



RamSan Training

Monitoring the Health of Your RamSan

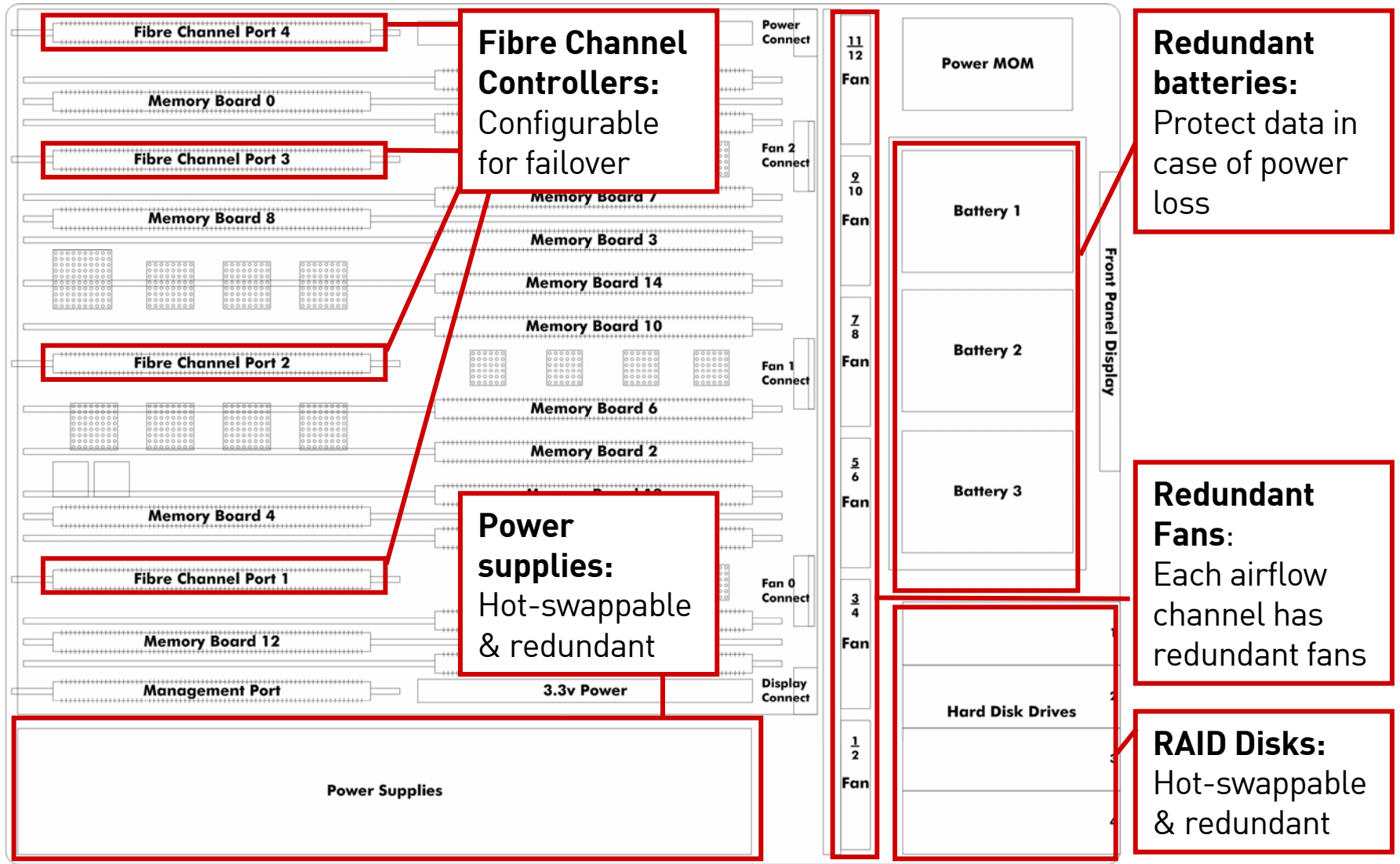


The RamSan is designed to be highly available and fault tolerant

The RamSan-3xx series solid-state disk uses DDRRAM (memory) as its primary storage. This technology enables practically instantaneous data access, which results in dramatic application performance increases.

Texas Memory Systems (TMS) designed the RamSan to be highly available and fault tolerant. The system has higher availability than RAID or JBOD systems because the primary storage media is DDRRAM, which does not require moving parts. Additionally, DDRRAM has a very high mean time between failures (as high as several hundred years) according to some studies. The mechanical components in the RamSan are redundant and hot swappable.

The RamSan is designed to be highly available and fault tolerant



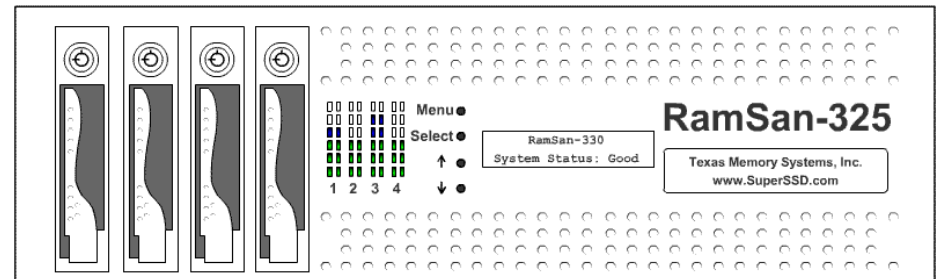
However, if problems occur ...

- Reports to front panel display
- Reports to Web Management Interface
- Reports to Text Management Interface
- Triggers SNMP traps
- Captures in the system and support logs

How to access monitoring software

Front panel display

The front panel display provides a quick and easy way view the RamSan's status. It displays the current progress of disk synchronization and shows system warnings and failures.



How to access monitoring software

Web Management Interface

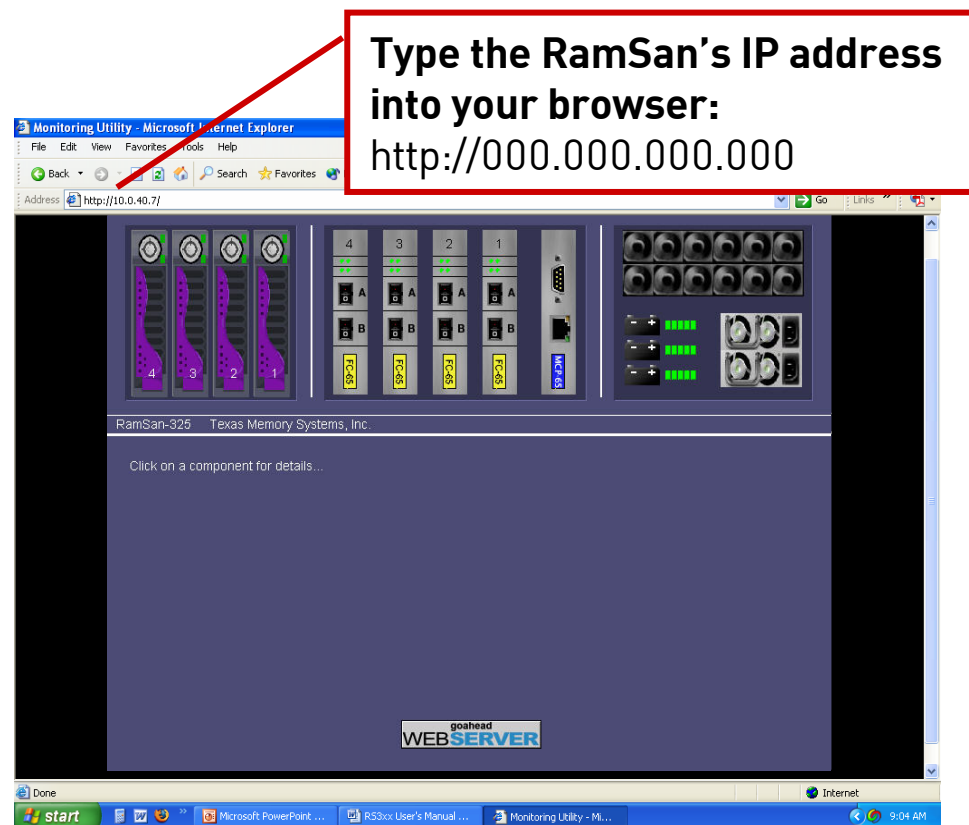
At a glance, the Web Management Interface utility shows the status of all components and combines the information found in the Text Management Interface. In addition, the Web interface includes complete management and configuration features.

To access the web management interface, enter the RamSan's IP address in a web browser. The web management interface is password protected; use your system login and password.

Default Username: *admin*

Default Password: *ssd*

Type the RamSan's IP address into your browser:
`http://000.000.000.000`



The screenshot shows a Microsoft Internet Explorer browser window with the address bar set to `http://10.0.40.7/`. The main content area displays the 'Monitoring Utility' for a 'RamSan-325' device by Texas Memory Systems, Inc. The interface features a top navigation bar with 'goahead WEB SERVER' branding. Below this, there are several panels: on the left, three vertical status indicators labeled 4, 3, and 2; in the center, a grid of four status indicators labeled 4, 3, 2, and 1, each with sub-labels A and B; on the right, a panel showing disk drive status with green progress bars and icons. The browser's taskbar at the bottom shows the Windows start button and several open applications, including 'Microsoft PowerPoint...', 'RS3xx User's Manual...', and 'Monitoring Utility - Mi...'. The system clock in the bottom right corner indicates '9:04 AM'.

How to access monitoring software

Text Management Interface

Once the administrator configures the Ethernet port on the RamSan using either the front panel or the serial port, you may remotely monitor the system using a Telnet session. Set your terminal settings to VT100 mode.

Texas Memory Systems designed the management program as a text based menu system. This program displays all of the user's possible choices in a series of menus. The user may select menu items by entering the number of the menu item or by using the arrow keys and the [ENTER] key.

Default Username: *admin*
Default Password: *ssd*

```
*** RamSan-325 Monitor ***
Texas Memory Systems, Inc.
System software version: 2.6.0
Capacity: 131072 MB
IP Address: 10.0.30.114
System Status: GOOD
State: Ready

-1: LUN setup
2: Controller setup
3: Health and status
4: Management setup
5: Log files
6: Power down system
Q: Exit

Press "H" at any time to view help on the currently highlighted menu item
```

How to access monitoring software

SNMP

RamSans support the Simple Network Management Protocol (SNMP), which is the dominant network management protocol. The industry has accepted this protocol due to its relative simplicity. The SNMP standards provide a framework for the definition of management information along with a protocol for the exchange of that information. The RamSan 3xx Series is compatible with SNMP V2c.

The SNMP model contains “managers” and “agents.” A manager is a software module responsible for managing the configuration on behalf of the network management application end users. Agents are devices, such as the RamSan, which are responsible for maintaining local management information and delivering that information to a manager via SNMP. Both the manager (via polling) and the agent (via a trap) can initiate management information exchanges.

Managers can access statistical information from the RamSan through its management information base (MIB). In addition, the RamSan can issue up to thirteen traps. For more information about configuring SNMP settings, see the RamSan-3xx User’s Guide Chapter 8 – SNMP Configuration.

RamSan has standard health levels

- **Good**
The RamSan is operating under normal conditions with no problems.
- **Warning**
The RamSan has detected a problem that requires attention but does not represent an immediate risk to the data on the system.
 - Email support@texmemsys.com with logs
- **Error**
The RamSan is experiencing a serious problem that could affect the system if it is not dealt with immediately (e.g. disk failure, power, temperature, etc.)
 - Call TMS support or email support@texmemsys.com
 - Copy data to external location
 - If power or temperature related, power down the system.

How information is reported

Front panel

The front panel display scrolls warnings and errors across the screen.

“WARNING”

Indicates that the RamSan has detected a system warning.

Possible warning examples:

- Pwr supply # removed
- AC lost at one or both power supplies
- One or both batteries are low
- Temperature warning
- One disk removed

```
System Status:    WARNING
Warnings: Fans slow
```

“ERROR”

Indicates that the RamSan has detected a system failure.

Possible failure examples:

- Fan failure
- Power supply failed
- System overheated
- More than one disk removed or failed.

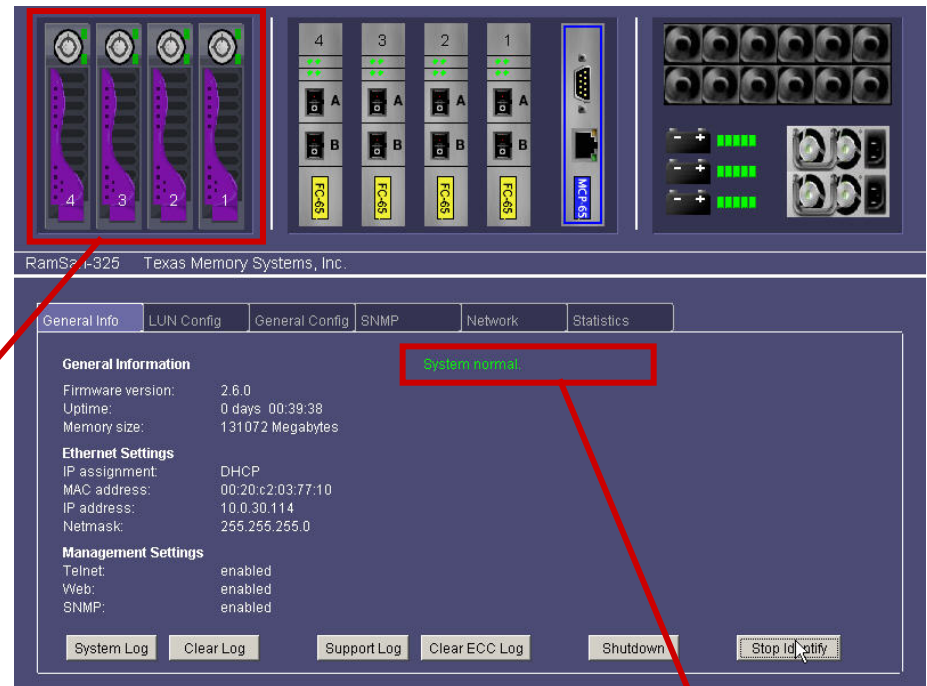
```
System Status:    ERROR
Errors: Disk # Failed
```

How information is reported

Web Management Interface

This interface displays warnings and errors by:

- Describing the system status on the MCP - General Info tab
- Highlighting the relevant component



Component highlights:

System warnings and errors highlight the relevant component.
Yellow represents warnings and red represents errors.

System messages:

The MCP 'General Info' tab displays system warnings and messages as text descriptions.

How information is reported

Text Management Interface

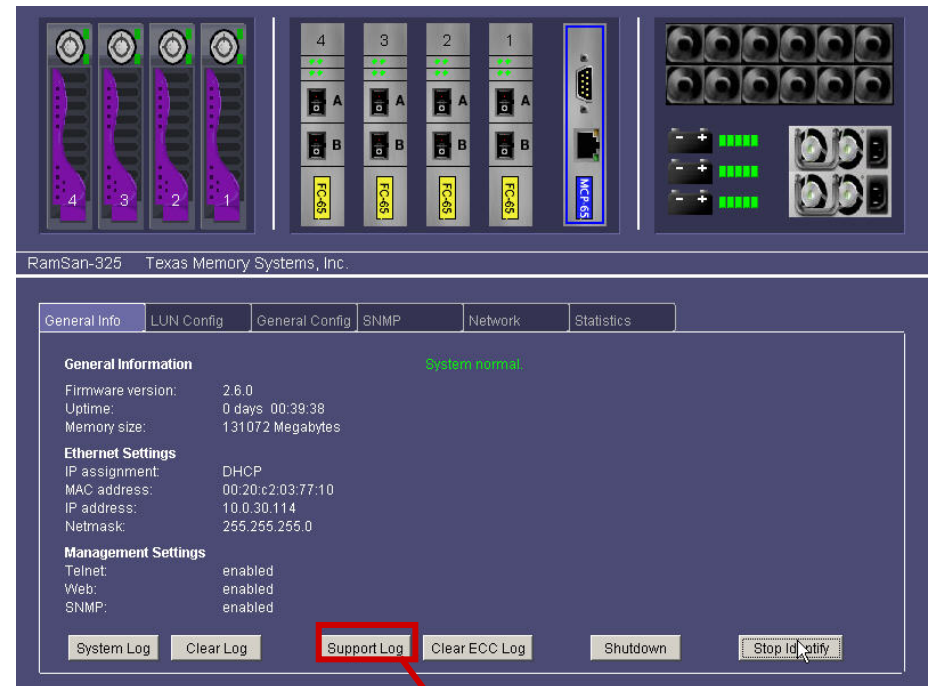
The Telnet interface displays system warnings and errors in two areas:

- The Main Menu screen displays a summary of any system warnings and errors
- For additional details regarding the problem, view the Health and Status option from the Main Menu.

```
*** System Health Status ***
System states: Temperature: GOOD           Fans: GOOD
                Power: GOOD              Batteries: GOOD
                Memory: GOOD             PSU state: GOOD
                Battery 1: READY         FC 1: GOOD
                Battery 2: READY         FC 2: GOOD
                Battery 3: READY         FC 3: NOT PRESENT
                Disk Array: GOOD         FC 4: NOT PRESENT
ECC Errors:      Corrected: 0(0), Uncorrected: 0(0)
Voltages:        Voltage 3.3: (3.33V, 3.36V) Voltage 2.5: 2.52V
                MOD5: 4.93V             MOD12: 11.98V
Temperatures:   System: 86.56F/30.31C    MCP: 88.70F/31.50C
                Battery: 80.04F/26.69C   PWR 3.3: 92.19F/33.44C
                PWR 2.5: 87.46F/30.81C    PMOM: 83.52F/28.62C
                FC 1: 101.75F/38.75C     FC 2: 100.96F/38.31C
Fans:           (141.64Hz, 148.37Hz, 149.25Hz, 148.37Hz, 145.35Hz, 144.51Hz)
                (144.09Hz, 146.20Hz, 136.99Hz, 135.50Hz, 137.74Hz, 146.20Hz)
^Q: Exit to main menu, I/D: Inc/Dec update interval, R: Refresh now
```

Contacting Texas Memory Systems

- Before contacting our support staff, please download your RamSan's support log. It provides valuable information to help diagnose system issues.
- The support log is available through the Web Management Interface under the MCP General Info tab.
- The support log is also available through the Text Management Interface under 'Log Files' and then 'Get Support Log'



Support log:
Click this button to download the system support log.

Contacting Texas Memory Systems

We are more than happy to answer your questions:

- Email Texas Memory Systems support at:
 - support@texmemsys.com
- Call Texas Memory Systems support at:
 - (713) 266-3200
 - Monday – Friday 8:30am – 5:00pm CST

Review

- The RamSan is designed to be fault tolerant
- If problems occur, check the RamSan's monitoring tools
- Before contacting TMS support, please download the support log, which helps to diagnose potential issues.