Accounts screen.

6.1.2 Deleting User Accounts

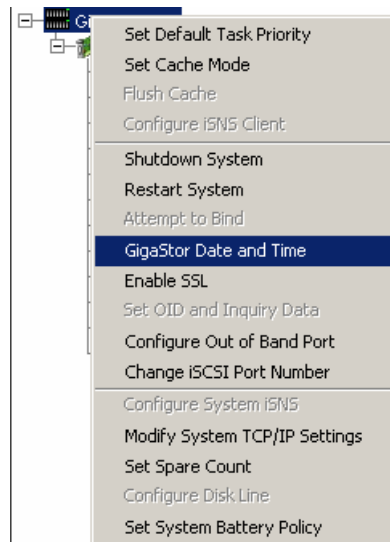
If you no longer need a user account, use the following procedure to delete it.

1. On the **View** menu, click **User Accounts**. The User Accounts screen appears, with a list of the user accounts that have been defined (see Figure 6.1 on page 74).
2. Click the user whose account you want to delete, then click the **Delete User** button.
3. When a precautionary message asks whether you want to delete the user account, click **Yes**. The selected user account is deleted from the Use Accounts screen.

6.2 Changing the GigaStorATX Date and Time

The GigaStorATX Storage Controller maintains the current timezone, date and time. If you need to change these settings, use the following procedure. This procedure requires you to reset the GigaStorATX Storage Controller.

1. Click the GigaStorATX icon at the top of the **Physical Resources** tab.
2. Perform one of the following steps:
 - On the **File** menu, click **GigaStor Date and Time**.
 - Right-click and click **GigaStor Date and Time**.



Either step displays the GigaStor Date and Time dialog box, with the system timezone, date, and time settings shown (see Figure 6.3).

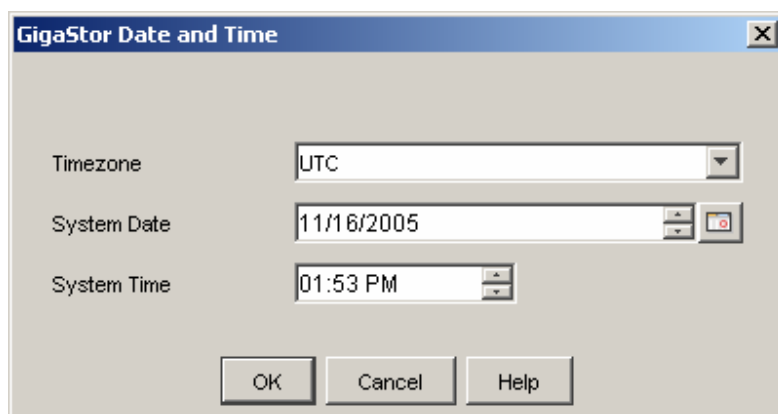


Figure 6.3. GigaStor Date and Time Dialog Box

3. Complete the fields in the dialog box:
 - **Timezone.** Select the appropriate timezone from the drop-down list.
 - **System Date.** Either use the controls to the right of this field to select the appropriate system date or click the calendar icon and select a date from the popup calendar.
 - **System Time.** Use the controls to the right of this field to select the appropriate system time.
4. Click **OK**. A message asks whether you want to restart the system (see Figure 6.4).

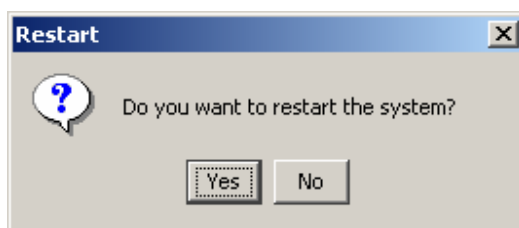


Figure 6.4. Restart System Message

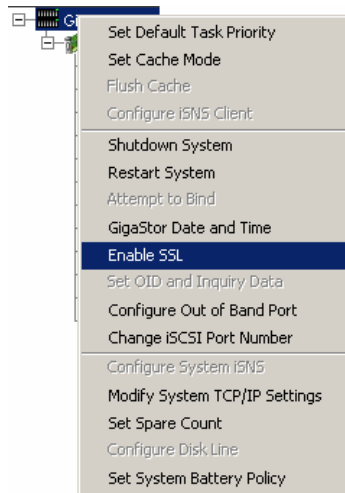
5. Click **Yes** to restart the system or **No** to not restart it. You must restart the GigaStorATX Storage Controller for the revised timezone, date, and time to take effect.

6.3 Enabling or Disabling SSL

Secure Sockets Layer (SSL) is the encryption process that allows a user's communication with a Web server to be secured, so that others cannot intercept and decipher any of the data being transferred. Using the GigaStorATX management console, you can enable or disable SSL between the management port and the PC connected to it.

To enable or disable SSL, use the following procedure.

1. Click the GigaStorATX icon at the top of the **Physical Resources** tab.
2. Perform one of the following steps:
 - On the **File** menu, click **Enable SSL**.
 - Right-click and click **Enable SSL**.



Either step displays the Enable/Disable SSL dialog box, with the current SSL setting shown (see Figure 6.5).

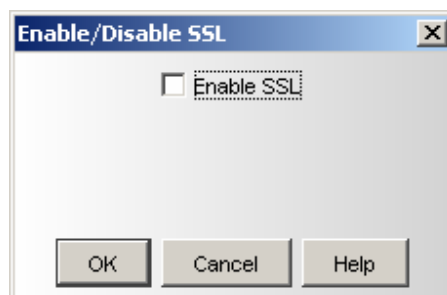


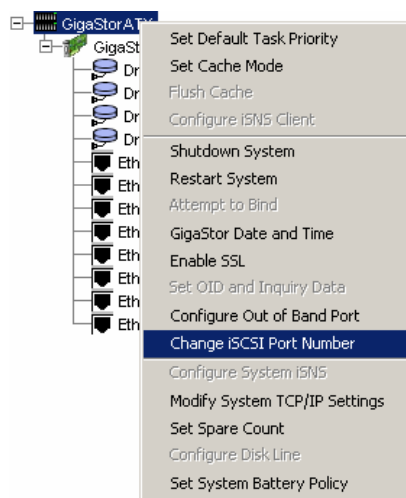
Figure 6.5. Enable/Disable SSL Dialog Box

2. To enable SSL, click **Enable SSL** so a check mark appears next to it. To disable SSL, click **Enable SSL** to remove the check mark next to it.
3. Click **OK**.

6.4 Changing the iSCSI Port Number

The iSCSI port number is the TCP/IP port number on which the iSCSI target is listening. The standard port number for iSCSI is 3260, but some targets may allow the port number to be customized. To change the iSCSI port number, use the following procedure.

1. Click the GigaStorATX icon at the top of the **Physical Resources** tab.
2. Perform one of the following steps:
 - On the **File** menu, click **Change iSCSI Port Number**.
 - Right-click and click **Change iSCSI Port Number**.



Either step displays the Modify iSCSI Port dialog box, with the current iSCSI port number shown (see Figure 6.6).

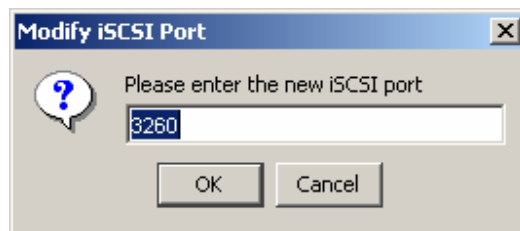


Figure 6.6. Modify iSCSI Port Dialog Box

2. Enter a new value for the iSCSI port.
3. Click **OK**.

6.5 Setting the Default Task Priority

You can set the default task priority to specify whether background tasks receive a high or low priority. By default, the default task priority provides for minimum impact on the foreground applications performed by the GigaStorATX. However, you can change this setting if desired. For example, you may want to specify a higher default task priority for time-critical tasks such as backups.



Assigning a high task priority can increase system I/O and, as a result, lose its effectiveness. If the GigaStorATX performs one task that is critical while the rest of the tasks are normal priority, you can use this procedure to raise the priority of the task temporarily, then reduce it after the time-critical task has completed.

To set the default task priority, use the following procedure.

1. On the **File** menu, click **Set Default Task Priority**. The Set Default Task Priority dialog box appears, with the current setting shown (see Figure 6.7).

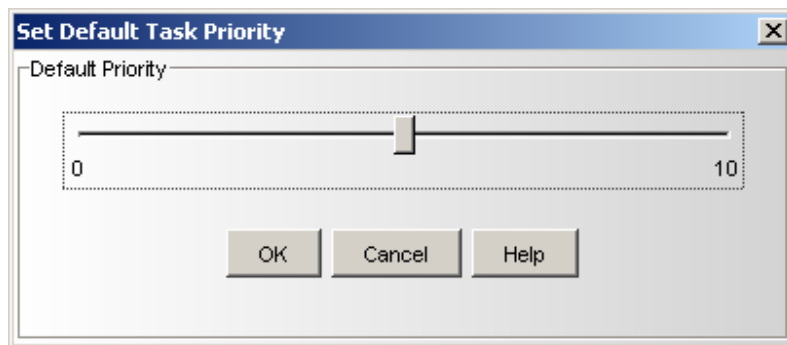


Figure 6.7. Set Default Task Priority Dialog Box

2. Use the slider switch to specify the default priority level (0 = lowest priority, 10 = highest priority).
3. Click **OK**.

6.6 Performing Cache Activities

The GigaStorATX Storage Controller contains cache memory for storing I/O activity and data. The File menu provides options for setting the cache mode and flushing cache contents.

6.6.1 Setting Cache Mode

The GigaStorATX Storage Controller is capable of caching write operations. Write-back caching saves the system from performing many unnecessary write cycles to the system RAM, which can lead to noticeably faster execution. However, when write-back caching is used, writes to cached memory locations are only placed in cache and the data is not written to the disks until the cache is flushed. When caching is disabled, all read and write operations directly access the physical disks.

To set cache mode, use the following procedure.

1. On the **File** menu, click **Set Cache Mode**. The Set Cache Mode dialog box appears, with the current setting shown (see Figure 6.8).

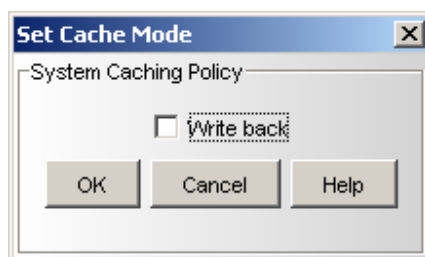


Figure 6.8. Set Cache Mode Dialog Box

2. To enable write backs to system cache, click **Write back** so a check mark appears next to it. To disable write backs to system cache, click **Write back** to remove the check mark next to it.
3. Click **OK**.



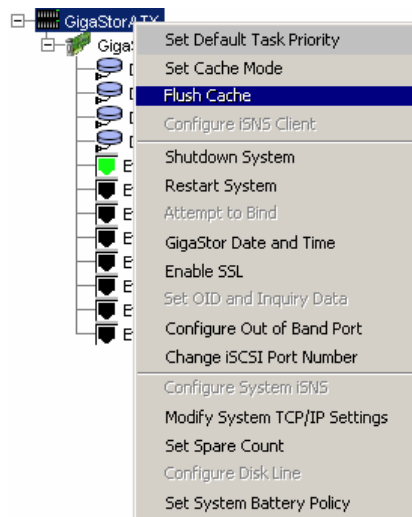
If you enable **Write back**, be sure the battery policy is not set to **Stop buffering I/O in cache**, and **directly write data to disk** (refer to Section 6.10).

6.6.2 Flushing Cache

Flushing cache writes the contents of cache memory to the physical disks. This safety measure prevents the accumulation of data in cache that could be lost in the event of a power loss.

To flush cache, use the following procedure.

1. Click the GigaStorATX icon at the top of the **Physical Resources** tab.
2. Perform one of the following steps:
 - On the **File** menu, click **Flush Cache**.
 - Right-click and click **Flush Cache**.



Either step displays the Set Cache Mode dialog box, with the current setting shown (see Figure 6.8).

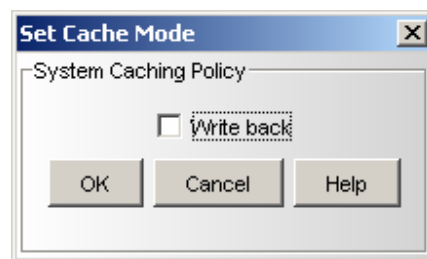


Figure 6.9. Set Cache Mode Dialog Box

4. To enable write backs to system cache, click **Write back** so a check mark appears next to it. To disable write backs to system cache, click **Write back** to remove the check mark next to it.
5. Click **OK**.

6.7 Managing GigaStorATX Configurations

The GigaStorATX management console provides options for saving and restoring the GigaStorATX configuration. You can also return the GigaStorATX to its factory default settings.

6.7.1 Saving the GigaStorATX Configuration

To save the current GigaStorATX configuration, use the following procedure.

1. On the File menu, click **Save GigaStor Configuration**. The Save GigaStor Configuration dialog box appears (see Figure 6.10).

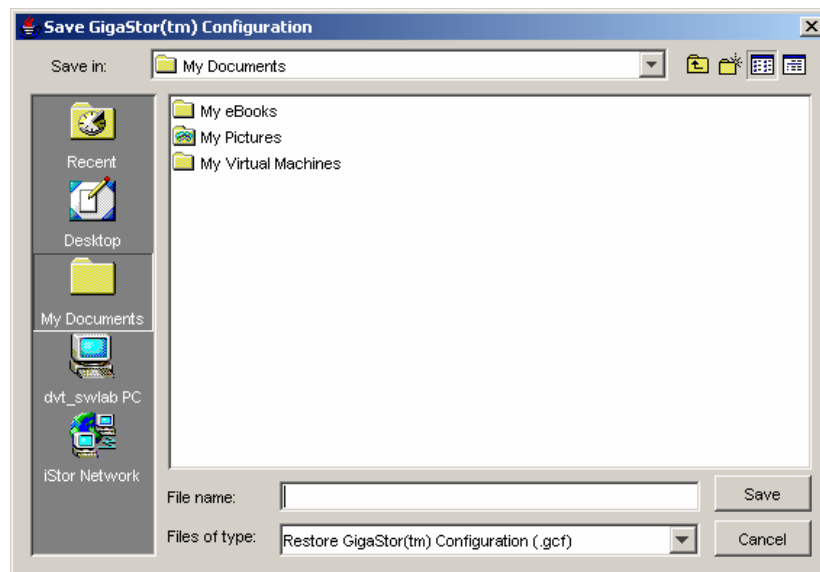


Figure 6.10. Save GigaStor Dialog Box

2. Navigate to the location where you want to save the configuration.
3. IN the File name field, type a name for the configuration.
4. Click the Save button.

6.7.2 Restoring the GigaStorATX Configuration

If you used the procedure in Section 6.7.1 to save the GigaStorATX configuration, you can use the following procedure to restore the saved configuration.

1. On the **File** menu, click **Restore GigaStor Configuration**. The Restore GigaStor Configuration dialog box appears (see Figure 6.11).

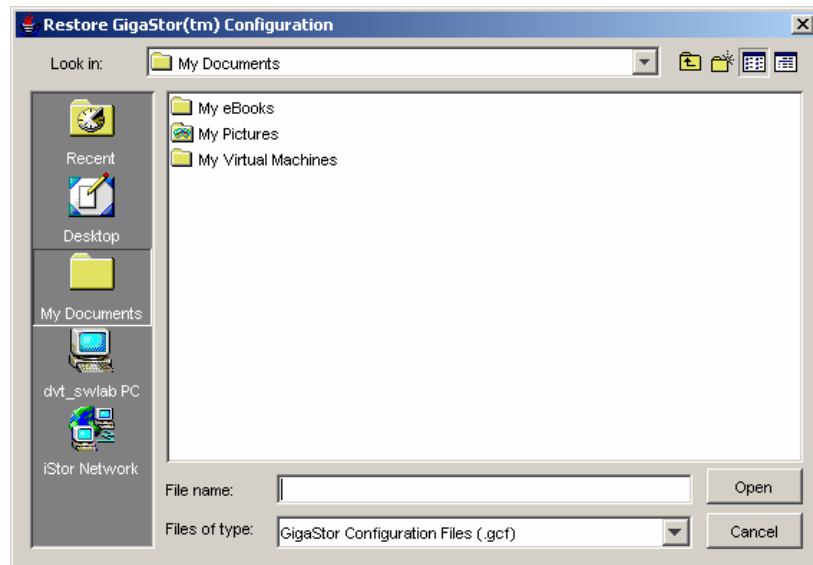


Figure 6.11. Restore GigaStor Configuration Dialog Box

2. Locate the configuration file whose settings you want to load, then select the file and click the **Open** button. The message in Figure 6.12 appears.

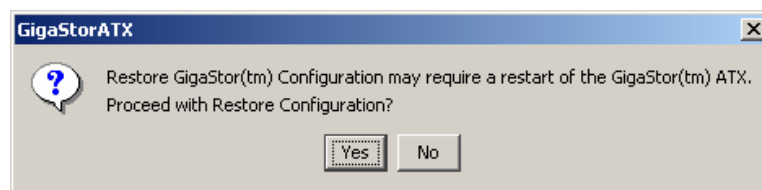


Figure 6.12. Configuration Restore Message

3. Click **Yes** to restore the configuration. (Or click **No** to keep the current configuration.) If you clicked **Yes** the GigaStorATX Storage Controller restarts and loads the selected configuration.

6.7.3 Restoring Factory Defaults

To return the GigaStorATX to its factory default settings, use the following procedure.



When you return to the factory default settings, the GigaStorATX IP port reverts to 192.168.1.1.

1. On the **File** menu, click **Restore Factory Defaults**. The message in Figure 6.13 appears.

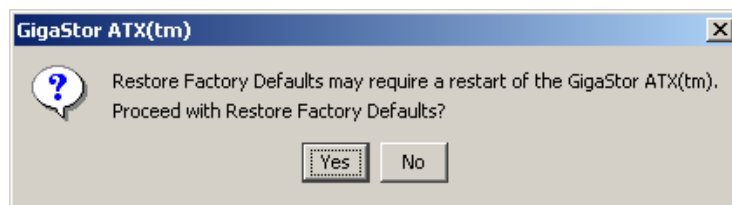


Figure 6.13. Restore Factory Defaults Message

2. Click **Yes** to restore the factory defaults. (Or click **No** to keep the current configuration.) If you clicked **Yes** the GigaStorATX Storage Controller loads the factory default settings and the message in Figure 6.14 appears.

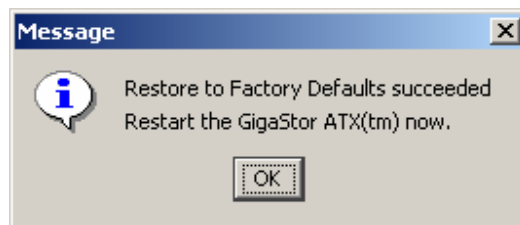


Figure 6.14. Restore to Factory Defaults Succeeded Message

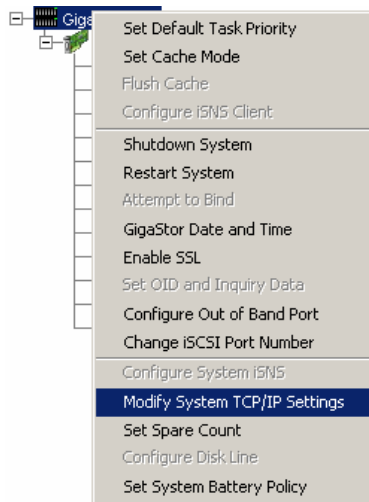
3. Click **OK** to restart the GigaStorATX Storage Controller with the factory default settings.

6.8 Modifying System TCP/IP Settings

You can use the GigaStorATX management console to view and change the system's TCP/IP settings.

To modify the system TCP/IP settings, use the following procedure.

1. Click the GigaStorATX icon at the top of the **Physical Resources** tab.
2. Perform one of the following steps:
 - On the **File** menu, click **Modify System TCP/IP Settings**.
 - Right-click and click **Modify System TCP/IP Settings**.



Either step displays the Modify System TCP/IP Settings dialog box appears, with the current setting shown (see Figure 6.15).

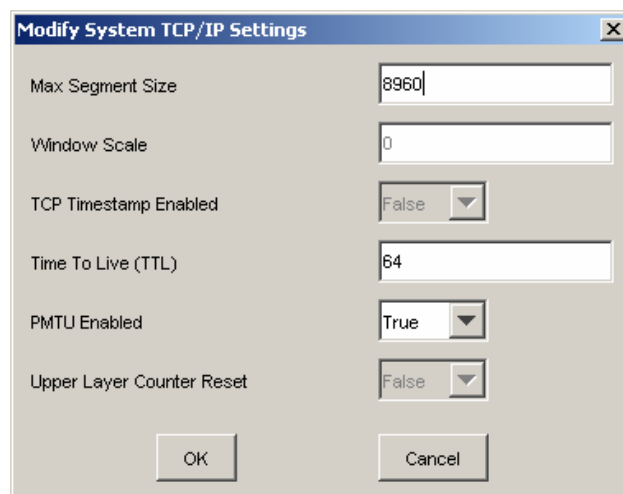


Figure 6.15. Modify System TCP/IP Settings Dialog Box

3. Complete the fields in the dialog box:

- **Max Segment Size.** This option indicates the maximum size TCP segment that can be accepted on a TCP/IP connection when the connection is established.
- **Window Scale.** This option lets you use large windows during TCP/IP connections. On fast, high-bandwidth networks, a large TCP window provides greater efficiency by allowing for a greater amount of unacknowledged data.
- **TCP Timestamp Enabled.** This option causes the receiving computer to send a time-stamp reply back to the originating computer. Systems can use time-stamp requests and replies to measure the transmission speed of datagrams on a network.
- **Time to Live (TTL).** This option specifies the default time to live (TTL) value for IP packets generated by the Windows TCP/IP stack.
- **PMTU Enabled.** Enabling this option allows the GigaStorATX to automatically adapt its packet size. Disabling this option makes the system keep its default packet size (576 bytes), even when it receives an ICMP request asking it to change its packet size. Disabling this option can render some remote systems unreachable, because if intermediate systems on the path to the remote system cannot support the default packet size, the GigaStorATX will ignore their requests to make the packets smaller.
- **Upper Layer Counter Reset.** This option resets the TCP/IP upper layer counters. Resetting the counters simplifies the ability to look at the counters for an accurate percentage of packets sent or received.

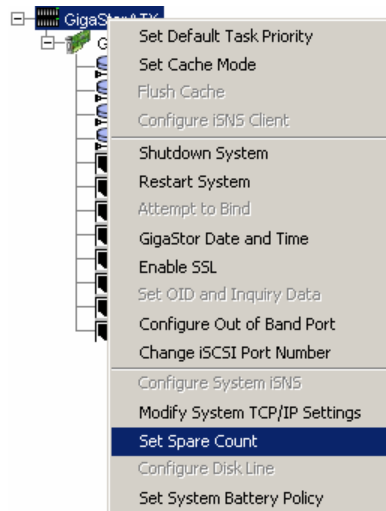
4. Click OK.

6.9 Setting the Spare Count

You can specify the number of spares available to the GigaStorATX Storage Controller. A spare is a drive that is present in the system but normally unused until another drive fails, at which time the hot spare is automatically substituted for the failed drive. For more information about the spare count, refer to Section 3.4.

To set the spare count, use the following procedure.

1. Click the GigaStorATX icon at the top of the **Physical Resources** tab.
2. Perform one of the following steps:
 - On the **File** menu, click **Set Spare Count**.
 - Right-click and click **Set Spare Count**.



Either step displays the Set Spare Count dialog box appears, with the current setting shown (see Figure 6.16).

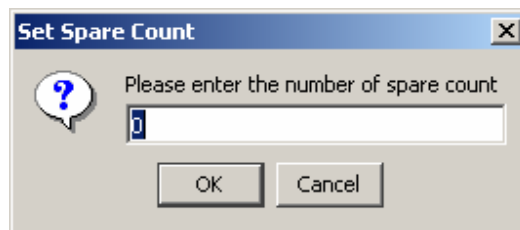


Figure 6.16. Set Spare Count Dialog Box

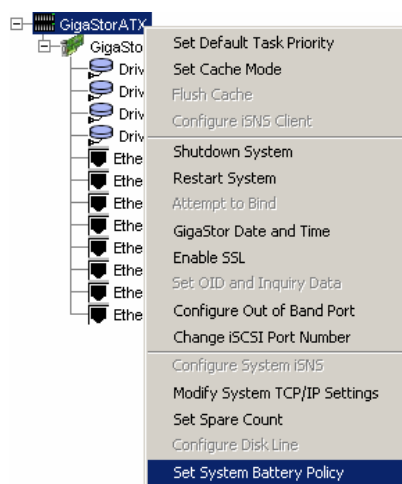
3. Enter a value that corresponds to the number of drives.
4. Click **OK**.

6.10 Setting the System Battery Policy

The GigaStorATX Storage Controller has a battery that must be fully charged before RAID operations can be performed. Using the GigaStorATX management console, you can specify a battery policy that defines the action that the GigaStorATX Storage Controller is to perform if the battery fails.

To set the system battery policy, use the following procedure.

1. Click the GigaStorATX icon at the top of the **Physical Resources** tab.
2. Perform one of the following steps:
 - On the **File** menu, click **Set System Battery Policy**.
 - Right-click and click **Set System Battery Policy**.



Either step displays the Battery Policy dialog box appears, with the current setting shown (see Figure 6.17). The traffic light at the top of the dialog box provides a color-coded indication of the GigaStorATX battery status.

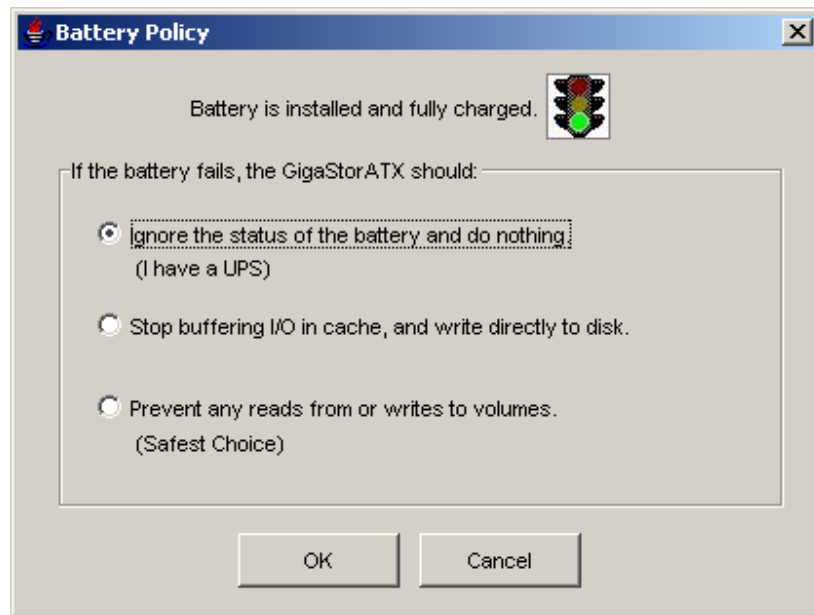


Figure 6.17. Battery Policy Dialog Box

3. Select the appropriate setting that the GigaStorATX Storage Controller should use if the battery fails. The choices are:
 - **Ignore the status of the battery and do nothing.** Use this setting if you will be operating the GigaStorATX from AC power with an uninterruptible power supply.
 - **Stop buffering I/O in cache, and directly write data to disk.** Use this setting if you want to write to disk all I/O buffered in cache memory in the event of a battery failure.



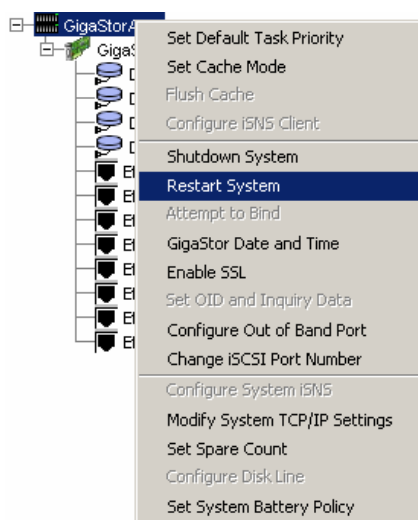
If the GigaStorATX is operating from battery and the battery fails, there may not be sufficient time to write all the buffered I/O to disk. This can result in lost or unintelligible data.

- **Prevent any reads from or writes to volumes.** This setting prevents all read and write operations from occurring if the battery fails.
4. Click **OK**.

6.11 Restarting the GigaStorATX

To restart the GigaStorATX Storage Controller, use the following procedure.

1. Log off from all iSCSI initiators.
2. Click the GigaStorATX icon at the top of the **Physical Resources** tab.
3. Perform one of the following steps:
 - On the **File** menu, click **Restart System**.
 - Right-click and click **Restart System**.



Either step displays a message that asks whether you are sure you want to restart the system.

4. Click **Yes** to restart the system (or click **No** to keep the system running). If you clicked **Yes**, your management console session ends and the GigaStorATX Storage Controller is restarted. You can then use the log in procedure in Section 2.2 to log into the GigaStorATX management console.

6.12 Creating Scheduled Tasks

You can use the GigaStorATX management console to set up tasks that you want the Storage Controller to perform, such as performing parity or media scans. When you create a task, you can specify the day and time when the task is to be performed and whether the task will repeat (recur).

To create tasks, use the following procedure.

1. On the **View** menu, click **Create Task**. The Scheduled Task Wizard launches and the Volume and Operation screen appears (see Figure 6.18).

Figure 6.18. Scheduled Task Wizard – Volume and Operation

2. Complete the fields in the screen:
 - **Operation Name.** Enter a name for the task you are creating.
 - **Object.** Select the volume on which the scheduled task will be performed.
 - **Operation.** Select the task that is to be performed.
 - **Perform this task.** Select how often the scheduled task is to be performed.
3. Click **Next**. The Select Date and Time screen appears (see Figure 6.19).

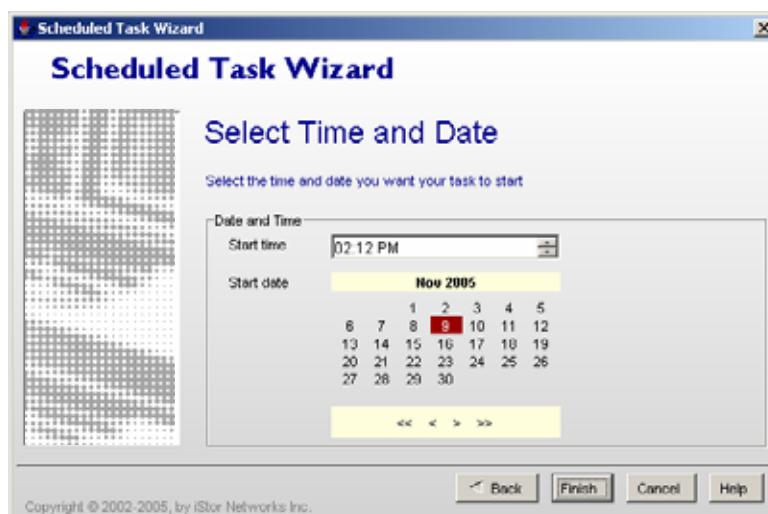


Figure 6.19. Scheduled Task Wizard – Select Date and Time Screen

4. Complete the fields in the screen:
 - **Start time.** Use the controls to specify the time when the scheduled task is to start.
 - **Start date.** Use the calendar to select the date when the scheduled task is to start. You can use the controls below the calendar to move to the previous year, previous month, next month, or next year.
5. Click **Finish**.

After you schedule a task, you can use the Tasks Info screen to view the task status (refer to Section 7.2.3.2).

6.13 Adding, Viewing, and Deleting IP Route Tables

Routing is the process of deciding the disposition of each incoming and outbound packet that the GigaStorATX Storage Controller handles. Using the GigaStorATX management console, you can view the GigaStorATX Storage Controller's routing table.

If a route being used encounters problems, you can use the GigaStorATX management console to add route tables. Adding a route is also useful if you discover a quick alternative route to the destination. You can also use the GigaStorATX management console to delete routes.

To add, view, and delete IP route tables, use the following procedure.

1. On the **View** menu, click **View Manual Route**. The View Route Table appears, with the current route tables shown (see Figure 6.20).

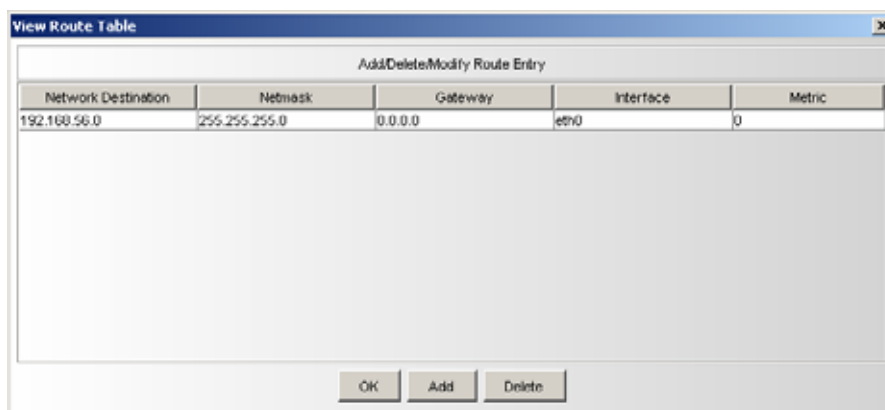


Figure 6.20. View Route Table

2. To add a route to the routing table, click the **Add** button. Then, when the dialog box in Figure 6.21 appears, complete the fields and click **OK**.
 - **Destination.** Enter the IP address of the destination for this route.
 - **Netmask.** Enter the netmask associated with this route or press the Tab key to automatically set the default subnet mask to 255.255.255.0.
 - **Gateway.** If the route uses a gateway, specify the gateway associated with this route.

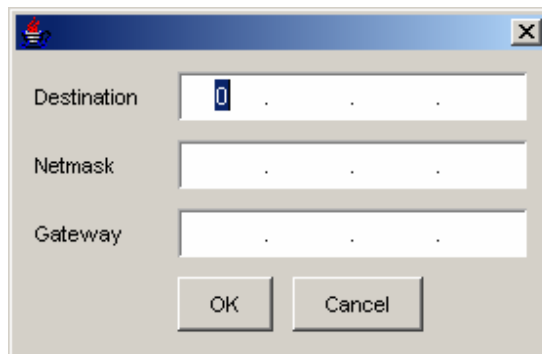


Figure 6.21. Adding a Route Table

3. To delete a route, click the route in the View Route Table and click the Delete button.



A warning message does not appear before you delete a route. Therefore, be sure you do not need the route before you delete it.

6.14 Changing the CHAP Secret

When you created an iSCSI target node, you could specify an optional CHAP secret. If desired, you can change the CHAP secret using the following procedure.

1. Click a network entity (prefaced by **naa**) in the **Logical Resources** tab.
2. On the iSCSI menu, click **Change CHAP Secret**. The Set CHAP Secret dialog box appears (see Figure 6.22).

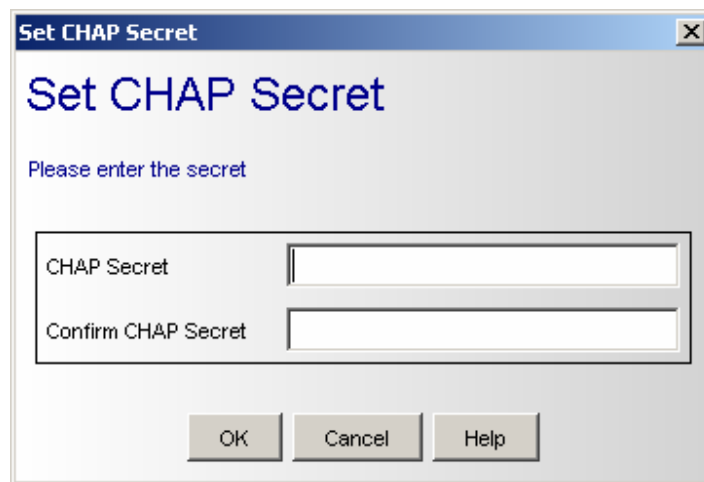


Figure 6.22. Set CHAP Secret Dialog Box

3. Complete the fields in the dialog box:
 - **CHAP Secret**. Enter the CHAP secret.
 - **Confirm CHAP Secret**. Enter the same CHAP secret.



The CHAP secret is case sensitive. For security, each typed character in **CHAP Secret** and **Confirm CHAP Secret** appears as an asterisk (*).

4. Click **OK**.

6.15 Saving the Event Log

The event log tracks the GigaStorATX informational, warning, and error messages (refer to Section 7.1.2). Using the GigaStorATX management console, you can save the event log as an unformatted text file to a user-specified folder.

To save the event log, use the following procedure.

1. On the **View** menu, click **Save Event Log Messages**. The Open dialog box appears (see Figure 6.23).

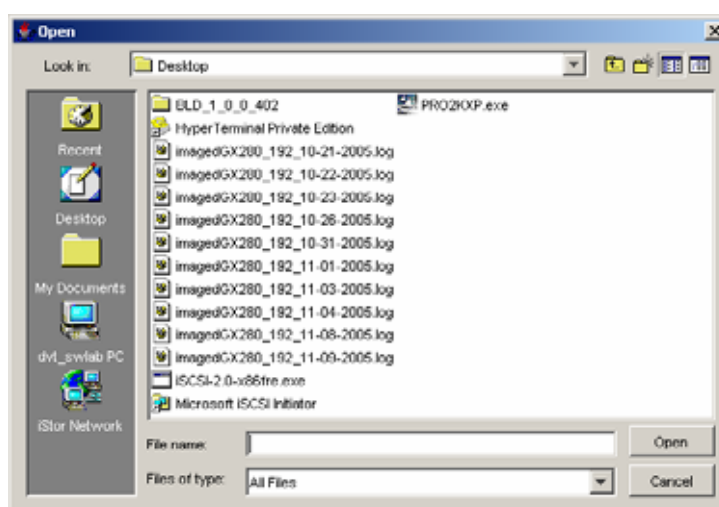


Figure 6.23. Open Dialog Box

2. Using the Open dialog box, navigate to the location where you want the event log text file to reside.
3. In the **File name** field, enter a name for the event log text file.
4. Click **OK**.

Chapter 7 Viewing GigaStorATX Screens

The GigaStorATX management console can display a number of screens in the main area for viewing system and storage information. This chapter shows and describes the screens. Some screens are available from either the **Logical Resources** or **Physical Resources** tab. Other screens are available from both tabs.

- **GigaStor Screens (Physical Resources tabs)**
 - Viewing enclosure information — refer to Section 7.1.1.
 - Viewing log messages — refer to Section 7.1.2.
 - Viewing information about tasks — refer to Section 7.1.3.
 - Viewing CIM server information — refer to Section 7.1.4.
 - Viewing firmware image information — refer to Section 7.1.5.
- **Blade A Base Pool Screens (Logical Resources tab)**
 - Viewing information about the storage pool — refer to Section 7.2.1.
 - Viewing information about tasks — refer to Section 7.2.2.
 - Viewing information about volumes — refer to Section 7.2.3.
 - Viewing information about drives — refer to Section 7.2.4.
- **Network Entities Screens (Logical Resources tab)**
 - Viewing information about iSCSI target nodes — refer to Section 7.3.1.
 - Viewing volume access information — refer to Section 7.3.2.
 - Viewing iSCSI initiator access information — refer to Section 7.3.3.
 - Viewing information about network portals — refer to Section 7.3.4.
 - Viewing information about LAG ports — refer to Section 7.3.5.
 - Viewing information about an iSCSI connection — refer to Section 7.4.
- **Initiator Resource Screens (Logical Resources tab)**
 - Viewing information about iSCSI initiators — refer to Section 7.4.1.
 - Viewing LUN access information — refer to Section 7.4.2.
- **Drive Screens (Physical Resources tab)**
 - Viewing information about drives — refer to Section 7.2.4.
- **Ethernet Port Screens (Physical Resources tab)**
 - Viewing information about Ethernet ports — refer to Section 7.5.

7.1 GigaStor Screens

When the top GigaStorATX icon is selected in the **Physical Resources** tab, the main display area can show the following screens with information about:

- **The GigaStorATX Storage Controller enclosure.** Refer to Section 7.1.1.
- **Log messages.** Refer to Section 7.1.2.
- **Tasks information.** Refer to Section 7.1.3.
- **CIM Server information.** Refer to Section 7.1.4.
- **Firmware image information.** Refer to Section 7.1.5.

7.1.1 Viewing Enclosure Information

When the top GigaStorATX icon is selected in the **Physical Resources** tab, you can use the Enclosure Information screen to view information about the GigaStorATX enclosure (see Figure 7.1).

This screen is divided into three areas:

- **Message Log Summary.** The Message Log Summary summarizes the current error, warning, and information messages in the event log. To enhance visibility, the three message types are color coded.
 - Error messages are red and indicate something unexpected has occurred that may be a serious problem.
 - Warning messages are yellow. Warning messages indicate that something appeared wrong but has been corrected. They also provide notification about things that may be expected but are of particular interest.
 - Informational messages are green. Informational messages contain information about steps performed, detected version information, and miscellaneous messages.

For more information about a message, go to the Log Messages screen (refer to Section 7.1.2).

- **System Settings.** The Systems Settings show the spare count, disk line mode, and default BT priority settings.
- **TCP/IP Default Parameters.** The TCP/IP Default Parameters show the maximum IP segmentation, TCP window scale, TCP timestamp, and PMTU enabled settings.

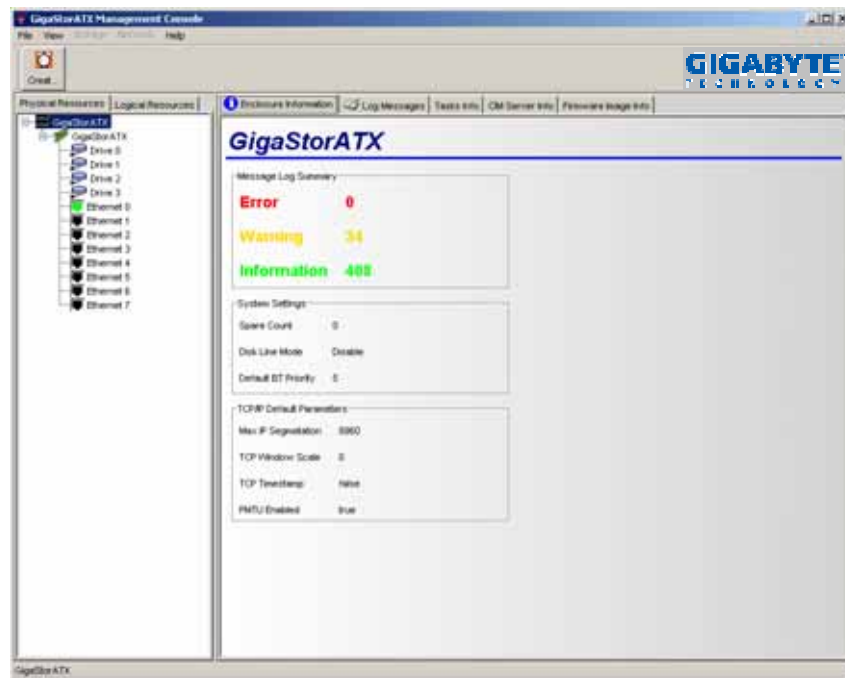


Figure 7.1. Enclosure Information Screen

7.1.2 Viewing Log Messages

When the top GigaStorATX icon is selected in the **Physical Resources** tab, you can use the Log Messages screen to view the entries in the event log (see Figure 7.2).

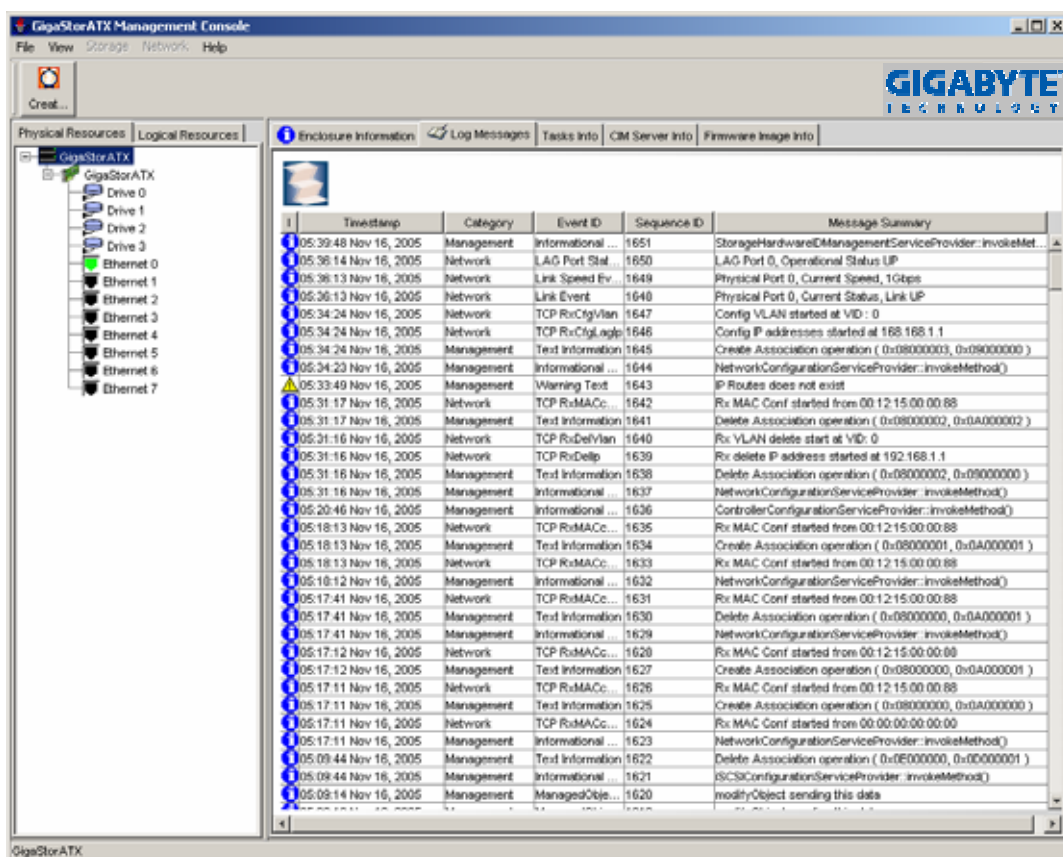


Figure 7.2. Log Messages Screen

The messages are color coded, making it easy to differentiate among informational, warning, and error messages. The messages are time- and date-stamped, with the most recent entry appearing at the top of the screen.

To obtain additional information about a message shown in the Log Messages screen, double-click the message. A Log Message Details box appears, with detailed information about the message (see Figure 7.3). The box also provides buttons for moving to the next or previous message in the message log and an OK button for exiting.



You can save the event log entries as an unformatted text file to disk. For more information, refer to Section 6.15.



Figure 7.3. Example of a Log Messages Details Box

You can save the Log Messages as an unformatted text file to a user-specified folder. For more information, refer to Section 6.14.

7.1.3 Viewing GigaStorATX Tasks

When the top GigaStorATX icon is selected in the **Physical Resources** tab, you can use the Tasks Info screen to view the GigaStorATX tasks (see Figure 7.4). Examples of tasks include bad block scan and volume initialization activities.

Each row of the Tasks Info screen corresponds to a task. The last column, **Recurring**, shows whether the task is recurring and will repeat again in the future.

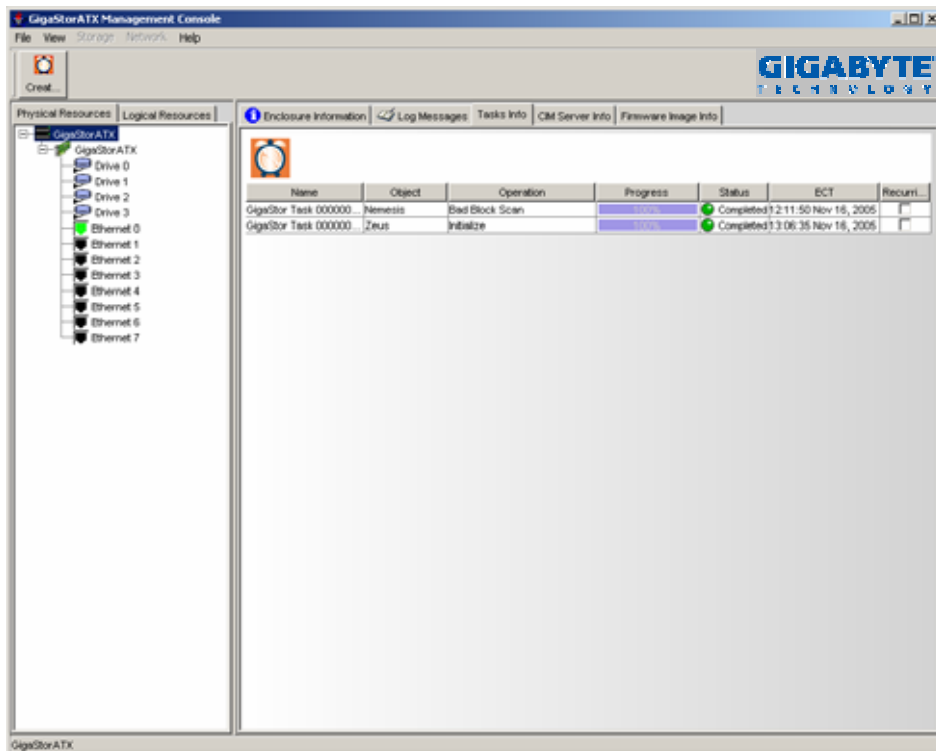
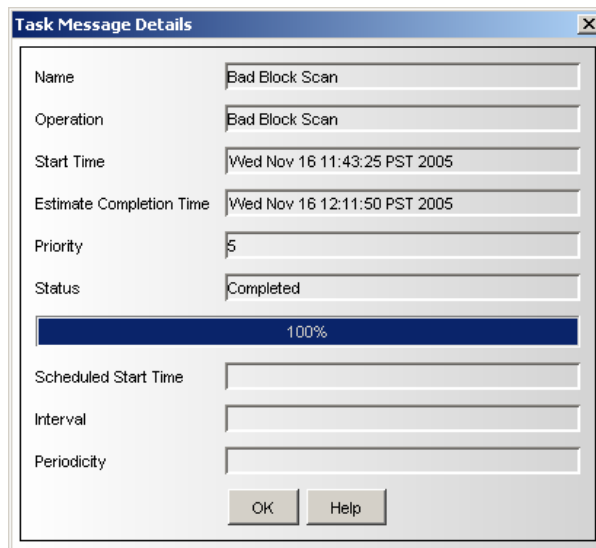


Figure 7.4. Tasks Info Screen

To obtain additional information about a task shown in the Tasks Info screen, double-click the task. A Task Message Details box appears, with detailed information about the task (see Figure 7.5).

A screenshot of a Windows-style dialog box titled "Task Message Details". It contains several input fields for task information: Name (Bad Block Scan), Operation (Bad Block Scan), Start Time (Wed Nov 16 11:43:25 PST 2005), Estimate Completion Time (Wed Nov 16 12:11:50 PST 2005), Priority (5), and Status (Completed). Below these fields is a progress bar that is filled to 100%. At the bottom, there are three more input fields: Scheduled Start Time, Interval, and Periodicity, all of which are currently empty. The dialog box has "OK" and "Help" buttons at the bottom right.

Name	Bad Block Scan
Operation	Bad Block Scan
Start Time	Wed Nov 16 11:43:25 PST 2005
Estimate Completion Time	Wed Nov 16 12:11:50 PST 2005
Priority	5
Status	Completed
100%	
Scheduled Start Time	
Interval	
Periodicity	
OK Help	

Figure 7.5. Example of a Task Message Details Box

If you right-click a task in the Tasks Info screen, a popup similar to the one in Figure 7.6 appears. Depending on the options that are available, you can:

- Set a priority for the selected task.
- Suspend or resume the task.
- Cancel the task to stop the current task from being performed. If the task is recurring, it will start again automatically when scheduled.
- Delete the task.

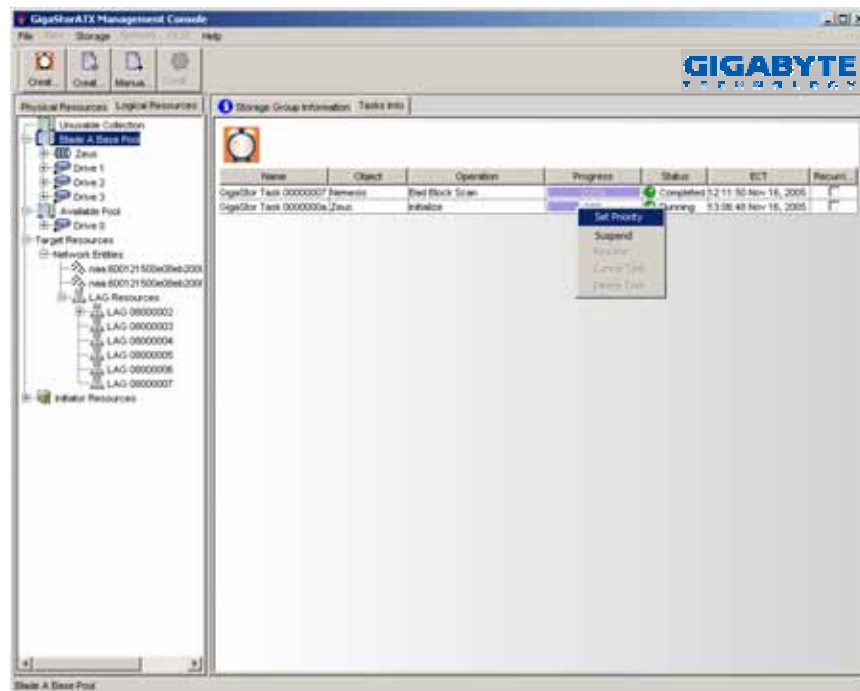


Figure 7.6. Task Popup Menu

7.1.4 Viewing Server CIM Information

When the top GigaStorATX icon is selected in the **Physical Resources** tab, you can use the CIM Server Info screen to view Storage Management Initiative (SMI) server and profile information (see Figure 7.7). The SMI Server Information area has an **Edit** button you can click to change the SMI server information if necessary.

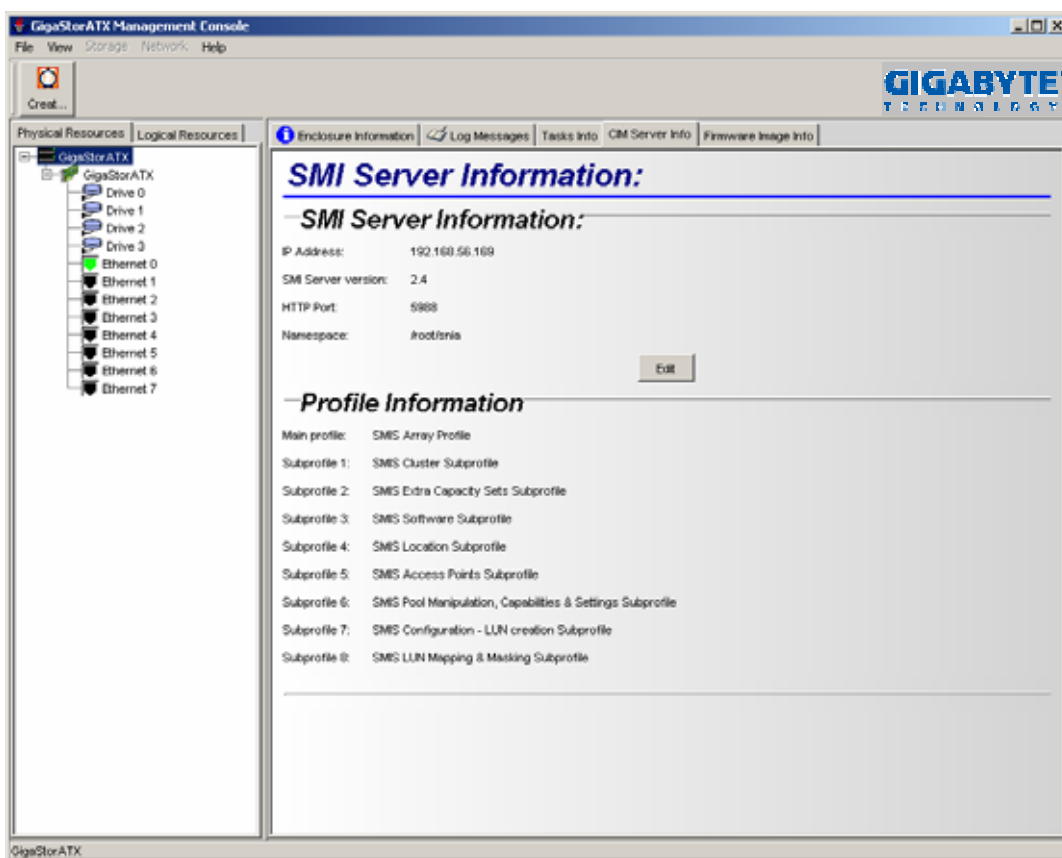


Figure 7.7. CIM Server Info Screen

7.1.5 Viewing Firmware Image Information

When the top GigaStorATX icon is selected in the **Physical Resources** tab, you can use the Firmware Image Info screen to view the currently active firmware image being used by the GigaStorATX Storage Controller (see Figure 7.8). This screen also shows other valid firmware images that have been used with the GigaStorATX.



For information about upgrading the GigaStorATX Storage Controller firmware, refer to Appendix B.

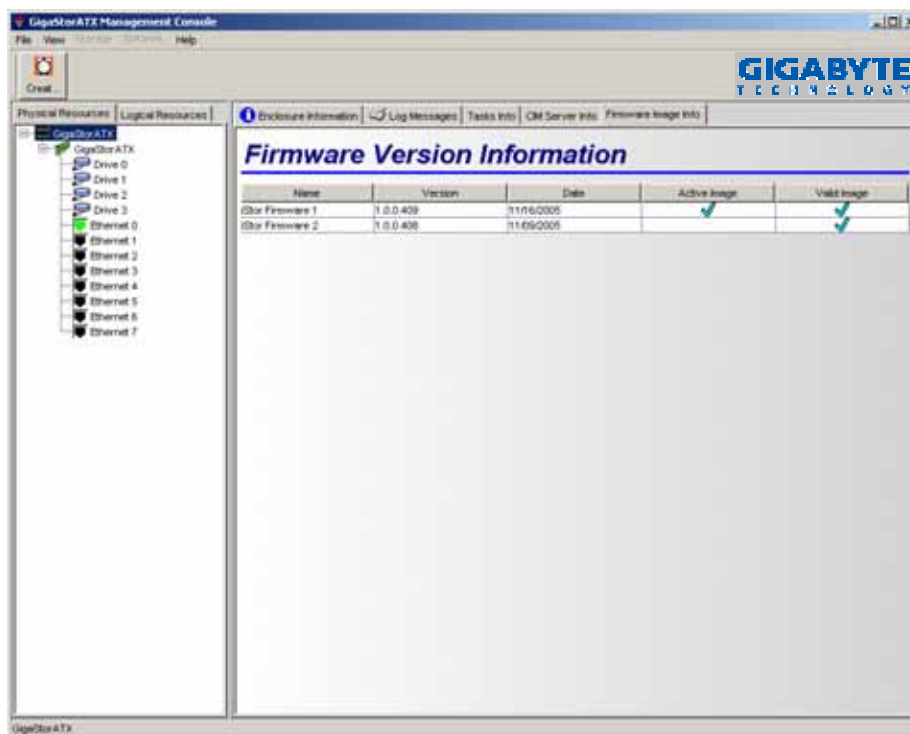


Figure 7.8. Firmware Image Info Screen

7.2 Blade A Base Pool Screens

When **Blade A Base Pool** is selected in the **Logical Resources** tab, the main display area can show the following screens with information about the storage pool:

- **Storage group information.** Refer to Section 7.2.1.
- **Tasks information.** Refer to Section 7.2.2.

You can also display the following screens by clicking the appropriate entity below **Blade A Base Pool**:

- **Volumes.** Lets you view information about the volumes that make up the storage pool. Refer to Section 7.2.3.
- **Drives.** Lets you view information about the drives that make up the storage pool. Refer to Section 7.2.4.

7.2.1 Viewing Information about the Storage Pool

When **Blade A Base Pool** is selected in the **Logical Resources** tab, you can use the Storage Group Information screen to view information about the storage pool (see Figure 7.9).

The top-left side of the screen shows the storage pool type, amount of free space, total capacity, and number of drives. To the right of this information is a pie chart that provides a graphical representation of the amount of used and unused (free) space in the storage pool. Used space is shown in gray and unused space is shown in green.

Below this information are rows that correspond to the drives attached to the GigaStorATX Storage Controller. Each row corresponds to a separate drive and shows the drive's:

- Slot number
- State (online, offline, etc.). For readability, the state is color coded (green = online, black = offline).
- Capacity
- Utilization percentage
- Allocation

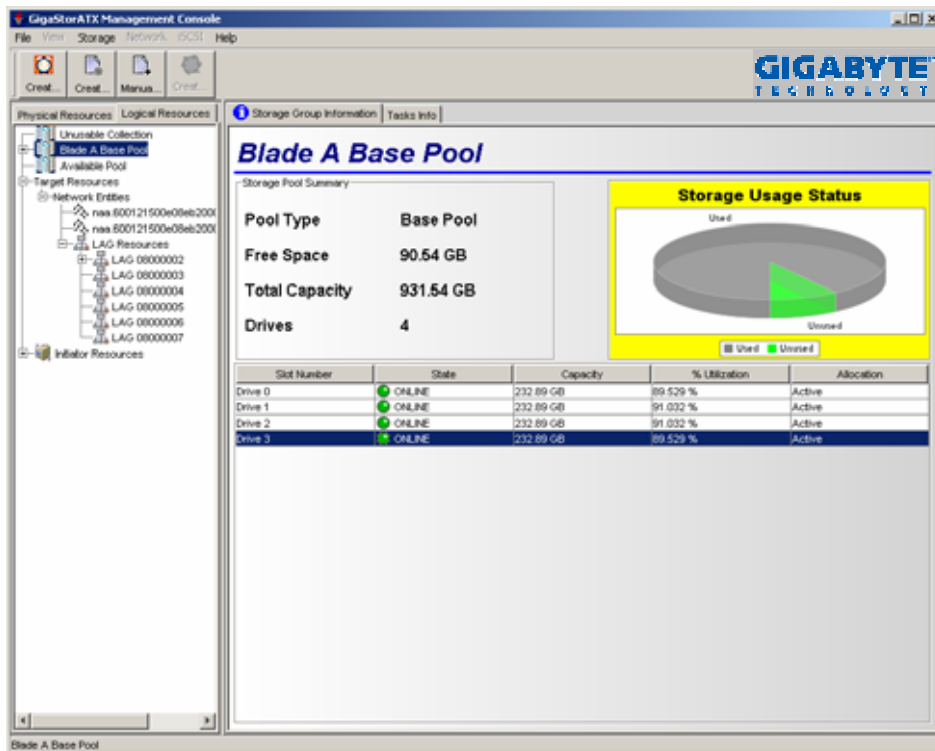


Figure 7.9. Storage Group Information

7.2.2 Viewing Storage Pool Tasks

When **Blade A Base Pool** is selected in the **Logical Resources** tab, you can use the Tasks Info screen to view tasks scheduled for the storage pool (see Figure 7.10). Examples of tasks include media scan and drive initialization activities.

Each row of the Tasks Info screen corresponds to a task. The last column, **Recurring**, shows whether the task is recurring and will repeat again in the future.

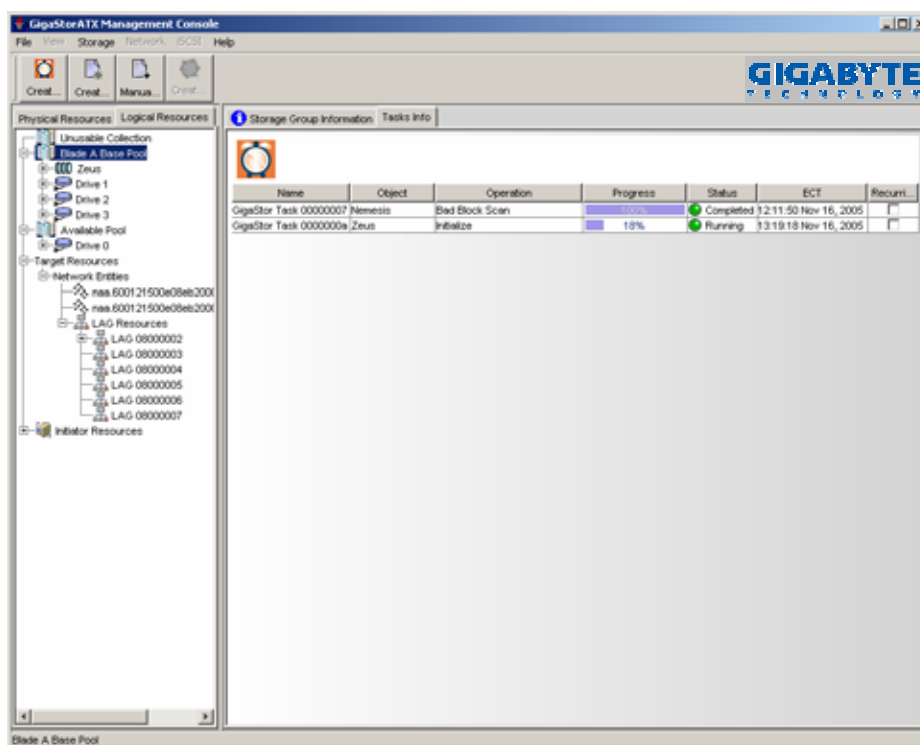
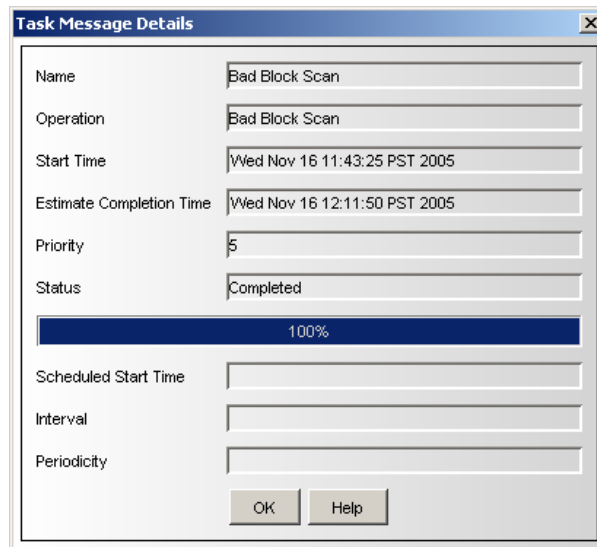


Figure 7.10. Tasks Info Screen

To obtain additional information about a task shown in the Tasks Info screen, double-click the task. A Task Message Details box appears, with detailed information about the task (see Figure 7.13).



The image shows a Windows-style dialog box titled "Task Message Details". It contains several fields for task information: Name, Operation, Start Time, Estimate Completion Time, Priority, and Status. Below these is a progress bar showing 100% completion. At the bottom, there are fields for Scheduled Start Time, Interval, and Periodicity, along with OK and Help buttons.

Name	Bad Block Scan
Operation	Bad Block Scan
Start Time	Wed Nov 16 11:43:25 PST 2005
Estimate Completion Time	Wed Nov 16 12:11:50 PST 2005
Priority	5
Status	Completed
100%	
Scheduled Start Time	
Interval	
Periodicity	

OK Help

Figure 7.11. Example of a Task Message Details Box

7.2.3 Viewing Information about Volumes in the Blade A Base Pool

When a volume is selected under **Blade A Base Pool** in the **Logical Resources** tab, two screens are available in the main display:

- Volume information screen. Refer to Section 7.2.3.1.
- Tasks Info screen. Refer to Section 7.2.3.2.

7.2.3.1 Viewing Volume Information about a Volume

When you click a volume under **Blade A Base Pool**, you can use the Volume Information screen to view information about the selected volume.



The name of the volume appears in the tab. Figure 7.12, for example, shows information for a volume named "Zeus."

The Volume Information screen shows the following information (see Figure 7.12):

- The volume's durable name and size, volume status and cache status, volume type, storage efficiency and storage bandwidth, and chunk size.
- A graphical representation of the drives associated with the volume.
- A LUN Map that shows the iSCSI target node(s), LUN Number(s), and Access Mode(s).

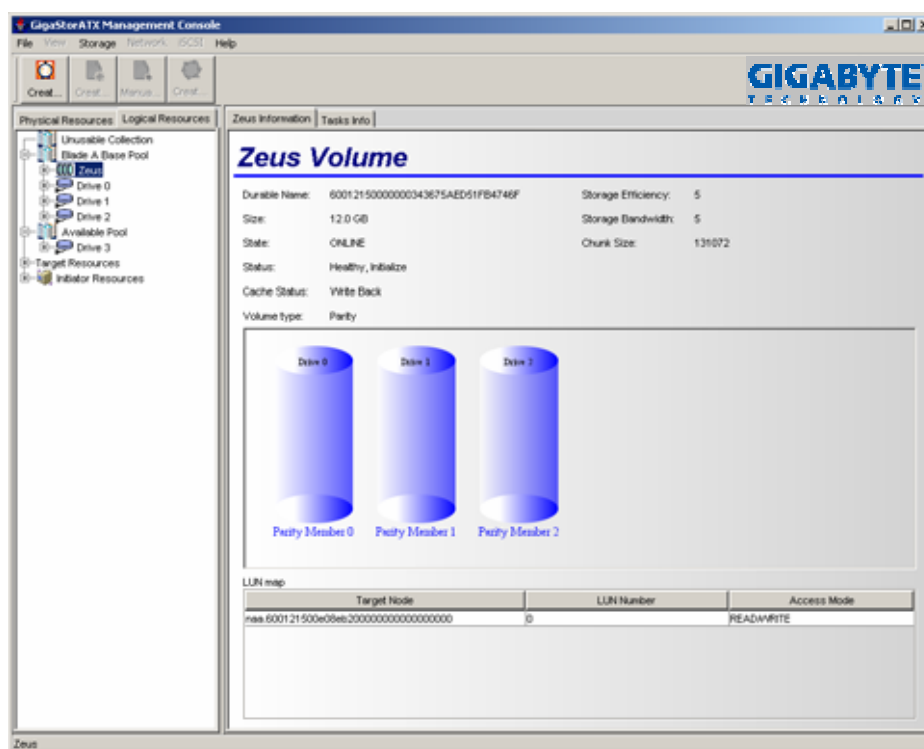


Figure 7.12. Example of Volume Information for a Volume Named Zeus

7.2.3.2 Viewing Volume Tasks

When you click a volume under **Blade A Base Pool**, you can use the Task Info screen to view tasks assigned to the selected volume.

Each row of the Tasks Info screen corresponds to a task assigned to the volume. The information shown for each task is (see Figure 7.13):

- The task name
- The object (volume) assigned the task
- The task (operation) that is to be performed
- The progress of the task
- The status of the task
- The task's estimated completion time (ECT)
- Whether the task is recurring

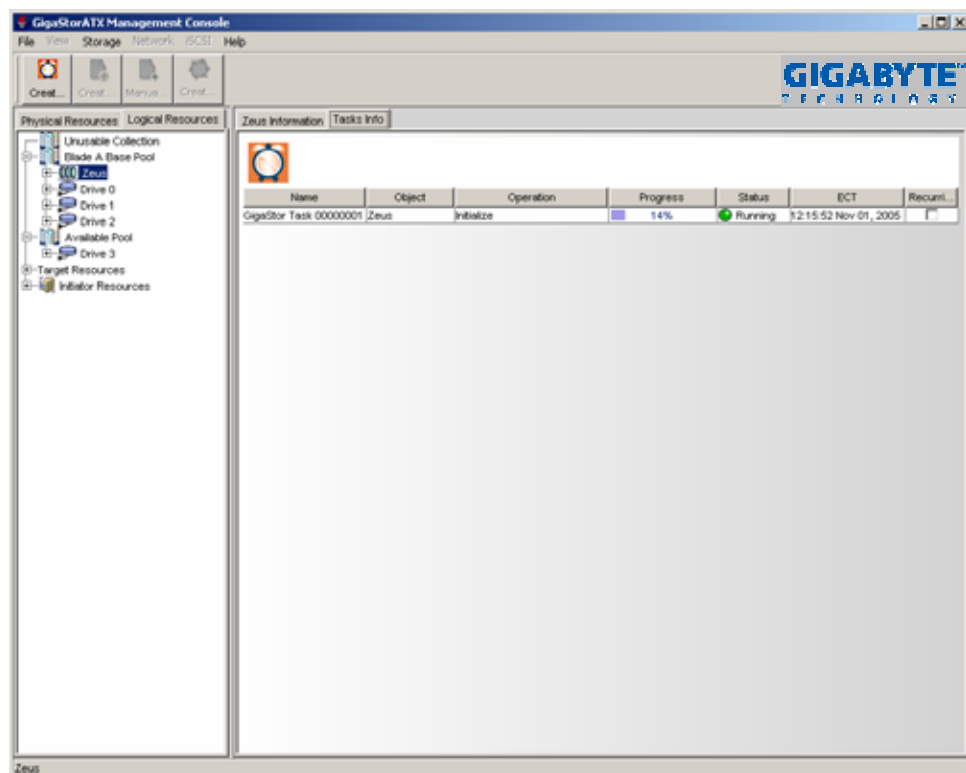
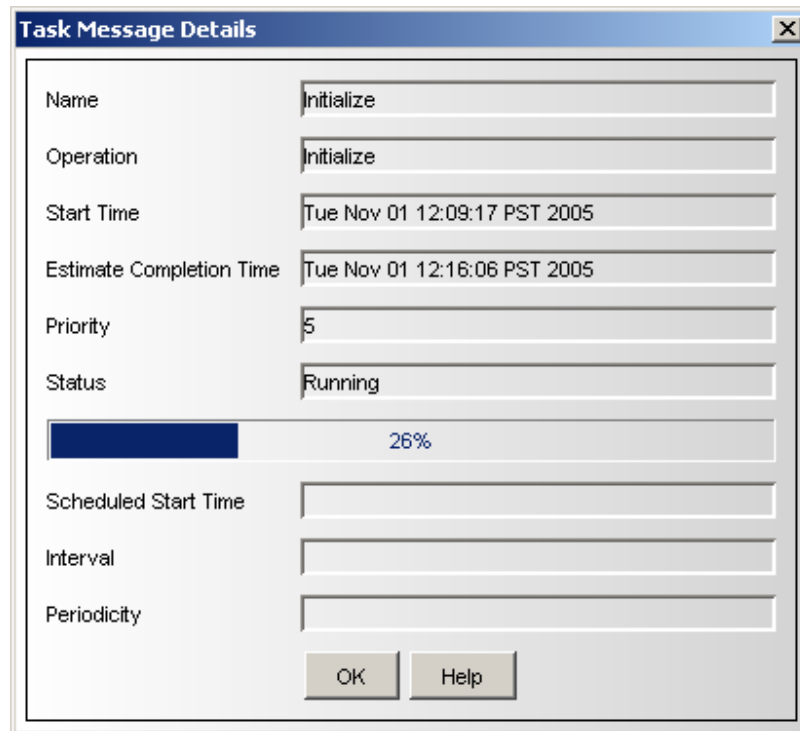


Figure 7.13. Tasks Info Screen

To obtain additional information about a task shown in the Tasks Info screen, double-click the task. A Task Message Details box appears, with detailed information about the task (see Figure 7.14)



The image shows a Windows-style dialog box titled "Task Message Details". It contains several fields for task information:

Field	Value
Name	Initialize
Operation	Initialize
Start Time	Tue Nov 01 12:09:17 PST 2005
Estimate Completion Time	Tue Nov 01 12:16:06 PST 2005
Priority	5
Status	Running
Progress	26%
Scheduled Start Time	
Interval	
Periodicity	

At the bottom of the dialog box are two buttons: "OK" and "Help".

Figure 7.14. Example of the Task Message Details Dialog Box

7.2.4 Viewing Information about Drives in the Blade A Base Pool

When a drive is selected under **Blade A Base Pool** in the **Logical Resources** or when a drive is selected on the **Physical Resources** tab, you can view information about the selected drive (see Figure 7.15). This screen shows the following information about the selected drive:

- Drive number
- Vendor model
- Physical capacity
- State (for example, online or offline)
- Microcode level

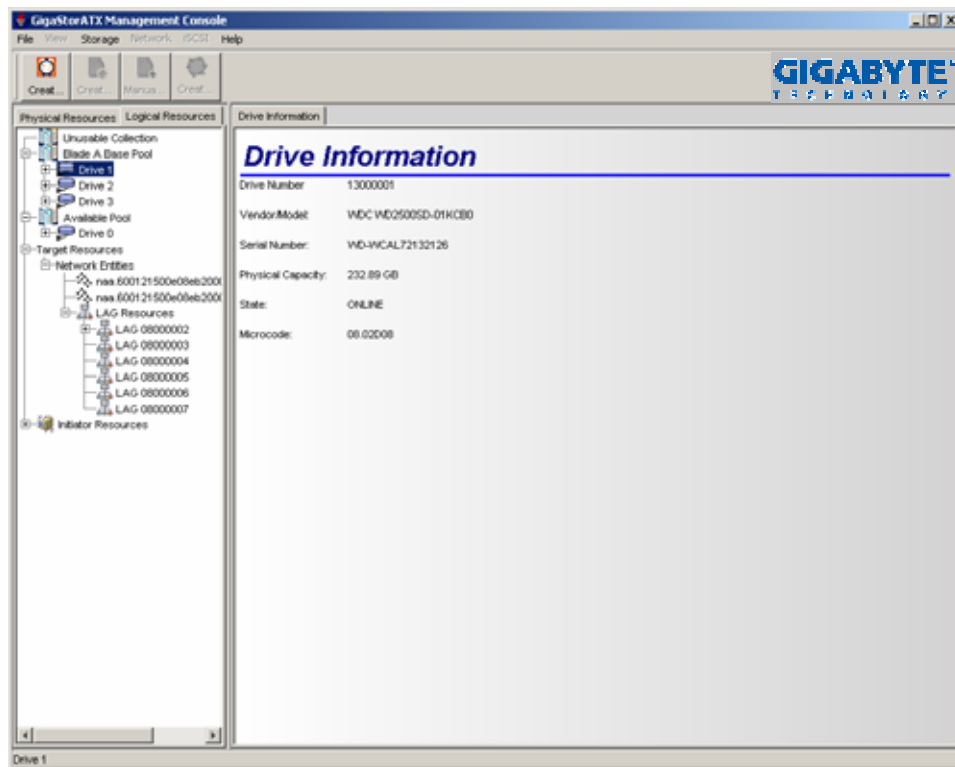


Figure 7.15. Drive Information Screen

7.3 Network Entities Screens

When a network entity is selected in the **Logical Resources** tab, the main display area can show the following screens with information about the selected network entity:

- **Type Node Info.** Refer to Section 7.3.1.
- **Volume Access Info.** Refer to Section 7.3.2.
- **Initiator Access Info.** Refer to Section 7.3.3.
- **Portals Info.** Refer to Section 7.3.4.

7.3.1 Viewing Target Node Information

When a network entity is selected in the **Logical Resources** tab, you can use the Target Node Info screen to view the session and connection parameters associated with the selected network entity.

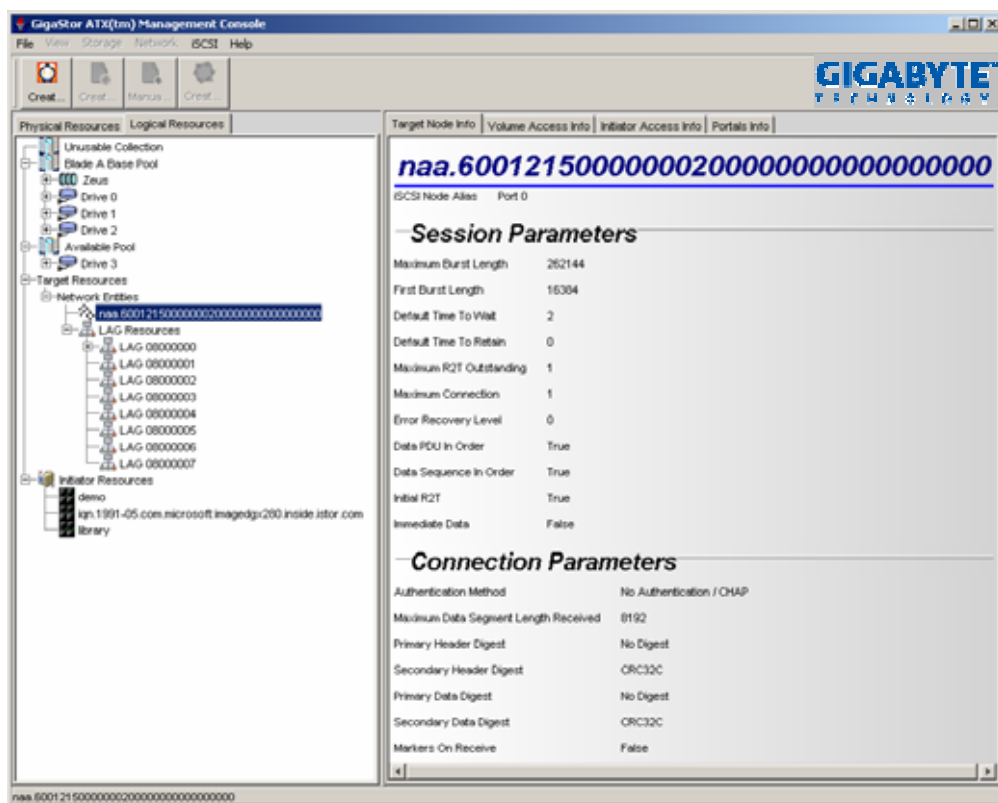


Figure 7.16. Target Node Info Screen

7.3.2 Viewing Volume Access Information

When a network entity is selected in the Logical Resources tab, you can use the Volume Access Info screen to view LUN Map information for the volume associated with the selected network entity.

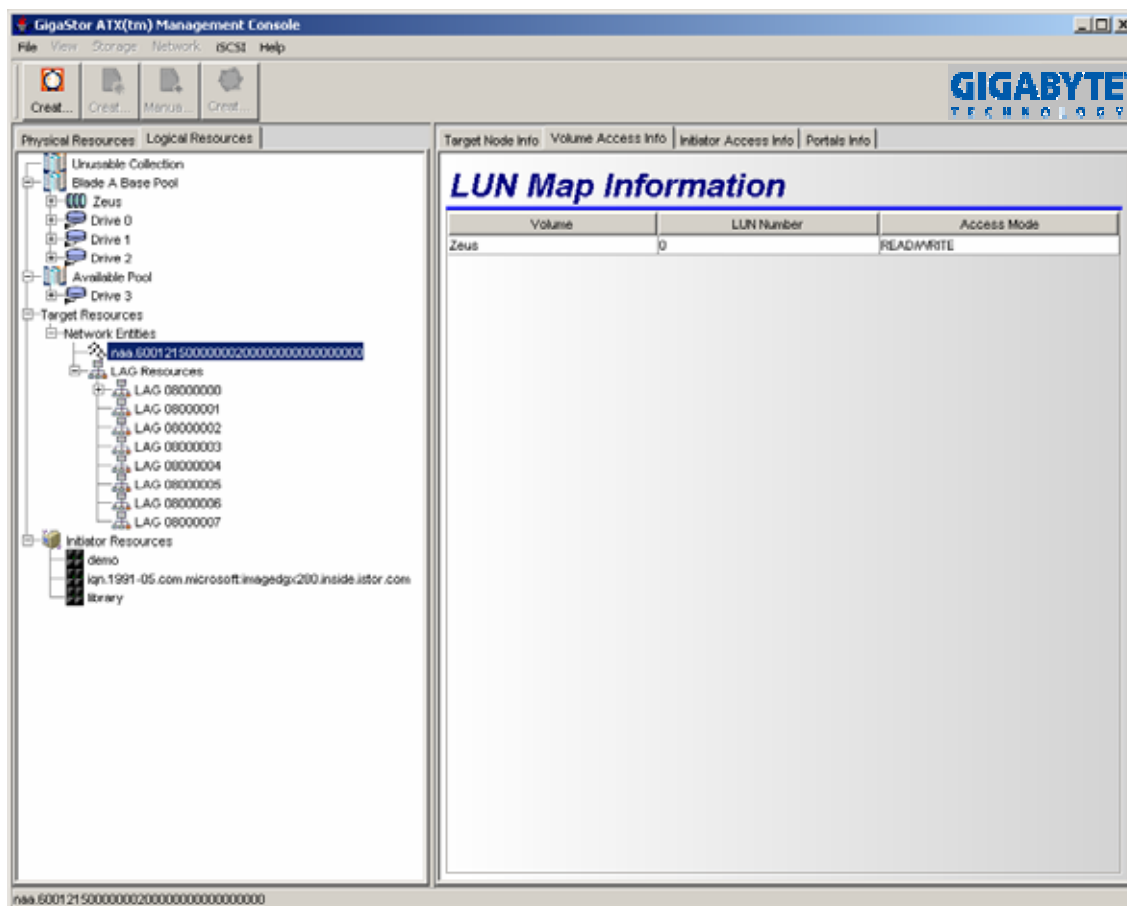


Figure 7.17. Volume Access Info Screen

7.3.3 Viewing Initiator Access Information

When a network entity is selected in the **Logical Resources** tab, you can use the Initiator Access Info screen to view iSCSI initiator and access information associated with the selected network entity.

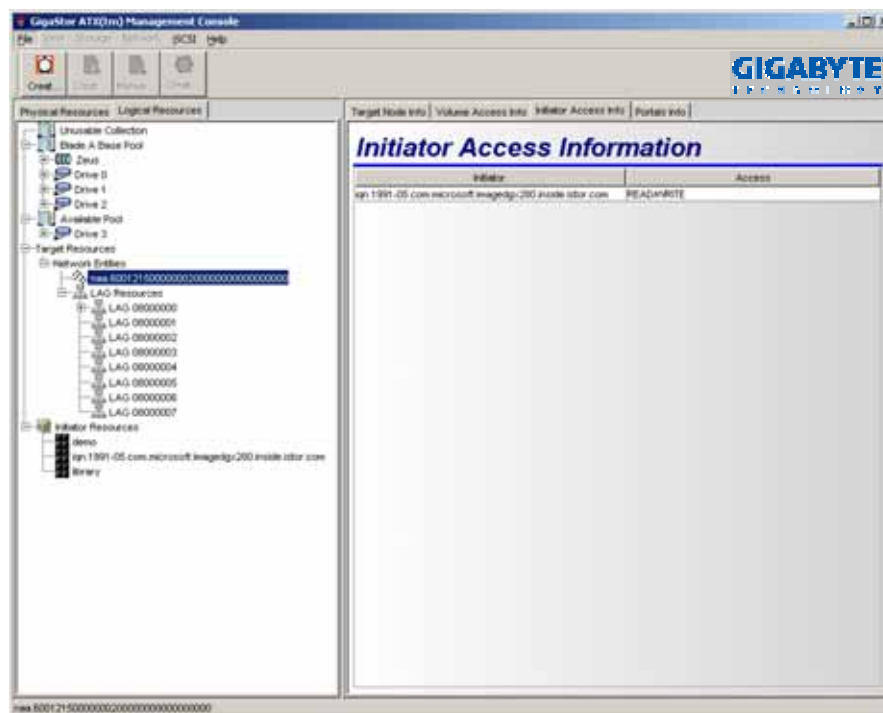


Figure 7.18. Initiator Access Info Screen

7.3.4 Viewing Network Portal Information

When a network entity is selected in the **Logical Resources** tab, you can use the Portals Info screen to view the IP address and port number associated with the selected network entity.

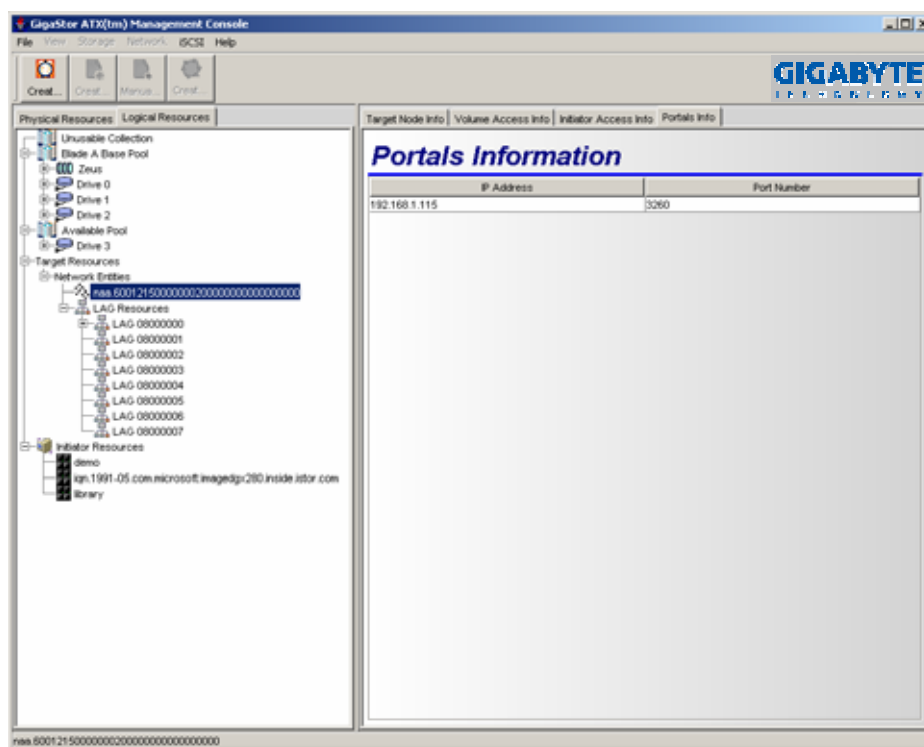


Figure 7.19. Portals Info Screen

7.3.5 Viewing LAG Port Information

When a LAG is selected in the **Logical Resources** tab, the main display shows the **LAG Port Info** tab (see Figure 7.20). This tab is divided into the following sections:

- **LAG port information.** This section shows the following information:
 - LAG MAC port address
 - Requested per-port speed
 - Aggregate LAG speed
 - Link status
 - Admin status
 - Ethernet encapsulation
 - VLAN support
 - Auto negotiation
 - MTU
- **Ethernet Port.** This area shows the status of each Ethernet port associated with the LAG port. To enhance viewing, online ports are shown in green.
- **IP Address.** This area shows the IP addresses and corresponding VLAN IDs, if any, associated with the LAG port.

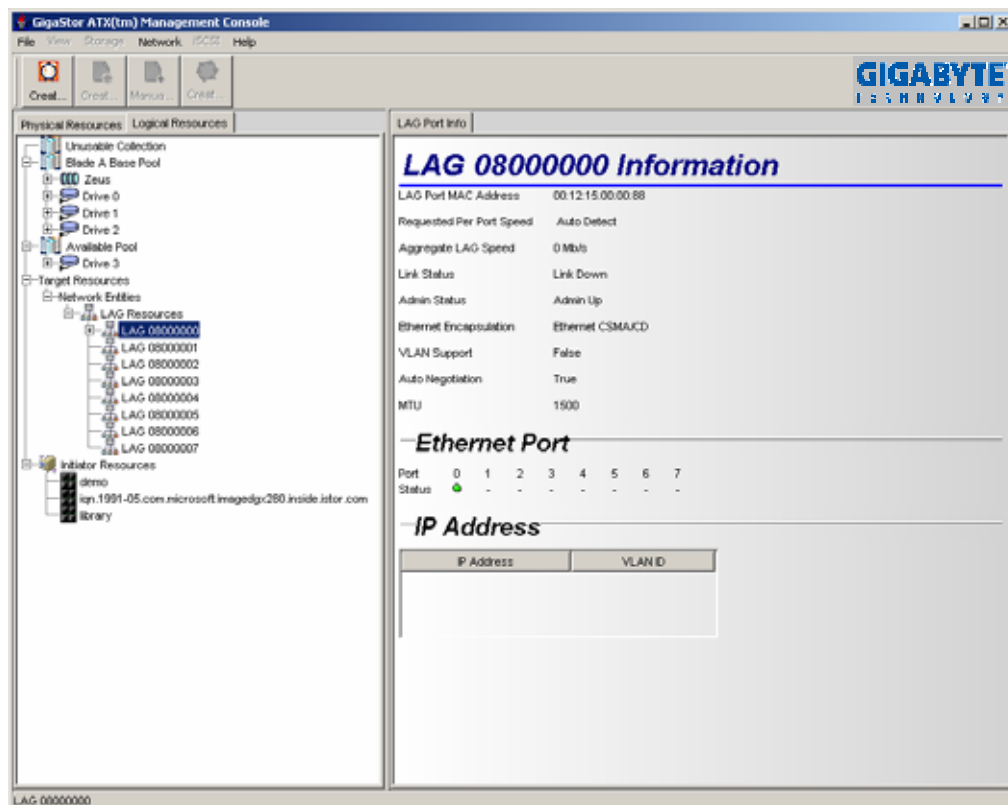


Figure 7.20. Example of a LAG Port Info Screen

7.3.6 Viewing Connection Information

If you select a connection in the **Physical Resources** tab, the main display shows the connection parameters and session information for the selected connection (see Figure 7.21).

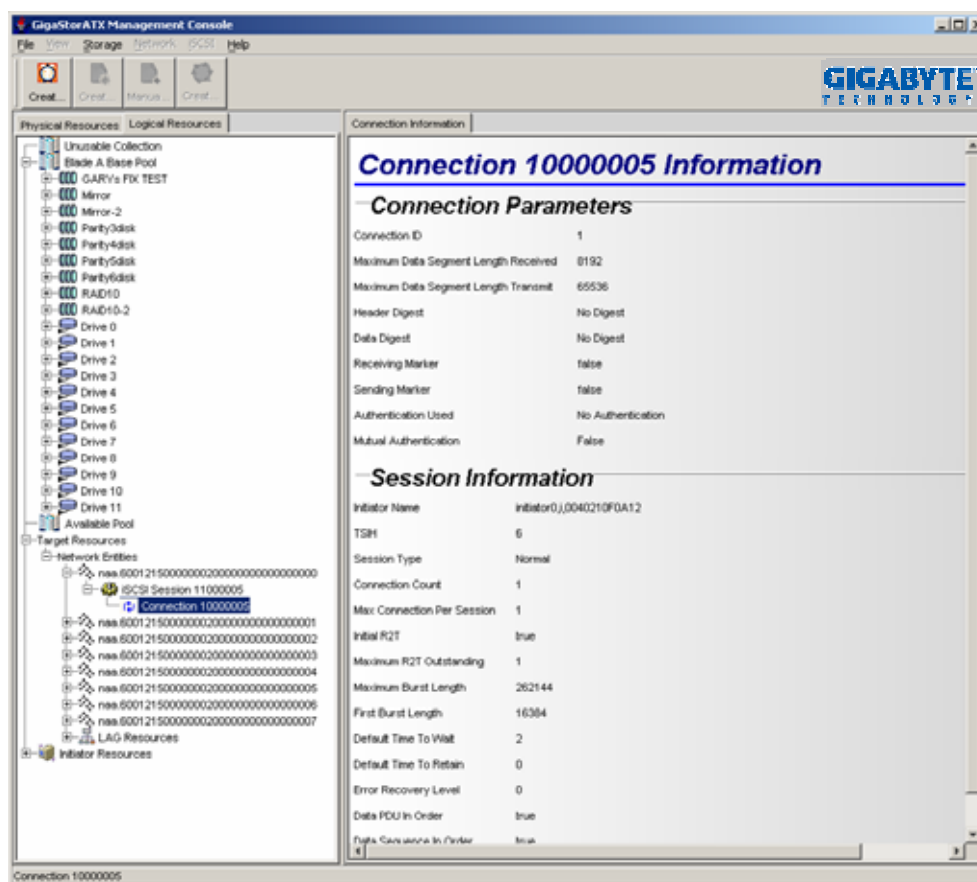


Figure 7.21. Connection Information Screen

7.4 Initiator Resource Screens

When a network entity is selected in the **Logical Resources** tab, the main display area can show the following tabs with information about the selected iSCSI initiator:

- **Initiator Info.** Refer to Section 7.4.1.
- **LUN Access Info.** Refer to Section 7.4.2.

7.4.1 Viewing Initiator Information

When an iSCSI initiator is selected in the **Logical Resources** tab, you can use the Initiator Information screen to view information associated with the selected iSCSI initiator (see Figure 7.22).

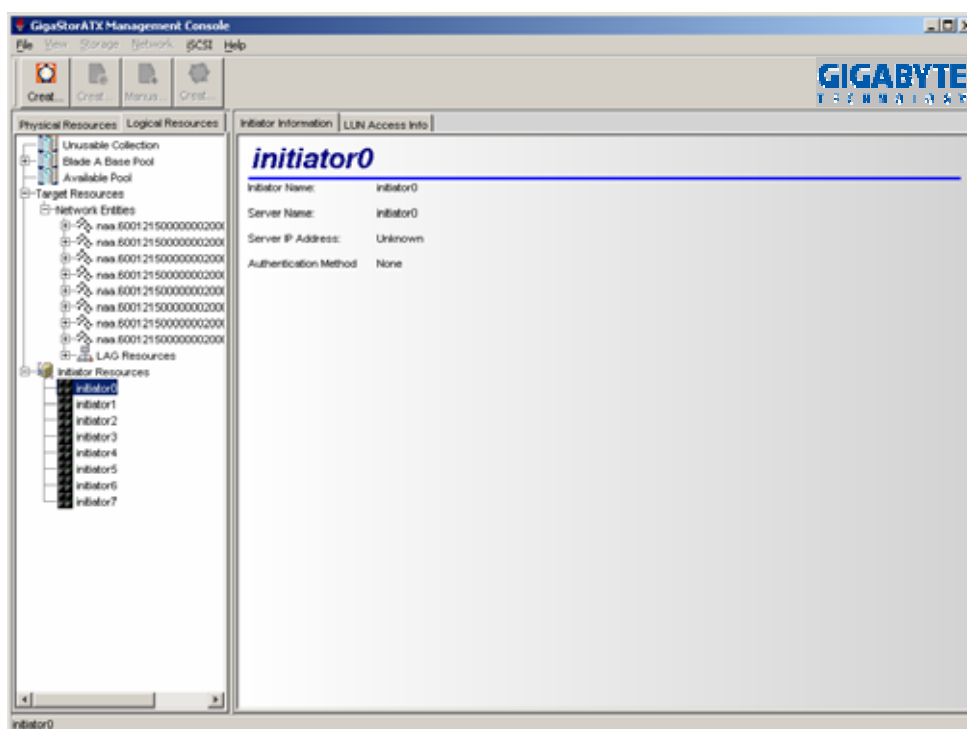


Figure 7.22. Initiator Information Screen

7.4.2 Viewing LUN Map Information

When an iSCSI initiator is selected in the **Logical Resources** tab, you can use the LUN Map Information screen to view LUN Map information associated with the selected iSCSI initiator (see Figure 7.23).

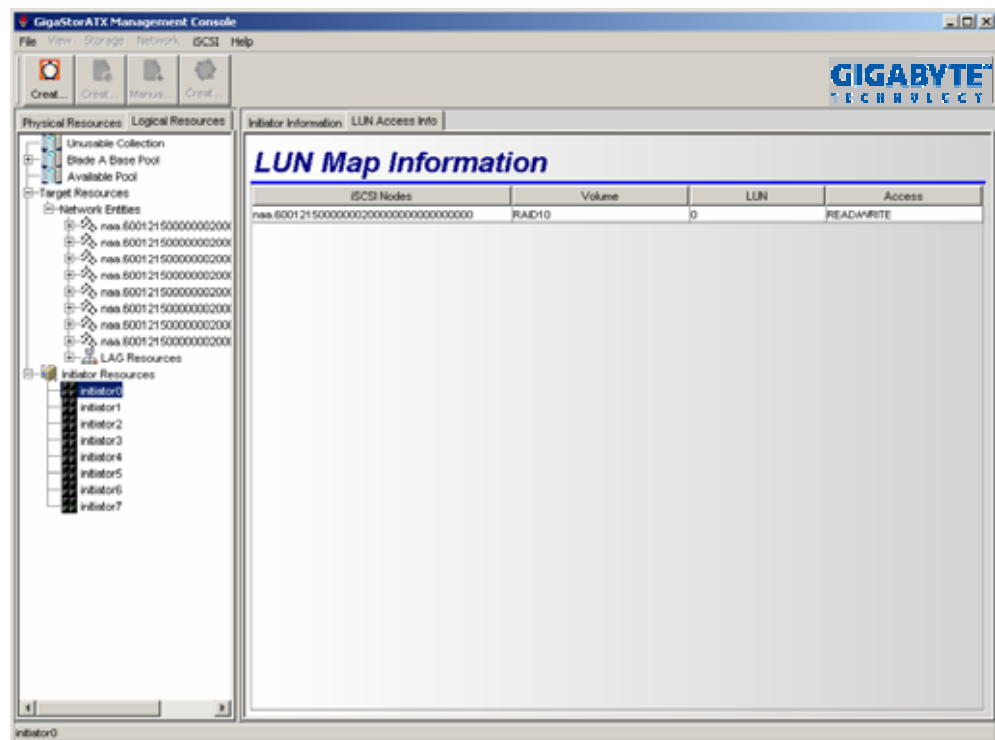


Figure 7.23. LUN Map Information Screen

7.5 Viewing Ethernet Port Information

When an Ethernet port is selected in the **Physical Resources** tab, the main display area shows the physical port information for the selected Ethernet port (see Figure 7.24).

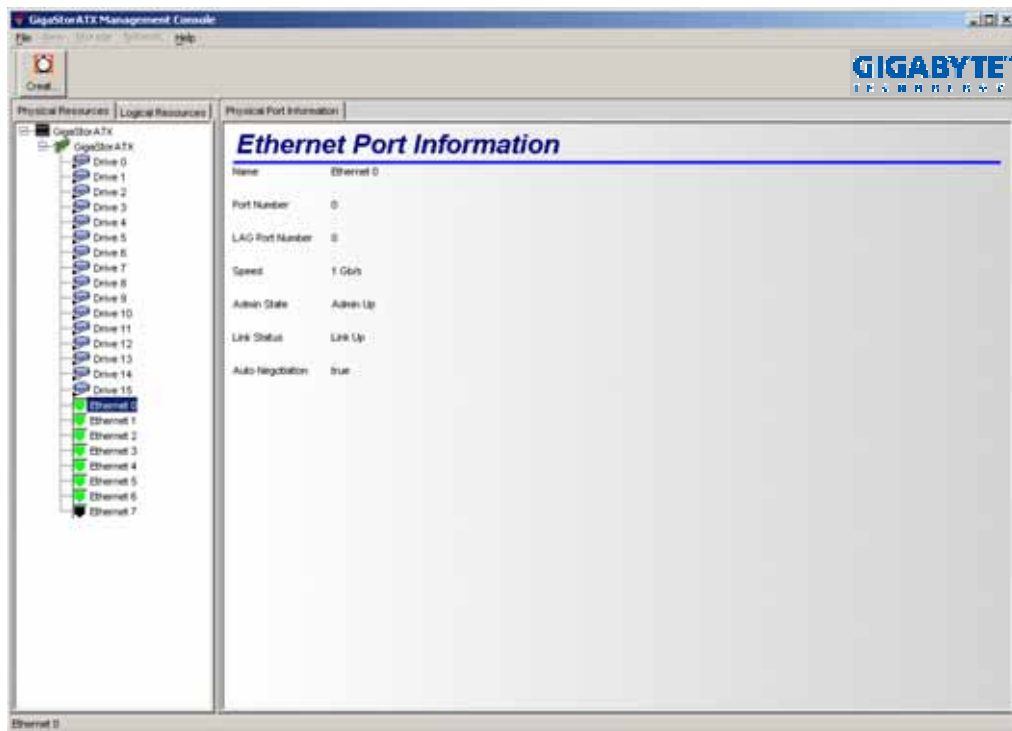


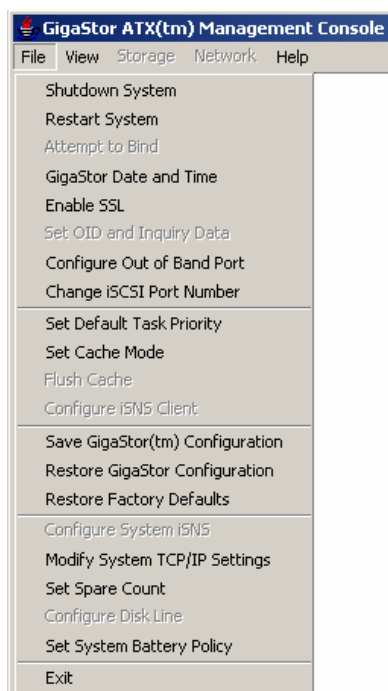
Figure 7.24. Physical Port Information

Appendix A Summary of Menus and Commands

This appendix summarizes the menus and commands available in the GigaStorATX management console.

A.1 File Menu

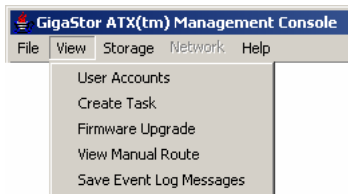
The File menu contains the following commands.



Command	Description
Shutdown System	Lets you shut down the GigaStorATX management console and Storage Controller.
Restart System	Lets you reboot the GigaStorATX management console and Storage Controller.
Attempt to Bind	Reserved for future use.
GigaStor Date and Time	Lets you change the system date and time.
Enable SSL	Lets you enable/disable Secure Sockets Layer.
Set OID and Inquiry Data	Lets you set the organization unique identifier of the connection or session.
Configure Out of Band Port	Lets you change the GigaStorATX IP address, subnet mask, hostname, and gateway settings.
Change iSCSI Port Number	Lets you change the iSCSI port number for the
Set Default Task Priority	Lets you set the priority of tasks.
Set Cache Mode	Lets you enable cache on the GigaStorATX Storage Controller cache memory.
Flush Cache	Lets you remove information stored in cache.
Configure iSNS Client	Reserved for future use.
Save GigaStor Configuration	Lets you save the GigaStorATX configuration.
Restore GigaStor Configuration	Lets you restore the GigaStorATX configuration.
Restore Factory Defaults	Lets you return the unit to its factory default settings.
Configure System iSNS	Reserved for future use.
Modify System TCP/IP Settings	Lets you change the system TCP/IP settings.
Set Spare Count	Lets you specify the number of spares available to the GigaStorATX.
Configure Disk Line	Reserved for future use.
Set System Battery Policy	Lets you specify the action that the GigaStorATX is to follow if the battery fails.
Exit	Lets you exit the GigaStorATX management console.

A.2 View Menu

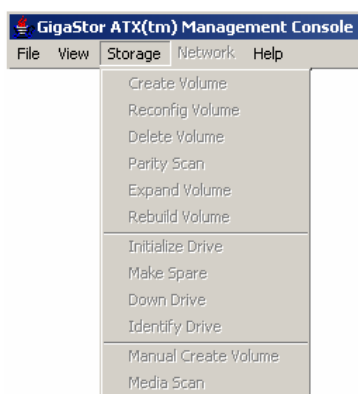
The View menu contains the following commands.



Command	Description
User Accounts	Lets you set up, modify, and delete user accounts.
Create Task	Lets you define tasks that the GigaStorATX is to perform. Tasks defined here can be viewed on the Tasks Info screen.
Firmware Upgrade	Lets you upgrade the GigaStorATX Storage Controller firmware.
View Manual Route	Lets you view the manual route.
Save Event Log Messages	Lets you save the event log as an unformatted text file to a user-specified folder.

A.3 Storage Menu

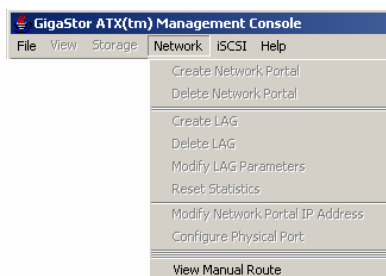
The Storage menu contains the following commands.



Command	Description
Create Volume	Lets you create a new volume.
Reconfig Volume	Lets you change the settings for a selected volume.
Delete Volume	Lets you delete a volume.
Parity Scan	Lets you perform a party scan on the selected drives.
Expand Volume	Lets you increase the capacity of a selected volume.
Rebuild Volume	Reserved for future use.
Initialize Drive	Lets you initialize a selected drive.
Make Spare	Reserved for future use.
Down Drive	Reserved for future use.
Identify Drive	Reserved for future use.
Manual Create Volume	Lets you create a volume manually.
Media Scan	Lets you perform a media scan on a selected drive.

A.4 Network Menu

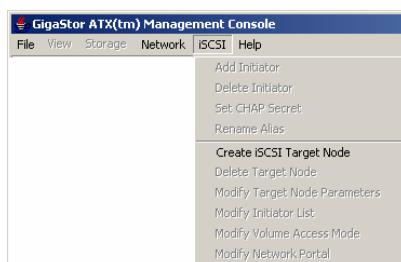
The Network menu contains the following commands.



Command	Description
Create Network Portal	Lets you create a network portal.
Delete Network Portal	Lets you delete a network portal.
Create LAG	Lets you create a LAG.
Delete LAG	Lets you delete a LAG.
Modify LAG Parameters	Lets you change the settings for a selected LAG.
Reset Statistics	Reserved for future use.
Modify Network Portal IP Address	Lets you modify a network portal IP address.
Config Physical Port	Lets you configure a selected physical port.
View Manual Route	Lets you view the manual route.

A.5 iSCSI Menu

The iSCSI menu contains the following commands.



Command	Description
Add Initiator	Lets you add an iSCSI initiator.
Delete Initiator	Lets you delete an iSCSI initiator.
Set CHAP Secret	Lets you specify a CHAP secret.
Rename Alias	Reserved for future use.
Create iSCSI Target Node	Lets you create an iSCSI node.
Delete Target Node	Lets you delete an iSCSI target node.
Modify Target Node Parameters	Lets you change the settings for a selected iSCSI target.
Modify Initiator List	Lets you change the entries in the iSCSI initiator list.
Modify Volume Access Mode	Lets you change the settings for a selected volume.
Modify Network Portal	Lets you change the settings for a selected network portal.

A.6 Help Menu

The **Help** menu contains the following commands.



Command	Description
Help	Lets you access the GigaStorATX online help.
About	Shows the GigaStorATX management console version number. A System Properties tab lets you view system properties.

Appendix B Upgrading Firmware

This appendix describes how to upgrade the firmware in the GigaStorATX Storage Controller using the GigaStorATX management console.

1. Go to the GIGA-BYTE FTP site and download the appropriate firmware file.



On a piece of paper, write the location and folder where you download the firmware file. You will need to access this location later in this procedure.

2. On the **View** menu, click **Firmware Upgrade**. The message in B-1 appears.

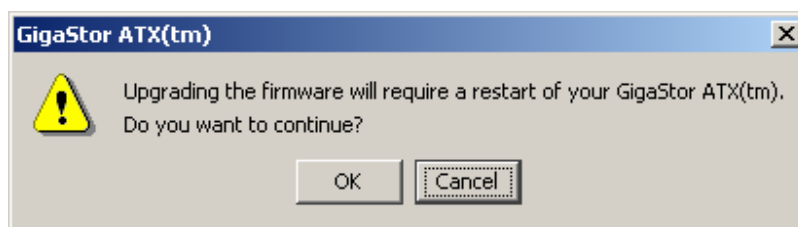


Figure B-1. Firmware Upgrade Message

3. Click **OK** to continue. (Or click **Cancel** to exit without upgrading the firmware.) If you click **OK**, the Open dialog box appears (see Figure B-2).

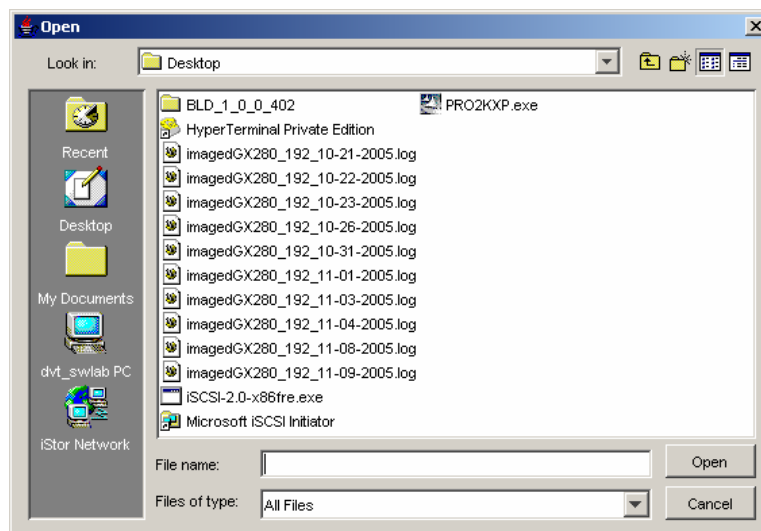


Figure B-2. Example of the Open Dialog Box

4. Navigate to the location where the firmware file you downloaded from the GIGA-BYTE FTP site is located.

5. Click the firmware file, then click the **Open** button. (Or as a shortcut, double-click the firmware file). The new firmware is installed. A progress bar shows the status of the installation.
6. After the firmware is installed, a message prompts you to press **OK** to restart the GigaStorATX Storage Controller to have the new firmware take effect.
7. Click **OK** to restart the GigaStorATX Storage Controller. If additional messages appear, click **OK** to remove them.
8. After the GigaStorATX Storage Controller restarts, launch your Web browser again and log in to the GigaStorATX management console.



The Firmware Image Info screen shows the current active firmware image being used by the GigaStorATX Storage Controller. For more information, refer to Section 7.1.5.

Appendix C Acronyms and Abbreviations

Administrator	The person responsible for managing storage operations. The administrator is the user who will use the storage management console provided with the GigaStorATX Storage Controller.
CHAP	Challenge Handshake Authentication Protocol. CHAP is a protocol for authenticating the peer of a connection and is based upon the peers sharing a secret (a security key similar to a password).
CSMA/CD	Carrier Sense Multiple Access/Collision Detection.) The LAN access method used in Ethernet. When a device wants to gain access to the network, it checks whether the network is quiet (senses the carrier). If it is not, it waits a random amount of time before retrying. If the network is quiet and two devices access the line at exactly the same time, their signals collide. When the collision is detected, they both back off and each waits a random amount of time before retrying.
Drive	A physical storage drive (usually, but not necessarily, a disk drive) managed by the GigaStorATX system.
802.3	An IEEE standard for a CSMA/CD local-area network access method, which is used in Ethernet, the most common LAN technology.
Extent	A contiguous set of LBs on a drive. An extent is also called a physical extent.
Initiator node	An iSCSI node that performs as an iSCSI Initiator in accessing data stored on the GigaStor system.
LAG	Link Aggregation Group. The combining of physical network links into a single logical link for increased bandwidth. A LAG increases capacity and availability of the communications channel between devices using existing Fast Ethernet and Gigabit Ethernet technology. LAGs also provide load balancing, where processing and communications activity is distributed across several links in a trunk, so that no single link is overwhelmed.
LB	Logical Block. A block of storage stored (and read) by the system.
LUN	Logical Unit Number. According to the SCSI Architectural Model, the number used by an iSCSI initiator to access a target's Logical Unit. In the GigaStorATX Storage Controller, a logical unit is a volume.
Member	A group of chunks organized vertically in an array.
Mirror	A method for improving reliability of a Volume by providing data redundancy. In a mirror volume, data redundancy is provided by recoding every data block on more than one drive.
MPU	Management Processor Unit. The PowerPC CPU used for management processing on the GigaStorATX Storage Controller.

Parity	A way to improve reliability of a volume by providing data redundancy. In a parity volume, data redundancy is improved by recording data blocks across multiple drives and recording one additional parity block on an additional drive. If any single drive fails, the original data can be reconstructed from the remaining blocks.
PLBN	Physical Logical Block Number. The number of an LB on a drive.
Striping	A way to improve I/O performance on a volume by splitting data among multiple drives.
Storage pool	A collection of drives used as a group for common functions (for example, the space used by a volume must be allocated from a specific storage pool).
Subnet	A portion of a network that shares a common address component. On TCP/IP networks, subnets are defined as all devices whose IP addresses have the same prefix. For example, all devices with IP addresses that start with 100.100.100. are part of the same subnet.
VLBN	Virtual Logical Block Number. The number of an LB within a volume. The LB is used to store customer data.
Volume	A fixed amount of storage on a disk. The term volume is often used as a synonym for the storage medium itself, but it is possible for a single disk to contain more than one volume or for a volume to span more than one disk.

Index

A

Accounts · 72
Activities
 cache · 79
 CHAP secret · 94
 date and time · 74
 default task priority · 78
 flushing cache · 80
 IP route tables · 92
 iSCSI
 port number · 77
 modifying system TCP/IP settings · 84
 restarting the GigaStorATX · 89
 restoring GigaStorATX configuration · 82
 saving GigaStorATX configuration · 81
 saving the event log · 95
 scheduled tasks · 90
 setting cache mode · 79
 setting the battery policy · 87
 setting the spare count · 86
 SSL · 76
 user accounts · 72
Adding initiators · 52
Automatically creating volumes · 38

B

Battery policy, setting · 87
Blade A Base Pool screens · 107

C

Cache
 flushing · 80
 setting the mode · 79
Changing the default IP address · 25
CHAP secret · 94
Configuration
 restoring · 82
 restoring factory defaults · 83
 roadmap · 14
 saving · 81
Configuring physical ports · 61
Connection Information screen · 121
Contact information · vi
Conventions · v
Creating
 iSCSI target nodes · 63
 LAGs · 57
 network portals · 53
Creating scheduled tasks · 90
Creating volumes
 automatically · 38

manually · 42

D

Date and time · 74
Default IP address, changing · 25
Default task priority · 78
Deleting
 LAGs · 62
 network portals · 56
 user accounts · 74
 volumes · 47
Drive Information screen · 115
Drives, overview · 31

E

Enclosure Information screen · 98
Ethernet Port · 120
Event log
 details · 100
 saving · 95
Expanding volumes · 34
 procedure · 45

F

Factory defaults, restoring · 83
File menu · 125
Firmware
 image information · 106
 upgrading · 131
Firmware Image Info screen · 106
Flushing cache · 80
Footer · 24

G

GigaStor screens · 98
GigaStorATX
 restarting · 89
GigaStorATX
 date and time · 74
 managing configurations · 81
 restoring configurations · 82
 restoring factory defaults · 83
 saving configuration · 81
 shutting down · 27
GigaStorATX
 viewing tasks · 102

H

Help menu · 129

I

Initializing a volume · 34

- Initiator Access Info screen · 118
- Initiator information · 122
- Initiator Information screen · 122
- Initiators, adding · 52
- Internal structure of volumes · 32
- IP address
 - and VLAN IDs · 120
 - changing · 25
 - iSCSI target · 53
 - network portal · 54
- IP route tables · 92
- iSCSI
 - menu · 128
 - port number · 77
 - target node creation · 63
- iSCSI initiator, logging on · 67
- iSCSI target, ascertaining the IP address · 53

J

- JBOD · 32

L

- LAG Port Info screen · 120
- LAG port information · 120
- LAGs
 - creating · 57
 - deleting · 62
 - modifying parameters · 59
- Launching the management console · 17
- Log Message Details · 100
- Log Messages screen · 100
- Logging on to iSCSI initiator · 67
- LUN Map Information screen · 123

M

- Main display area · 22
- Main screen · 19
 - footer · 24
 - main display area · 22
 - menu / tool bar area · 20
 - resource pane · 21
- Management console
 - changing the default IP address · 25
 - description · 14
 - launching · 17
 - main screen · 19
 - shutting down · 26
 - user accounts · 19
- Managing GigaStorATX configurations · 81
- Manually creating volumes · 42
- Media scan
 - overview · 34
 - procedure · 49
- Menu / toolbar area · 20

Menus

- File · 125
- Help · 129
- iSCSI · 128
- Network · 128
- Storage · 127
- View · 126
- Message Log Summary · 98
- Mirror · 32
- Modifying
 - LAG parameters · 59
 - network portal parameters · 55
 - system TCP/IP settings · 84
 - volume configurations · 45

N

- Network Entities screens · 116
- Network menu · 128
- Network portals
 - assigning an IP address · 54
 - creating · 53
 - deleting · 56
 - modifying parameters · 55

P

- Parity · 32
- Parity scan
 - overview · 35
 - procedure · 48
- Physical Port Information screen · 124
- Physical ports, configuring · 61
- Portals Info screen · 119

R

- Rebuilding a volume · 34
- Resource pane · 21
- Restarting the GigaStorATX · 89
- Restoring
 - factory defaults · 83
 - GigaStorATX configurations · 82

S

- Saving
 - event log · 95
 - GigaStorATX configuration · 81
- Scheduled tasks · 90
- Screens
 - Blade A Base Pool · 107
 - Connection Information · 121
 - Drive Information · 115
 - enclosure information · 98
 - Firmware Image Info · 106
 - GigaStor · 98
 - Initiator Access Info · 118

- Initiator Information · 122
- LAG Port Info · 120
- LUN Map Information · 123
- Network Entities · 116
- Physical Port Information · 124
- Portals Info · 119
- Server CIM Info · 105
- Storage Group Information · 108
- Target Node Info · 116
- Tasks Info, GigaStorATX · 102
- Tasks Info, storage pools · 109
- Tasks Info, volumes · 113
- Volume Access Info · 117
- volume information · 112
- Server CIM Info screen · 105
- Setting
 - battery policy · 87
 - cache mode · 79
 - spare count · 86
 - user accounts · 72
- Shutting down the GigaStorATX · 27
- Shutting down the GigaStorATX management console · 26
- Spare count · 34
 - setting · 86
- SSL · 76
- Storage Group Information screen · 108
- Storage menu · 127
- Storage pools · 29, 31
- Stripe · 32
- Stripe mirror · 32
- Structure of volumes · 32
- System TCP/IP settings, modifying · 84
- Systems Settings · 98

T

- Target Node Info screen · 116
- Task message details
 - GigaStorATX · 103
 - storage pools · 110
 - volumes · 114
- Tasks
 - creating · 90
 - default priority · 78
 - expanding a volume · 34
 - initializing a volume · 34
 - media scan · 34
 - overview · 34
 - parity scan · 35
 - rebuilding a volume · 34
- Tasks Info screen
 - GigaStorATX · 102
 - storage pools · 109
 - volumes · 113

- TCP/IP Default Parameters · 98
- Time and date · 74
- Typographic conventions · v

U

- Upgrading firmware · 131
- User accounts · 19
 - deleting · 74
 - setting up · 72
- User accounts · 72

V

- View menu · 126
- Viewing
 - connection information · 121
 - drive information · 115
 - firmware image information · 106
 - GigaStorATX tasks · 102
 - initiator access information · 118
 - initiator information · 122
 - LAG port information · 120
 - log messages · 100
 - LUN map information · 123
 - message log summary · 98
 - physical port information · 124
 - portal information · 119
 - Server CIM information · 105
 - storage group information · 108
 - storage pool tasks · 109
 - system settings · 98
 - target node drive information · 116
 - TCP/IP default parameters · 98
 - volume access information · 117
 - volume information · 112
 - volume tasks · 113
- VLAN IDs · 120
- Volume Access Info screen · 117
- Volume Information screen · 112
- Volumes
 - creating automatically · 38
 - creating manually · 42
 - deleting · 47
 - expanding · 45
 - internal structure · 32
 - media scan · 49
 - modifying configurations · 45
 - organizing · 32
 - overview · 31
 - parity scan · 48

