Sun StorEdge™ Component Manager 2.1 User's Guide

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Contents

Preface

The *Sun StorEdge Component Manager 2.1 User's Guide* provides instructions for operating the Sun StorEdge™ Component Manager software.

Before You Read This Book

For the latest Component Manager information, please see the *Sun StorEdge Component Manager 2.1 Release Notes*.

How This Book Is Organized

Chapter 1 provides an overview of the software.

Chapter 2 describes the features of the Sun StorEdge Component Manager graphical user interface.

Chapters 3, 4, 5, and **6** provides steps on how to operate the key components of the software.

Chapter 7 describes potential scenarios in which troubleshooting may be required.

Appendix A lists different types of diagnostic messages.

Using UNIX Commands

This document may not contain information on basic UNIX® commands and procedures such as shutting down the system, booting the system, and configuring devices.

See one or more of the following for this information:

- AnswerBook2™ online documentation for the Solaris™ operating environment
- Other software documentation that you received with your system

Typographic Conventions

Typeface	Meaning	Examples
`AaBbCc123`	The names of commands, files, and directories; on-screen computer output	Edit your `.login` file. Use `ls -a` to list all files. `% You have mail.`
`AaBbCc123`	What you type, when contrasted with on-screen computer output	`% su` `Password:`
AaBbCc123	Book titles, new words or terms, words to be emphasized	Read Chapter 6 in the *User's Guide*. These are called *class* options. You *must* be superuser to do this.
	Command-line variable; replace with a real name or value	To delete a file, type `rm` *filename*.

Shell Prompts

Shell	Prompt
C shell	*machine_name*%
C shell superuser	*machine_name*#
Bourne shell and Korn shell	$
Bourne shell and Korn shell superuser	#

Related Documentation

Application	Title	Part Number
Install	*Sun StorEdge Component Manager 2.1 Installation Guide: For the Solaris Operating Environment*	806-4811
Install	*Sun StorEdge Component Manager 2.1 Installation Guide: For the Microsoft Windows NT Operating Environment*	806-4814
Release	*Sun StorEdge Component Manager 2.1 Release Notes*	806-4813
Help	Sun StorEdge Component Manager Online Help	
Install / User	*Switch Management Installer's/User's Manual*	875-1890
Install / User	*SANbox-8 Fibre Channel Switch Installer's/User's Manual*	875-1881

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CHAPTER 1

Software Overview

This chapter contains the following topics as an introduction to the Sun StorEdge Component Manager software:

Sun StorEdge Component Manager

Sun StorEdge Component Manager provides monitoring and management of one or more Sun StorEdge A5*x*00 subsystem and Sun StorEdge T300 disk tray components that are managed by a host. It provides a graphical user interface (GUI) to display the status and associated properties of FRUs (field replaceable units).

Note – Sun StorEdge A5000, Sun StorEdge A5100, and Sun StorEdge A5200 subsystems are referred to collectively as "A5*x*00" within this document.

The software also enables you to perform control directives on some of the FRUs (for example, powering down a disk on an Sun StorEdge A5x00 subsystem). In addition, Sun StorEdge Component Manager constantly monitors the Sun StorEdge A5x00 and Sun StorEdge T300 component FRUs and provides alarm notification and remote reporting (via email, files, and system logging) upon detection of abnormal activities or conditions within a designated storage component. Sun StorEdge Component Manager facilitates the health monitoring of your Sun StorEdge A5x00 and Sun StorEdge T300 storage components while notifying you of potential hardware abnormalities.

The following are key features provided by Sun StorEdge Component Manager:

- Alarm notification
- Remote reporting
- Viewing of FRU status and properties
- Configuration of storage components
- Physical view images of Sun StorEdge T300 subsystem
- Sun StorEdge T300 disk array LUN configuration
- Sun StorEdge T300 disk array offline diagnostics
- Ability to launch switch management software

Alarms

Alarms are a means of notification that signify a problem may need to be resolved, depending on its degree of severity. An alarm corresponds to informational or exceptional management conditions (such as a monitored value exceeding a specified threshold) and may require your interaction. For details on alarms and viewing alarms, see "Alarm Viewer" on page 9.

Remote Reporting

Remote reporting is a Component Manager feature that enables you to designate recipients for the different levels of alarms, according to severity. Remote reporting also allows you to specify files and file path names to accept alarm messages. For details on how to use remote reporting, see “Configuring Remote Reporting Tab” on page 17.

FRU Status and Properties

Component Manager monitors your FRUs (field replaceable unit) through the Health Tab which enables you to view the properties and status of selected hardware components. A typical example of Health monitoring may include checking the size and current status of a disk. For details on monitoring FRUs and viewing a status and properties, see “Monitoring With Component Manager” on page 43.

Subsystem Support

This version of Sun StorEdge Component Manager supports the Sun StorEdge A5000, Sun StorEdge A5100, Sun StorEdge A5200 subsystems in addition to Sun StorEdge T300 disk trays and operates under the Solaris™ 2.6, Solaris 7, and Solaris 8 environments.

CHAPTER 2

Features of the Sun StorEdge Management Console

This chapter describes the features of the Sun StorEdge Component Manager graphical user interface, known as the *Sun StorEdge™ Management Console*.

Sun StorEdge Management Console

You can navigate to Sun StorEdge applications by using the Sun StorEdge Management Console. The Console provides a graphical user interface that enables you to navigate through the Component Manager features and functions.

▼ To Start the Component Manager GUI

See the *Sun StorEdge Component Manager Installation Guide* ensure the Component Manager daemons are running before starting Component Manager.

1. **Become root.**
2. **Start the Component Manager GUI**:

```
# /usr/opt/SUNWesm/bin/esm_gui &
```

The following figure shows an example of the Console main window, and TABLE 2-1 provides a detailed description of the main window elements.

TABLE 2-1 Sun StorEdge Management Console and Component Manager Window Elements

Window Element	Description
Navigation pane	This portion of the window shows the component for which the Console is running, and also displays the individual components.
Toolbar	The toolbar enables you to display Alarm Viewer, Log Viewer, new Console windows, and Online Help.
Expanders	The expanders let you expand or collapse the size of the pane with one mouse click.
Location	Selected object in Navigation pane.
Management application tabs	Component Manager provides four tabs: Health, Control, Configuration and Diagnose (see Chapters 3, 4, 5 and 6).
Alarm status buttons	These buttons show the number of alarms active at a particular alarm level. Click a button to display the Alarm Viewer popup window for more information about the alarms.
Pane divider	The divider lets you adjust the size of the pane.
Application Pane	Displays application tabs and subpanes.

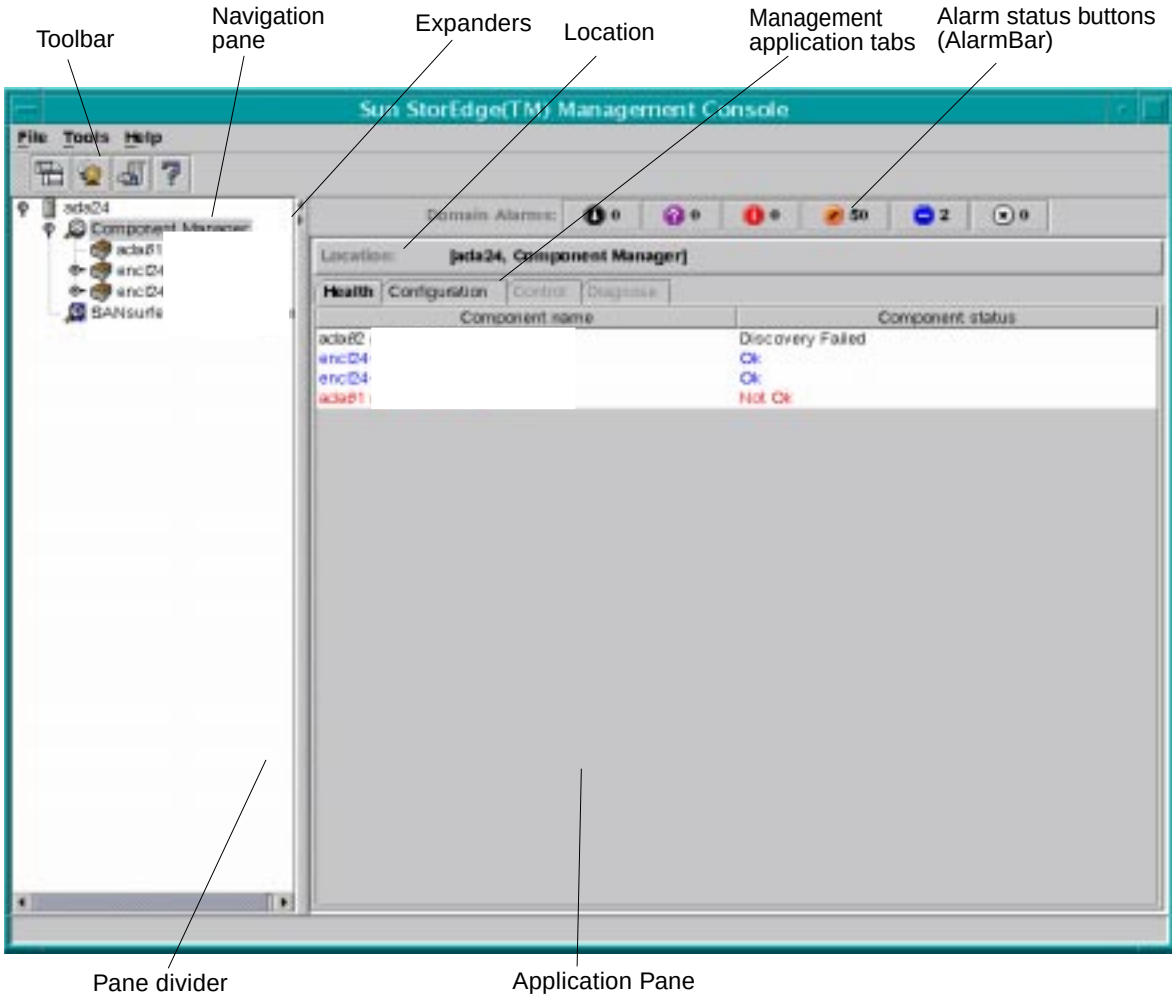


FIGURE 2-1 Sun StorEdge Management Console Main Window

▼ To Resize a Pane

1. **Drag a pane divider with the left mouse button.**
2. **Move the pane divider right or left to resize a pane.**

   Alternately, click the expanders at the top of the dividers.

Sun StorEdge Management Console Toolbar

The Toolbar has four icons as described in TABLE 2-2.

TABLE 2-2 Sun StorEdge Management Console Toolbar Icons

Icon	Name	Clicking This Icon:
	New Window	Launches another Sun StorEdge Management Console window
	Alarm Viewer	Displays the Alarm Viewer window (see “Alarm Viewer”)
	Log Viewer	Displays the Log Viewer window (see “Log Viewer”)
	Online Help	Displays online help for Component Manager (see “Online Help”)

Alarm Viewer

The AlarmBar displays the alarm summary for the Sun StorEdge Management Console. Alarms are sorted into six categories as shown in TABLE 2-3.

Note – When the system is rebooted it is important to note that all Alarms that have not been addressed (that is, deleted via the alarm viewer prior to reboot) will not be deleted. The email notification of these alarm events will also be re-generated.

TABLE 2-3 Alarm Viewer Icons

Icon	Name	Description
	DOWN	The monitored object, itself, is not responding (that is, it is “down”).
	UNKNOWN	Immediate corrective action may be required.
	CRITICAL	The monitored object has entered a CRITICAL state and immediate corrective action may be required.
	ALERT	The monitored object has entered a ALERT state and immediate corrective action may be required.
	CAUTION	The monitored object has entered a CAUTION state. Some of these alarms may be of an informational nature.
	OFF/DISABLED	The monitored object has entered a OFF/DISABLED state and immediate corrective action may be required. (The counter for this category is only incremented by the Sun Management Center and not Component Manager.)

▼ To View Alarms Viewer Entries

1. **Click one of the Alarm Status buttons in the AlarmBar, or click the Alarm Viewer icon on the Toolbar.**

   The Alarm Viewer window is displayed, showing the Component Manager alarm messages that reflect the level of severity of the button you have chosen. The number of outstanding alarms for each level is designated on each button.

   The View alarms in originating language checkbox enables you to view the alarms in the language in which the alarms were generated, regardless of the locale where your Sun StorEdge Management Console is running.

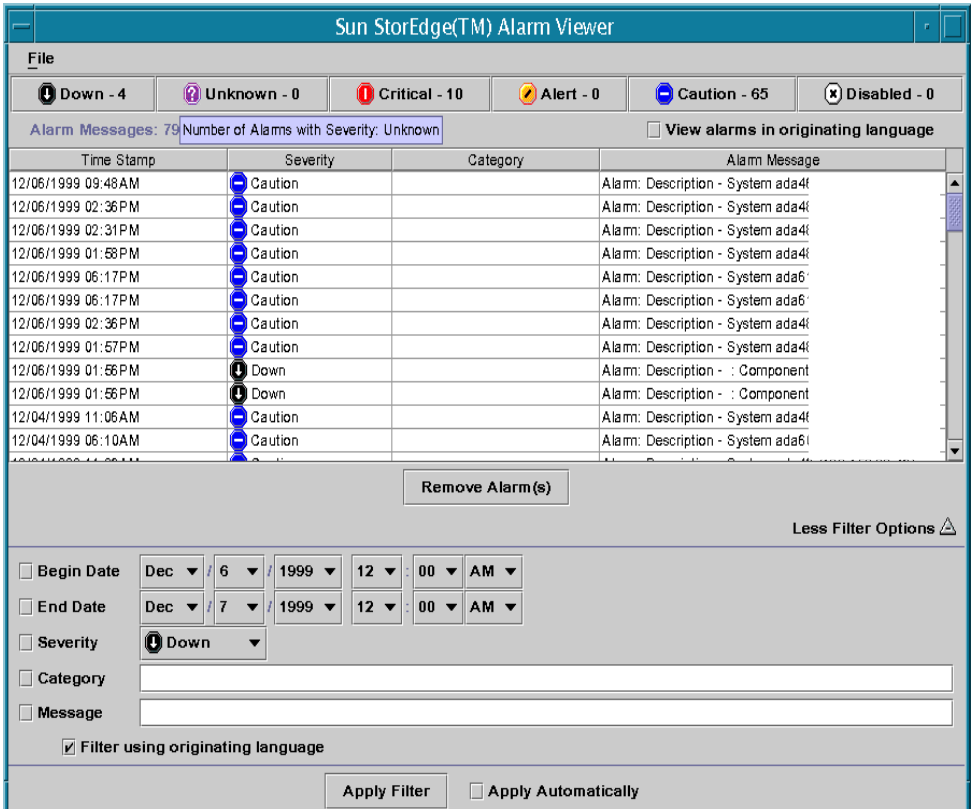


FIGURE 2-2 Alarm Viewer Window

2. **Click on heading title to sort by heading.**

3. **Click More Filter Options to view specific messages or a range of messages.**

   To search for and view a specific message or range of messages categorized by date, severity, category, or message string, enter the applicable values in each field, and click on Apply Filter. Be sure the box next to each field you are editing has been checked (enabled).

   To search for and display your specified message or range of messages automatically, click the Apply Automatically checkbox. If you choose this option, you do not need to click on Apply Filter for each search.

   The Filter using originating language checkbox allows you to specify search filters for the language in which the alarms were generated, regardless of the locale where your Sun StorEdge Management Console is running.

4. **Double-click on message to view it in greater detail.**

5. **Remove alarms that you have already addressed.**

   Once you have viewed and addressed an outstanding alarm message, you may remove the highlighted message by clicking on the Remove Alarm(s) button.

Log Viewer

Component Manager logs an entry for each monitoring or control operation performed, including failed operations. You can view these log messages in the Log Viewer window (see FIGURE 2-3).

▼ To Display Log Viewer Entries

1. **Click the Log Viewer icon on the Toolbar.**

   The Log Viewer window is displayed, showing up to 100 Component Manager log messages. Click on the Next button to view (up to) 100 more messages. The Previous and Next buttons enable you to toggle between log messages listed in increments of 100.

2. **Click on heading title to sort by heading.**

3. **Click More Filter Options to view specific messages or a range of messages.**

   To search for and view a specific message or range of messages categorized by date, category, or message string, enter the applicable values in each field, and click on Apply Filter. Be sure the box next to each field you are editing has been checked (enabled).

   To search for and display your specified message or range of messages automatically, click the Apply Automatically checkbox. If you choose this option, you do not need to click on Apply Filter for each search.

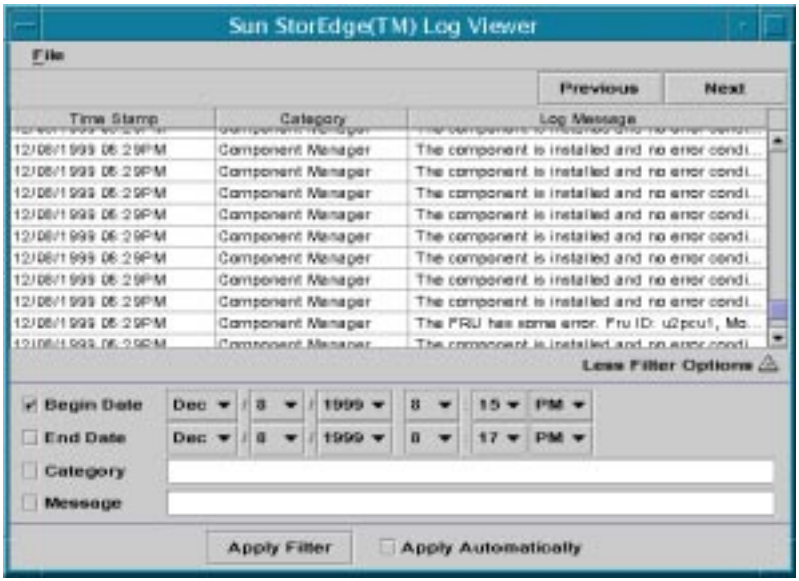


FIGURE 2-3 Log Viewer Window

Online Help

Online Help provides details to assist your operation of the Sun StorEdge Management Console and Sun StorEdge Component Manager functions.

1. **Click the Online Help icon on the Toolbar.**

   The Sun StorEdge Management Console Online Help window is displayed. For a description of the Online Help window elements, see TABLE 2-4.

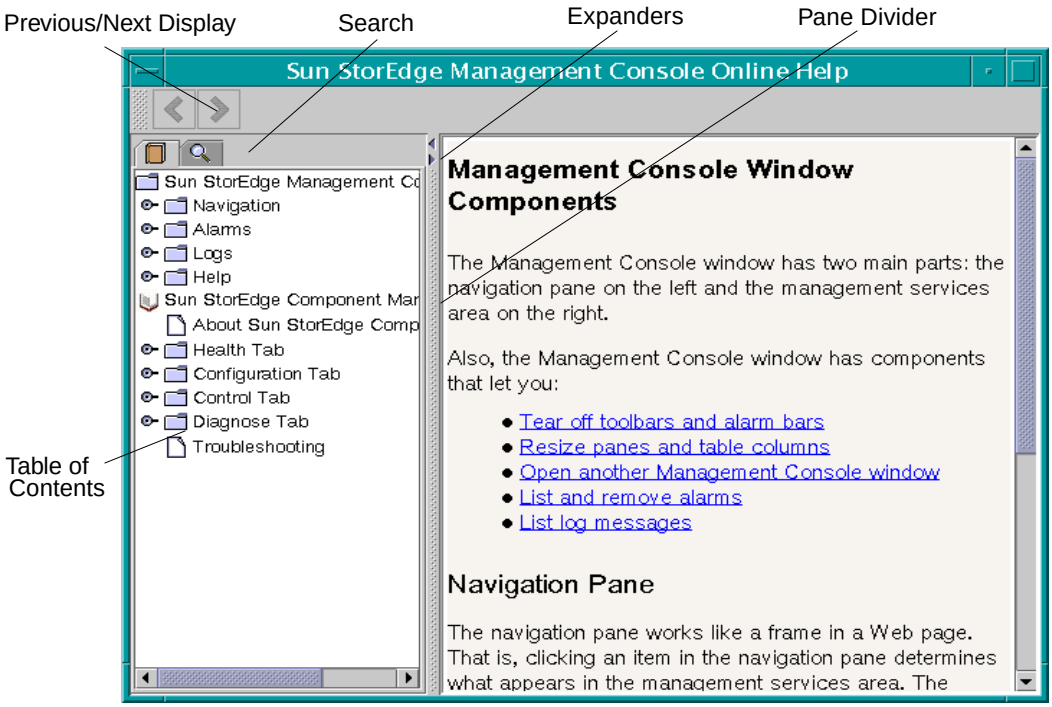


FIGURE 2-4 Online Help Window

2. **Click on any designated topic icon within the Table of Contents pane to view details about that topic.**

3. **Use the Search utility to find information about a particular topic.**

   a. **Click the Search icon.**

      The Online Help Search pane is displayed.

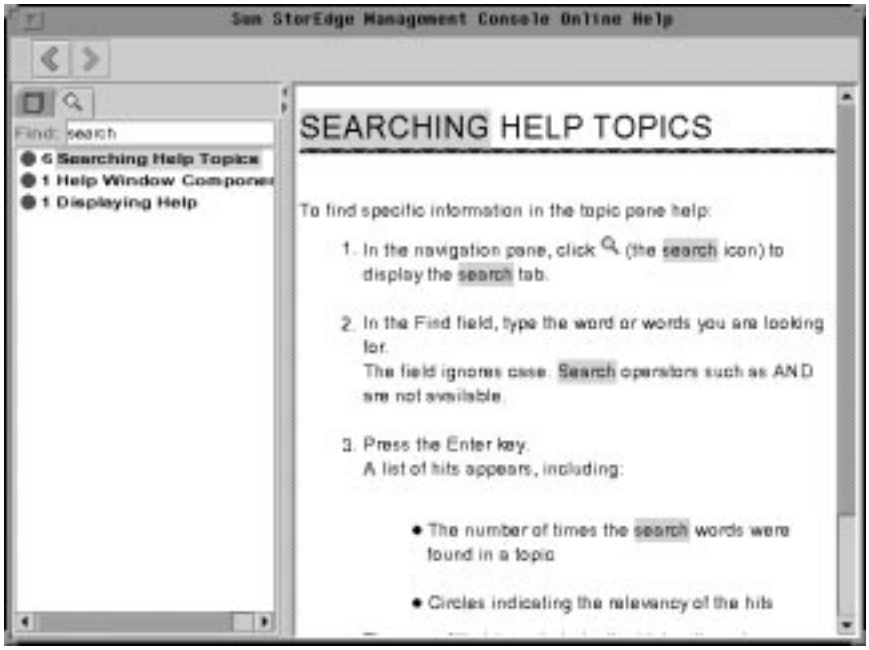


FIGURE 2-5 Online Help Search

b. Type the topic to be searched, and then press Return.

The Search pane displays every location of the topic, and also indicates the number of times the topic appears for each location. The topic is highlighted in every occurrence.

TABLE 2-4 Online Help Window Elements

Window Element	Description
Table of Contents	This pane lists the individual topics within Online Help.
Search	Click on the search icon to find particular topics or words.
Previous / Next Display	Click to toggle between display views.
Pane divider	Use to adjust the size of the pane.
Expanders	Click to expand or collapse the size of the pane.

CHAPTER 3

Configuring With Component Manager

This chapter contains the following topics for using the Sun StorEdge Component Manager software:

- "Configuring Component Manager" on page 17
- "Configuring Sun StorEdge A5x00 Components" on page 26
- "Configuring Sun StorEdge T300 Components" on page 29

Configuring Component Manager

The Configuration Tab enables you to perform the following:

- "Configuring Remote Reporting Tab" on page 17
- "Configuring Component Manager Maintenance Tab" on page 24
- "Configuring Component Manager Polling Tab" on page 21

Configuring Remote Reporting Tab

Remote Reporting enables you to notify selected email recipients of designated alarms and to log the alarms in selected ASCII files. Because both of these options are independent of one another, you can choose to send only designated alarm messages to email recipients, or send only designated alarm messages to log files (if you should decide not to do both).Component Manager Remote Reporting and Maintenance Mode Window

TABLE 3-1 shows the severity levels available for remote reporting.

TABLE 3-1 Remote Reporting Severity Levels

Severity Level	Description
DOWN	The monitored object, itself, is not responding (that is, it is “down”).
UNKNOWN	Immediate corrective action may be required.
CRITICAL	The monitored object has entered a CRITICAL state and immediate corrective action may be required.
ALERT	The monitored object has entered a ALERT state and immediate corrective action may be required.
CAUTION	The monitored object has entered a CAUTION state. Some of these alarms may be of an informational nature.
OFF/DISABLED	The monitored object has entered a OFF/DISABLED state and immediate corrective action may be required.

▼ To Enable Remote Reporting

When the Enable Remote Reporting option is disabled, no alarm notifications are forwarded, regardless of which individual email addresses or log file names are currently selected.

1. **Select Component Manager in the navigation pane.**
2. **Select the Configuration Tab.**
3. **Select the Remote Reporting Tab.**

   See FIGURE 3-1.

4. **Customize your remote reporting options.**

   a. **If you want to either disable or enable remote reporting altogether, click on the Enable Remote Reporting checkbox.**

      The check mark indicates whether reporting is disabled and reappears when reporting is enabled.

   b. **If you want to edit email addresses, log files, or log file locations:**

      i. **Highlight the designated email address or log file entry and enter your new email address, log file, or log file location.**

      ii. **Press Return.**

      iii. **With the left mouse button, click the checkbox for that entry so the check mark appears.**

      For email addresses, the check mark appears under Send Alarm. For log files, the check mark appears under Make a Log.

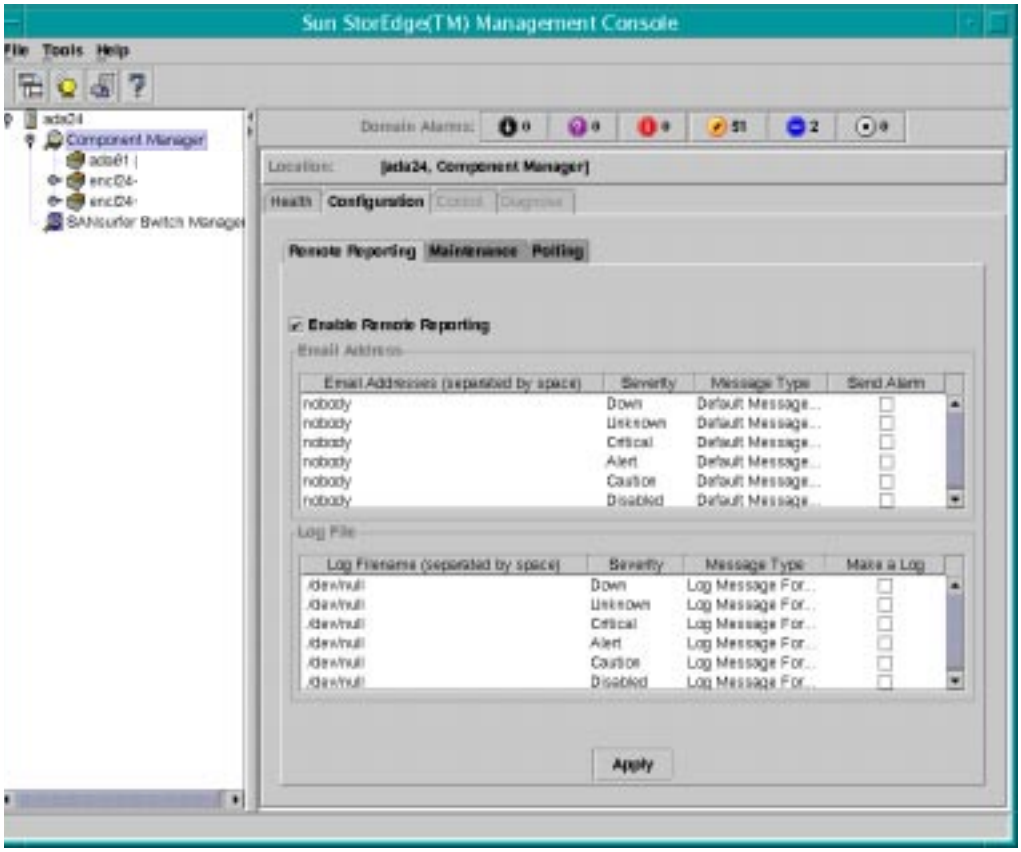


FIGURE 3-1 Component Manager Remote Reporting Window

c. If you want to add an email address to current recipients for a designated alarm:

i. Select the email address, insert a blank space, and then add the new email address.

Note – Make sure blank spaces are inserted between all email addresses to enable all addresses to receive the designated alarm.

---

ii. Press Return.

iii. With the left mouse button, click the checkbox for that entry so the check mark appears under Send Alarm.

5. Click the Apply button after completing your update

.

```
To: bob_johnson@supercoder.com
Subject: ada45:Enclosure java - Front Temperature Element, Slot Number 1:P4: A
critical condition is detected

DATE: 4/14/1999 12:22 PM

CUSTOMER: Sun StorEdge Customer

SYSTEM: ada45

PRIORITY: 4

COMPONENT: Enclosure java - Front Temperature Element, Slot Number 1

DESCRIPTION: A critical condition is detected

RESOLUTION HINT: Check the component
```

FIGURE 3-2 Example Remote Reporting Email Notification

```
StoreX (4/16/1999 10:57 AM localhost):P2:Enclosure A5K1 - Front Disk, Slot
Number 4 failed because: The component is not installed in the enclosure
StoreX (4/16/1999 10:57 AM localhost):P2:Enclosure A5K1 - Front Disk, Slot
Number 5 failed because: The component is not installed in the enclosure
StoreX (4/16/1999 11:22 AM localhost):P2:Enclosure A5K1 - Front Disk, Slot
Number 3 failed because: The component is not installed in the enclosure
StoreX (4/16/1999 10:57 AM localhost):P2:Enclosure A5K1 - Front Disk, Slot
Number 4 failed because: The component is not installed in the enclosure
StoreX (4/16/1999 11:22 AM localhost):P2:Enclosure A5K1 - Front Disk, Slot
Number 3 failed because: The component is not installed in the enclosure
```

FIGURE 3-3 Example Remote Reporting Log File

Configuring Component Manager Polling Tab

Hardware polling is the time interval that Component Manager uses to poll and monitor the subsystem hardware components. You can customize hardware polling by either changing the time interval or by disabling or enabling the function to suit your own needs. See FIGURE 3-4.This section contains instructions for the following tasks:

- "To Disabling All Polling" on page 24
- "To Enable All Polling" on page 22
- "To Customize Polling" on page 23

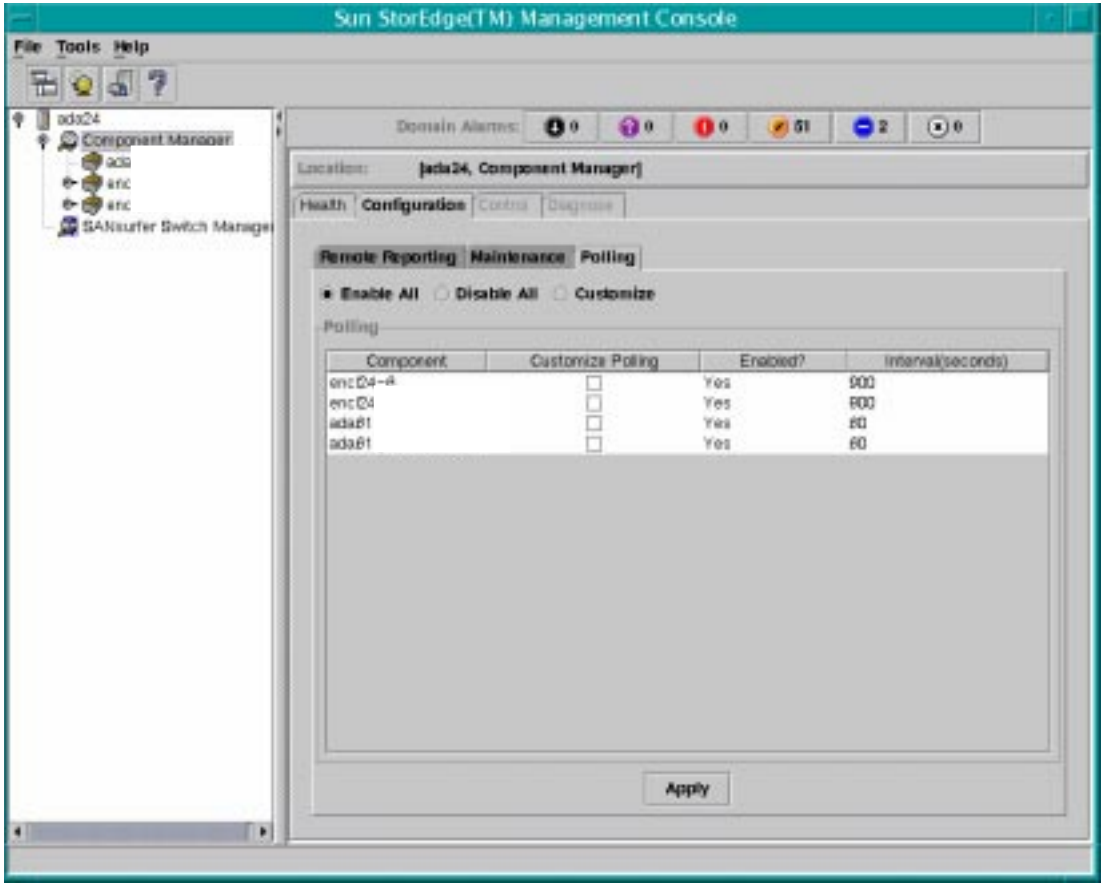


FIGURE 3-4 Component Manager Polling Window

The Polling columns are defined in TABLE 3-2.

TABLE 3-2 Configuration Tab Polling Pane

Column	Description
Component	The system being monitored.
Customize Polling	When the Customize radio button is selected, a check in this box will enable polling for this system after the Apply button is clicked. Conversely, if this box is not checked, an enabled system will become disabled after the Apply button is clicked.
Enabled	Whether or not the system in enabled.
Interval (seconds)	The polling interval configured for this system.

▼ To Disabling All Polling

Disabling all polling will sever polling to all subsystems displayed.

Before performing a reconfiguration (dynamic or otherwise), you should disable all polling.

1. **Select Component Manager in the navigation pane.**
2. **Select the Configuration Tab.**
3. **Select the Polling Tab.**
4. **Click on the Disable All radio button.**
5. **Click the Apply button.**

Caution – Failure to disable polling during any subsystem reconfiguration could potentially cause excessive alarms.

▼ To Enable All Polling

Enabling all polling will initiate polling to all subsystems displayed.

1. **Select Component Manager in the navigation pane.**
2. **Select the Configuration Tab.**
3. **Select the Polling Tab.**
4. **Click on the Enable All radio button.**
5. **Click the Apply button.**

▼ To Customize Polling

Customizing polling enables you to poll individual subsystems.

1. **Select Component Manager in the navigation pane.**
2. **Select the Configuration Tab.**
3. **Select the Polling Tab.**
4. **Customize polling options.**
   a. **Click on the Customize radio button.**
   b. **Click on the Customize Polling box for each component for which you want polling enabled**

Caution – Failure to click on the Customize Polling box for a component will cause polling to be disabled.

---

5. **Click the Apply button.**

Configuring Component Manager Maintenance Tab

The maintenance options can be used when you need to rediscover a subsystem (for example, adding or replacing a subsystem that Component Manager will monitor).

1. **Select Component Manager in the navigation pane.**
2. **Select the Configuration Tab.**
3. **Select the Maintenance Tab.**

See FIGURE 3-5

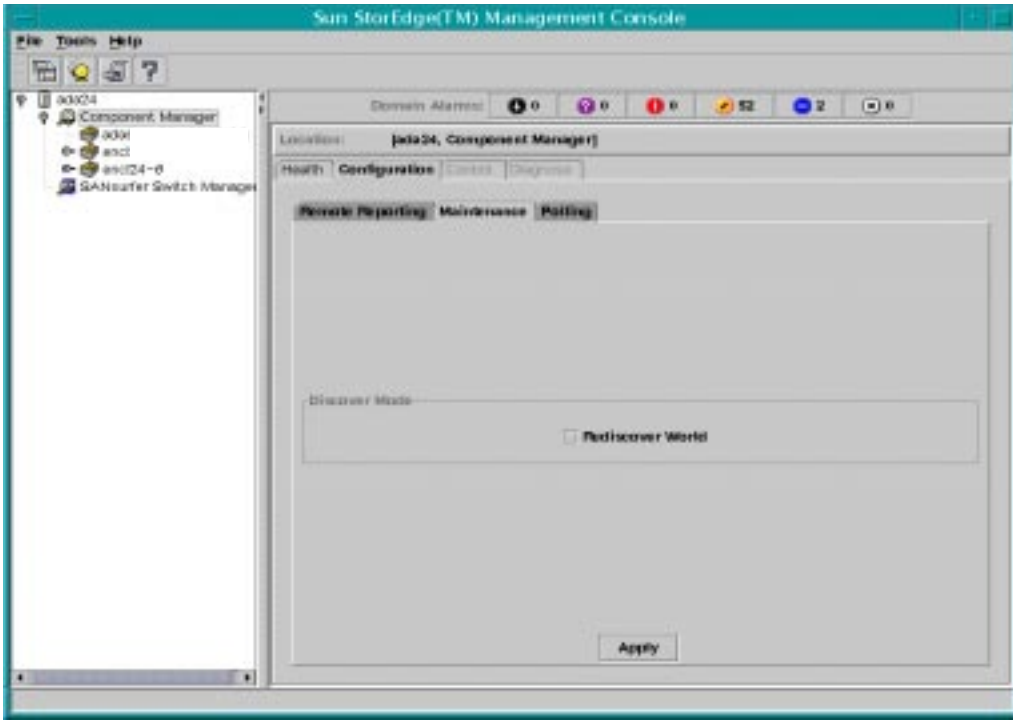


FIGURE 3-5 Component Manager Maintenance Window

Caution – Before performing a reconfiguration (dynamic or otherwise), you should disable all polling. Failure to disable polling could cause device reconfiguration to fail and potentially cause excessive alarms. See “Configuring Component Manager Polling Tab” on page 21 for more information about polling.

▼ To Select a Discovery Mode

1. **Click the Rediscover World checkbox.**

   Selecting this checkbox will set Component Manager to discover all subsystems in `/dev/es` and `/etc/opt/SUNWesm/mo/hosts`. This operation may take a considerable amount of time depending upon how your installation is configured.

2. **Click on the Apply button.**

FIGURE 3-6 Rediscover World Confirmation Box

If another user is changing the discovery mode of a component you are also trying to change, your discovery selection will not be applied.

Configuring Sun StorEdge A5*x*00 Components

The Configuration Tab enables you to perform the following tasks:

- "To Set a Sun StorEdge A5x00 Name" on page 26
- "Changing Sun StorEdge A5x00 Hardware Polling" on page 27

▼ To Set a Sun StorEdge A5*x*00 Name

You can change the name of your specified component by editing the Enclosure Name field. This name identifies the Sun StorEdge A5x00 enclosure, and it must be limited to 16 or fewer characters.

1. **Select the component in the navigation pane that you want to rename.**
2. **Select the Configuration Tab.**

   See FIGURE 3-7.

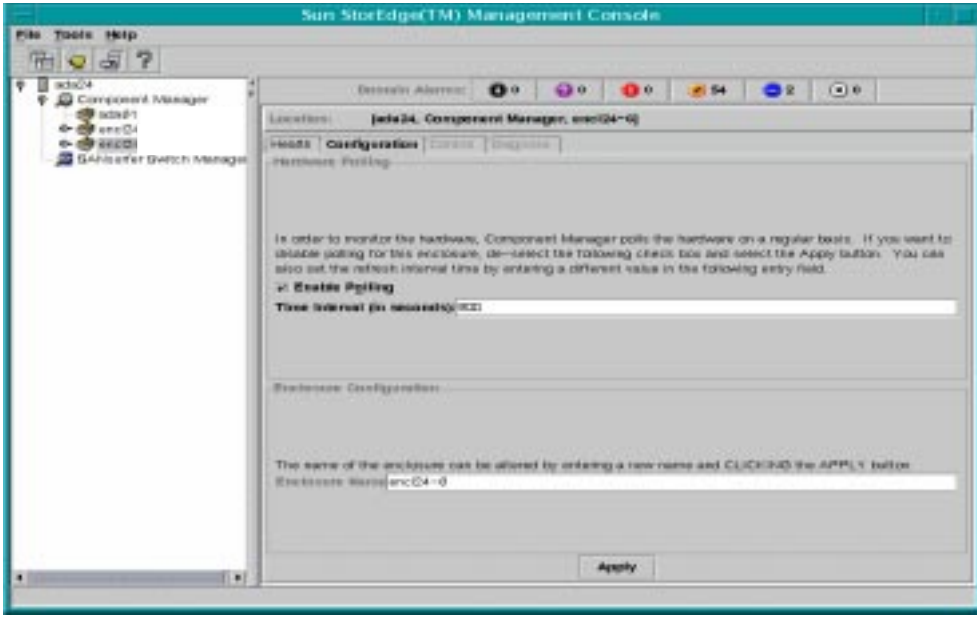


FIGURE 3-7 Sun StorEdge A5x00 Hardware Polling and Naming Window

3. **Change the name.**

   See FIGURE 3-8.

   a. **Double-click the current name in the Enclosure Name field with the primary mouse button to highlight the name.**

   b. **Enter your new enclosure name.**

4. **Click the Apply button to update your enclosure name.**

Changing Sun StorEdge A5*x*00 Hardware Polling

Hardware polling is the time interval that Component Manager uses to poll and monitor the subsystem hardware components. You can customize hardware polling by either changing the time interval or by disabling or enabling the function to suit your own needs.

Polling time intervals are measured in seconds, and can be customized to any value greater than 900 second (15 minutes), the default polling time. See FIGURE 3-8. Polling will occur no less than the polling interval specified.

The Enable Polling checkbox lets you either disable or enable hardware polling for an enclosure. Polling is always enabled by default.

▼ To Customize Sun StorEdge A5x00 Polling

1. **Select the enclosure in the navigation pane that you are polling.**

2. **Select the Configuration Tab.**

   See FIGURE 3-8.

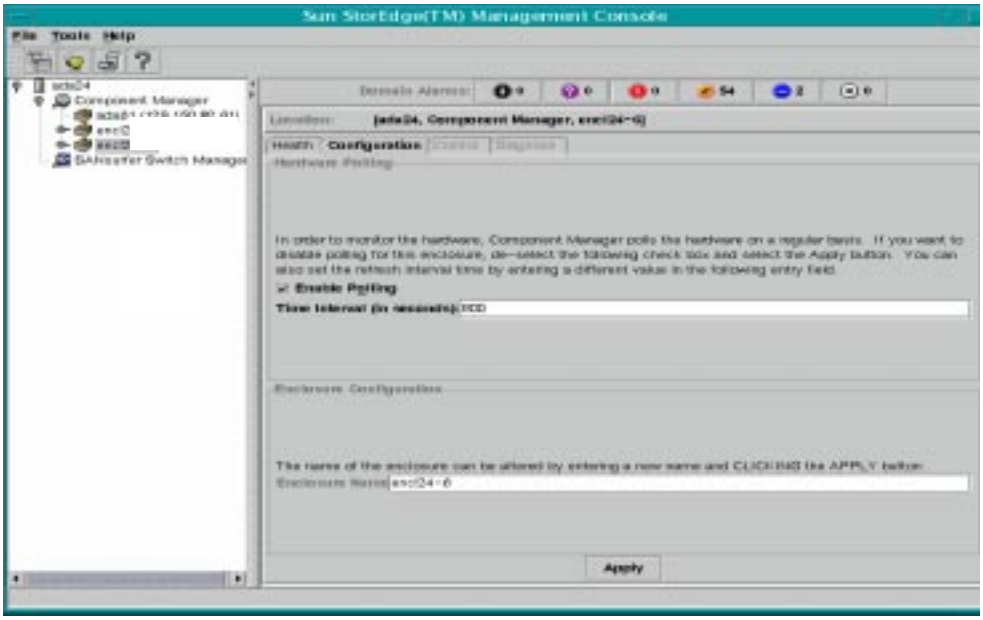


FIGURE 3-8 Sun StorEdge A5x00 Hardware Polling and Naming Window

3. **Customize your polling options.**

   a. **If you need to either disable or enable hardware polling, click on the Enable Polling checkbox.**

      The check mark disappears when polling is disabled and reappears when polling is enabled.

   b. **If you want to change the polling time interval, double-click the current value in the Time Interval field with the left mouse button.**

      Enter the new value (in seconds).

4. **Click the Apply button after either disabling or enabling polling, or after resetting the polling time interval value.**

Configuring Sun StorEdge T300 Components

The Configuration Tab enables you to perform the following tasks:

- "To Set Sun StorEdge T300 System Property Values" on page 29
- "To Set Fibre SCSI Port Properties" on page 32
- "Using LUN Operations" on page 33

▼ To Set Sun StorEdge T300 System Property Values

1. **Select the Sun StorEdge T300 component in the navigation pane that you are configuring.**
2. **Select the Configuration Tab.**
3. **Select Physical View**
4. **Select the system name text in the Physical View.**

   See FIGURE 3-9.

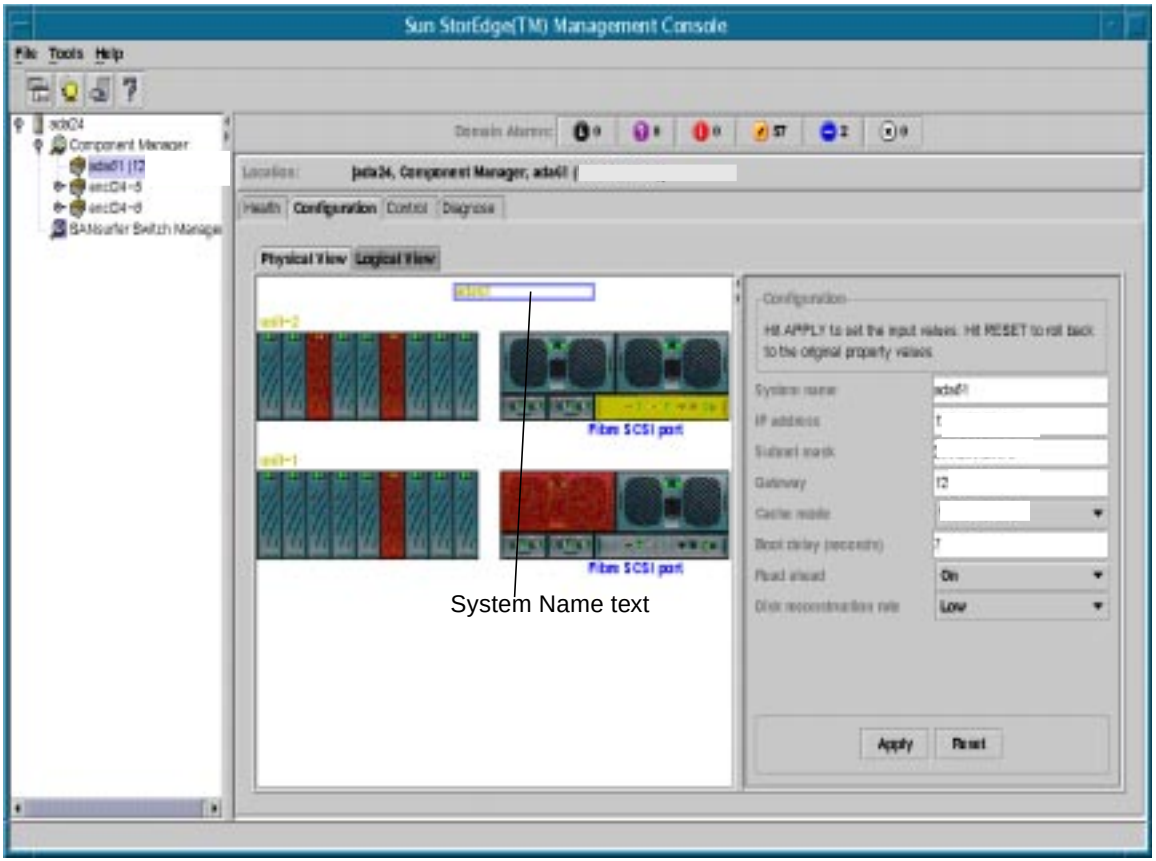


FIGURE 3-9 Sun StorEdge T300 System Configuration Window

5. **Change the parameter**

   a. **For system name, system IP address, system subnet mask, system gateway, or system boot delay:**

      i. **Double-click on the parameter value you would like to change.**

      ii. **Enter the new value**

   b. **For system cache mode, read ahead or reconstruction rate, click on the pull-down menu and select the desired value.**

6. **Click the Apply button to save your changes.**

Note – For an IP address change to become fully effective, you must: update the `hosts` file (see "Configuring the `hosts` File" in the *Sun StorEdge Component Manager Installation Guide*), reset the subsystem (see the "Operation" chapter in the *Sun StorEdge T300 Installation, Operation and Service Manual*), and rediscover the subsystems (see Section "Configuring Component Manager Maintenance Tab" on page 3-24).

Note – For a subnet mask or gateway change to become fully effective, you must rediscover the subsystems (see Section "Configuring Component Manager Maintenance Tab" on page 3-24.)

▼ To Set Fibre SCSI Port Properties

1. **Select the Sun StorEdge T300 component in the navigation pane that you are configuring.**
2. **Select the Configuration Tab.**
3. **Select Physical View**

   See FIGURE 3-10.

4. **Select the "Fibre SCSI Port" text in the Physical View.**

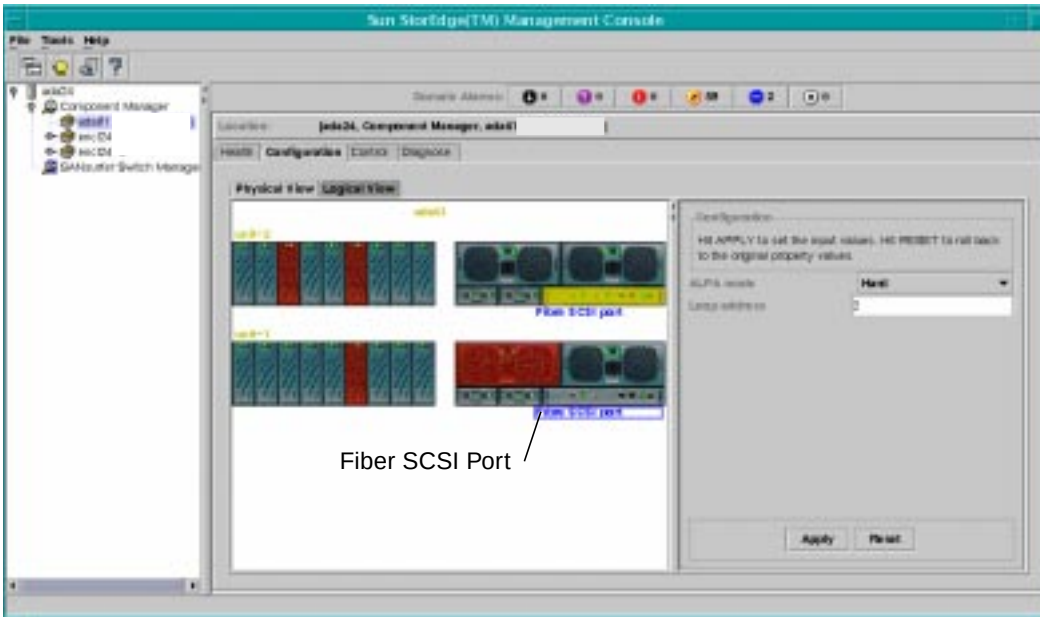


FIGURE 3-10 Sun StorEdge T300 Fibre SCSI Port Configuration Window

5. **Change the parameter**

   a. **For system ALPA mode, click on the pull-down menu and select the desired value.**

   b. **For Loop Address, double click on the value and enter the new value.**

6. **Click the Apply button.**

Using LUN Operations

LUN creation, deletion, initializing, mounting and unmounting are available from the Configuration Tab, Logical View. The Logical View Tab enables you to perform the following tasks:

- "Creating LUNs" on page 33
- "To Initialize a LUN" on page 38
- "To Mount a LUN" on page 40
- "To Unmount a LUN" on page 41
- "To Delete a LUN" on page 40
- "To Clear LUN Statistics" on page 41

Note – Only one LUN operation can be performed on a system at a time.

▼ Creating LUNs

To create a LUN, perform the following steps.

1. **Click the Create New LUN button.**

   The Create New LUN button can be seen in FIGURE 3-11.

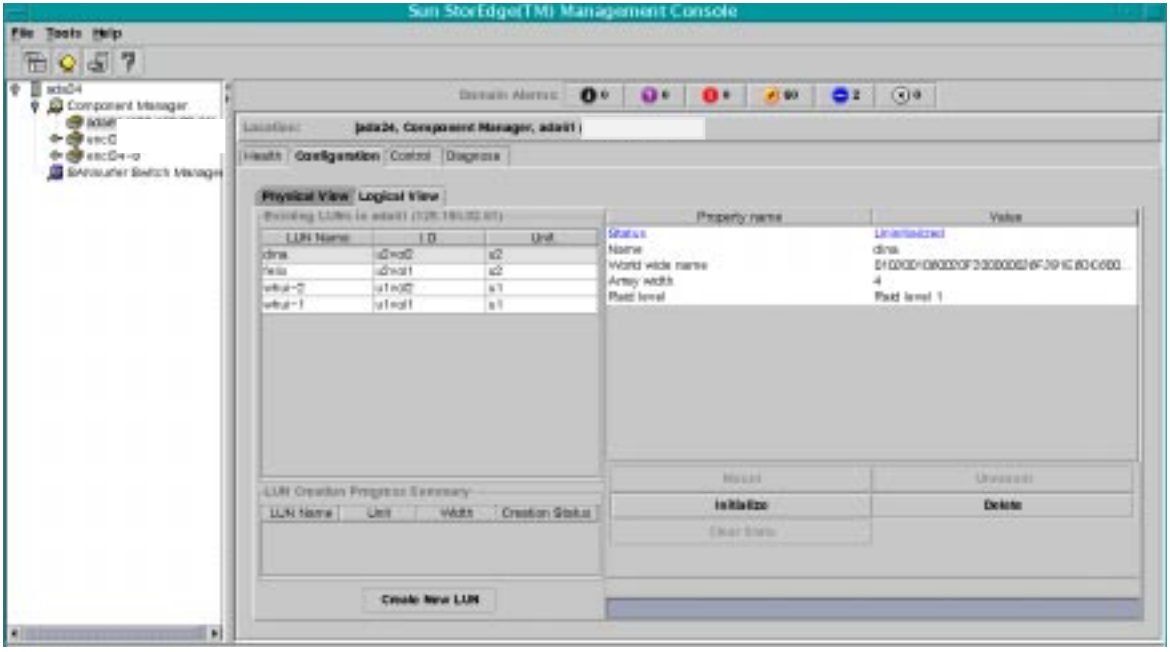


FIGURE 3-11 Configuration Tab, Logical View

2. **Specify LUN attributes.**

The LUN configuration window can be seen in FIGURE 3-12.

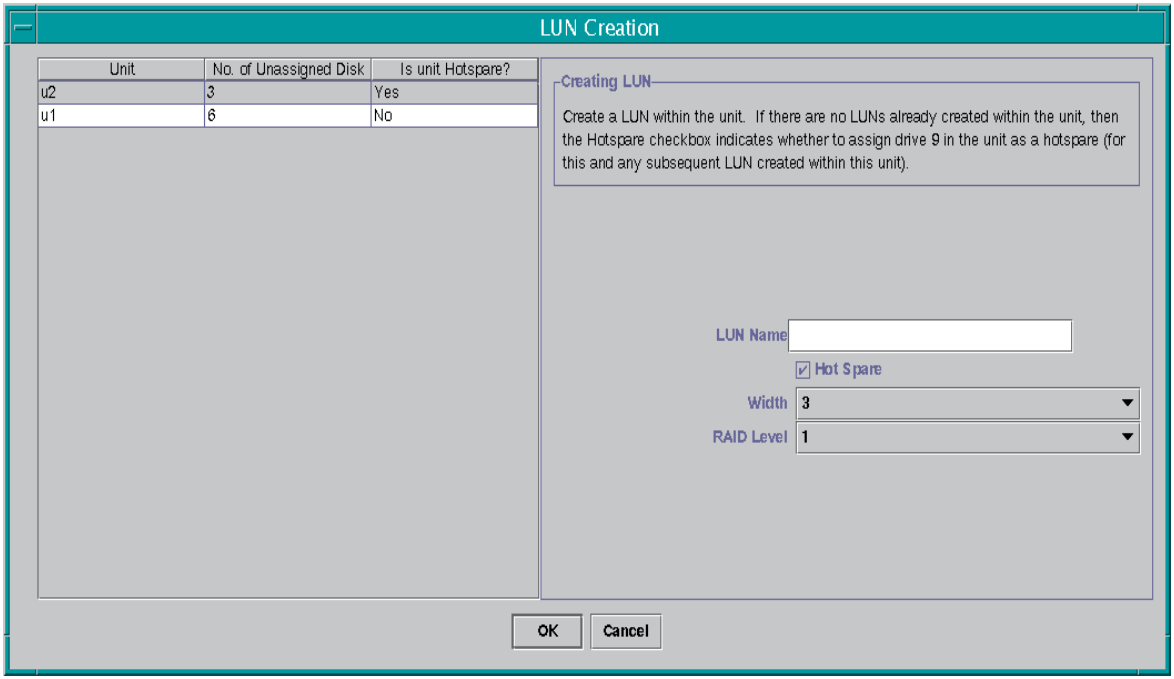


FIGURE 3-12 LUN Creation Window

a. **Select the Unit from the list.**

b. **Enter the LUN Name.**

The LUN name must not exceed 12 characters.

c. **Check the Hot Spare box if so desired.**

Checking the Hot Spare box will reserve disk FRU #9 as a spare for reconstruction in the event one of the other disks fails. Only one hot spare can be defined per unit.

d. **Select Width from the pull-down menu.**

If this is the first LUN created on a unit, you can select the number of disks the LUN spans. If this is the second LUN created on the unit, the width is defaulted to remaining disks not included in the first LUN and any hot spare.

e. Select RAID Level from the pull-down menu.

TABLE 3-3 RAID Definitions

RAID Level	Definition
0	Data blocks are striped across all drives in the volume in order. There is no parity data so RAID 0 uses the full capacity of the drives. There is, however, no redundancy; if a single drive fails, all data on the volume is lost.
1	This level gives the performance of striping with the redundancy of mirroring. The data is mirrored on two drives and striped across all the drives in the volume. If one of the mirrored pair fails, the data from the other drive is used. Because the data is mirrored in a RAID 1 configuration, the volume has only half the capacity of the assigned drives.
5	Data is striped across the drives in the volumes in segments, with parity information being striped across the drives as well. Because of this parity, if a single drive fails, data can be recovered from the remaining drives. The failure of two drives, however, causes all data to be lost. A RAID 5 volume has the data capacity of all the drives in the logical unit, less one.

TABLE 3-4 RAID Configuration Limitations

Width	Hotspare	RAID Levels Permitted
3-9	No	0, 1, 5
2	No	1,5
3-8	Yes	1,5
2	Yes	1

f. Click the OK button.

3. **Enter Sun StorEdge T300 password.**

FIGURE 3-13 Password Validation Dialog Box

4. **Confirm the LUN attribute selections by clicking the OK button or discard LUN creation by clicking the Cancel button.**

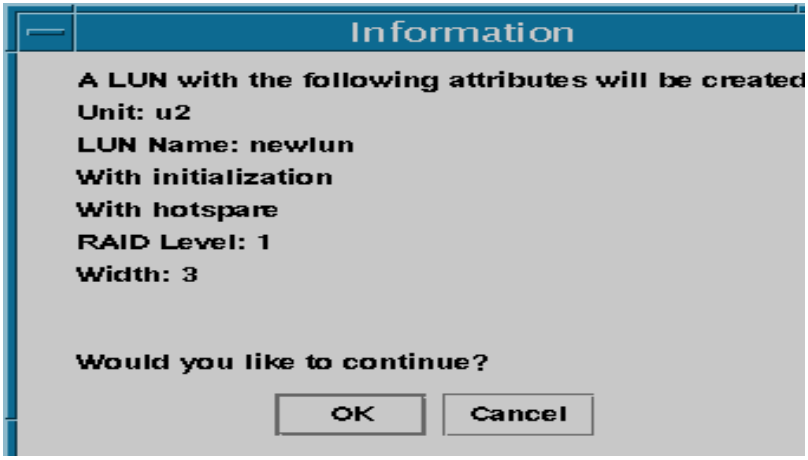


FIGURE 3-14 LUN Configuration Confirmation Dialog Box

While the LUN is being created, you can monitor its progress in the LUN Creation Progress Summary table as shown in FIGURE 3-15.

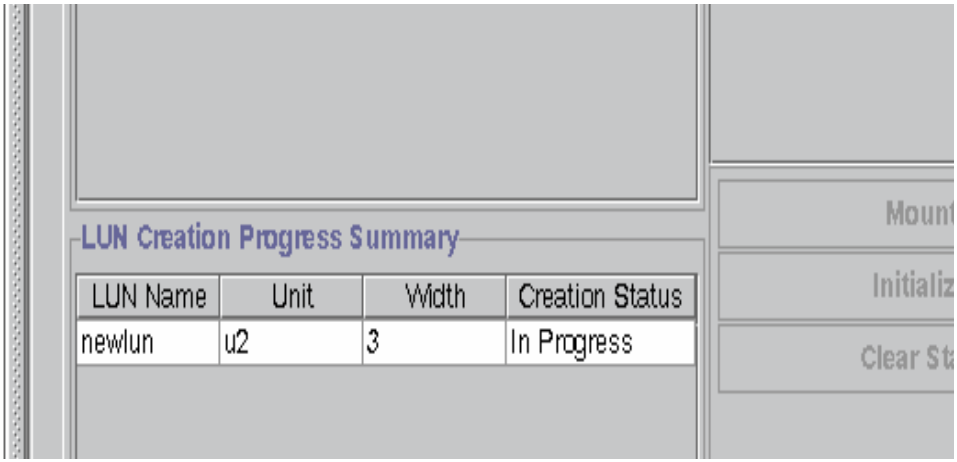


FIGURE 3-15 LUN Creation in Progress

▼ To Initialize a LUN

1. **Select the LUN in the Existing LUNs list.**
2. **Start the initialization process by clicking the Initialize button as shown in** FIGURE 3-16**.**

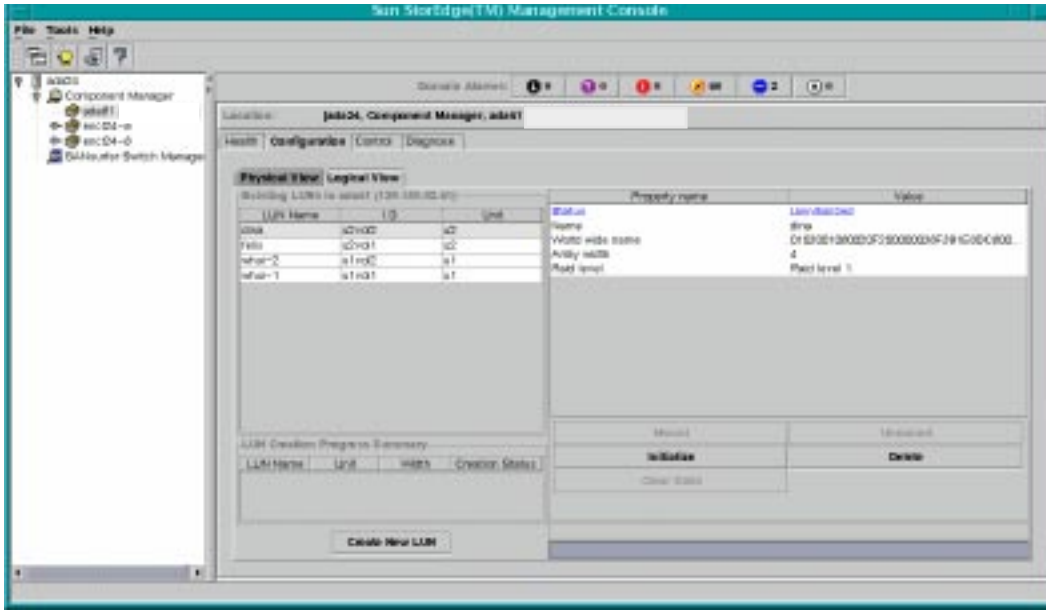


FIGURE 3-16 Active LUN Initialization Button

3. **Enter the Sun StorEdge T300 root password.**
4. **Set LUN Initialization rate by selecting the speed from the pull-down menu shown in** FIGURE 3-17**.**

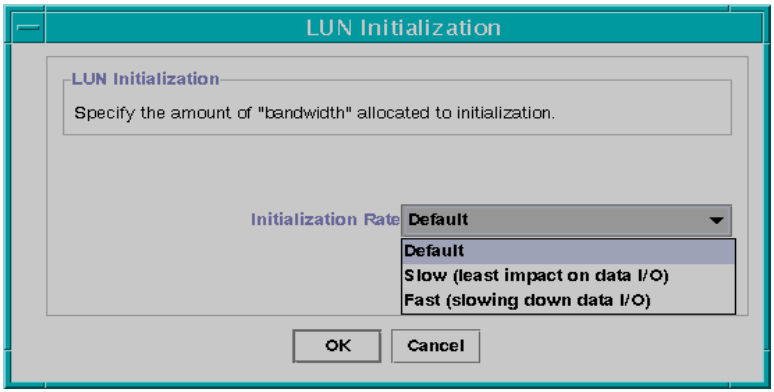


FIGURE 3-17 LUN Initialization Rate Window

5. **Click the OK button.**

Initialization progress can be monitored by the progress bar as shown in FIGURE 3-18.

FIGURE 3-18 LUN Initialization Progress Bar.

▼ To Mount a LUN

Mount a LUN with the following procedure.

1. **Select the LUN in the Existing LUNs list.**
2. **Mount the LUN by clicking the Mount button.**

   See FIGURE 3-19.

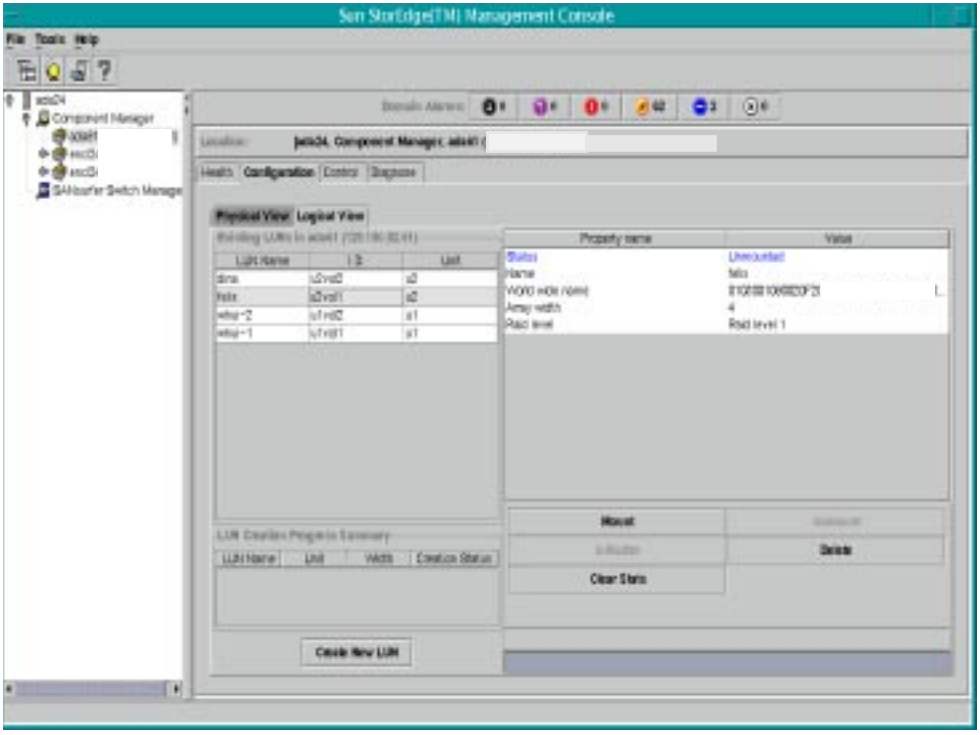


FIGURE 3-19 Created LUN Operations

3. **Enter the Sun StorEdge T300 root password.**

▼ To Delete a LUN

Delete a LUN with the following procedure.

1. **Select the LUN in the Existing LUNs list.**
2. **Delete the LUN by clicking the Delete button.**

   See FIGURE 3-19.

3. **Enter the Sun StorEdge T300 root password.**

▼ To Clear LUN Statistics

LUN statistics are displayed on the component Health Tab, Logical view (see “LUN Properties” on page 74).To clear LUN statistics, perform the following procedure.

1. **Select the LUN in the Existing LUNs list.**
2. **Clear the statistics by clicking the Clear Stats button.**

   See FIGURE 3-19.

3. **Enter the Sun StorEdge T300 root password.**

▼ To Unmount a LUN

Mount a LUN again with the following procedure.

1. **Select the LUN in the Existing LUNs list.**
2. **Unmount the LUN by clicking the Unmount button.**

   See FIGURE 3-19.

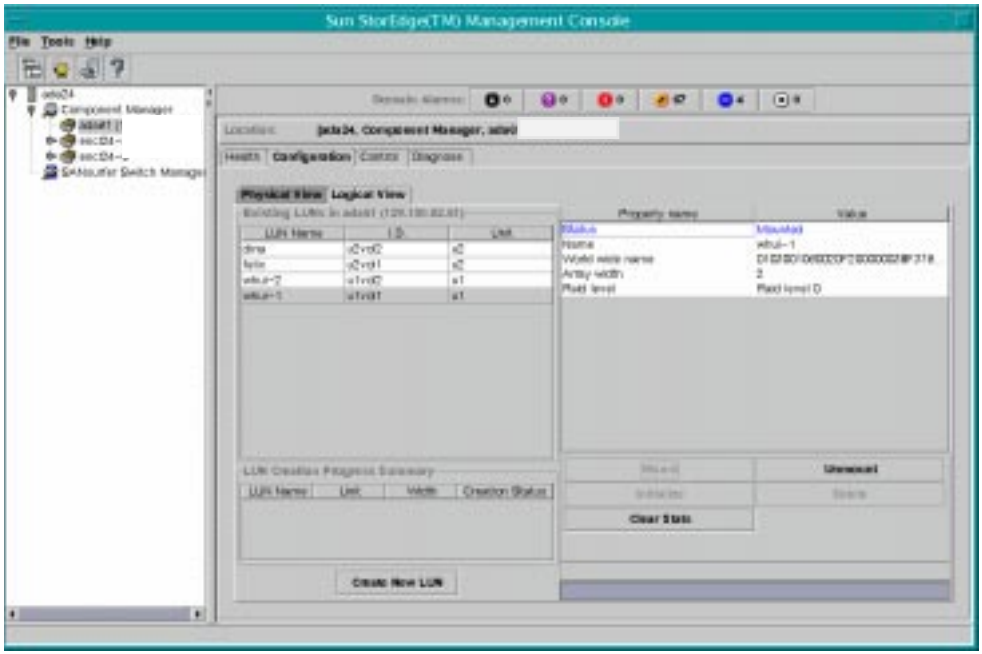


FIGURE 3-20 Active LUN Unmount Button

3. **Enter the Sun StorEdge T300 root password.**

CHAPTER 4

Monitoring With Component Manager

The Health Tab can be used to monitor administrative domains, components and FRUs. This chapter discusses how to use the Health Tab.

Component Manager displays icons and text in color. The significance of color usage is explained in TABLE 4-1.

TABLE 4-1 Component Manager Color Usage

Color	Significance
Blue	OK.
Black	The subsystem has not been discovered.
Grey	The subsystem has not yet been discovered.
Green	The subsystem is in the process of being discovered.
Gold	Subsystem, unit or FRU is in a degraded state (Sun Sun StorEdge T300 only).
Red	Physical intervention required.

Monitoring Component Manager

At the Component Manager level, using the Health Tab enables you to see the status of components at a glance as in FIGURE 4-1.

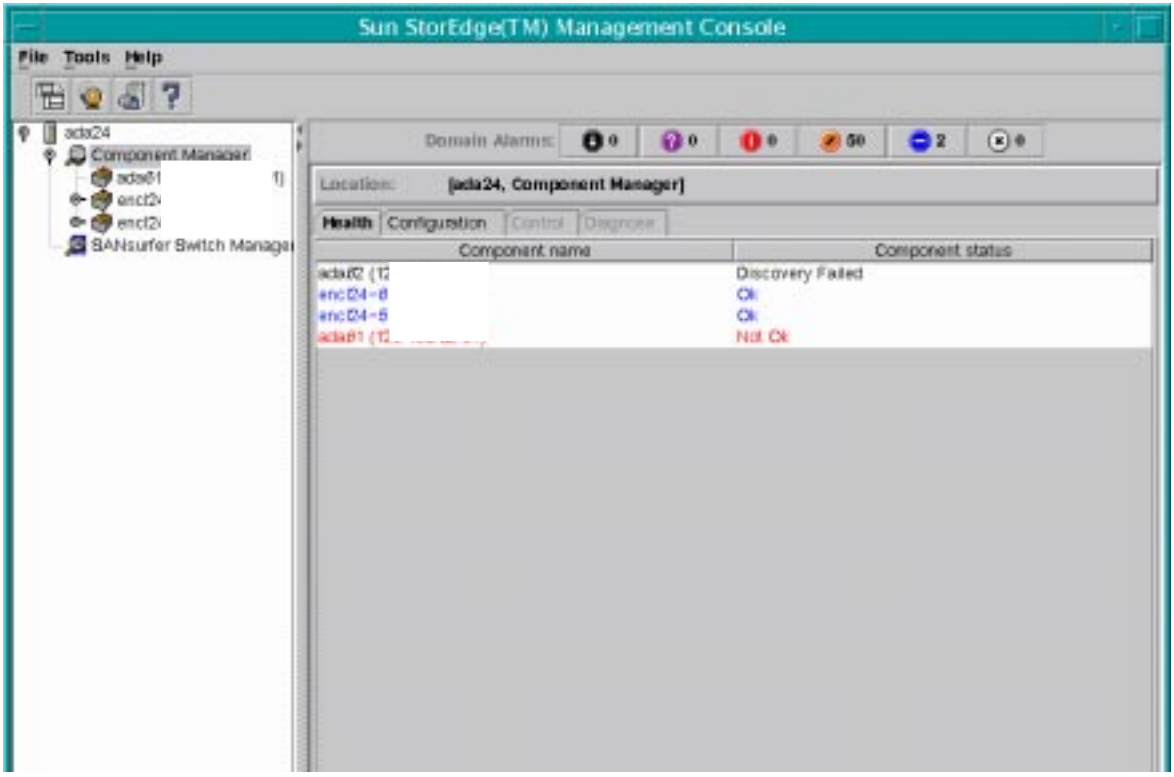


FIGURE 4-1 Component Manager Health Tab Component Status

Component Status

The different status possibilities are defined in TABLE 4-2.

TABLE 4-2 Component Status Definitions

Component Status	Status Definition
Being Discovered	Component is in the process of being discovered.
Connection Broken	Discovered component still not responding.
Degraded	Some component features are compromised and may require intervention.
Discovered	Component discovery process succeeded.
Discovery Failed	Component not discovered after discovery attempt.
Not OK	Something has failed, requiring immediate attention
OK	Component has been discovered and all functionality is present.
Pending Discovery	Discovery process not yet attempted
Polling Failed	Component discovered but temporarily not responding.

Discovery Rules

A system log message will be written under the following conditions:

- If the `/etc/opt/SUNWesm/mo/hosts` file containing Sun StorEdge T300 IP addresses could not be found or read (DOWN)
- If the HTML pages required for the Sun StorEdge T300 are missing (DOWN)
- If authorization fails (DOWN)
- If a connection cannot be established with the IP adsun storedgedress in a host (DOWN)
- If there is an error while reading the persistence files during a reboot of the Management Objects station (DOWN)
- If the Sun StorEdge A5000 library is returning an error (DOWN)
- If the Sun StorEdge T300 firmware cannot be determined (DOWN)
- If the SunStorEdge T300 firmware is less than the one supported by CM (DOWN)
- If the html page cannot be obtained from Sun StorEdge T300 (DOWN)
- If the http connection to the Sun StorEdge T300 times out (DOWN)
- If there is an invalid IP address in the hosts file. (DOWN)

Monitoring the Sun StorEdge A5x00

The Health Tab enables you to monitor the properties and status of selected hardware FRUs. This section describes the individual properties and rules specific to each component. *Rules* define the conditions under which you are notified through remote reporting when monitoring the Health Tab components. Rule evaluations are integrated into the Component Manager software.

Sun StorEdge A5x00 Properties

To view the Sun StorEdge A5x00 properties:

1. **Select your Sun StorEdge A5x00 name in the navigation pane.**

   Double-click on the words Component Manager to view your component names.

2. **Select the Health Tab.**

   Component properties and descriptions are provided in TABLE 4-3.

TABLE 4-3 Sun StorEdge A5x00 Properties

Property	Description
Enclosure Name	The name of your component subsystem. This name must be 16 or fewer characters.
Enclosure Status	The current status of the specified component is designated as one of the following: • OK – The component has no error conditions. • Critical – One or more critical conditions has been detected or set in the component. • Unrecoverable – One or more unrecoverable conditions has been detected or set in the component. • Unknown – The status of the component could not be determined.
Polling Status	Polling is designated as either Active or Inactive.
Box ID	The Box ID of the component.
Product ID	The Product ID of the component.
Vendor ID	The Vendor ID of the component.
Firmware Revision	The firmware revision of the component's interface board.
ANSI Revision	The supported SCSI level of the component. For example, a value of 2 indicates that the SCSI level equals 2.
ISO Revision	The ISO revision of the component.
ECMA Revision	The ECMA revision of the component.
Physical Path	The physical path of the component.
Port	The port number of the component.
Serial Number	The serial number of the component.
Node World Wide Name	The node world wide name of the component (unique across different components).

Sun StorEdge A5x00 FRU Summary

The current FRU status is designated as one of the following:

- OK – The FRUs are installed and no error conditions are known.
- NOT OK – Some (or all) of the FRUs are not in an OK state.

An example FRU summary is shown in the following figure.

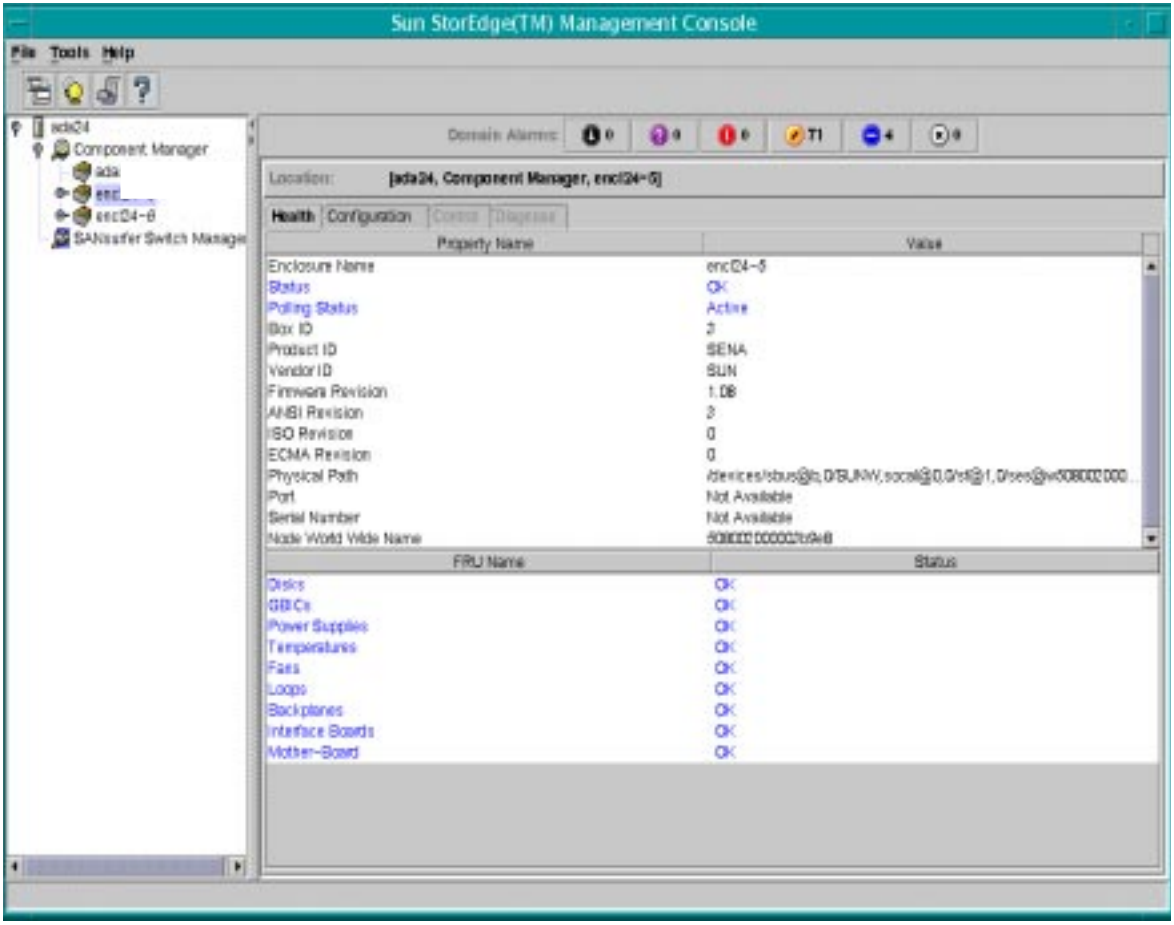


FIGURE 4-2 Sun StorEdge A5x00 Health and FRU Summary Window

Sun StorEdge A5x00 Rules

A system log message will be written under the following condition:

- When the name of the component changes

A system log message will be written and an alarm message will be generated (also triggering a remote support notification) under the following conditions:

- When a critical condition is detected (CRITICAL)
- When an unrecoverable condition is detected (CRITICAL)
- When an unknown condition is detected (ALERT)

Disk Properties

To view disk properties:

1. **Display the disk icons in the navigation pane.**
   a. **Double-Click on Component Manager in the Navigation Pane to display enclosure icons.**
   b. **Double-click on the enclosure name to display subcomponents.**
   c. **Double-click on the Disks icon to view individual disk icons.**
2. **Select a disk by clicking on it.**

Disk properties and descriptions are provided in TABLE 4-4

TABLE 4-4 Sun StorEdge A5x00 Disk Properties

Property	Description
Disk Status	The current status of the specified disk is designated as one of the following: • OK – The disk is installed and no error conditions are known. • OFF – The disk is installed and there are no known errors, but it has not been turned on or set into operation. • Not Installed – The disk is not installed in the component. • Critical – A critical condition has been detected. • Unrecoverable – An unrecoverable condition has been detected. • Unknown – The sensor has failed or the disk status is not available.
Loop Status	The current disk loop status is designated as one of the following: • OK – The disk loop is installed and no error conditions are known. • OFF – The disk loop is installed and there are no known errors, but it has not been turned on or set into operation. • Not Installed – The disk loop is not installed. • Unknown – The sensor has failed or the disk loop status is not available.
Disk Location	The physical location of a disk, described by the panel name and the slot number. For example, Front Panel, Slot Number: 0.
Disk Capacity	The disk unformatted capacity, in megabytes.
Node World Wide Name	The disk node world wide name, unique to every disk.
Product ID	The Product ID of the disk.
Vendor Name	The Vendor ID of the disk.
Firmware Revision	The firmware revision of the disk.
ANSI Revision	The supported SCSI level of the disk. For example, a value of 2 indicates that the SCSI level equals 2.
ISO Revision	The ISO revision of the disk.
ECMA Revision	The ECMA revision of the disk.
Disk Serial Number	The serial number of the disk.
Logical Path Name	The logical path of the disk.
Physical Path Name	The physical path of the disk.
Port A World Wide Name	The port A world wide name of the disk.
Disk Port A Status	The status of port A of the disk.

TABLE 4-4 Sun StorEdge A5x00 Disk Properties *(Continued)*

Property	Description
Port B World Wide Name	The port B world wide name of the disk.
Disk Port B Status	The status of port B of the disk.
CRC Error Count	The number of disk CRC errors.

Disk Rules

A system log message will be written under the following conditions:

- When a disk drive is powered down
- When a disk drive is powered up
- When a disk drive is bypassed by the user (Port A or B)
- When a disk drive is bypassed by a device (Port A or B)
- When a disk LED is turned on or off
- When a disk LED is set to blink

A system log message will be written and an alarm message will be generated (also triggering a remote support notification) under the following conditions:

- When a disk drive fails due to an open failure, SCSI error, or fault condition (CRITICAL)
- When an unknown condition is detected (ALERT)
- When a disk is unplugged (DOWN)

File Monitoring

A file monitoring processing module performs matching and frequency analysis of specified string patterns. The main use of file monitoring is to review the file `/var/adm/messages` for Sun StorEdge A5x00-related problems that cannot be directly determined through the management interface.

Alarms or log messages are sent when a match is detected. The following string patterns are used to determine when the disk's failure prediction threshold has been exceeded:

```
"drive operation marginal, service immediately (failure prediction
threshold exceeded)"
```

```
"failure prediction threshold exceeded (false)"
```

An alarm of ALERT severity is sent for these matching strings.

GBIC Properties

A Gigabit Interface Converter (GBIC) is a small, hot-pluggable optical/electrical conversion unit that converts standard Fibre Channel connector and signalling technologies to a standard copper serial connection.

1. **Display the GBIC icons in the navigation pane.**
   a. **Double-Click on Component Manager in the Navigation Pane to display enclosure icons.**
   b. **Double-click on the enclosure name to display subcomponents.**
   c. **Double-click on the GBICs icon to view individual GBIC icons.**
2. **Select a GBIC by clicking on it.**

GBIC properties and descriptions are provided in TABLE 4-5.

TABLE 4-5 Sun StorEdge A5x00 GBIC Properties

Property	Description
GBIC Status	The current status of the specified GBIC is designated as one of the following: • OK – The GBIC is installed and no error conditions are known. • OFF – The GBIC is installed and there are no known errors, but it has not been turned on or set into operation. • Not Installed – The GBIC is not installed in the component. • Critical – A critical condition has been detected. • Unrecoverable – An unrecoverable condition has been detected. • Unknown – The sensor has failed or the GBIC status is not available.
Transmission Status	The transmitting status page path of the specified GBIC, designated as one of the following: • Transmitting – The GBIC is transmitting. • Not Transmitting – The GBIC is not transmitting. • Not Available – The transmitting status is not available.
Receiving Status	The receiving status of the specified GBIC, designated as one of the following: • Receiving – The GBIC is receiving signals. • Not Receiving – The GBIC is not receiving signals. • Not Available – The receiving status is not available.
Enabling Status	The status that indicates whether the specified GBIC is enabled: • Enabled – The GBIC is enabled. • Disabled – The GBIC is disabled. • Not Available – Cannot determine if the GBIC is enabled.
Operating Status	The status that indicates whether the specified GBIC has failed: • OK – The GBIC is installed and no error conditions are known. • Failed – The GBIC has failed. • Not Available – Cannot determine the operating status.
GBIC Revision	The GBIC revision level.

GBIC Rules

A system log message will be written under the following condition:

- When a GBIC is enabled

A system log message will be written and an alarm message will be generated (also triggering a remote support notification) under the following conditions:

- When a GBIC is not available (DOWN)
- When a GBIC fails (DOWN)
- When an unknown condition is detected (ALERT)

File Monitoring

A file monitoring processing module performs matching and frequency analysis of specified string patterns. The main use of file monitoring is to review the file `/var/adm/messages` for Sun StorEdge A5x00-related problems that cannot be directly determined through the management interface.

Alarms or log messages are sent when a match is detected. The following string pattern is used to determine when the GBIC's Fibre Channel is offline:

```
"socal0...9: port 0...1: Fibre Channel is OFFLINE"
```

Alarm Progression

1. An alarm of ALERT severity is sent if this message occurs five times within one hour.
2. Thereafter, an alarm of CRITICAL severity is sent if this message occurs 11 times within 24 hours.
3. Thereafter, if any identical alarm message occurs within 20 minutes, a summary alarm message will be sent with the total number of occurrences of this incident along with the alarm message.
4. At this point, if this alarm message is not sent within 24 hours, the state is reset and future alarms would be reported as an ALERT (see step #1 above).

Power Supply Properties

To view power supply properties:

1. **Display the power supply icons in the navigation pane.**

   a. **Double-Click on Component Manager in the Navigation Pane to display enclosure icons.**

   b. **Double-click on the enclosure name to display subcomponents.**

   c. **Double-click on the Power Supplies icon to view individual power supply icons.**

2. **Select a power supply by clicking on it.**

   Power Supply properties and descriptions are provided in TABLE 4-6.

TABLE 4-6 Sun StorEdge A5x00 Power Supply Properties

Property	Description
Power Supply Status	The current status of the specified power supply is designated as one of the following: • OK – The power supply is installed and no error conditions are known. • OFF – The power supply is installed and there are no known errors, but it has not been turned on or set into operation. • Not Installed – The power supply is not installed in the component. • Critical – A critical condition has been detected. • Unrecoverable – An unrecoverable condition has been detected. • Unknown – The sensor has failed or the power supply status is not available.
Power Supply Revision	The Power Supply revision level.

Power Supply Rules

A system log message will be written and an alarm message will be generated (also triggering a remote support notification) under the following conditions:

- When a power supply is not available (DOWN)
- When an unknown condition is detected (ALERT)
- When a power supply fails due to one of the following reasons (CRITICAL):
  - Not receiving AC power
  - Not providing power
  - Over voltage
  - Under voltage
  - Over current
  - Reaching temperature critical condition

Temperature Properties

To view temperature properties:

1. **Display the temperature icons in the navigation pane.**

   a. **Double-Click on Component Manager in the Navigation Pane to display enclosure icons.**

   b. **Double-click on the enclosure name to display subcomponents.**

   c. **Double-click on the Temperatures icon to view individual temperature sensor icons.**

2. **Select a temperature sensor by clicking on it.**

   Temperature properties and descriptions are provided in TABLE 4-7.

TABLE 4-7 Sun StorEdge A5x00 Temperature Properties

Property	Description
Temperature Status	The current status of the specified sensor is designated as one of the following: • OK – The temperature element is installed and no error conditions are known. • OFF – The temperature element is installed and there are no known errors, but it has not been turned on or set into operation. • Not Installed – The temperature element is not installed in the component. • Critical – A critical condition has been detected. • Unrecoverable – An unrecoverable condition has been detected. • Unknown – The sensor has failed or the temperature element status is not available.
Temperature	Indicates the Celsius temperature reading of the temperature element surrounding.

Temperature Rules

A system log message will be written and an alarm message will be generated (also triggering a remote support notification) under the following conditions:

- When a temperature element is not available (DOWN)
- When a critical condition is detected (CRITICAL)
- When an unrecoverable condition is detected (CRITICAL)
- When an unknown condition is detected (ALERT)

Fan Properties

To view fan properties:

1. **Display fan icons in the navigation pane.**

   a. **Double-Click on Component Manager in the Navigation Pane to display enclosure icons.**

   b. **Double-click on the enclosure name to display subcomponents.**

   c. **Double-click on the Fans icon to view individual fan icons.**

2. **Select a fan by clicking on it.**

   Fan properties and descriptions are provided in TABLE 4-8.

TABLE 4-8 Sun StorEdge A5x00 Fan Properties

Property	Description
Fan Status	The current status of the specified fan element is designated as one of the following: • OK – The fan element is installed and no error conditions are known. • OFF – The fan element is installed and there are no known errors, but it has not been turned on or set into operation. • Not Installed – The fan element is not installed in the component. • Critical – A critical condition has been detected. • Unrecoverable – An unrecoverable condition has been detected. • Unknown – The sensor has failed or the fan element status is not available.
Fan Speed	Indicates the speed value of the fan.
Fan Revision	Indicates the fan element revision level.

Fan Rules

A system log message will be written and an alarm message will be generated (also triggering a remote support notification) under the following conditions:

- When a fan tray is not available (DOWN)
- When a critical condition is detected (CRITICAL)
- When an unrecoverable condition is detected (CRITICAL)
- When an unknown condition is detected (ALERT)

Loop Properties

To view loop properties:

1. **Display loop icons in the navigation pane.**

   a. **Double-Click on Component Manager in the Navigation Pane to display enclosure icons.**

   b. **Double-click on the enclosure name to display subcomponents.**

   c. **Double-click on the Loops icon to view individual loop icons.**

2. **Select a loop by clicking on it.**

   Loop properties and descriptions are provided in TABLE 4-9.

TABLE 4-9 Sun StorEdge A5x00 Loop Properties

Property	Description
Loop Status	The current status of the specified loop is designated as one of the following: • OK – No error conditions are known. • OFF – There are no known errors, but it has not been turned on or set into operation. • Not Installed – The loop is not installed in the component. • Critical – A critical condition has been detected. • Unrecoverable – An unrecoverable condition has been detected. • Unknown – The sensor has failed or the loop status is not available.
Loop Configuration	The configuration of the specified loop is designated as either: • Single Loop – A single loop configuration. • Split Loop – A split loop configuration.

Loop Rules

A system log message will be written and an alarm message will be generated (also triggering a remote support notification) under the following conditions:

- When a loop is not available (DOWN)
- When a loop is not installed (DOWN)
- When an unknown condition is detected (ALERT)

Backplane Properties

To view backplane properties:

1. **Display backplane icons in the navigation pane.**

   a. **Double-Click on Component Manager in the Navigation Pane to display enclosure icons.**

   b. **Double-click on the enclosure name to display subcomponents.**

   c. **Double-click on the Backplanes icon to view individual backplane icons.**

2. **Select a backplane by clicking on it.**

   Backplane properties and descriptions are provided in TABLE 4-10.

TABLE 4-10 Sun StorEdge A5x00 Backplane Properties

Property	Description
Backplane Status	The current status of the specified backplane is designated as one of the following: • OK – The backplane is installed and no error conditions are known. • OFF – The backplane is installed and there are no known errors, but it has not been turned on or set into operation. • Not Installed – The backplane is not installed in the component. • Critical – A critical condition has been detected. • Unrecoverable – An unrecoverable condition has been detected. • Unknown – The sensor has failed or the backplane status is not available.
Port A Status	The current status of the specified backplane is designated as either: • Enabled – Port A is enabled. • Bypassed – Port A is bypassed.
Port B Status	The current status of the specified backplane is designated as either: • Enabled – Port B is enabled. • Bypassed – Port B is bypassed.
Backplane Revision	The revision level of the backplane.

Backplane Rules

A system log message will be written under the following condition:

- When a backplane Port A or Port B is bypassed

A system log message will be written and an alarm message will be generated (also triggering a remote support notification) under the following conditions:

- When a backplane is disabled (DOWN)
- When a critical condition is detected (CRITICAL)
- When an unrecoverable condition is detected (CRITICAL)
- When an unknown condition is detected (ALERT)
- When the average temperature exceeds 60°C (CRITICAL)

Interface Board Properties

The interface board provides a Fibre Channel connection to the component. Furnishing all intelligent controls for the array, the interface board supplies special services to report and control the state of the component and its components—sensing and setting the environmental service signals as required by conditions inside the unit. The interface board interprets component service commands from the host or the front panel module and performs the indicated component management and sensing functions.

1. **Display interface board icons in the navigation pane.**

   a. **Double-Click on Component Manager in the Navigation Pane to display enclosure icons.**

   b. **Double-click on the enclosure name to display subcomponents.**

   c. **Double-click on the Interface Boards icon to view individual interface board icons.**

2. **Select an interface board by clicking on it.**

   Interface Board properties and descriptions are provided in TABLE 4-11.

TABLE 4-11 Sun StorEdge A5x00 Interface Board Properties

Property	Description
Interface Board Status	The current status of the specified interface board is designated as one of the following: • OK – The interface board is installed and no error conditions are known. • OFF – The interface board is installed and there are no known errors, but it has not been turned on or set into operation. • Not Installed – The interface board is not installed in the component. • Critical – A critical condition has been detected. • Unrecoverable – An unrecoverable condition has been detected. • Unknown – The sensor has failed or the interface board status is not available.
Interface Board Over Temperature	The current value of the specified interface board indicates if the interface board is over temperature: • True – The interface board is over temperature. • False – The interface board is not over temperature.
Interface Board Loop 0 Status	The current status of the specified interface board is designated as either: • OK – The loop has not failed. • Failed – The loop has failed.
Interface Board Loop 1 Status	The current status of the specified interface board is designated as either: • OK – The loop has not failed. • Failed – The loop has failed.
Interface Board Revision	The revision level of the interface board.

Interface Board Rules

A system log message will be written and an alarm message will be generated (also triggering a remote support notification) under the following conditions:

- When an interface board is not available (DOWN)
- When an interface board fails due to the following reasons:
  - Over temperature (CRITICAL)
  - Loop 0 or 1 failure (ALERT)
- When an unknown condition is detected (ALERT)

Motherboard Properties

To view motherboard properties:

1. **Display Motherboard icon in the navigation pane.**

   a. **Double-Click on Component Manager in the Navigation Pane to display enclosure icons.**

   b. **Double-click on the enclosure name to display subcomponents.**

2. **Select a Motherboard by clicking on it.**

   Motherboard properties and descriptions are provided in TABLE 4-12.

TABLE 4-12 Sun StorEdge A5x00 Motherboard Properties

Property	Description
Motherboard Status	The current status of the motherboard is designated as one of the following: • OK – The motherboard is installed and no error conditions are known. • OFF – The motherboard is installed and there are no known errors, but it has not been turned on or set into operation. • Not Installed – The motherboard is not installed in the component. • Critical – A critical condition has been detected. • Unrecoverable – An unrecoverable condition has been detected. • Unknown – The sensor has failed or the motherboard status is not available.
Motherboard EPROM Status	The current status of the motherboard indicates if the motherboard EPROM has failed: • OK – The motherboard EPROM has not failed. • Failed – The motherboard EPROM has failed.
Motherboard Revision	The revision level of the motherboard.

Motherboard Rules

A system log message will be written and an alarm message will be generated (also triggering a remote support notification) under the following conditions:

- When a motherboard is not available (DOWN)
- When a motherboard fails due to EPROM failure (CRITICAL)
- When an unknown condition is detected (ALERT)

Monitoring the Sun StorEdge T300 Disk Tray

The Health Tab enables you to monitor the properties and status of selected hardware FRUs. This section describes the individual properties and rules specific to each FRU. *Rules* define the conditions under which you are notified through remote reporting when monitoring the Health Tab components. Rule evaluations are integrated into the Component Manager software.

System Properties

To view the system properties:

1. **Display the component icon in the navigation pane.**

   If the component icons are not already visible, double-click on Component Manager to view the component icons.

2. **Select the Health Tab.**

3. **Select Physical View Tab.**

4. **Select the system name text in the physical view.**

   System properties and values appear as in FIGURE 4-3.

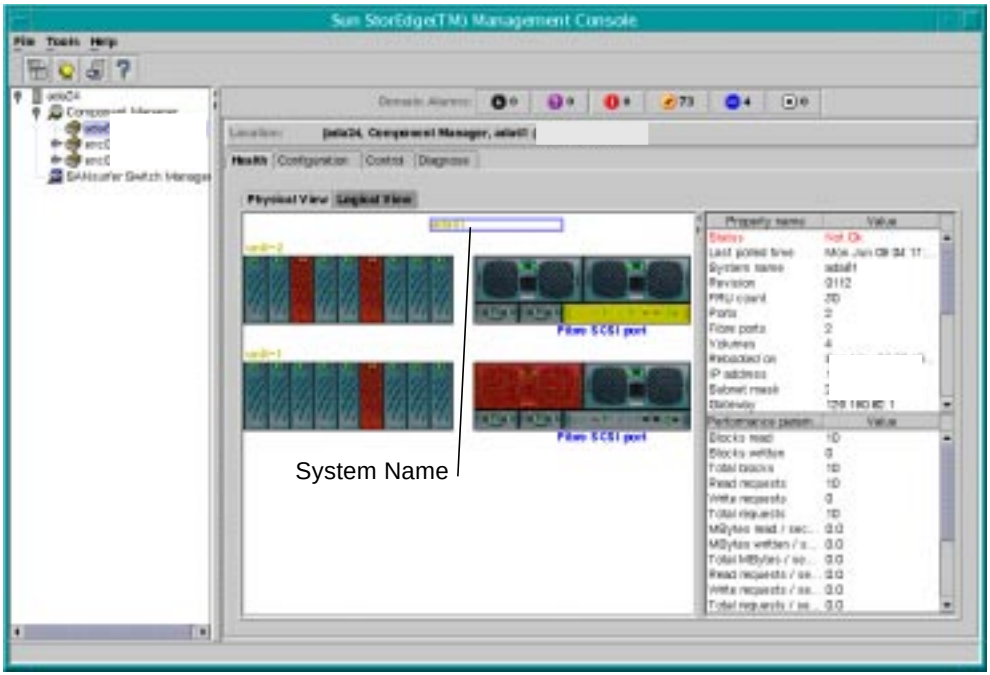


FIGURE 4-3 Health Tab, Sun StorEdge T300 System Properties

System properties and performance parameter descriptions are provided in TABLE 4-15 an dTABLE 4-14 respectively.

TABLE 4-13 Sun StorEdge T300 System Properties

Property	Description
Status	The current status of the system is designated as one of the following: • OK – The system has no error conditions. • Not OK - The system or one of the FRUs has an error. The problem component will have a red image or be red text on physical view. • Degraded – The system or one of the FRUs are physically ok. However something may be running in a degraded condition and will be outlined in gold or gold text (for example, a disk may be reconstructing, port is offline). • Polling Failed – Component Manger could not communicate to the system during a polling cycle. This may be a temporary condition due to a network congestion. • Connection Broken – Component Manager could not communicate with a Sun StorEdge T300 system for more than 2 minutes. This is a serious condition because the system cannot be monitored.
Last Polled Time	Date and time stamp of most recent successful polling event.
System Name	The name of the system.
Revision	Firmware revision.
FRU Count	Total number of FRUs in system
Ports	Number of ports in system
Fibre Ports	Number of Fibre Ports
Volumes	Number of LUNS defined.
Rebooted on	The date and time of the most recent system reboot.
IP address	The IP address.
Subnet Mask	The subnet mask of the system.
Gateway	The default gateway IP address.
Boot Delay (seconds)	The time delay during which time a user could strike a key at the system console to interrupt EPROM boot process.
Spin Delay (seconds)	The drive spinup delay in seconds.
Cache mode	The current system buffer cache mode. It can be one of the following values: disabled, write through, write behind, auto.
Cache mirror	The current system buffer cache mirror code. It can be either off or auto.

TABLE 4-13 Sun StorEdge T300 System Properties *(Continued)*

Property	Description
Multi-pathing Support	The current multi-pathing support mode. It can be either none or "read write".
OFDG (Offline Diagnostics)	The current offline diagnostic mode: * "Off" - indicates that the on-line loop diagnostic is suspended. * "Passive" - the on-line loop diagnostic executes only the "monitor" function. * "Active" - the on-line loop diagnostic executes the "monitor" function, and if link error(s) is detected, executes the "find" function automatically.
OFDG Time Slice (seconds)	The time-slice in seconds devoted to normal I/O between loop diagnostic data pattern I/O.
Read Ahead	The number of consecutive contiguous read commands received before triggering read-ahead. This feature is mainly useful when host read requests are smaller than the system stripe unit size. For example, consider the case where host read requests are 4K (8 SCSI blocks), stripe unit size is 64K, sysReadAhead is on. If the host issues a read to block X, immediately followed by a read of block X+8, the system will read all blocks starting at block X+8 to the end of the stripe unit. If the host then issues a read to block X+16, this block will most likely already be in the cache.
Disk Reconstruction Rate	A value controlling the amount of "bandwidth" allocated to disk reconstruction. "High" allocates the most amount of bandwidth to reconstruct (slowing down host I/O), and "Low" allocates the least amount of bandwidth to reconstruct (least impact on host I/O).
Unit Stripe Size (bytes)	The current system stripe unit size. This is the amount of data written to one disk before moving onto the next disk. This value is changeable only if there are no created volumes. The stripe unit size is also sometimes referred to as the block size; however, this block size should not be confused with the SCSI block size as seen by the host (which is always 512 bytes).
User	Specifies the current user login (only root and guest today).
Vendor	The system vendor.
Model	The system model, that is, "T300".

TABLE 4-13 Sun StorEdge T300 System Properties *(Continued)*

Property	Description
Current Time	The current date and time. The format of the string is: “Wed Mar 17 18:30:00 1999"
Time Zone	Specifies the time zone offset, that is, the difference between local time and universal time (UTC). This value is expressed as a string in the form “SHHMM”, where S is the sign ’+’ or ’-’. For example, for Pacific Standard Time, use “-0800”. (For Pacific Daylight Time, use “-0700”.)
Has volumes	A flag indicating whether volumes have been defined.

TABLE 4-14 Sun StorEdge T300 Performance Parameters

Property	Description
Blocks Read	The current number of blocks read (transmitted to) all host ports.
Blocks Written	The current number of blocks written (received from) all host ports.
Total Blocks	The current total number of blocks transferred via all host ports.
Read Requests	The current number of read requests received from all host ports.
Write Requests	The current number of write requests received from all host ports.
Total Requests	The current total number of read / write commands received from all host ports.
Mbytes Read / Second	The number of bytes / 1,000,000 read per second during the sampling period.
Mbytes Written / Second	The number of bytes / 1,000,000 written per second during the sampling period.
Total Mbytes / Second	The number of bytes / 1,000,000 transferred per second during the sampling period.
Read Requests / Second	The number of read requests received per second during the sampling period.
Write Requests / Second	The number of write requests received per second during the sampling period.
Total Mbytes / Second	The number of bytes / 1,000,000 transferred per second during the sampling period.
Read Hits in Cache	The current number of blocks read from cache.
Write Hits in Cache	The current number of new blocks written to the cache.
Read Misses in Cache	The current number of blocks read from disk into the cache.

TABLE 4-14 Sun StorEdge T300 Performance Parameters *(Continued)*

Property	Description
Write Misses in Cache	The current number of new blocks written to the cache.
Stripe-write Stripe Operation	The current number of stripe-write stripe operations executed by cache flush.
Read-modify-write Stripe Operation	The current number of read-modify-write stripe operations executed by cache flush.
Reconstruct-write Stripe Operation	The current number of reconstruct-write stripe operations executed by cache flush.

System Rules

A system log message will be written and an alarm message will be generated (also triggering a remote support notification) under the following conditions:

- When the system will shut down in *n* minutes (CRITICAL)
- When the connection to the host has failed (CRITICAL)
- When Component Manager looses connection with a Sun StorEdge T300 disk tray during configuration (CAUTION)
- When any FRU is missing (ALERT)
- When a FRU has been missing for 30 minutes (CRITICAL

Unit Properties

To view the unit properties:

1. **Display the component icon in the navigation pane.**

   If the component icons are not already visible, double-click on Component Manager to view the component icons.

2. **Select the Health Tab.**

3. **Select Physical View Tab.**

4. **Select the unit name text in the physical view.**

   Unit properties and values appear as in FIGURE 4-4.

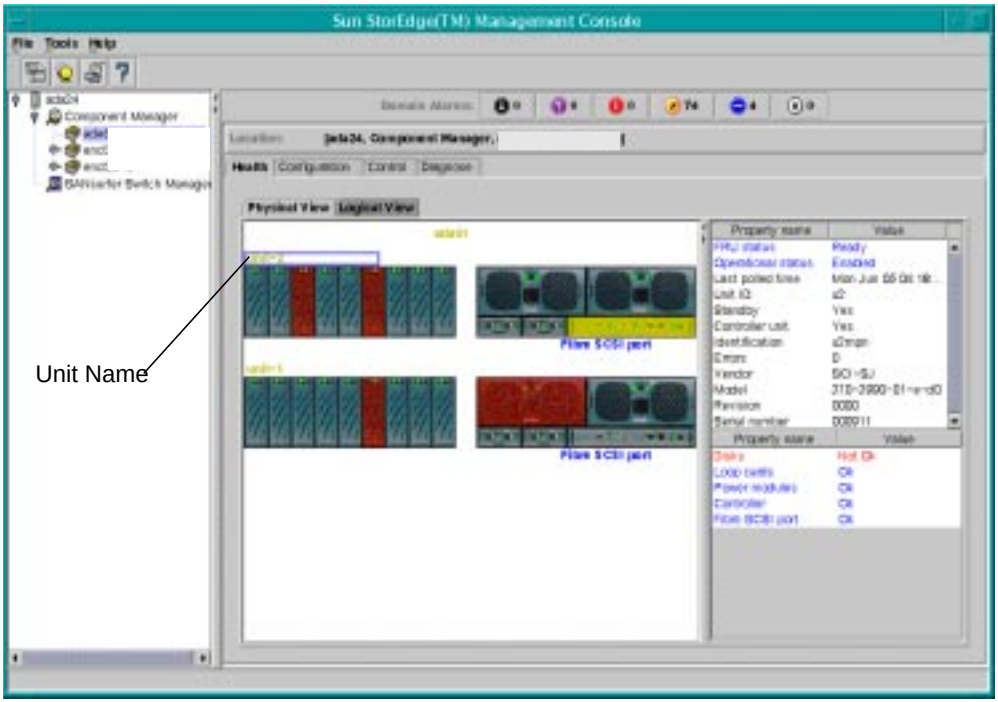


FIGURE 4-4 Health Tab, Sun StorEdge T300 Unit Properties

Unit properties and descriptions are provided in TABLE 4-15.

TABLE 4-15 Sun StorEdge T300 Unit Properties

Property	Description
FRU Status	Absent, Fault, Ready, Polling failed, Connection broken, Diagnostics in Progress.
Operational Status	Enabled, Disabled, Substituted, Polling failed, Connection broken, Diagnostics in Progress.
Unit Id	The unit id string, for example, “u1”.
Standby	A flag indicating whether drive 9 in the unit is a standby.
Controller Unit	A flag indicating whether the unit is a controller unit.
Last Polled Time	Date and time stamp of most recent successful polling event.
Identification	The FRU id string, for example, “u1pcu2”.
Errors	The number of errors for a FRU.
Vendor	The FRU vendor id string.

TABLE 4-15 Sun StorEdge T300 Unit Properties *(Continued)*

Property	Description
Model	The FRU model id string.
Revision	The FRU revision string.
Serial Number	The FRU serial number string.

Unit Summary

The current unit component status is designated as one of the following:

- OK – The unit components are installed and no error conditions are known
- NOT OK – Some (or all) of the unit components are not in an `OK` state
- DEGRADED – There has been a loss of redundant functionality (that is, a controller, disk, power supply, or interconnect cable or card.

Unit Rules

A system log message will be written and an alarm message will be generated (also triggering a remote support notification) under the following conditions:

- When any FRU is missing (ALERT)
- When a FRU has been missing for 30 minutes (CRITICAL)

Disk Properties

To view disk properties:

1. **Display the component icon in the navigation pane.**

   If the component icons are not already visible, double-click on Component Manager to view the component icons.

2. **Select the Health Tab.**

3. **Select Physical View Tab.**

4. **Select the disk FRU in the physical view.**

   Disk properties are displayed as in FIGURE 4-5.

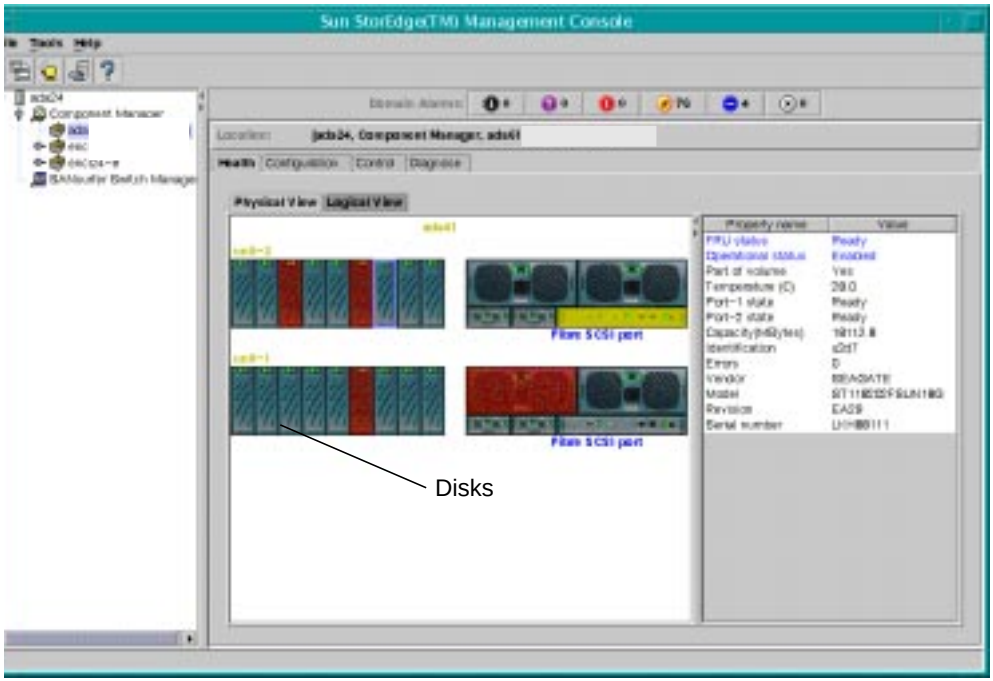


FIGURE 4-5 Health Tab, Sun StorEdge T300 Disk Properties

Disk properties and descriptions are provided in TABLE 4-16.

TABLE 4-16 Sun StorEdge T300 Disk Properties

Property	Description
FRU Status	Absent, Fault, Ready, Polling failed, Connection broken, Diagnostics in Progress.
Operational Status	Enabled, Disabled, Substituted, Polling failed, Connection broken, Diagnostics in Progress.
Part of Volume	A flag indicating if this disk has been defined as part of a volume.
Temperature	Temperature in degrees Celsius.
Port-1 State	The status the disk FRU via the disk's interface port 1.
Port-2 State	The status the disk FRU via the disk's interface port 2.
Capacity	The number of bytes / 1,000,000 of storage on the disk FRU.
Identification	The FRU id string, for example, "u1d1".
Errors	The number of errors for a FRU.
Vendor	The FRU vendor id string.
Model	The FRU model id string.
Revision	The FRU revision string.
Serial Number	The FRU serial number string.

Disk Rules

A system log message will be written and an alarm message will be generated (also triggering a remote support notification) under the following conditions:

- When a disk drive has been removed (ALERT)
- When a disk drive is disabled (ALERT)
- When the system area of disk drive is bad (ALERT)
- When attempting to being a newly-installed disk on-line (CAUTION)
- When there is a disk error (ALERT)

LUN Properties

To create LUNS, see “Creating LUNs” on page 33. To clear LUN statistics, see “To Clear LUN Statistics” on page 41.

To view LUN properties:

1. **Display the component icon in the navigation pane.**

   If the component icons are not already visible, double-click on Component Manager to view the component icons.

2. **Select the Health Tab.**

3. **Select Logical View Tab.**

4. **Select the LUN in the Existing LUNs list.**

   Disk properties are displayed as in FIGURE 4-6.

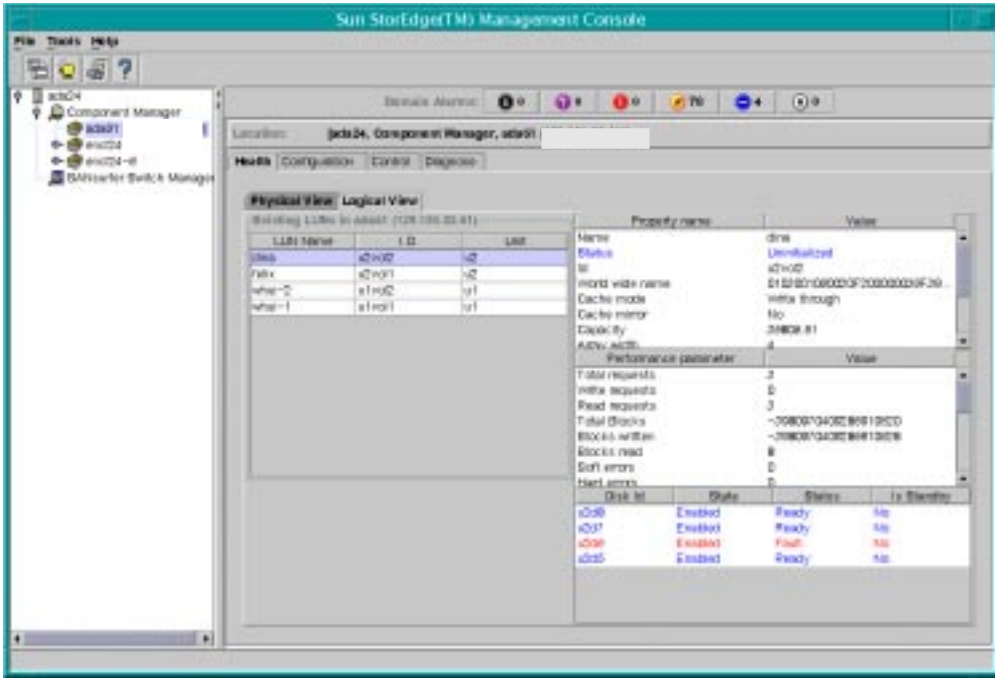


FIGURE 4-6 Health Tab, Sun StorEdge, T300 LUN Properties

LUN properties and performance parameters are provided in TABLE 4-17 and TABLE 4-18 respectively.

TABLE 4-17 Sun StorEdge T300 LUN Properties

Property	Description
Name	The LUN name.
Status	The status of the LUN (that is, mounted, unmounted, initializing, uninitialized, etc.).
ID	Unit number and volume number.
World Wide Name	Unique identifier.
Cache Mode	Off, writebehind, writethrough or auto.
Cache Mirror	The current system buffer cache mirror mode: on or off.
Capacity	The number of bytes / 1,000,000 of storage on the LUN.
Array Width	The number of disks the LUN spans
RAID level	The RAID level the LUN was created with. See TABLE 3-3 on page 3-35 for RAID definitions.
Disabled disk id	FRU id of disabled disk.
Substituted disk id	FRU id of disk being substituted for disabled disk.
Current Operation	Mounted, unmounted, initialized, created
Operation progress (%)	Percentage of operation completed.

TABLE 4-18 Sun StorEdge T300 LUN Performance Parameters

Property	Description
Total Requests	The current total number of read / write commands received from all host ports.
Write Requests	The current number of write requests received from all host ports.
Read Requests	The current number of read requests received from all host ports.
Total Blocks	The current total number of blocks transferred via all host ports.
Blocks Written	The current number of blocks written (received from) all host ports.
Blocks Read	‘The current number of blocks read (transmitted to) all host ports.
Soft Errors	Number of errors in which a disk retry succeeded.
Hard Errors	Number of times input or output failed for a LUN.

TABLE 4-18 Sun StorEdge T300 LUN Performance Parameters *(Continued)*

Property	Description
Firm Errors	Number of stripe parity replacements but successful come backs.
Cache Write Hits	The current number of blocks in the cache re-written before the previous contents have been written to disk.
Cache Write Misses	The current number of new blocks written to the cache.
Cache Read Hits	The current number of blocks read from cache.
Cache Read Misses	The current number of blocks read from disk into the cache.
Cache RMW Flushes	The current number of read-modify-write stripe operations executed by cache flush.
Cache Recon Flushes	The current number of reconstruct-write stripe operations executed by cache flush.
Cache Stripe Flushes	The current number of stripe-write stripe operations executed by cache flush.
Total Requests / Second	The number of read / write requests received per second during the sampling period.
Write Requests / Second	The number of write requests received per second during the sampling period.
Read Requests / Second	The number of read requests received per second during the sampling period.
Total Mbytes / Second	The number of bytes / 1,000,000 transferred per second during the sampling period.
Written Mbytes / Second	The number of bytes / 1,000,000 written per second during the sampling period.
Read Mbytes / Second	The number of bytes / 1,000,000 read per second during the sampling period.

TABLE 4-19 LUN Disk Status

Property	Description
Disk Id	The FRU id string, for example, “u1d1”.
State	The FRU state.
Status	The FRU status.
In Standby	Whether the FRU is defined as the standby (hot spare) disk.

LUN Rules

A system log message will be written and an alarm message will be generated (also triggering a remote support notification) under the following conditions:

- When a disk drive has been removed (ALERT)
- When a disk drive is disabled (ALERT)
- When the system area of disk drive is bad (ALERT)
- When soft, firm or hard errors are increasing in frequency (ALERT)
- When LUN status changes (CAUTION)
- When loosing connection with a unit while performing a LUN operation (CAUTION)
- When another user is creating a LUN

Interconnect Card Properties

To view interconnect properties:

1. **Display the component icon in the navigation pane.**

   If the component icons are not already visible, double-click on Component Manager to view the component icons.

2. **Select the Health Tab.**

3. **Select Physical View Tab.**

4. **Select the loop FRU in the physical view.**

   Interconnect Properties are displayed as in FIGURE 4-7.

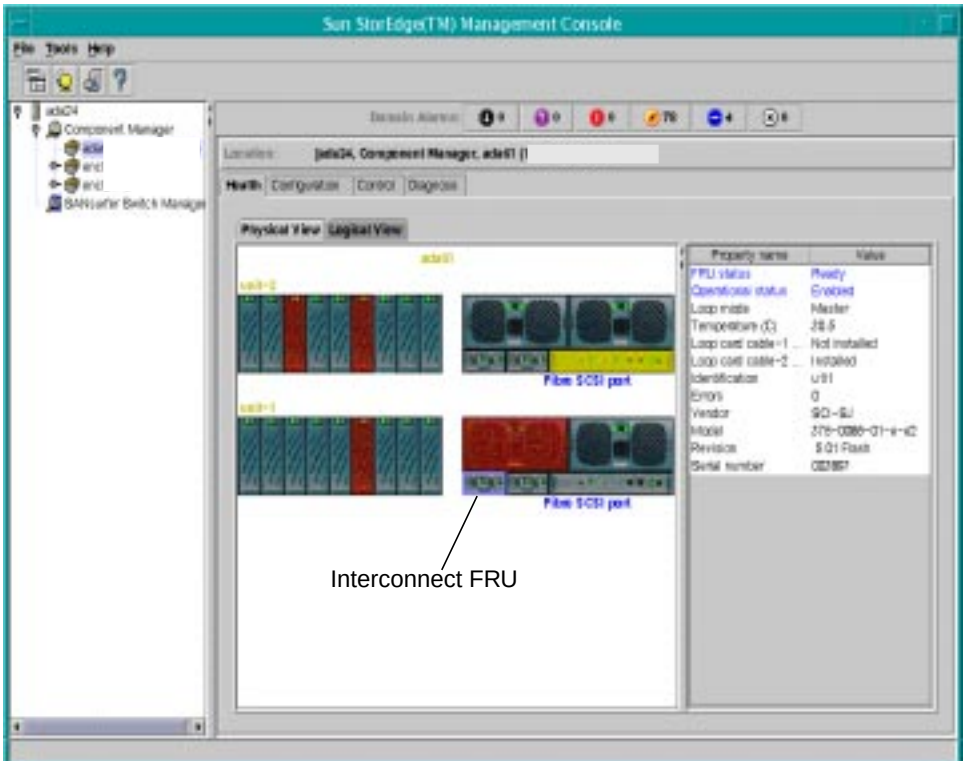


FIGURE 4-7 Health Tab, Sun StorEdge T300 Interconnect Card Properties

Interconnect properties and descriptions are provided in TABLE 4-20.

TABLE 4-20 Sun StorEdge T300 Interconnect Properties

Property	Description
FRU Status	Absent, Fault, Ready, Polling failed, Connection broken, Diagnostics in Progress.
Operational Status	Enabled, Disabled, Substituted, Polling failed, Connection broken, Diagnostics in Progress.
Loop Mode	The current operational mode of the loop card FRU.
Temperature	The temperature in degrees Celsius.
Loop Card Cable-1 State	The status of the interconnect cable.
Loop Card Cable-2 State	The status of the interconnect cable.
Identification	The FRU id string, for example, “u1l2”.

TABLE 4-20 Sun StorEdge T300 Interconnect Properties *(Continued)*

Property	Description
Errors	The number of errors for a FRU.
Vendor	The FRU vendor id string.
Model	The FRU model id string.
Revision	The FRU revision string.
Serial Number	The FRU serial number string.

Interconnect Card Rules

A system log message will be written and an alarm message will be generated (also triggering a remote support notification) under the following conditions:

- When a interconnect card is not available (ALERT)
- When a interconnect cable is not installed (ALERT)
- When an interconnect cable is missing (ALERT)
- When an interconnect card is disabled (ALERT)
- When an interconnect card has an error (ALERT)

Power Module Properties

To view power module properties:

1. **Display the component icon in the navigation pane.**

   If the component icons are not already visible, double-click on Component Manager to view the component icons.

2. **Select the Health Tab.**

3. **Select Physical View Tab.**

4. **Select the power module FRU in the physical view.**

   Power Module properties are displayed as in FIGURE 4-8.

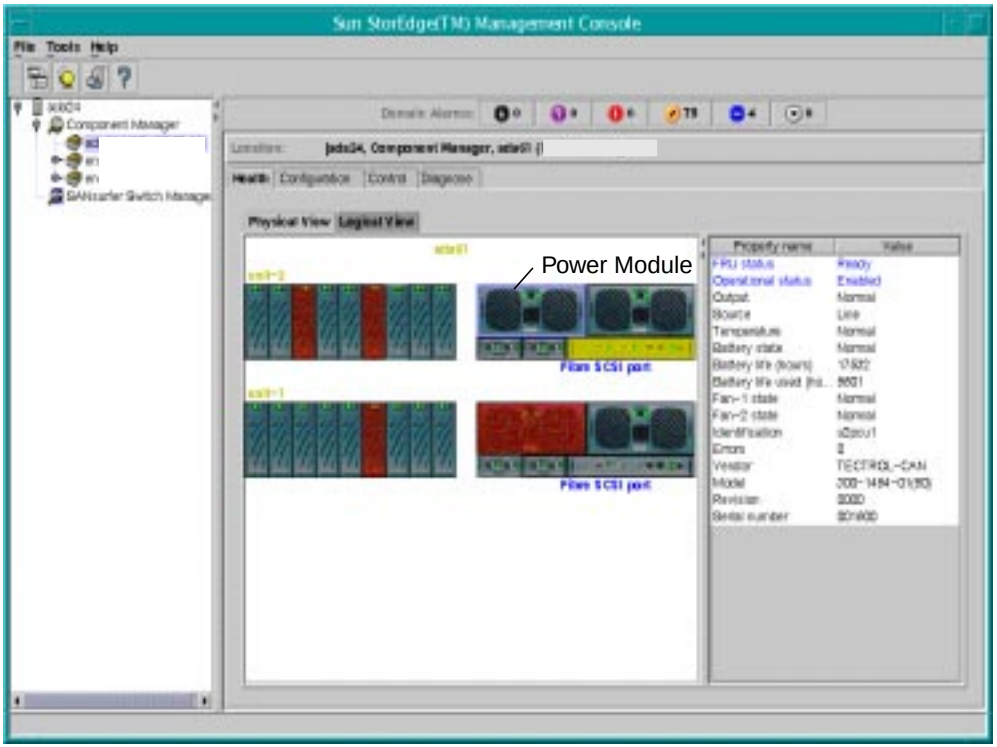


FIGURE 4-8 Health Tab, Sun StorEdge T300 Power Module Properties

Power Module properties and descriptions are provided in TABLE 4-21.

TABLE 4-21 Sun StorEdge T300 Power Module Properties

Property	Description
FRU Status	Absent, Fault, Ready, Polling failed, Connection broken, Diagnostics in Progress.
Operational Status	Enabled, Disabled, Substituted, Polling failed, Connection broken, Diagnostics in Progress.
Output	The current power output state of the power/cooling FRU.
Source	The current power input source of the power/cooling FRU.
Temperature	The temperature in degrees Celsius.
Battery State	The current state of fan 1 in the power/cooling FRU.
Battery Life (hours)	The expected battery life.
Battery Life Used	The hours of battery life used.
Fan-1 State	The current state of fan 1 in the power/cooling FRU.
Fan-2 State	The current state of fan 2 in the power/cooling FRU.
Identification	The FRU id string, for example, “u1pcu2”.
Errors	The number of errors for a FRU.
Vendor	The FRU vendor id string.
Model	The FRU model id string.
Revision	The FRU revision string.
Serial Number	The FRU serial number string.

Power Module Rules

A system log message will be written and an alarm message will be generated (also triggering a remote support notification) under the following conditions:

- When a power supply unit is missing (ALERT)
- When a power supply unit is over temperature (ALERT)
- When a fan fault exists on a power supply unit (ALERT)
- When the DC of a power supply unit is not OK (ALERT)
- When a power supply unit has been disabled (ALERT)
- When a power supply unit is off (ALERT)
- When a power supply unit has switched to battery for a power source (ALERT)
- When a battery is missing from a power supply unit (ALERT)

- When a battery is fully drained or approaching total battery life (ALERT)
- When the power supply unit has an error (ALERT)

Controller Properties

To view controller properties:

1. **Display the component icon in the navigation pane.**

   If the component icons are not already visible, double-click on Component Manager to view the component icons.

2. **Select the Health Tab.**

3. **Select Physical View Tab.**

4. **Select the controller FRU in the physical view.**

   Controller properties are displayed as in FIGURE 4-9.

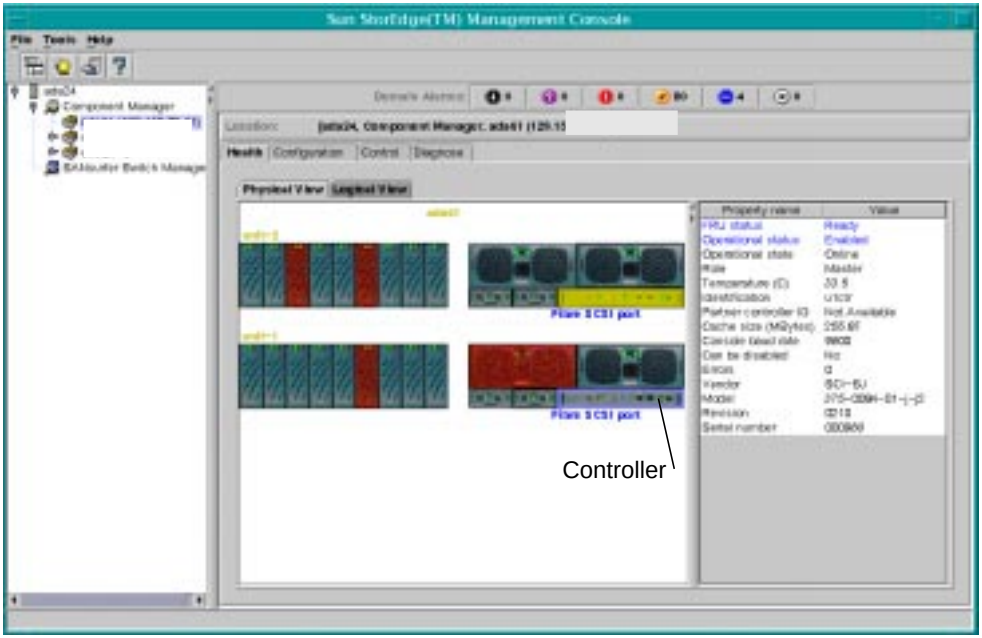


FIGURE 4-9 Health Tab, Sun StorEdge T300 Controller Properties

Controller properties and descriptions are provided in TABLE 4-22.

TABLE 4-22 Sun StorEdge T300 Controller Properties

Property	Description
FRU Status	Absent, Fault, Ready, Polling failed, Connection broken, Diagnostics in Progress.
Operational Status	Enabled, Disabled, Substituted, Polling failed, Connection broken, Diagnostics in Progress
Operational State	Expansion unit, Booting, Disabling, Resetting, Reconfiguring, Hot plug, Virtual, Online, Disabled, Reset
Role	The current operational role of this controller FRU.
Temperature	The temperature in degrees Celsius.
Identification	The FRU id string, for example, “u1ctr”.
Partner Identification	In a dual controller system, the partner controller’s FRU id.
Cache Size	The cache size in bytes / 1,000,000.
Console Baud Rate	Data transfer rate from unit to console.
Can Be Disabled	A flag indicating whether the controller may be disabled.
Errors	The number of errors for a FRU.
Vendor	The FRU vendor id string.
Model	The FRU model id string.
Revision	The FRU revision string.
Serial Number	The FRU serial number string.

Controller Rules

A system log message will be written and an alarm message will be generated (also triggering a remote support notification) under the following conditions:

- When a controller is missing (ALERT)
- When a controller has been disabled (ALERT)
- When an controller role change (master, slave, alternate master) takes place (ALERT)
- When a controller error has been detected (ALERT)
- When connection is lost during an enable / disable operation (CAUTION)

Fibre SCSI Port Properties

To view fibre SCSI port properties:

1. **Select the component icon in the navigation pane.**

   If the component icons are not already visible, double-click on Component Manager to view the component icons.

2. **Select the Health Tab.**

3. **Select Physical View Tab.**

4. **Select the "Fibre SCSI port" text in the physical view.**

   Fibre SCSI Port properties are displayed as in FIGURE 4-10.

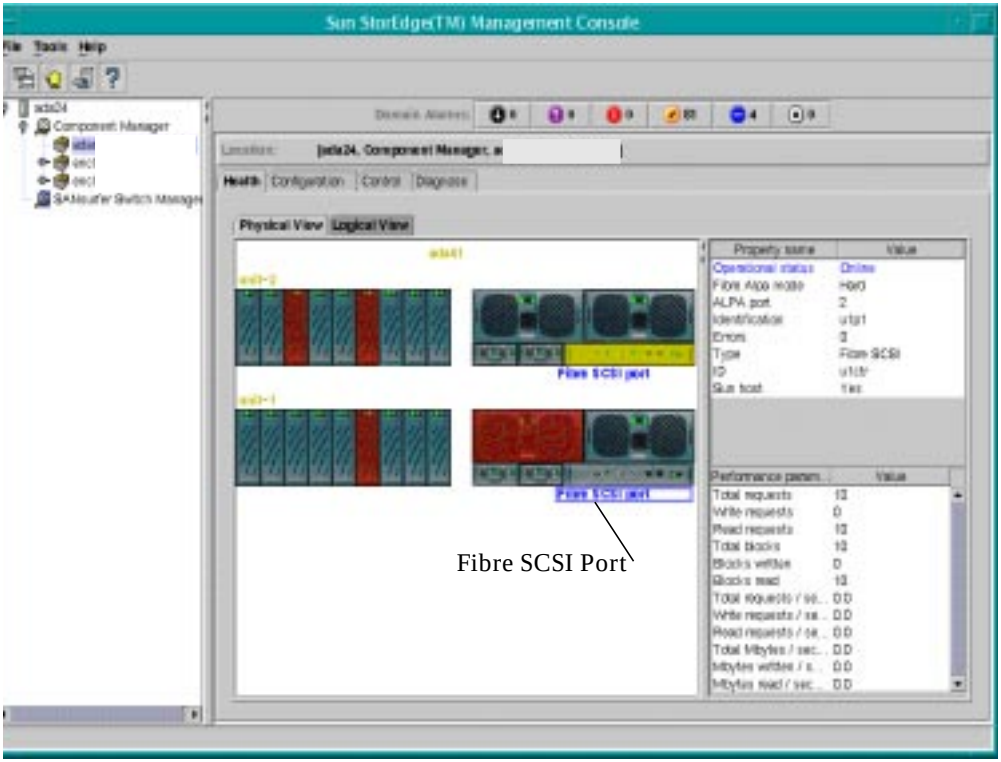


FIGURE 4-10 Health Tab, Sun StorEdge T300 Fibre SCSI Port Properties

Fibre SCSI Port properties and performance parameter descriptions are provided in TABLE 4-23 and TABLE 4-24 respectively.

TABLE 4-23 Sun StorEdge T300 Fibre SCSI Port Properties

Property	Description
Operational Status	Enabled, Disabled, Substituted, Polling failed, Connection broken, Diagnostics in Progress
Fibre Alpa Mode	The ALPA mode of the port.
Alpa Port	The ALPA of the port when the ALPA mode is “hard”.
Identification	The port id string, for example, “u1p1”.
Errors	Number of errors.
Type	The current port type.
FRU Id	The controller FRU id string which contains this port.
Sun Host	A flag indicating whether this port is connected to a Sun host.

TABLE 4-24 Sun StorEdge T300 Fibre SCSI Performance Parameters

Property	Description
Total Requests	The current total number of read / write commands received from all host ports.
Write Requests	The current number of write requests received from a host ports.
Read Requests	The current number of read requests received from a host ports.
Total Blocks	The current total number of blocks transferred via a host ports.
Blocks Written	The current number of blocks written (received from) a host ports.
Blocks Read	‘The current number of blocks read (transmitted to) a host ports.
Total Requests / Second	The number of read / write requests received per second during the sampling period.
Write Requests / Second	The number of write requests received per second during the sampling period.
Read Requests / Second	The number of read requests received per second during the sampling period.

TABLE 4-24 Sun StorEdge T300 Fibre SCSI Performance Parameters *(Continued)*

Property	Description
Total Mbytes / Second	The number of bytes / 1,000,000 transferred per second during the sampling period.
Written Mbytes / Second	The number of bytes / 1,000,000 written per second during the sampling period.
Read Mbytes / Second	The number of bytes / 1,000,000 read per second during the sampling period.

Fibre SCSI Rules

A system log message will be written and an alarm message will be generated (also triggering a remote support notification) under the following conditions:

- When a port is not available (DOWN)
- When an unknown condition is detected (ALERT)
- When unable to contact host (CAUTION)
- When connection is lost during a configuration operation (CAUTION)

Monitoring Switches

If installed, you can launch switch management software from the Health Tab. See the SANSurfer Switch Manager software documentation for further information on monitoring switches.

Launching SANSurfer Switch Manager Software

1. **Display the switches icon in the navigation pane.**

   a. **Double-Click on Component Manager in the Navigation Pane to subsystem icons.**

   b. **Click on the switches icons. See** FIGURE 4-11**.**

   If not installed, the application will notify you in the Application Pane.

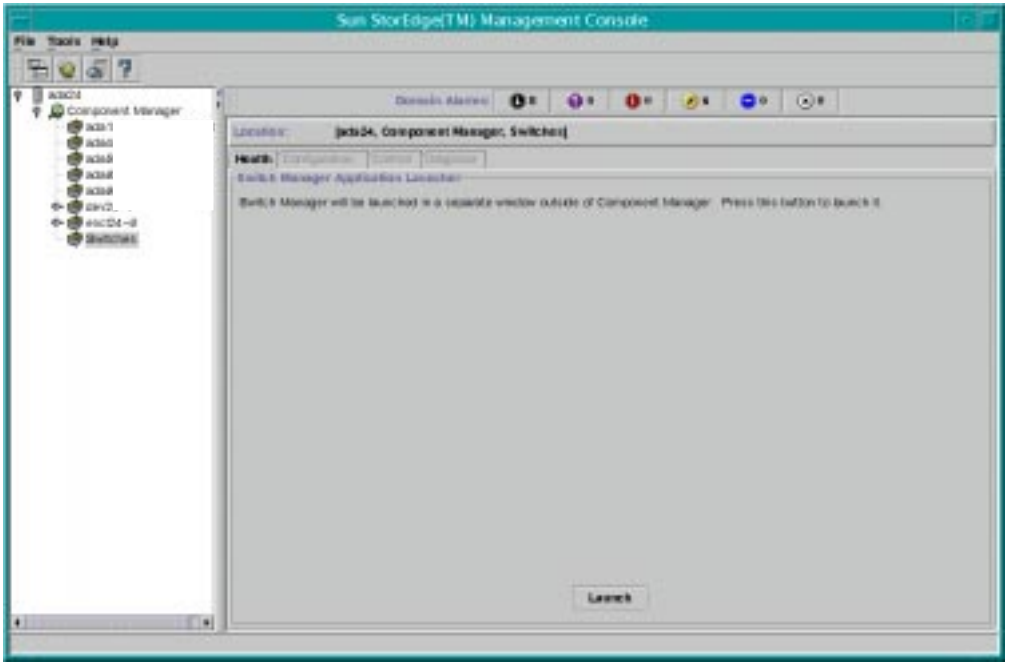


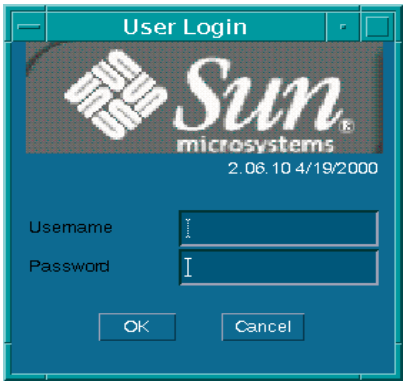
FIGURE 4-11 Health Tab, Switch Software Launch Window

2. **Click the Launch button in the Physical View application pane.**

   If the SANSurfer Switch Manager software is already running when you click the Launch button a second time, you will be prompted as to whether you wish to terminate your first SANSurfer Switch Manager session.

3. **Login**

   a. **Complete the Login Dialogue Box**



   b. **Click the OK button.**

CHAPTER 5

Controlling With Component Manager

The Control Tab allows you to control the status of selected hardware components. This chapter has the following subsections:

Controlling the Sun StorEdge A5x00

This section discusses using the Control Tab with the Sun StorEdge A5x00.

▼ To Control Disks

1. **Display the disk icons in the navigation pane.**

   a. **Double-Click on Component Manager in the Navigation Pane to display enclosure icons.**

   b. **Double-click on the enclosure name to display subcomponents.**

   c. **Double-click on the Disks icon to view individual disk icons.**

2. **Select a disk by clicking on it.**

3. **Select the Control Tab (see** FIGURE 5-1**).**

   Select the appropriate button at the bottom of the window to do one of the following:

   - Power Up – Sets the drive to its normal start-up state.
   - Power Down – Sets the disk to the drive off/unmated state. In this state, the disk is stopped and in bypass (power-save) mode. Power down a disk only when performing diagnostics or when you need to actually replace the disk.
   - Blink LED – Requests the drive to begin blinking the LED associated with the disk.
   - Stop Blink LED – Requests the drive to disable (turn off) the LED associated with the disk.
   - Bypass Port A – Bypasses port A of the disk.
   - Bypass Port B – Bypasses port B of the disk.
   - Enable Port A – Enables port A of the disk.
   - Enable Port B – Enables port B of the disk.

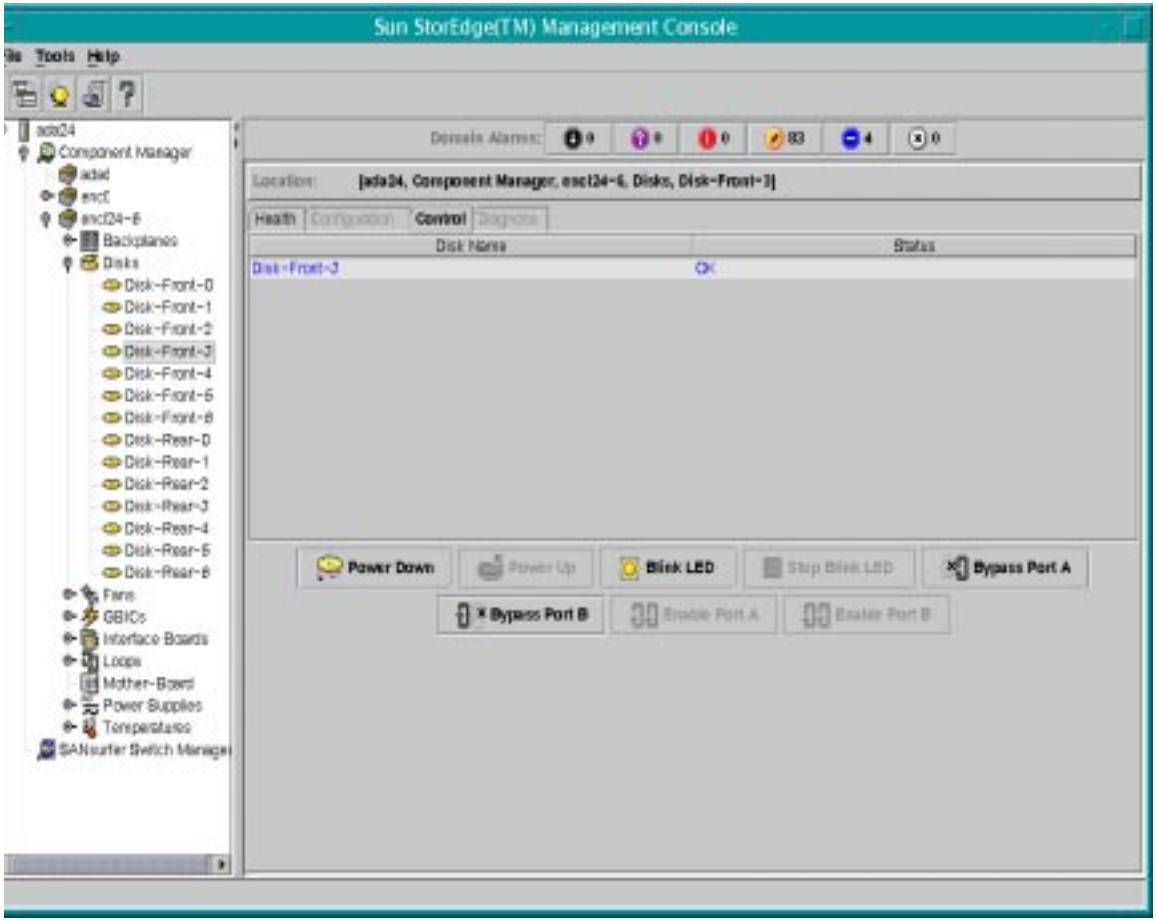


FIGURE 5-1 Sun StorEdge A5x00 Disk Control Window

▼ To Control Backplanes

1. **Display the backplane icons in the navigation pane.**

   a. **Double-Click on Component Manager in the Navigation Pane to display enclosure icons.**

   b. **Double-click on the enclosure name to display subcomponents.**

   c. **Double-click on the Backplanes icon to view individual backplane icons.**

2. **Select a backplane by clicking on it.**

3. **Select the Control Tab (see** FIGURE 5-2**).**

   Select the appropriate button at the bottom of the window to do one of the following:

   - Bypass Port A – Bypasses port A of the backplane.
   - Bypass Port B – Bypasses port B of the backplane.
   - Enable Port A – Enables port A of the backplane.
   - Enable Port B – Enables port B of the backplane.

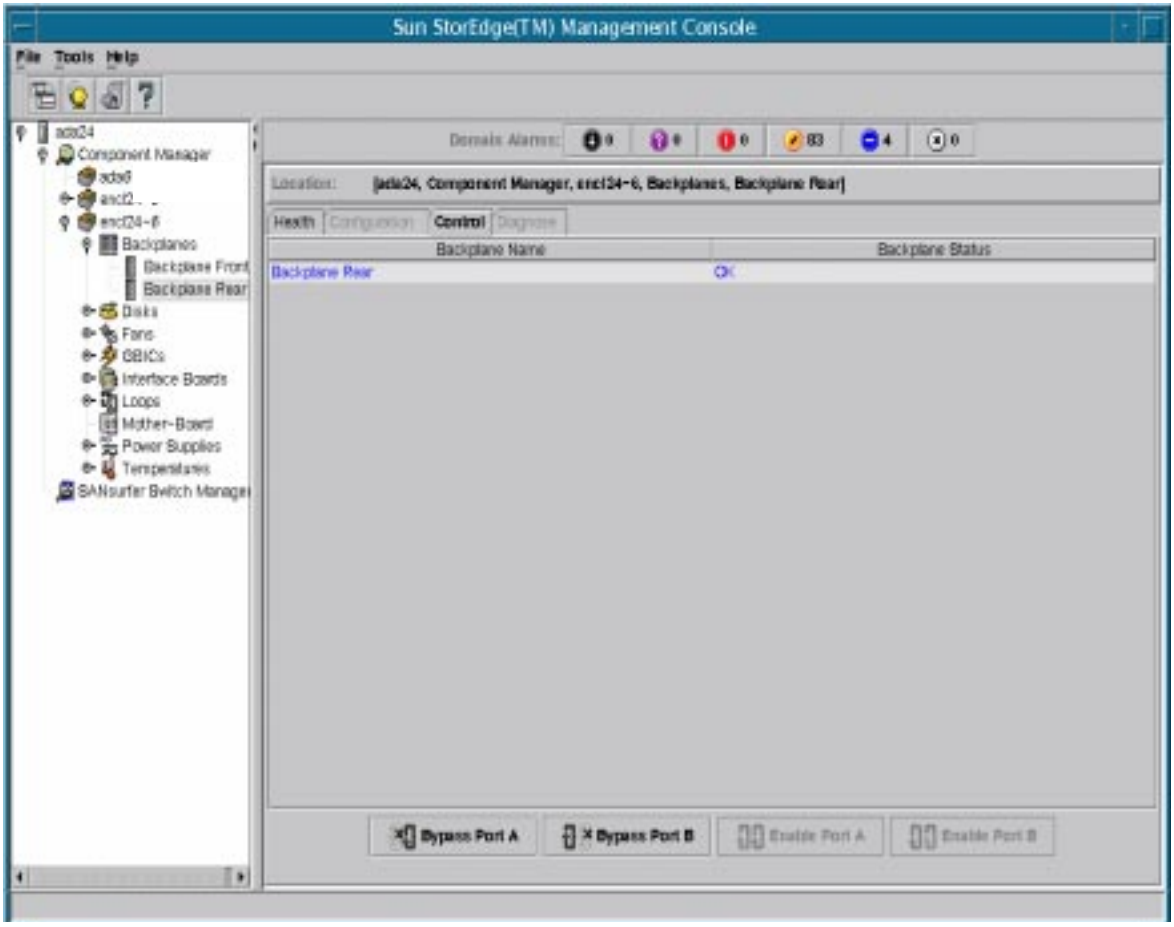


FIGURE 5-2 Sun StorEdge A5x00 Backplane Control Window

Controlling the Sun StorEdge T300

This section discusses using the Control Tab with the Sun StorEdge T300.

■ "To Control the Sun StorEdge T300 Controller" on page 95

▼ To Control the Sun StorEdge T300 Controller

If the system consists of two or more units, you can enable or disable a controller. You cannot, however, disable a controller on a singe unit system.

1. **Display the component icon in the navigation pane.**

   a. **Double-Click on Component Manager in the Navigation Pane to display enclosure icons.**

   b. **Double-click on the Sun StorEdge T300 system name.**

2. **Select the Control Tab.**

3. **Select the controller in the Physical Pane (see** FIGURE 5-3**).**

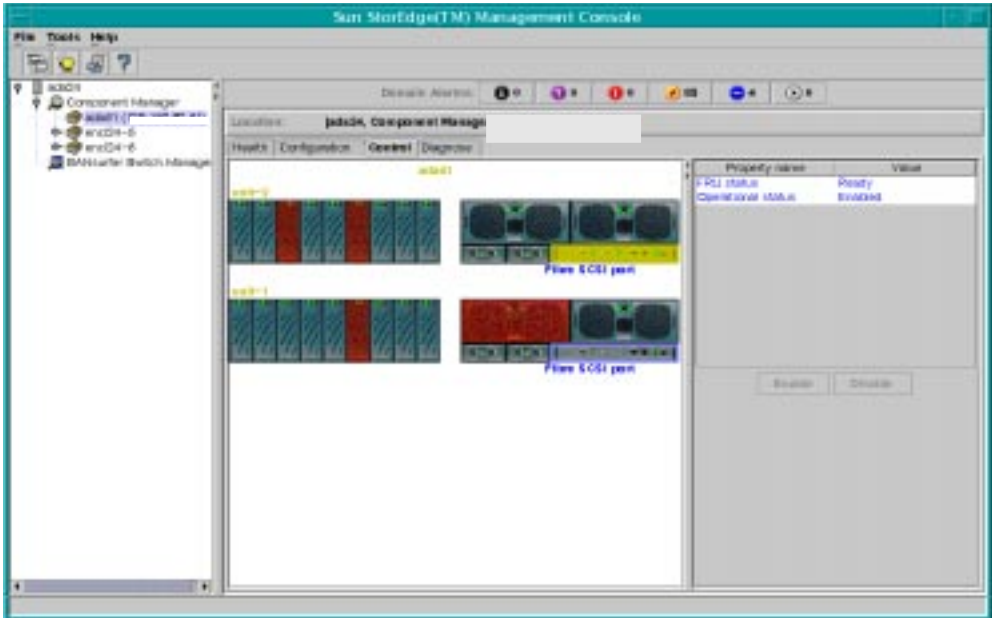


FIGURE 5-3 StorEdge T300 Controller Window

4. **Select the attribute or its value**

5. **Select the appropriate button at the bottom of the window.**

   If the controller belongs to a “single controller unit system” then both enable and disable operations are disallowed. If there are two controllers in the system, see TABLE 5-1 for valid operations.

TABLE 5-1 Valid Controller Operations

Controller State		Valid Operation	
Controller 1	**Controller 2**	**Controller 1**	**Controller 2**
Enable	Enable	Disable (if Controller 2is enabled)	Disable (if Controller 1 is enabled)
Enabled	Disabled	(none)	Enable
Disabled	Enabled	Enable	(none)

Note – Component Manager will display a dialogue box if you attempt an invalid controller operation.

CHAPTER 6

Diagnosing With Component Manager

The Diagnose Tab allows you to run diagnostic tests on the Sun StorEdge T300 disk tray. This chapter has the following subsections:

Note – When performing offline diagnostic tests (that is, health and interconnect tests), no other control, configuration or LUN operations will be allowed while the test is in progress. Also, if a controller unit is defective, no offline diagnostic operation is allowed.

Testing Sun StorEdge T300 Health

The HealthCheck is a system level test which runs FastTest (see "Testing Sun StorEdge T300 Interconnect (Loop) Cards and Cables" on page 99) on all controllers and their associated backend loops (interconnect cables and cards):

1. **Select the subsystem icon in the navigation pane.**

   If the component icons are not already visible, double-click on Component Manager to view the component icons.

2. **Select the Diagnose Tab.**

3. **Select Physical View Tab.**

4. **Select the system name text in the physical view.**

   See the system name highlighted in FIGURE 6-1.

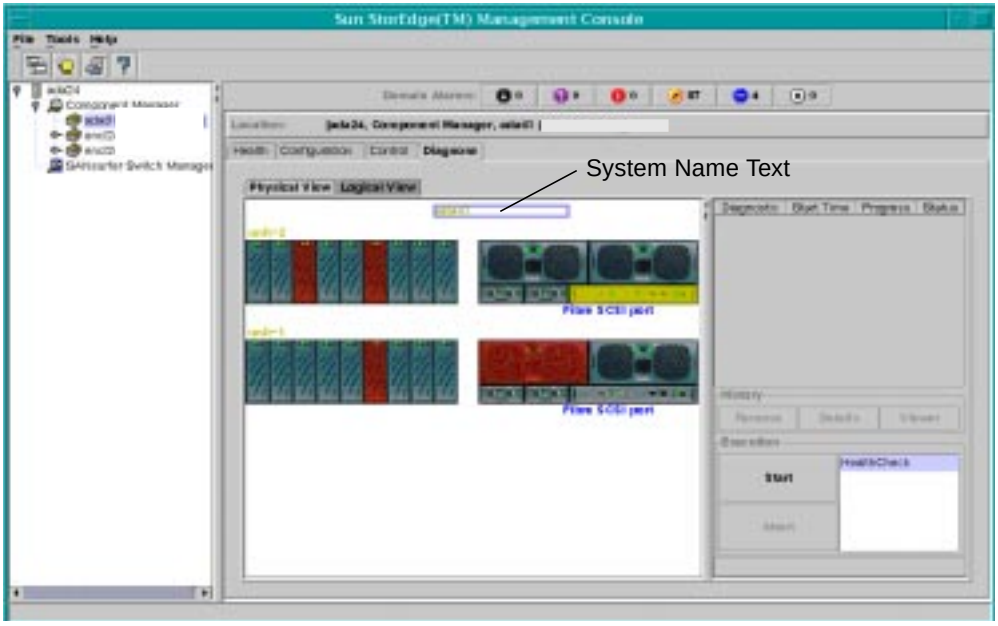


FIGURE 6-1 Diagnose Tab, Sun StorEdge T300 Health Check Window

5. **Click the Start button.**

   You can monitor the status of the test in the status bar as shown in FIGURE 6-2. The status bar displays activity while a subsystem is selected.

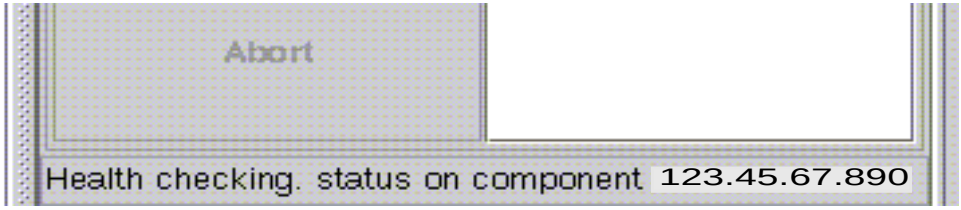


FIGURE 6-2 Status Bar

6. **View diagnostic progress, details or history.**

   See “Viewing Diagnostic Results” on page 102.

Testing Sun StorEdge T300 Interconnect (Loop) Cards and Cables

To test the interconnect (loop) cards and cables of a Sun StorEdge T300:

1. **Select the subsystem component icon in the navigation pane.**

   If the component icons are not already visible, double-click on Component Manager to view the component icons.

2. **Select the Diagnose Tab.**

3. **Select Physical View Tab.**

4. **Select the interconnect (loop) FRU in the physical view.**

   See the interconnect FRU highlighted in FIGURE 6-3.

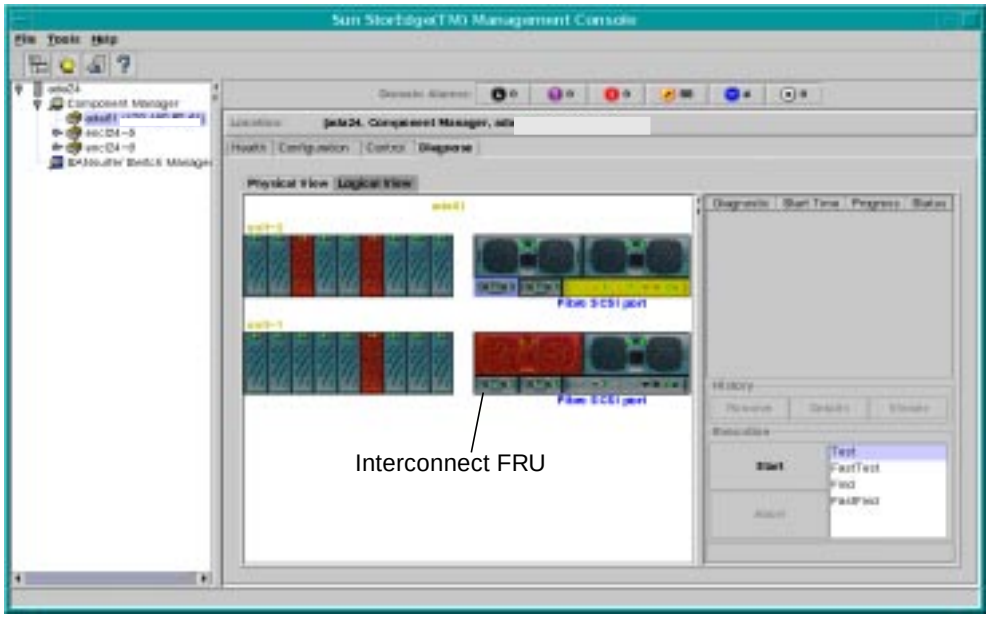


FIGURE 6-3 Diagnose Tab, Sun StorEdge T300 Interconnect (Loop) Test Window

5. **Click on the desired text in the Execution box list.**

   Disk properties and descriptions are provided in TABLE 6-1.

TABLE 6-1 Sun StorEdge T300 Interconnect (Loop) Tests

Property	Description
Test	This test provides a go/no-go interconnect (loop) test.
Fast Test	This test provides a go/no-go loop test without changing the loop DUT configuration.
Find	This test provides a go/no-go loop test. If the loop test fails then additional diagnostics are invoked to find the faulty FRU.
Fast Find	This test should be performed on failed loops or data paths after a system HealthCheck (see "Testing Sun StorEdge T300 Health" on page 97).

6. **Click the Start button.**

7. **View diagnostic progress, details or history.**

   See "Viewing Diagnostic Results" on page 102.

Testing Sun StorEdge T300 LUNs

To test a LUN, you must first make sure that the LUN is unmounted. (See "To Unmount a LUN" on page 41 for more information).

1. **Select the subsystem icon in the navigation pane.**

   If the component icons are not already visible, double-click on Component Manager to view the component icons.

2. **Select the Diagnose Tab.**

3. **Select Logical View Tab.**

4. **Select the system name text in the physical view.**

5. **Select a LUN in the Existing LUNs list.**

   See in FIGURE 6-4.

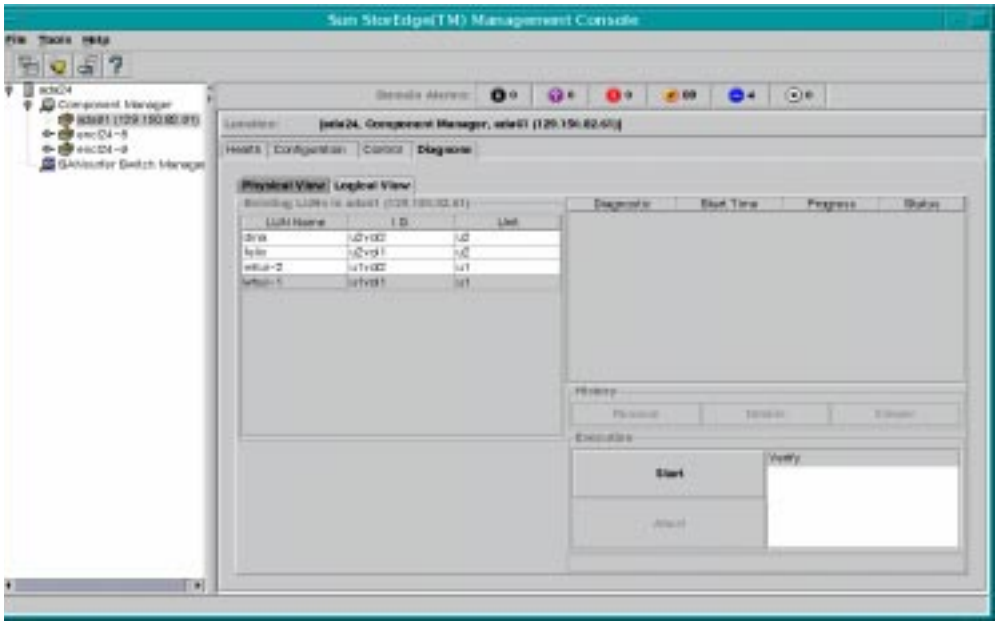


FIGURE 6-4 Diagnose Tab, Sun StorEdge T300 LUN Test Window

6. **Click the Start button.**

7. **Select LUN Verification Options and click OK.**

8. **View diagnostic progress, details, or history.**

   See “Viewing Diagnostic Results” on page 102.

Viewing Diagnostic Results

This section contains the following topics:

- Physical View Diagnostic Table
- Removing Diagnostic Table Entry
- Viewing History Details
- Viewing Syslog Message Viewer

Physical View Diagnostic Table

You can view the diagnostic test progress in the table in the physical view as shown in FIGURE 6-5.

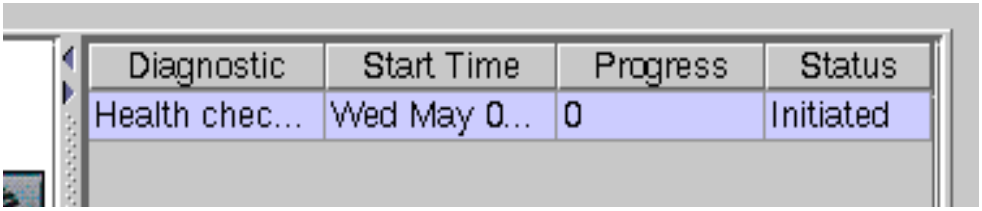


FIGURE 6-5 Diagnostic Table

See TABLE 6-2 for column definitions.

TABLE 6-2 Physical View Diagnostic Table

Pane Column	Definition
Diagnostic	The diagnostic test performed.
Start Time	The date and time stamp of when the diagnostic test began.
Progress	The percentage of completion.
Status	The status of the diagnostic test (active, completed, etc.).

Removing Diagnostic Table Entry

To remove the test entry from the physical view table:

1. **Select the desired diagnostic test in the physical view table.**
2. **Click on the Remove button in the History Pane.**

   If you selected an active diagnostic entry, a confirmation box will be displayed as shown in FIGURE 6-6.

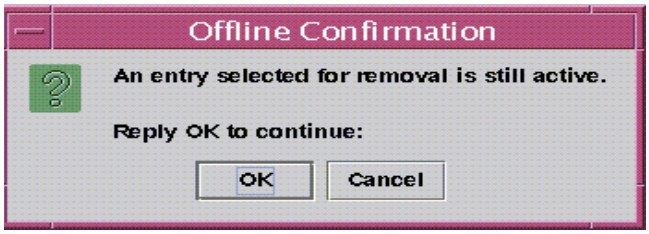


FIGURE 6-6 Active Entry Removal Confirmation Pop-up

Viewing History Details

To view the test history details:

1. **Select the desired diagnostic test in the physical view table.**
2. **Click on the Detail button in the History Pane.**

   The History Detail popup is shown in FIGURE 6-7.

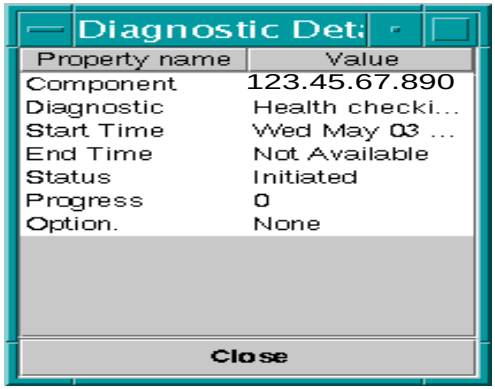


FIGURE 6-7 Diagnostic Detail Pop-up

An explanation of the contents is summarized in TABLE 6-3.

TABLE 6-3 History Details

Property	Description
Component	The IP address of the subsystem.
Diagnostic	The diagnostic test performed.
Start Time	The date and time stamp of when the diagnostic test began.
End Time	The date and time stamp of when the diagnostic test ended.
Status	The status the diagnostic test ended.
Progress	The percentage of completion.
Option	The options selected for the diagnostic test.
Hint	Additional diagnostic information.

Viewing Syslog Message Viewer

To view the Syslog Message Viewer:

1. **Select the desired diagnostic test in the physical view table.**
2. **Click on the Viewer button in the History Pane.**

   The Viewer is shown in FIGURE 6-8.

FIGURE 6-8 Syslog Message Viewer with Fewer Filtering Options

An explanation of the contents is summarized in TABLE 6-4.

TABLE 6-4 Syslog Message Viewer Column Definitions

Pane Column	Definition
Date/Time	The date and time stamp the diagnostic test was performed.
Level	The level of the diagnostic test.
Message	Syslog message.

▼ Filtering Syslog Message Viewer Entries

1. **Click on the More FIlter Options triangle in the lower right corner of the Syslog Message Viewer window to view filtering options.**

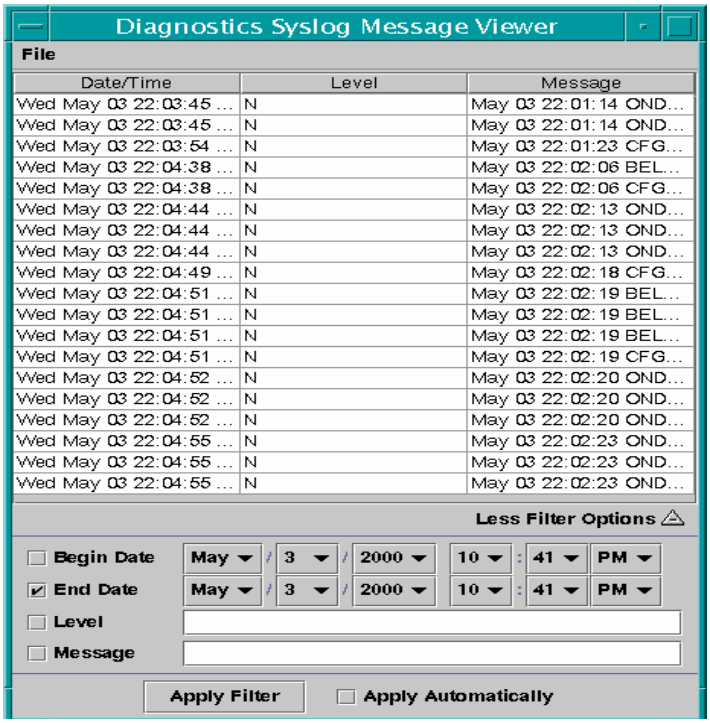


FIGURE 6-9 Syslog Message Viewer with More Filtering Options

2. **Enter filter criteria.**

   a. **Check the box of the filter option.**

   b. **Use the pull-down menus if setting dates.**

   c. **Enter matching search text for Level and Message**

3. **Select the Apply Filter button or the Apply Automatically check box.**

   Checking the Apply Automatically check box will execute the filter criteria when any of the date menu items is changed.

▼ Displaying Individual Syslog Entries

- **Double click on a syslog message in the viewer to display a pop-up box.**

CHAPTER 7

Troubleshooting

This chapter addresses potential scenarios in which troubleshooting may be necessary. The troubleshooting issues are described within the following categories:

Error Messages

You may encounter the following error message when using Sun StorEdge Component Manager.

Download Correct HTML Files

Description

If you are using the old or incompatible HTML files for the Sun StorEdge T300 disk tray, you will receive an alert and email message as follows:

```
Download the correct version of HTML files.  Refer to
Troubleshooting in online help for more details.
```

This message will be generated each time Component Manager attempts to discover the Sun StorEdge T300 or the Component Manager daemons are stopped and started.

You can replace the files with those on the Component Manager CD.

User Action

To correct this problem, install the correct HTML files.

1. **Use the `telnet` command to connect to the T300 and login as root.**

   For example, if the Sun StorEdge T300 disk tray has an IP address of 123.456.78.90, enter the following:

```
% telnet 123.456.78.90
% User ID: root
% Password: <enter or password>
T300>
```

2. **Check for a** `/web` **directory.**

```
T300> ls
```

3. **If there is not a** `/web` **directory, create one.**

```
T300> mkdir /web
```

4. **Change to the** `/web` **directory.**

```
T300> cd /web
```

5. **Start an** `ftp` **session using the IP address of the host where your CD is inserted.**

```
T300> ftp ip_address
```

6. **Enter your user id and password.**

7. **Enter the following:**

```
ftp> cd /cdrom/cdrom0/Component_mgr/prereq/t3h/cm2.1
ftp> prompt
ftp> mget *.htm
ftp> quit
```

Station Connection

```
# ./esm_mcboot -v start
MCBoot: INFO: starting realm "StoreX" on station "MCStation"
MCBoot: INFO: realm "StoreX" on station "MCStation" - started
MCBoot: INFO: connecting station "MCStation" to remote stations on realm
"StoreX"
MCBoot: INFO: building InetStationAddress for all hosts
MCBoot: INFO: building InetStationAddress for host "localhost"
```

Description

The management class station cannot establish a connection to the managed object station.

User Action

Caution – When the system is rebooted it is important to note that all Alarms that have not been addressed (that is, deleted via the alarm viewer prior to reboot) will be re-issued. The email notification of these alarm events will also be re-generated.

---

1. **Become root.**
2. **Stop any currently running management class and managed object stations:**

```
# /usr/opt/SUNWesm/sbin/esm_mcboot stop
# /usr/opt/SUNWesm/sbin/esm_moboot stop
```

3. **Start the managed object station:**

```
# /usr/opt/SUNWesm/sbin/esm_moboot -v start
```

Wait until you see the following message before proceeding to the next step:

```
“MOBoot: INFO: realm “StoreX” on station “MOStation” - booted”
```

4. **Start the management class station:**

```
# /usr/opt/SUNWesm/sbin/esm_mcboot -v start
```

Wait until you see the following message before proceeding to the next step:

```
"MCBoot: INFO: realm "StoreX" on station "MCStation" - booted"
```

5. **Type the following commands:**

```
# /usr/opt/SUNWesm/sbin/esm_em_moboot start
```

```
# /usr/opt/SUNWesm/sbin/esm_em_mcboot start
```

6. **Start the Sun StorEdge Management Console:**

```
# /usr/opt/SUNWesm/bin/esm_gui &
```

Common Problems

The following common problems are known to exist for this version of Sun StorEdge Component Manager.

Remote Reporting

After enabling remote reporting under the Configuration Tab, alarm messages are not being sent to designated email addresses and are not logged to designated log files.

User Action

Be sure to press Return and then the Apply button after entering or editing email addresses or log file locations. This will enable your updates to be retained and take effect.

Too Many Email Messages or Alarms

Excessive alarm messages are being sent to the Log Viewer and Alarm Viewer.

User Action

- Regularly handle and delete alarms
- Do not configure CAUTION alarms for notification
- Be certain to handle alarms before rebooting otherwise they will be reissued.

Powering Down Disks

Administrator is uncertain when it is okay to power down a disk.

User Action

Power down a disk only when performing diagnostics or when you need to replace the disk.

Before powering down a disk, make sure that the disk is not mounted by any file system or being used by any application (for example, volume manager software, Solstice DiskSuite™ software, a database server, and so on).

Full Disk in Log Directory

The disk space is full in the log directory.

User Action

1. **Become root.**
2. **Move the following files in** `/var/opt/SUNWesm/mc/log` **to another directory:**
   - `Logging.log.`*x*
   - `Trace.log.`*x*

   The *x* file extension will be a number.
3. **Stop any currently running management class and managed object stations:**

```
# /usr/opt/SUNWesm/sbin/esm_mcboot stop
# /usr/opt/SUNWesm/sbin/esm_moboot stop
```

4. **Start the managed object station:**

```
# /usr/opt/SUNWesm/sbin/esm_moboot -v start
```

   Wait until you see the following message before proceeding to the next step:

```
"MOBoot: INFO: realm "StoreX" on station "MOStation" - booted"
```

5. **Start the management class station:**

```
# /usr/opt/SUNWesm/sbin/esm_mcboot -v start
```

   Wait until you see the following message before proceeding to the next step:

```
"MCBoot: INFO: realm "StoreX" on station "MCStation" - booted"
```

6. **Type the following commands:**

```
# /usr/opt/SUNWesm/sbin/esm_em_moboot start
```

```
# /usr/opt/SUNWesm/sbin/esm_em_mcboot start
```

7. **Start the Sun StorEdge Management Console:**

```
# /usr/opt/SUNWesm/bin/esm_gui &
```

Sun StorEdge Management Console Does Not Launch

When attempting to start the Sun StorEdge Management Console, only the following error dialogue pops up:

```
Console: ERROR: no MCStation found on realm StoreX on host(s) specified: “localhost”
```

User Action

Stop and restart the management stations:

1. **Become root.**
2. **Stop any currently running management class and managed object stations:**

```
# /usr/opt/SUNWesm/sbin/esm_mcboot stop
# /usr/opt/SUNWesm/sbin/esm_moboot stop
```

3. **Start the managed object station:**

```
# /usr/opt/SUNWesm/sbin/esm_moboot -v start
```

Wait until you see the following message before proceeding to the next step:

```
"MOBoot: INFO: realm "StoreX" on station "MOStation" - booted"
```

4. **Start the management class station:**

```
# /usr/opt/SUNWesm/sbin/esm_mcboot -v start
```

Wait until you see the following message before proceeding to the next step:

```
"MCBoot: INFO: realm "StoreX" on station "MCStation" - booted"
```

5. **Type the following commands:**

```
# /usr/opt/SUNWesm/sbin/esm_em_moboot start
```

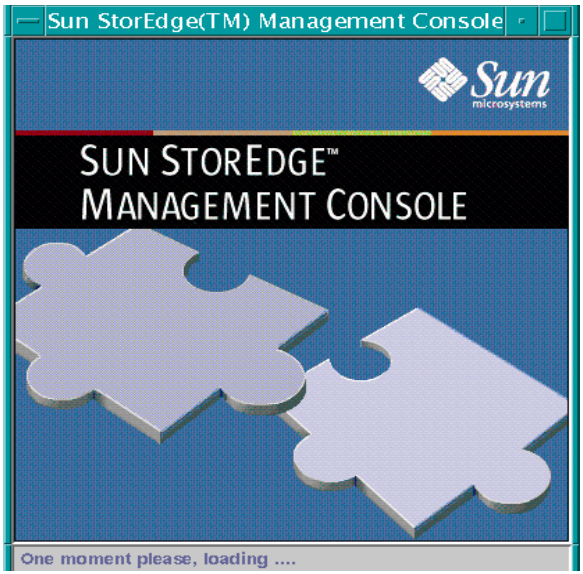
```
# /usr/opt/SUNWesm/sbin/esm_em_mcboot start
```

6. **Start the Sun StorEdge Management Console:**

```
# /usr/opt/SUNWesm/bin/esm_gui &
```

Splash Screen Appears Followed by a Dialog Box

The initial GUI spash screen comes up.



After about 2-3 minutes a dialog box comes up which tells user that there is no MC station running.

User Action

Stop and restart the management stations:

1. **Become root.**

2. **Stop any currently running management class and managed object stations:**

```
# /usr/opt/SUNWesm/sbin/esm_mcboot stop
# /usr/opt/SUNWesm/sbin/esm_moboot stop
```

3. **Start the managed object station:**

```
# /usr/opt/SUNWesm/sbin/esm_moboot -v start
```

Wait until you see the following message before proceeding to the next step:

```
"MOBoot: INFO: realm "StoreX" on station "MOStation" - booted"
```

4. **Start the management class station:**

```
# /usr/opt/SUNWesm/sbin/esm_mcboot -v start
```

Wait until you see the following message before proceeding to the next step:

```
"MCBoot: INFO: realm "StoreX" on station "MCStation" - booted"
```

5. **Type the following commands:**

```
# /usr/opt/SUNWesm/sbin/esm_em_moboot start
```

```
# /usr/opt/SUNWesm/sbin/esm_em_mcboot start
```

6. **Start the Sun StorEdge Management Console:**

```
# /usr/opt/SUNWesm/bin/esm_gui &
```

APPENDIX **A**

Diagnostic Error Messages

This appendix contains a list of the error messages associated with the Sun StorEdge T300 disk tray.

Verify Messages

The messages in this subsection are for Volume/LUN verification and general LUN events that could occur during its execution.

Warning Messages

The following are the warning messages in the verify messages.

control_unit `recon failed in vol(`*number*`)`

A reconfiguration attempt failed. Look for additional messages that might indicate the cause of the failure.

```
control_unit hard err in vol(number) starting auto disable
```

A hard error was detected on a volume and an auto disable has been issued. The resulting volume state will be unmounted.

```
control_unit could not enable lun number
```

The *control_unit* could not enable the specified LUN. It is possible that the LUN is inaccessible or that some other task has it reserved.

```
SCSI Disk Error Occurred (path = number, port = number lun = number)
```

A SCSI disk error occurred on the specified path (loop), port, and LUN.

Notices

The following are the notices from the verify messages.

```
control_unit Unmount of vol(number) failed due to bg task
```

A background task was found running when an unmount was attempted. The unmount was rejected. Confirm through Health what task was running and when none is running, reissue the command.

control_unit `config change to vol(`*number*`) failed due to bg task`

A background task was found running when a configuration change was attempted. The configuration change was rejected. Confirm through Health what task is running and when none are running, reissue the command.

control_unit `User should remove this volume and reconfigure`

A failure has occurred in a volume.The user is being notified that they should remove the volume and reconfigure.

control_unit `verify failed in vol(`*number*`)`

A verify attempt failed. Look for additional messages that might indicate the cause of the failure. This message may be generated by an abort or failure to repair a stripe.

control_unit `Verify volume fails on u1d`*n*`, error code=`*number*

A verify command found a bad disk. In this case the code specifies information important to the field personnel when resolving this problem.

control_unit `unsupported opcode number lun` *number*

The unsupported opcode implies an interface problem or an application who has issued improper opcode.

```
control_unit could not close lun=number
```

The *control_unit* could not close the specified LUN. It is possible that the LUN is inaccessible or that some other task has it reserved.

```
control_unit Takeover failed getting LUN data base err=number
```

The *control_unit* takeover failed to obtain the format information for the LUN.

```
control_unit could not disable mirroring on lun number
```

The *control_unit* could not disable the specified LUN. It is possible that the LUN is inaccessible or that some other task has it reserved.

```
control_unit All mirroring turned off due to lun scan failure
```

All mirroring has been turned off because a scan of the LUNs failed.

```
control_unit could not enable mirroring on lun number
```

The *control_unit* could not enable mirroring on the specified LUN. It is possible that the LUN is inaccessible, unformatted, or that some other task has it reserved.

```
control_unit Open failure - svd_init_lun failed
```

A *control_unit* could not open a LUN for initialization.

```
control_unit Open failure - svd_init_lun failed (lid = number)
```

A *control_unit* could not open a LUN for initialization. The LUNid is given.

```
control_unit Error - Unit Not Ready (path=number, port=number,\
lun=number)
```

A unit containing the identified LUN is not ready.

```
control_unit multiple read failure on verify scb = number
```

A verify command detected a multiple read failure on the specified stripe control block (scb).

```
control_unit read disk failure on verify scb = number
```

A verify command detected a read disk failure on the specified stripe control block.

```
control_unit multiple read failure on verify scb = number
```

A verify command detected a multiple read failure on the specified stripe control block.

```
control_unit Disk error on block number during verify
```

A disk error occurred on the specified block during a verify command.

```
control_unit Disk error on stripe number during verify
```

A disk error occurred on the specified stripe during a verify command.

```
control_unit Disk error on block number during verify fix
```

A disk error occurred on the specified block during a verify fix.

```
control_unit Disk error on stripe number during verify fix
```

A disk error occurred on the specified stripe during a verify fix.

```
control_unit Disk error on block number during verify write
```

A disk error occurred on the specified block during a verify write command.

```
control_unit Disk error on strip number during verify write
```

A disk error occurred on the specified stripe during a verify write command.

Informational Messages

The following are the informational messages in the verify messages.

```
control_unit attempt to change mounted volume name
```

A volume was mounted when a rename of the volume was attempted. Unmount the volume before renaming.

```
control_unit attempt to change mounted volume config
```

A volume was found mounted when an attempt was made to configure it. Unmount the volume before configuring.

```
control_unit Attempting to fix block number in vol(number)
```

Verify operation found a bad block in the volume and is attempting to make a repair.

```
control_unit Attempting to fix parity on stripe number in vol(number)
```

Verify operation found a bad stripe in the volume and is attempting to make a repair.

```
control_unit Mirror block number is fixed in vol(number)
```

An operation found a bad mirror block in the volume and a repair has been made.

```
control_unit Parity on stripe number is fixed in vol(number)
```

An operation found a bad strip in the volume and a repair has been made.

```
control_unit lun number is not enabled
```

The logical unit number (LUN) is not presently enabled.

```
control_unit disable mirror failed on lun number
```

A mirror failed on a LUN.

```
control_unit LUN number failover granted
```

The LUN is failing over to the mirror.

```
control_unit disabled mirroring on lun number
```

The *control_unit* disabled the mirror on the specified LUN. A possible cause is that a LUN scan failed.

```
control_unit enabled mirroring on lun number
```

The *control_unit* enabled mirror on the specified LUN.

```
control_unit fixing data on verify scb = number
```

A verify command is fixing the associated data on the specified stripe control block.

```
control_unit fixing parity on verify scb = number
```

The verify command is fixing a parity error on the specified stripe control block.

control_unit `Verify failed on block` *number*

A verify command failed on the specified block.

control_unit `Verify failed on stripe` *number*

A verify command failed on the specified stripe.

Offline Diagnostic Messages

The messages in this subsection are for Loop / Offline Diagnostics (OFDG) and general LUN events that could occur during execution. Due to future considerations for running this test online, the messages were written using the acronym for online diagnostics (ONDG).

Warning Messages

The following are the warning messages in the offline diagnostics messages.

loop_element`: Offline` *encid*

The *loop_element* is offline.

loop_element`: Offline` *pathid*

The *loop_element* is offline.

Notices

The following are the notices from the offline diagnostic messages.

loop_element: `Not ready on loop` *number*

The *loop_element* cannot process against the specified loop.

loop_element: `Bypassed on loop` *number*

The *loop_element* has bypassed processing against the specified loop.

loopid `ONDG Loop Down Fault`

The OFDG loop is unavailable.

loopid `ONDG No Loop Trouble Found`

No errors were encountered during OFDG.

loopid `ONDG Loop Trouble Found`

Errors were encountered during OFDG.

loopid `ONDG_MONITOR Loop Down Fault`

The OFDG monitor encountered a loop down fault.

loopid `ONDG_MONITOR FC-AL Link Status Fault`

The OFDG monitor encountered an FC-AL link status fault.

loopid `ONDG Test Enclosure Phase - Failed`

The OFDG Test function failed during the phase of testing a specific enclosure. Refer to OFDG failed message for information on the proper fix to the problem.

control_unit `ioctl loop manager err=`*slot_number*

The ioctl loop manager encountered an I/O control operation error. The error number is given.

controller_id`: Transfers suspended for loop reconfig`

Data transfers have been suspended during loop reconfiguration.

controller_id`: Transfers resumed for loop reconfig`

Data transfers have been resumed following loop reconfiguration.

control_unit `ioctl disk failed err=`*slot_number*

An I/O control command failed on the specified disk slot number.

loopid `ONDG Loop Fault: cannot isolate to FRU`

OFDG could not resolve a loop fault to any field replaceable unit. Please refer to field documentation for additional isolation techniques.

diskid `ONDG Bad Disk FRU Found on` *loopid*

This message indicates the specified disk should be replaced.

control_unit `ONDG LUNSB Compare Error (pattern =` *number*`)`

When running the specified pattern, OFDG found a compare error within the LUN Status Block (LUNSB).

enclosure_id `ISP2100[%x] ONDG LMSB Compare Error (pattern =` *number*`)`

When running the specified pattern, OFDG found a compare error within the Loop Monitor Status Block (LMSB).

control_unit`: Not bypassed on loop` *slot_number*

An information message that indicates the specified slot was not bypassed.

controller_id`: ISP not ready on loop` *number*

The task manager (ISP2100) was unavailable for use.

loopid: `Controller off the loop`

An informational message that indicates the controller is off the loop.

loopid: `Loop forced open`

An error occurred which caused the loop to split.

controller_id `could not disable mirroring on lun` *number*

Some other condition prevented mirroring from being disabled on the specified LUN. For example, a reservation or unavailability could cause such a condition.

controller_id `disabled mirroring on lun` *number*

Mirroring has been disabled on the specified LUN.

controller_id `could not scan bus on B-loop`

A condition prevented the specified controller from accessing the B-loop bus.

controller_id `loop 2 path available event received`

The specified control unit received a path available event from the specified loop.

```
controller_id loop 2 path failed event received
```

The specified control unit received a path failed event from the specified loop.

```
controller_id: Reserved path_id Loop: A Mask=string, B Mask=string
```

The controller reserved the specified path.

Informational Messages

The following are the informational messages in the offline diagnostic messages.

```
Loop number Not Available
```

The specified loop is not available for data transfers.

```
loop_element: Ready on loop number
```

The *loop_element* can begin processing against the specified loop.

```
loopid ONDG Bypassing all disk ports
```

The OFDG test running has disabled all disk ports on the specified *loopid*.

```
loopid ONDG_MONITOR Loop Monitor Initiated LoopId = cnt_unit_num
```

The OFDG monitor was started.

loopid `ONDG_MONITOR Loop Monitor Completed`

The OFDG monitor completed the loop evaluation.

control_unit `ONDG_MONITOR Initiated`

The OFDG monitor has been initiated.

control_unit `ONDG_MONITOR Completed`

The OFDG monitor has completed.

loopid `ONDG Loop Mask =` *number*

The OFDG test running is using the specified loop mask.

loopid `ONDG Fast Loop Test Initiated`

OFDG initiated a fasttest which tests all ports with patterns.

loopid `ONDG Disk Mask =` *number*

The OFDG running is using the specified disk mask.

```
loopid ONDG Bypassing all SIM ports
```

The OFDG is bypassing all SIM ports.

```
loopid ONDG lac_reserve() successfully completed
```

The OFDG test successfully reserved the loop.

```
loopid ONDG Enclosure Mask = number
```

The OFDG is using the specified enclosure mask.

```
loopid ONDG SIM Mask = number
```

The OFDG is using the specified SIM mask.

```
loopid ONDG FC-AL Map - Port Count = number_of_ports
```

The *loopid* contains the specified port count.

```
loopid ONDG FC-AL Map - Port #number has ALPA = physical_address
```

The *loopid* contains the physical address for the specified port number.

loopid `ONDG Test Enclosure Phase - Passed`

The OFDG Test function passed.

loopid `LMM Setting Loop Mask =` *number*

The loop manager is setting the specified mask.

diskid `LIP Count =` *number*

The specified disk accumulated the specified number of loop instructions.

diskid `LOOP-UP Count =` *number*

The specified disk accumulated the specified loop-up count.

diskid `LOOP-DOWN Count =` *number*

The specified disk accumulated the specified loop-down count.

diskid `Path Error Count =` *number*

The specified disk accumulated the specified path error count.

loopid `ONDG Loop Test Initiated`

The OFDG loop test has started.

loopid `ONDG Loop Test Completed`

The OFDG completed the loop test.

enclosure_id `ONDG Mode changed to` *ondg_mode_str*

The OFDG mode has been changed. The valid values are `off`, `passive`, and `active`.

loopid `ONDG Fast Loop Fault Diag Initiated`

The OFDG has initiated the fast loop diagnostics.

loopid `ONDG Fast Loop Fault Diag Completed`

The OFDG completed the fast loop fault diagnostics.

loopid `ONDG Bypassing all disk ports`

The OFDG is bypassing all disk ports.

loopid `ONDG Test Enclosure Phase Initiated`

The OFDG initiated the test enclosure phase.

loopid `ONDG Test Enclosure Phase Completed`

The OFDG completed the test enclosure phase on the specified loop.

loopid `ONDG Enclosure Drill Down Phase Initiated`

The OFDG initiated the enclosure drill down phase on the specified loop.

loopid `ONDG loopid Enclosure Drill Down Phase Completed`

The OFDG completed the enclosure drill down phase on the specified loop.

loopid `ONDG Drill Down Phase Initiated`

The OFDG initiated the drill down phase on the specified loop.

loopid `ONDG Drill Down Phase Completed`

The OFDG completed the drill down phase on the specified loop.

```
loopid ONDG Disk Drill Down type 1 Initiated
```

The OFDG find test initiated a drill down type 1 on the specified loop. The type represents one of the patterns of composing clusters of disks and retesting to find problems.

```
loopid ONDG Disk Drill Down Type 1 Completed
```

The OFDG find test completed a drill down type 1 on the specified loop. The type represents one of the patterns of composing clusters of disks and retesting to find problems.

```
loopid ONDG Disk Drill Down type 2 Initiated
```

The OFDG find test initiated a drill down type 2 on the specified loop. The type represents one of the patterns of composing clusters of disks and retesting to find problems.

```
loopid ONDG Disk Drill Down type 2 Completed
```

The OFDG find test completed a drill down type 2 on the specified loop. The type represents one of the patterns of composing clusters of disks and retesting to find problems.

```
loopid: Alternate loop present
```

A alternate loop has been detected on the specified loop.

enclosure_id: `ISP ready on loop number`

The ISP2100 reports to be ready on the loop for the specified enclosure.

loopid: `Controller on the loop`

A controller reports to be ready on the specified loop.

loopid: `Loop closed`

The specified loop has been healed.

Glossary

C

Controller Unit (CU) A StorEdge T300 disk tray, which includes a controller card. The controller card has the FC-AL host interfaces.

E

Expansion Unit (EU) A StorEdge T300 disk tray without a controller card.

F

Fibre Channel Arbitrated Loop (FC-AL) A 100 MB/s serial channel, which allows connection of multiple devices (disk drives and controllers).

Field Replaceable Unit (FRU) The FRU is a component that is easily removed and replaced by a Client Service Engineer (CSE), by design.

G

Gigabyte (GB) One gigabyte is equal to one billion bytes ($1x10^9$).

H

Hot-plug This is the capability of a Field Replaceable Unit (FRU) to be removed and replaced while the system remains powered on and operational.

I

Input/Output Operations Per Second (IOPS) This is a performance measurement of the transaction rate.

L

LUN Logical Unit Number.

M

Managed Class Station Managed class daemon.

Managed Object Station Managed object daemon.

Megabyte (MB) One megabyte is equal to one million bytes ($1x10^6$).

Megabytes per second (MB/s) A performance measurement of the sustained data transfer rate.

P

Power/cooling Unit A component (FRU) in the StorEdge T300 disk tray. It contains a power supply, cooling fans, and an integrated UPS battery. There are two power/cooling units in a StorEdge T300 disk tray.

R

Redundant Array of Independent Drives (RAID) A configuration in which multiple drives are combined into a single virtual drive, in order to improve performance and reliability.

S

Simple Network Management Protocol (SNMP) A network management protocol designed to give a user the capability to remotely manage a computer network.

U

Uninterruptable Power Source (UPS) This is a component within the power/cooling unit. It supplies power from a battery in the case of an AC power failure.

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