Tekelec EAGLE ® 5 ISS
with T1100 AS

MPS Platform Software and Maintenance Manual

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5,732,213; 5,953,404; 6,115,746; 6,167,129; 6,324,183; 6,327,350; 6,456,845; 6,606,379; 6,639,981; 6,647,113; 6,662,017; 6,735,441; 6,745,041; 6,765,990; 6,795,546; 6,819,932; 6,836,477; 6,839,423; 6,885,872; 6,901,262; 6,914,973; 6,940,866; 6,944,184; 6,954,526;6,954,794; 6,959,076; 6,965,592; 6,967,956; 6,968,048; 6,970,542; 6,987,781; 6,987,849; 6,990,089; 6,990,347; 6,993,038; 7,002,988; 7,020,707; 7,031,340; 7,035,239; 7,035,387; 7,043,000; 7,043,001; 7,043,002; 7,046,667; 7,050,456; 7,050,562; 7,054,422; 7,068,773; 7,072,678; 7,075,331; 7,079,524; 7,088,728; 7,092,505; 7,108,468; 7,110,780; 7,113,581; 7,113,781; 7,117,411; 7,123,710; 7,127,057; 7,133,420; 7,136,477; 7,139,388; 7,145,875; 7,146,181; 7,155,206; 7,155,243; 7,155,505; 7,155,512; 7,181,194; 7,190,702; 7,190,772; 7,190,959; 7,197,036; 7,206,394; 7,215,748; 7,219,264; 7,222,192; 7,227,927; 7,231,024; 7,242,695; 7,254,391; 7,260,086; 7,260,207; 7,283,969; 7,286,516; 7,286,647; 7,286,839; 7,295,579; 7,299,050; 7,301,910; 7,304,957; 7,318,091; 7,319,857; 7,327,670

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Introduction

Overview

This manual contains the information necessary for the maintenance of the T1100-based Multi-Purpose Server (MPS) that supports the EAGLE 5 ISS LNP Application Processor (ELAP). Included are an overview of the MPS archtiecture and functions, routine operational proceedures, preventative maintenance techniques, and corrective maintenance procedures.

Scope and Audience

This manual is written for system administrators of the MPS. The manual provides routine operating procedures, preventive maintenance procedures, and corrective maintenance procedures that aid administrators maintaining the MPS.

- *Preventive maintenance* procedures are routines implemented on a scheduled basis to prevent system faults. These tasks are industry-standard recommendations and are adaptable to any customer maintenance plan.

- *Corrective maintenance* procedures are used in response to a system alarm or output message. These procedures are MPS-specific and aid in the detection, isolation, and repair of faults.

Manual Organization

This document is organized into the following chapters:

- Chapter 1 Introduction contains general information about the T1100-based Multi-Purpose Server (MPS) documentation, the organization of this manual, and how to request technical assistance.
- Chapter 2 Platform Overview provides an overview of the T1100-based MPS platform, including terminology, hardware, software, network configurations, user administration, and fault tolerance.
- Chapter 3 MPS Maintenance describes the preventative mainteance procedures, system health checks, problem detection, reporting, and recovery.
- Chapter 4 MPS Platform and Application Alarms consists of the platform and application alarm recovery procedures, grouped by alarm severity level.
- Chapter 5 MPS Field Replaceable Units consists of the hardware replacement procedures for the Field Replaceable Units (FRUs) of the T1100-based MPS.
- Appendix A General Procedures contains general procedures that are commonly used and referred to by other procedures.

Related Publications

For information about additional publications that are related to this document, refer to the *Related Publications* document. The *Related Publications* document is published as a part of the *Release Documentation* and is also published as a separate document on the Tekelec Customer Support Site.

Documentation Availability, Packaging, and Updates

Tekelec provides documentation with each system and in accordance with contractual agreements. For General Availability (GA) releases, Tekelec publishes a complete EAGLE 5 ISS documentation set. For Limited Availability (LA) releases, Tekelec may publish a documentation subset tailored to specific feature content or hardware requirements. Documentation Bulletins announce a new or updated release.

The Tekelec EAGLE 5 ISS documentation set is released on an optical disc. This format allows for easy searches through all parts of the documentation set.

The electronic file of each manual is also available from the Tekelec Customer Support site. This site allows for 24-hour access to the most up-to-date documentation.

Printed documentation is available for GA releases on request only and with a lead time of four weeks. The printed documentation set includes pocket guides for commands and alarms. Pocket guides may also be ordered as a set or individually. Exceptions to printed documentation are:

- Hardware or Installation manuals are printed only without the linked attachments found in the electronic version of the manuals.
- The Release Notice is available only on the Customer Support site.

NOTE: Customers may print a reasonable number of each manual for their own use.

Documentation is updated when significant changes are made that affect system operation. Updates resulting from Severity 1 and 2 PRs are made to existing manuals. Other changes are included in the documentation for the next scheduled release. Updates are made by re-issuing an electronic file to the customer support site. Customers with printed documentation should contact their Sales Representative for an addendum. Occasionally, changes are communicated first with a Documentation Bulletin to provide customers with an advanced notice of the issue until

officially released in the documentation. Documentation bulletins are posted on the Customer Support site and can be viewed per product and release.

Content changes are indicated with change bars, the revision of the manual part number is incremented, and the month of publication is updated.

Documentation Admonishments

Admonishments are icons and text throughout this manual that alert the reader to assure personal safety, to minimize possible service interruptions, and to warn of the potential for equipment damage.

	**DANGER**: (This icon and text indicate the possibility of *personal injury*.)
	**WARNING**: (This icon and text indicate the possibility of *equipment damage*.)
	**CAUTION**: (This icon and text indicate the possibility of *service interruption*.)

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  Phone:

  +1 888 367 8552 (US and Canada only)

  +1 919 460 2150 (international)

  Email: *support@tekelec.com*

- Tekelec, Europe

  Phone: +44 1784 467804

  Email:*ecsc@tekelec.com*

When a call is received, a Customer Service Report (CSR) is issued to record the request for service. Each CSR includes an individual tracking number.

After a CSR is issued, the Customer Care Center determines the classification of the trouble. If a critical problem exists, emergency procedures are initiated. If the problem is not critical, information regarding the serial number of the system, COMMON Language Location Identifier (CLLI), initial problem symptoms (includes outputs and messages) is recorded. A primary Customer Care Center engineer is also assigned to work on the CSR and provide a solution to the problem. The CSR is closed when the problem is resolved.

Emergency Response

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A critical situation is defined as a problem with an EAGLE 5 ISS that severely affects service, traffic, or maintenance capabilities, and requires immediate corrective action. Critical problems affect service and/or system operation resulting in:

- A total system failure that results in loss of all transaction processing capability
- Significant reduction in system capacity or traffic handling capability
- Loss of the system's ability to perform automatic system reconfiguration
- Inability to restart a processor or the system
- Corruption of system databases that requires service affecting corrective actions
- Loss of access for maintenance or recovery operations
- Loss of the system ability to provide any required critical or major trouble notification

Any other problem severely affecting service, capacity/traffic, billing, and maintenance capabilities may be defined as critical by prior discussion and agreement with the Tekelec Customer Care Center.

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2. Select **EAGLE** from the Product Support menu.
3. Select the release number from the Release menu.
4. Locate the Notices section to view the latest Feature Notice.
5. Locate the Manuals section to view all manuals applicable to this release.

   The documentation is listed in alphabetical order by the manual name. Only the first three manuals display. Click **more…** to see the remaining manuals.
6. Locate the latest revision of the manual name.

   Confirm the release number and last available revision.

   Select the 936-xxxx-x01 part number to download the complete documentation set with all linked files.

   NOTE: The electronic file for this part number is quite large.
7. To view a manual, double-click the manual name.
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2

Platform Overview

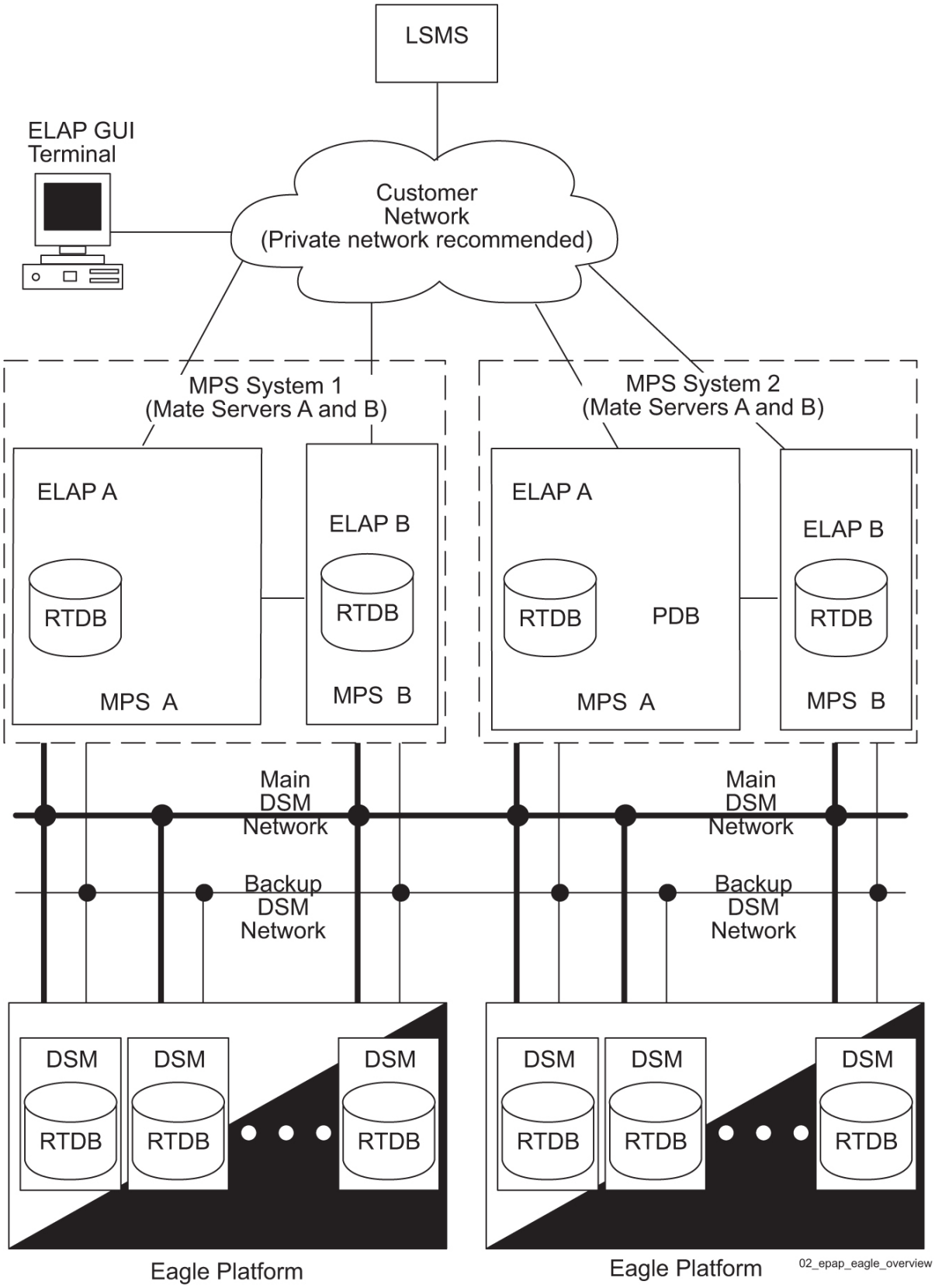
Introduction

The Multi-Purpose Server (MPS) supports high speed provisioning of large databases for the EAGLE 5 Integrated Signaling System (ISS). The MPS is composed of hardware and software components that interact to create a secure and reliable platform.

The MPS platform supports the EAGLE 5 ISS LNP Application Processor (ELAP). The ELAP application includes support for the 228 Million number LNP solution. In addition to the software application, additional third-party software might be required to support the software application. **Figure 2-1** shows an overview of how the MPS is used with the EAGLE 5 ISS system.

This chapter provides an overview of the hardware and platform software that comprises the MPS. For information about the ELAP application and how it interacts with the EAGLE 5 ISS, refer to the *ELAP Administration Manual*.

Figure 2-1. MPS/EAGLE 5 ISS Overview



MPS Terminology

Table 2-1 defines the terminology used for MPS and the ELAP application.

Table 2-1. MPS Terminology

Term	Definition
MPS Server	The Tekelec 1100 AS hardware and the MPS platform software comprise one MPS server.
Mate servers	Two MPS servers are located at an EAGLE 5 ISS site. An MPS server is referred to as a mate server by the other MPS server in the frame.
Upper server (also known as Server A)	This MPS server is installed above its mate.
Lower server (also known as Server B)	This MPS server is installed below its mate.
MPS system	Two MPS servers and their associated hardware are located at an EAGLE 5 ISS site. For more information about associated hardware, see see MPS System Hardware Configuration .
Mated MPS systems	Two MPS systems are located at mated EAGLE 5 ISS sites.
ELAP A	This is the ELAP application running on MPS server A (the upper server)
ELAP B	This is the ELAP application running on MPS server B (the lower server)

Tekelec 1100 AS Terminology

Table 2-2 shows the terms used in describing the Tekelec 1100 AS platform.

Table 2-2. Tekelec 1100 AS Platform Terminology

Term	Definition
IPM	Initial Product Manufacture is the process of installing Tekelec 1100 AS software platform on a *bare* server, which has no software installed, resulting in a state for which the server is ready to for the installation of one or more applications.
Tekelec 1100 AS platform	The Tekelec 1100 AS platform is a combination of Tekelec 1100 AS hardware and Tekelec 1100 AS platform software.
TPD	Tekelec Platform Distribution (TPD) is the common platform Operating System packaged and distributed by Tekelec. TPD is the base installation for all products built on the Tekelec 1100 AS platform.

EAGLE 5 ISS Terminology

In this manual, the term DSM card (Database Service Module card) refers to either a DSM card or an E5-SM4G card unless a specific card is required. For more information about the supported cards, refer to the *EAGLE 5 ISS Hardware Manual*.

MPS System Hardware Configuration

To view the hardware required for each MPS system, refer to the MPS configuration in the Assembly Drawing T1100. **Table 2-3** describes the MPS hardware components in more detail.

Table 2-3. MPS Hardware Components

Qty	Hardware Item	For more detail, see:	To replace, see:
2	Tekelec 1100 AS main unit; each unit has the following cards added during manufacturing: • One dual-port gigabit Ethernet Peripheral Component Interconnect (PCI) card • One quad-port gigabit Ethernet PCI Express card • One Out-of-Band-Management (OOBM) PCI card that contains: — One serial port — One modem interface — One Ethernet port — One interface for alarm relays Each Tekelec 1100 AS main unit has 8 gigabytes of Random Access Memory (RAM) installed and available.	*Tekelec 1100 Application Server Hardware Manual*	*Tekelec 1100 Application Server Hardware Manual*
4	Ethernet hubs: • Two for main DSM network • Two for backup DSM network	Hubs	Hub Replacement Procedure
1	Breaker panel	Breaker Panel	Breaker Panel Replacement Procedure

The MPS system does not support any additional peripheral devices, such as printers or tape drives.

Hubs

An MPS system contains four hubs. Two hubs support the main DSM network and two hubs support the backup DSM network. **Figure 2-2** shows a front view of a hub, and **Figure 2-3** shows a rear view.

For more information about the hubs, refer to:

- 804-1198-01 for a front view and description of the hubs
- Detail G of the ELAP Interconnect T1100 for a rear view

Figure 2-2. Hubs Front View

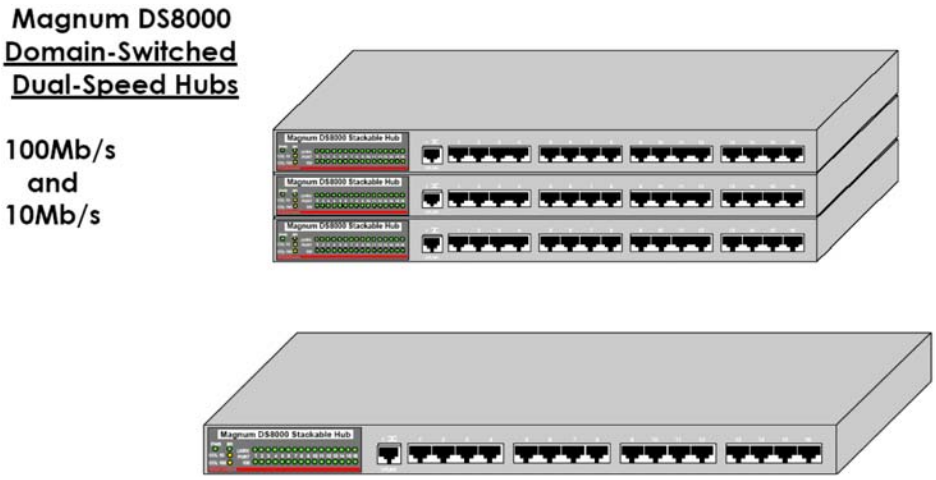
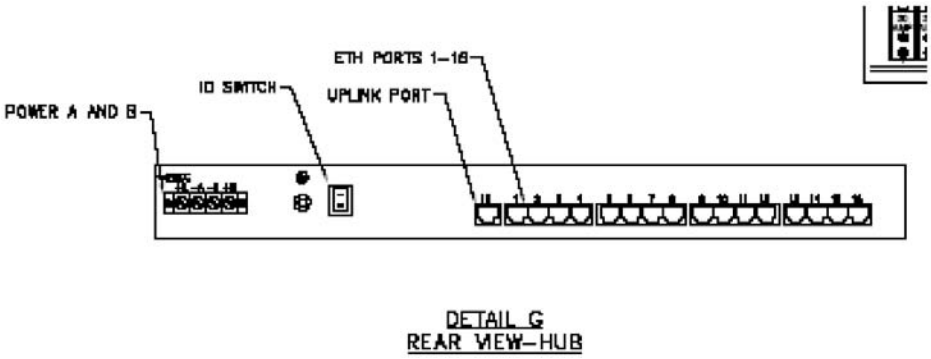


Figure 2-3. Hubs, Rear View



Breaker Panel

A breaker panel with two sides (labeled BUS A and BUS B) provides redundant power paths to the MPS hardware. The rear view of the breaker panel is shown in **Figure 2-4** . The front view of the breaker panel is shown in **Figure 2-5** .

Figure 2-4. T1100 MPS Breaker Panel Rear View

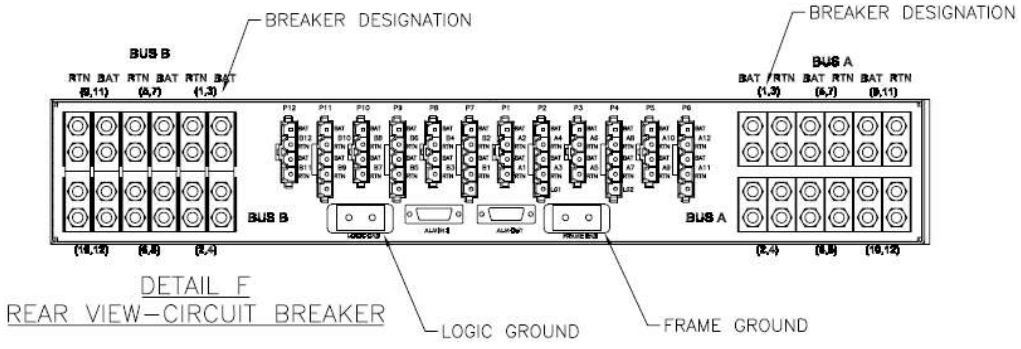
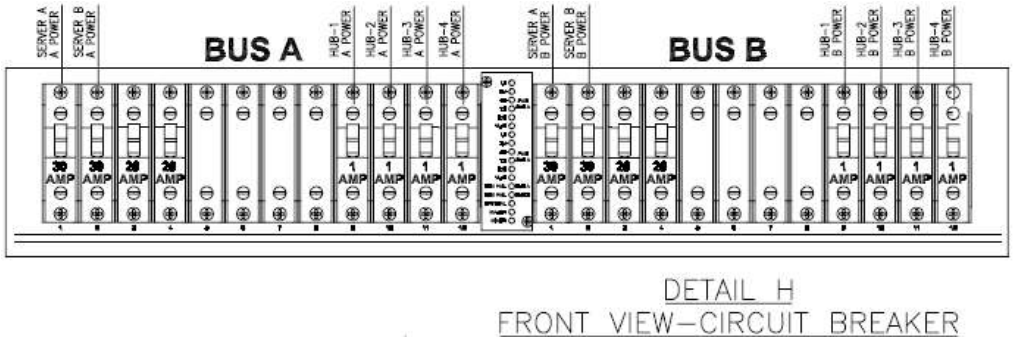


Figure 2-5. T1100 MPS Breaker Panel Front View



Breaker Panel LEDs

Figure 2-6 shows a detailed view of the Indicator Panel located in the center of the front of the breaker panel. Table 2-4 shows the possible LED states and describes what each state indicates.

Figure 2-6. Breaker Panel LEDs

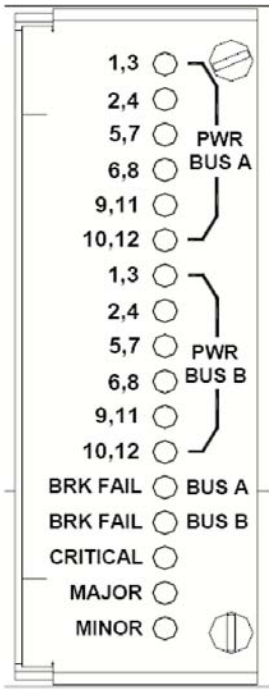


Table 2-4. Breaker Panel LED States

LED Position (from top)	Label on left side:	Label on right side:	Color	Indicates:
Top 6 LEDs	**1,3** through **10,12**	**PWRBUS A**	Green	Power is supplied from power source A to breakers indicated by numbers on left.
			Red	No power is supplied from power source A to breakers indicated by numbers on left.
			Off	Breakers indicated by numbers on left are not used.
Next 6 LEDs	**1,3** through **10,12**	**PWRBUS B**	Green	Power is supplied from power source B to breakers indicated by numbers on left.
			Red	No power is supplied from power source B to breakers indicated by numbers on left.
			Off	Breakers indicated by numbers on left are not used.
13th LED	**BRK FAIL**	**BUS A**	Green	No breakers on side A have tripped.
			Red	One or more breakers on side A have tripped.
14th LED	**BRK FAIL**	**BUS B**	Green	No breakers on side B have tripped.
			Red	One or more breakers on side B have tripped.
15th LED	**CRITICAL**	No label	Green	No critical platform alarms are reported.[1]
			Red	One or more critical platform alarms are reported.[1]
16th LED	**MAJOR**	No label	Green	No major platform alarms are reported.[1]
			Red	One or major platform alarms are reported.[1]
17th LED	**MINOR**	No label	Green	No minor platform alarms are reported.[1]
			Red	One or minor platform alarms are reported.[1]

[1]Both servers may send alarm information to the breaker panel for critical, major, or minor platform alarms. A CRITICAL,MAJOR, or MINOR LED is illuminated when one or more alarms of that type are reported from either or both servers. For more information about platform alarms, see Critical Platform Alarms , Major Platform Alarms , and Minor Platform Alarms .

Breaker Panel Power

Power is distributed from the input circuits to the breakers on their respective side. Each breaker controls the power to its corresponding power feed on the back of the breaker panel. The power feeds connect to the individual hardware devices in the frame.

Power comes into each breaker panel on side A and on side B. Each input power line connects to the input power feeds in the rear of the breaker panel. Each input power feed has an input circuit breaker that ensures that the power is within an acceptable range.

Mapping Breakers to Devices

Six breakers on each side of the breaker panel control power to the two servers and the four hubs in the frame.

Figure 2-7 and Table 2-5 show each active breaker and the device it controls. The table shows only end-to-end connectivity from the breaker panel breakers to the MPS.

Figure 2-7. T1100 MPS Breakers

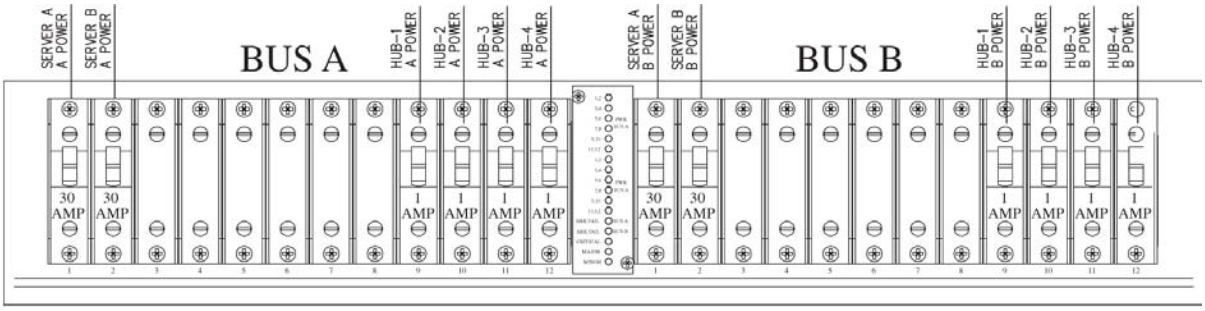


Table 2-5. Mapping of Active (Closed) Breakers to Devices

Breaker Panel Side	Breaker Position	Device
A	1	MPS A
	2	MPS B
	9	Hub 1
	10	Hub 2
	11	Hub 3
	12	Hub 4
B	1	MPS A
	2	MPS B
	9	Hub 1
	10	Hub 2
	11	Hub 3

Breaker Panel Side	Breaker Position	Device
	12	Hub 4

MPS Platform Software Configuration

MPS platform software is packaged and distributed as a Tekelec Platform Distribution (TPD). The following sections describe the features of the MPS platform software:

- Serial Communication
- Remote Access
- Installation and Upgrade
- Diagnostics, Monitoring, and Alarming
- Disaster Recovery
- Security

Serial Communication

The MPS provides the serial communication interfaces shown in **Figure 2-8** and described in **Table 2-6**.

Figure 2-8. MPS Serial Port Connections

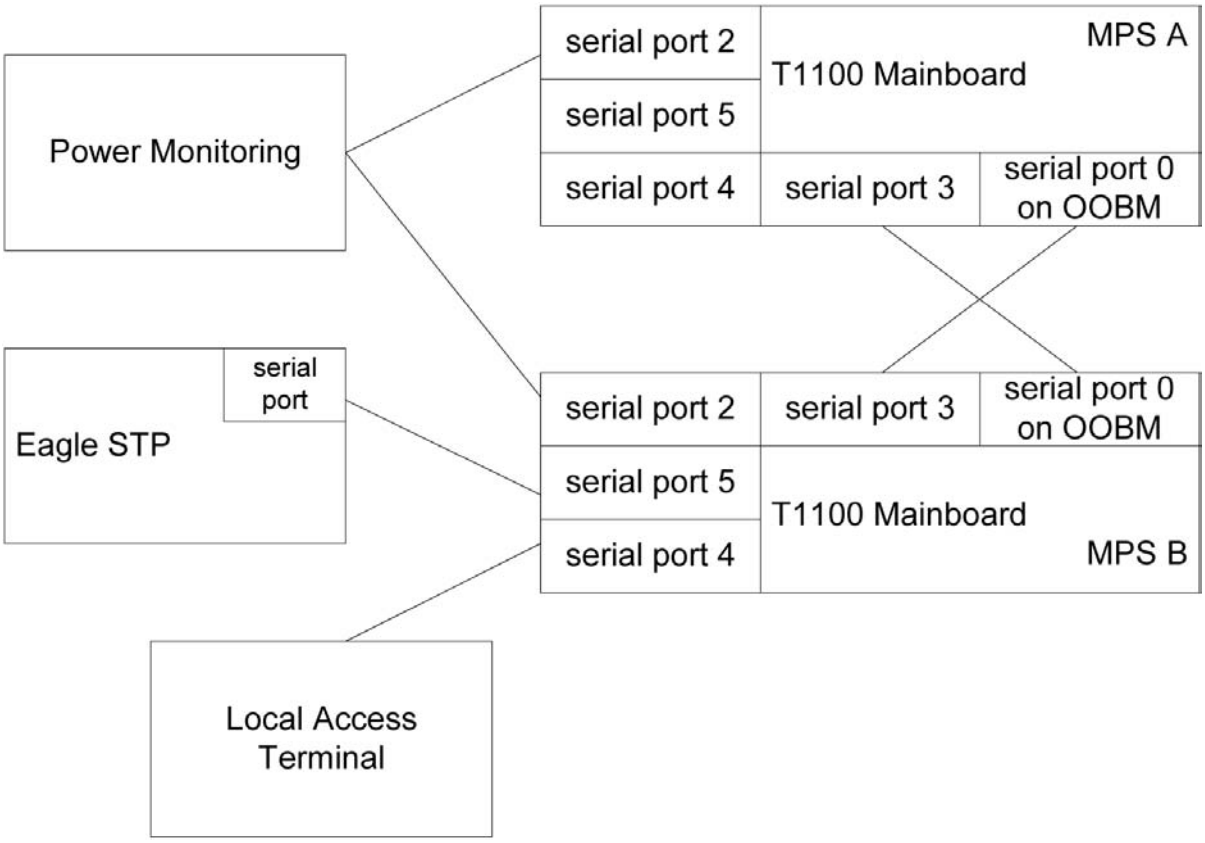


Table 2-6. MPS Serial Port Assignments

Serial Port Name	Serial Port Description
Serial port (top port on Out-of-Band Management (OOBM) card in PCI slot 8)	Configured as the Console port that is cable-crossed to mate, configured as: • 115200 baud • 8 data bits • 1 stop bit • No parity
Serial port 1 on rear of T1100 chassis	Not used
Serial port 2 on rear of T1100 chassis	Power monitoring port
Serial port 3 on rear of T1100 chassis	Cable from serial port 0 on OOBM card of mate, configured as: • 115200 baud • 8 data bits • 1 stop bit • No parity
Serial port 4 on rear of T1100 chassis	Local access terminal port, configured by the MPS as: • 9600 baud • Parity 7E1 • Logins enabled
Serial port 5 on rear of T1100 chassis	Serial EAGLE 5 ISS connection port, configured by the MPS as: • 9600 baud • Parity 7E1 • Logins enabled

Remote Access

The MPS system provides the following remote access features.

- Remote network access is available through two Ethernet interfaces connected to the customer network. One of these interfaces is optional. For more information about the Ethernet interfaces, see **Table 2-7** .
- A Web server provides hypertext transfer protocol (HTTP) access over Ethernet.
- The MPS does not support incoming connections that use non-secure services such as **`rlogin`**, **`rsh`**, **`rexec`**, **`ftp`**, and **`telnet`**. Any incoming connections using these services are dropped. The MPS supports secure protocols that provide similar features. The MPS enables the use of the following secure programs instead of the indicated non-secure programs:
  - The **`ssh`** program instead of **`rlogin`** and **`telnet`**
  - The **`scp`** program instead of **`rcp`**
  - The **`sftp`** program instead of **`ftp`**

The MPS enables the use of secure protocols to access the MPS for troubleshooting. These secure protocols ensure that all traffic, including passwords, is encrypted, effectively eliminating eavesdropping, connection hijacking, and other network-level attacks. Additionally, several secure tunneling capabilities and a variety of authentication methods are provided.

- Dial-in modems provide access for both Microsoft® Windows® and Linux® clients using the Point to Point Protocol (PPP). One dial-in modem is located in each OOBM card. The modems are for use by only the Customer Care Center .

Installation and Upgrade

This section provides an overview of MPS installation and upgrade.

Installation and upgrade of the MPS platform software and the applications that run on the MPS are coordinated by the Customer Care Center . Contact the Customer Care Center to schedule an installation or upgrade.

Installation and Upgrade Media

The MPS operating system is installed or upgraded by either of the following methods:

- Locally install or upgrade from a CD-ROM (Compact Disk-Read Only Memory) that includes a checksum so that the contents are verified before loading. The mate server cannot be installed or upgraded from the CD-ROM in the local server; either the CD-ROM must be inserted into the mate server or an International Standards Organization (ISO) image of the CD-ROM must be transmitted to the hard disk of the mate server.
  - — For an initial installation, two CD-ROMs are provided. One CD-ROM contains the platform software and one CD-ROM contains application software.
  - — For an upgrade, one CD-ROM contains all the software that needs to be upgraded. The CD-ROM contains platform software, application software, or both.
- Remotely install or upgrade from an ISO image of the CD-ROM that has been transmitted to and stored on the local hard disk.
  - — For an initial installation, two images are provided. One image contains the platform software and one image contains application software.
  - — For an upgrade, one image contains all of the software to be upgraded. This image includes platform software, application software, or both.

Upgrade Features

The upgrade design permits platform and/or application software upgrades to be performed easily and with minimal interruption of service. The following platform upgrade features are supported:

- Each server is upgraded independently and is brought offline during its upgrade. During the upgrade, the other server remains in service.
- If any package is not installed successfully during an upgrade, the entire upgrade is automatically backed out to leave the server in the same state as before the upgrade was initiated.
- A rollback mechanism is provided which can be executed at any time after a successful upgrade. The rollback of a server upgrade will undo all changes made to the server by the upgrade to leave the server in the same state as before the upgrade was initiated.

Diagnostics, Monitoring, and Alarming

The MPS provides the following diagnostic, monitoring, and alarming functions:

- Network diagnostic tools
- Monitoring of the following items:
  - Power
  - Fans
  - Hard drives for free capacity and faults
  - Logical integrity of meta-devices and filesystems
  - IP network core components
  - Operational status of core processes
  - Virtual Memory (VM) subsystem
  - Temperature
- Alarms, as Light-Emitting Diodes (LEDs) or messages, to report problems found by monitoring

For more information about MPS diagnostics, monitoring, and alarming, see Detecting and Reporting Problems.

Disaster Recovery

This section describes how the MPS platform is designed to prevent disastrous problems and to recover from them as efficiently as possible.

- The system disks are mirrored. A single disk failure does not cause system operation to stop.
- Installation is designed to prevent overwriting of existing application partitions.
- Journaling file systems are used for all general-purpose file system disk partitions. In addition to its meta-data, a journaling file system contains a log (or journal) of changes to meta-data. Before any meta-data changes, the changes to be attempted are written to this journal. If a non-clean shutdown occurs, this journal is played back upon reboot so that the meta-data changes occur.
- The hard drives are warm-swappable.

Security

The MPS includes security features at several levels:

- Network access control
  - Only the network ports necessary for remote access or application use are enabled.
  - To reduce the risk of spoofing, all network name resolution occurs only through local files.
- Secure access for user accounts
  - The ELAP GUI displays a banner that explains that the system is for authorized users only and authentication is required for all accounts.
  - When stored, passwords are encrypted.

— All connection attempts are logged.

— The customer can assign users to different account types with varying levels of accessibility. For example, some users may be assigned access to only configuration data while others may be assigned access to both configuration data and diagnostic utilities.

- Remote administrative access, which always uses an encrypted protocol

MPS System Network Configuration

The following sections describe the MPS system network configuration.

MPS Network Interfaces

Each MPS server has a dual-port Ethernet PCI (Peripheral Component Interconnect) card and a quad-port gigabit Ethernet PCI Express card to support network interfaces (refer to the ELAP Interconnect T1100). The MPS software configures the Ethernet interfaces and modifies files to allow the network interfaces to be available to the ELAP application.

Figure 2-9 shows the network connections for an MPS system.

Figure 2-9. MPS Network Connections

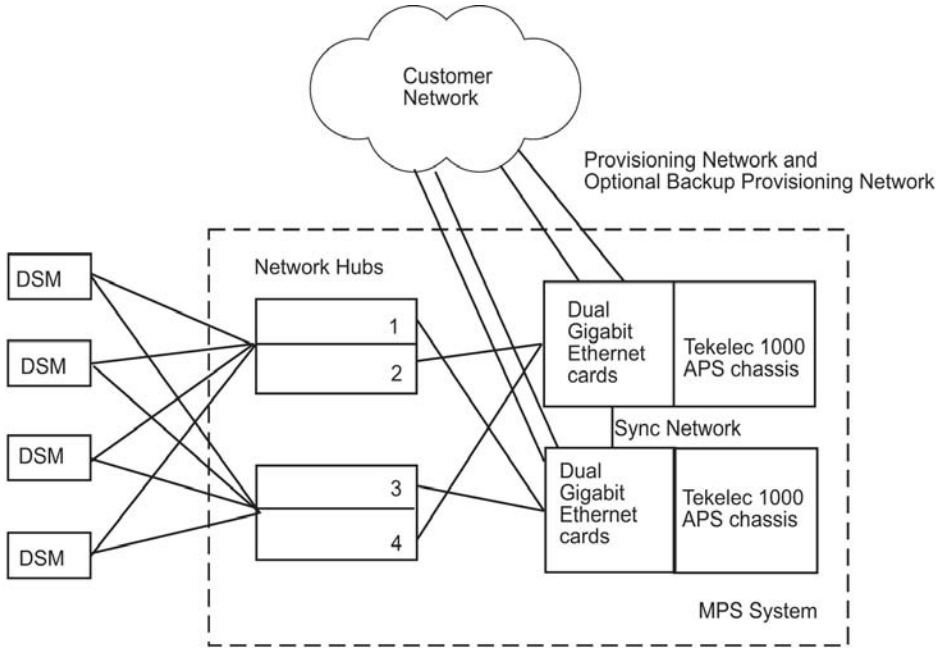


Table 2-7 describes the network interfaces and how they are used.

Table 2-7. MPS Network Interfaces

Hardware Identifier	Software Identifier	Interface Function	Speed and Routing	Network Description
eth0 on server	**eth91**	Provisioning network	1000BaseT auto-sensing device:	This port is available for remote access and carries:

Hardware Identifier	Software Identifier	Interface Function	Speed and Routing	Network Description
			• Automatically runs as fast as the customer equipment allows • Precise bandwidth requirements are determined by the system configuration and performance requirements of the customer	• All provisioning information from the provisioning system of the customer • All traffic required to keep the Real-Time Databases (RTDBs) of the remote MPS systems synchronized
eth1 on server	**eth92**	Main DSM network (A ports only)	• 1000BaseT half-duplex • Internal to EAGLE 5 ISS; not routed.	Most of the traffic on this network is Reliable Multicast Transport Protocol (RMTP) II multicast traffic used to keep the Database Services Module (DSM) databases loaded and synchronized. This is the DSM A network.
eth2 on server	**eth93**	Backup DSM network (B ports only)	• 1000BaseT: — DSM cards run at 10BaseT — MPS interfaces run at 100BaseT — Ethernet hubs carry out the required rate conversion • Internal to EAGLE 5 ISS; not routed.	Negligible traffic travels across this network unless the main DSM network fails, in which case this network will carry all traffic normally carried by the main DSM network. This is the DSM B network.
eth3 on server	**eth94**	Sync network	• Full-duplex Gigabit Ethernet • Point-to-point network between MPS servers	This network provides a high-bandwidth dedicated communication channel for MPS data synchronization.
eth0 Ethernet port on OOBM	n/a	Miscellaneous	• 10/100BaseT • supports DHCP (Dynamic Host Configuration Protocol)	Available for attachment by customer or Tekelec Technical Services.
NOTE: The MPS software identifies Ethernet ports differently from the way they are identified in the Interconnect T1100 and differently from the labels on the frame.				

Configuring Network Time Protocol

This section describes the network time protocol (NTP) features and how they are configured for the MPS platform.

Network Time Protocol Overview

Network Time Protocol (NTP) is an Internet protocol used to synchronize clocks of computers to Universal Time Coordinated (UTC) as a time reference. NTP reads a clock provided by a timeserver and transmits the reading to one or more clients; each client adjusts its clock as required. If left unchecked, the system time of a server will drift out of synchronization with other equipment with which it communicates.

Understanding Universal Time Coordinated

Universal Time Coordinated (UTC) is an official standard for determining current time. The UTC second is based on the quantum resonance of the cesium atom. UTC is more accurate than Greenwich Mean Time (GMT), which is based on solar time.

Universal in UTC means that this time can be used anywhere in the world; it is independent of time zones. To convert UTC to local time, add or subtract the same number of hours as when converting GMT to local time. Coordinated in UTC means that several institutions contribute their estimate of the current time, and the UTC is calculated by combining these estimates.

Understanding Network Time Protocol

NTP primary servers provide their clients time that is accurate within a millisecond on a Local Area Network (LAN) and within a few tens of milliseconds on a Wide Area Network (WAN). This first level of accuracy is called stratum-1. At each stratum, the client can also operate as a server for the next stratum.

A hierarchy of NTP servers is defined with strata to indicate how many servers exist between the current server and the original time source external to the NTP network, as follows:

- A stratum-1 server has access to an external time source that explicitly provides a standard time service, such as a UTC receiver.
- A stratum-2 server receives its time from a stratum-1 server.
- A stratum-3 server receives its time from a stratum-2 server.
- The stratum hierarchy continues up to the NTP network limit of stratum-15.

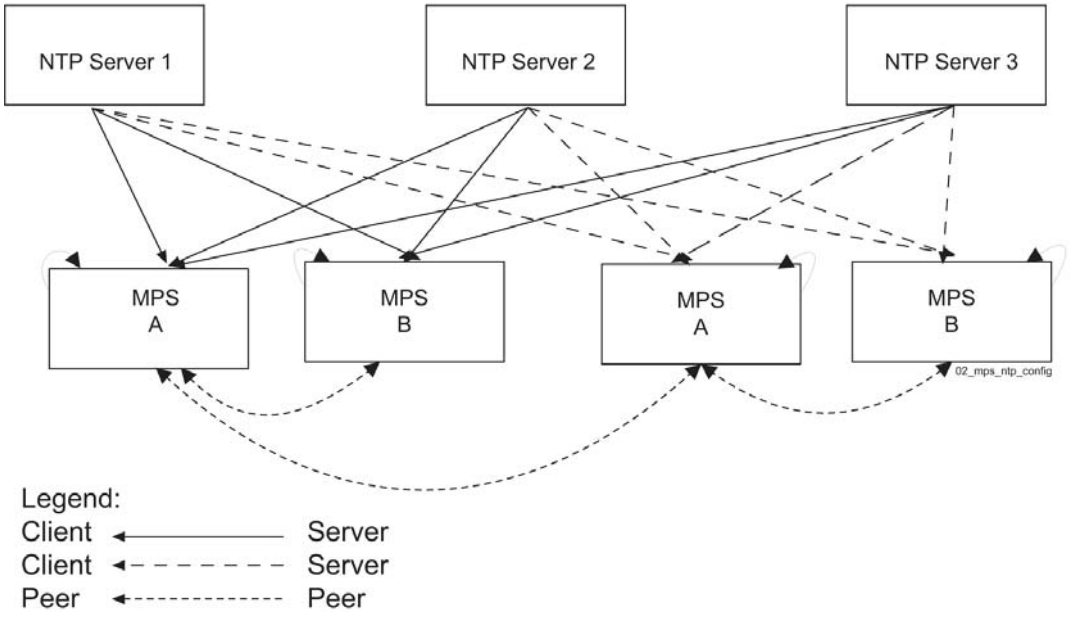
Normally, client workstations do not operate as NTP servers. NTP servers with a small number of clients do not receive their time from a stratum-1 server. At each stratum, it is usually necessary to use redundant NTP servers and diverse network paths to protect against failed software, hardware, or network links. NTP operates in one or more of the following association modes:

- Client/server mode - A client receives synchronization from one or more servers, but does not provide synchronization to the servers.
- Symmetric mode - Either of two peer servers can synchronize to the other to provide mutual backup.
- Broadcast mode - Many clients synchronize to one or a few servers, reducing traffic in networks that contain a large number of clients. IP multicast can be used when the NTP subnet spans multiple networks.

Network Time Protocol in the MPS

By default, the MPS A server of each mated MPS pair is configured as a free-running Network Time Protocol (NTP) server which communicates with the mate MPS servers on the provisioning network. Free-running refers to a system that is not synchronized to UTC and receives timing from its own clocking source. This allows mated MPS servers to synchronize their time. **Figure 2-10** shows the NTP configuration used by MPS.

Figure 2-10. MPS NTP Configuration



All MPS servers running the ELAP application have the option to be configured through the ELAP GUI to communicate and synchronize time with a customer-defined external NTP time server.

For information about defining an external NTP time server, refer to the *ELAP Administration Manual*.

User and Group Administration

The following groups are created during the Initial Product Manufacture (IPM):

- **`syscheck`**
- **`tklcppp`** (for use only by the Customer Care Center)

The following users are created during the Initial Product Manufacture (IPM) process:

- **`syscheck`**
  This account is used to execute the **`syscheck`** utility. The password is **`syscheck`**. When you log in as the syscheck user, the **`syscheck`** utility is executed in normal mode; when **`syscheck`** completes, the session is immediately logged off. This account does not have shell access.

- **`tklcppp`** (not used)

Fault Tolerance and High Availability

The MPS architecture is designed with the following features to ensure no single point of failure:

- The MPS system uses two MPS servers in an active/standby configuration. If the active server fails, the standby server can service all functions.

- Each frame in which the MPS servers are mounted has four power feeds. Each powered device in the frame has dual power feeds.
- Each MPS server is connected to the EAGLE 5 ISS with redundant networks.
- The EAGLE 5 ISS is replicated by a mate EAGLE 5 ISS, which has its own MPS system consisting of two MPS servers. These MPS servers are synchronized with the MPS servers of the mate EAGLE 5 ISS.

3

MPS Maintenance

Introduction

This chapter provides preventive and corrective maintenance information. Customers perform a small number of daily and monthly preventive maintenance tasks. The MPS system and the ELAP application perform automatic monitoring and problem reporting.

This chapter also presents an overview of how to recover from reported problems. Detailed information about recovery procedures is contained in the remaining chapters of this manual.

Preventive Maintenance

This section describes the following recommended periodic maintenance:

- Daily maintenance procedures:
  - Backing Up the RTDB

— Transferring RTDB Backup File

- Monthly maintenance procedures:

  — Replace fan filters (refer to the *Tekelec 1100 Application Server Hardware Manual*)

  — Verifying Modems

Daily Maintenance

Tekelec strongly recommends that all procedures in this section be performed once each day. Storing the database backups in a secure, off-site location ensures the ability to recover from system failures.

The following procedures should be performed once each day:

- Backing Up the RTDB
- Transferring RTDB Backup File

Backing Up the RTDB

Perform this procedure once each day. The estimated time required to complete this procedure is one hour.

Procedure

1. Log in to the ELAPGU I on MPS A as the **elapall** user.

   For information about how to log in to the ELAPGUI, see Accessing the ELAP GUI Interface .
2. If you are not logged in to ELAP A, select the **Select Mate** option.
3. From the ELAP Menu, select **Maintenance>LSMS Connection>Change Allowed**.
4. Click the **Disable LSMS Connection** button to disable the LSMS connection.

   Figure 3-1 shows the Change LSMS Connection Allowed screen.

Figure 3-1. Change LSMS Connection Allowed Screen

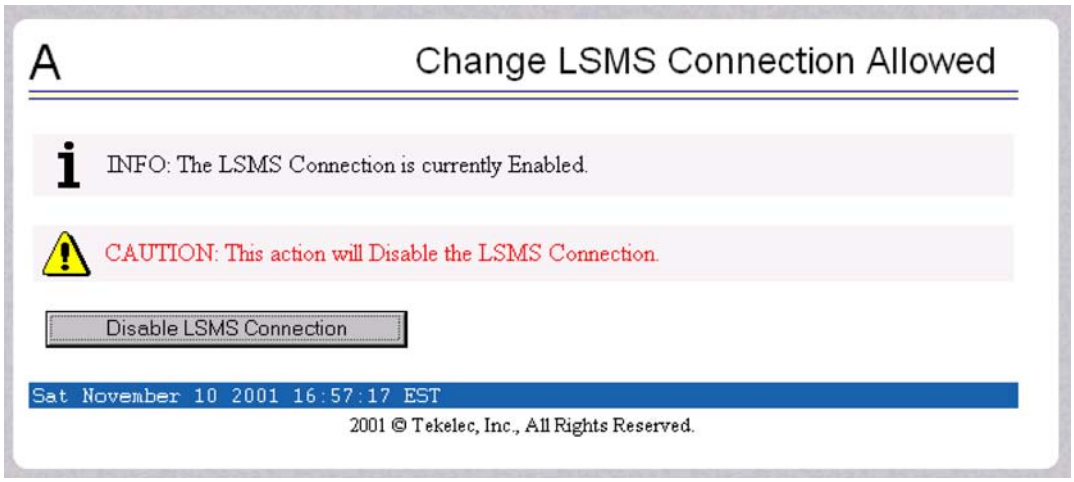
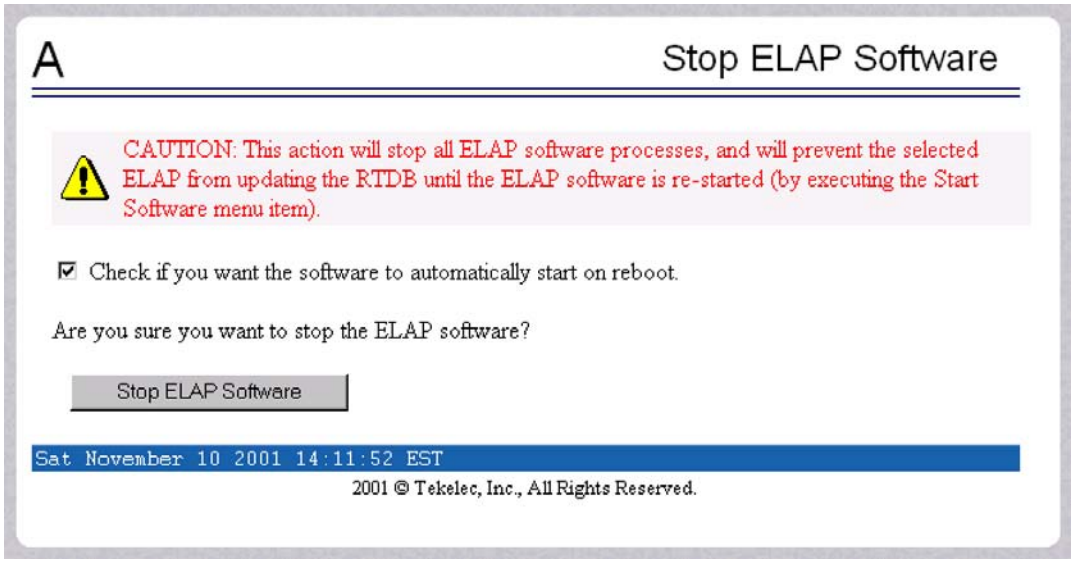


Figure 3-2 shows the LSMS connection disabled.

Figure 3-2. Successfully Disabled LSMS Connection

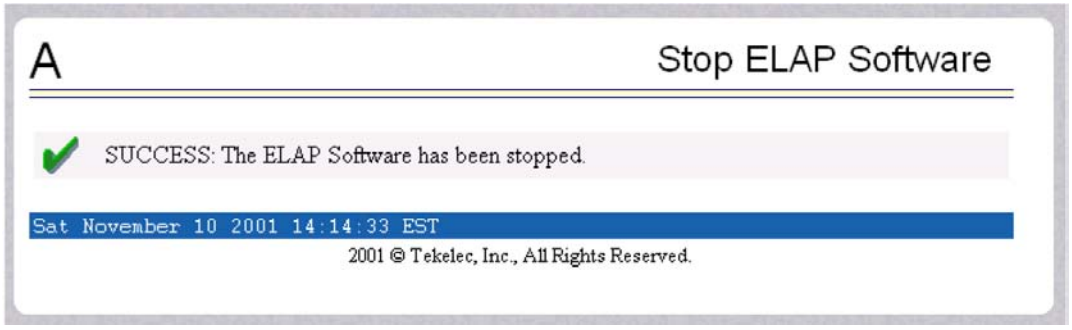
5. From the ELAP Menu, select **Process Control>Stop Software**.
6. On the Stop ELAP Software screen as shown in **Figure 3-3** , click **Stop ELAP Software**.

Figure 3-3. Stop ELAP Software



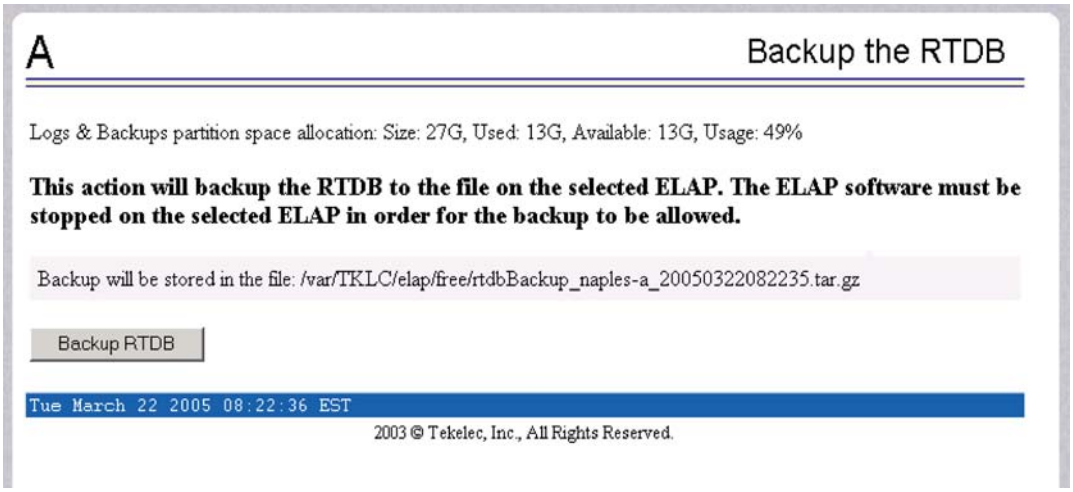
After the ELAP software has stopped successfully, the screen shown in **Figure 3-4** is displayed.

Figure 3-4. ELAP Software Successfully Stopped



7. From the ELAP menu, select **RTDB>Maintenance>Backup RTDB**.
   The screen shown in **Figure 3-5** is displayed.

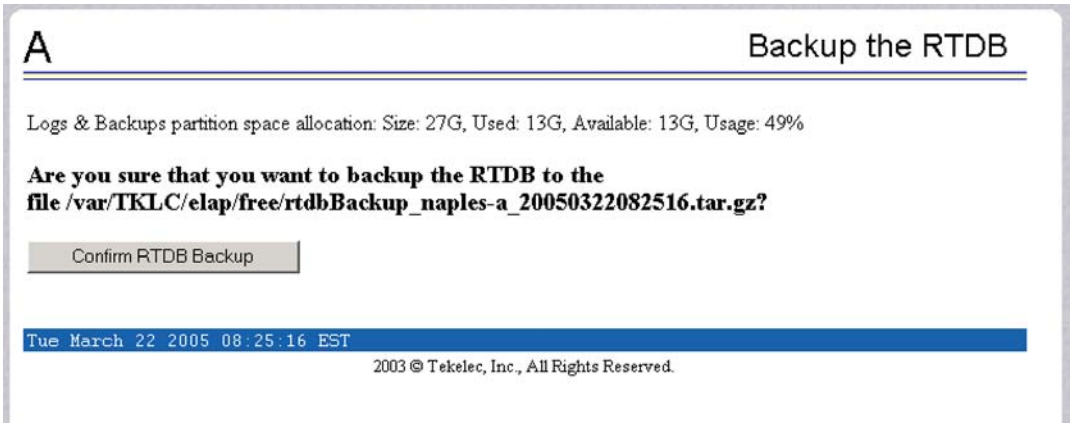
Figure 3-5. Backup the RTDB



8. Click **Backup RTDB**.

The screen shown in **Figure 3-6** displays a request for confirmation.

Figure 3-6. Backup the RTDB Confirmation



9. Click **Confirm RTDB Backup**.

If the backup starts successfully, the following message will scroll through the GUI banner:
`Backup RTDB in progress.`

After the backup completes successfully, the screen in **Figure 3-7** is displayed.

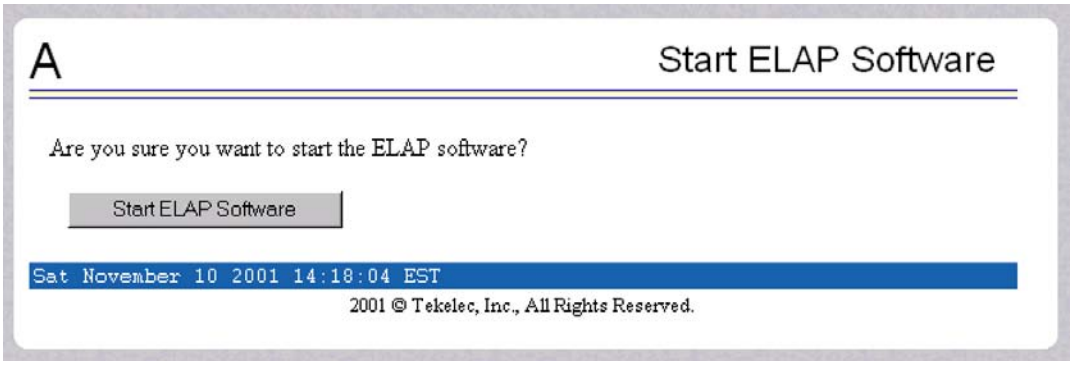
Figure 3-7. Backup the RTDB - Success

10. Record the file name, as shown in this example.

    /var/TKLC/elap/free/rtdbBackup_naples_a20050322082542.tar.gz

11. Select **Process Control>Start Software** from the ELAP Menu.
12. On the Start ELAP Software screen as shown in **Figure 3-8** , click **Start ELAP Software.**

Figure 3-8. Start ELAP Software



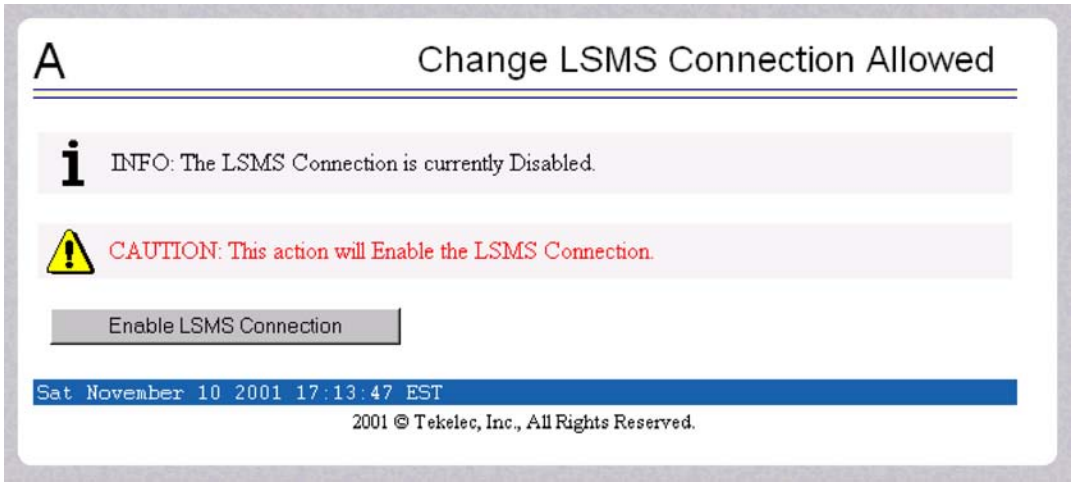
After the ELAP software has started successfully, the screen in **Figure 3-9** is displayed.

Figure 3-9. Start ELAP Software - Success

13. Select **Maintenance>LSMS Connection>Change Allowed** from the ELAP Menu.
14. Click the **Enable LSMS Connection** button to enable the LSMS connection.

    Figure 3-10 shows the Change LSMS Connection Allowed screen with the LSMS connection disabled.

Figure 3-10. Change LSMS Connection Allowed Screen



After the LSMS Connection is successfully enabled, the screen in **Figure 3-11** is displayed.

Figure 3-11. Successfully Enabled LSMS Connection

Transferring RTDB Backup File

Perform this procedure once each day. The estimated time required to complete this procedure depends on network bandwidth. File sizes can be several gigabytes for the database.

Procedure

1. Log in to the ELAP command line interface with user name **`elapdev`** and the password associated with that name.
2. Use the Secure File Transfer Protocol (**`sftp`**) to transfer to a remote, secure location the RTDB backup file, whose name was recorded in step Step 10 in the procedure described in Backing Up the RTDB.

Monthly Maintenance

Tekelec recommends that you perform the following procedures once a month.

- Replace Fan Filters

- Verifying Modems

Replace Fan Filters

Tekelec recommends replacing fan filters once a month. The fan filter may be replaced more often if the operating environment requires more frequent changes. Use the procedure described in the *T1100 Application Server Hardware Manual*.

Verifying Modems

Use the following procedure once a month to verify that the modems are operational. Correct operation of the modems is necessary if a problem occurs that requires the attention of the Customer Care Center and their ability to dial in to the MPS system.

Procedure

1. Using dial-in/terminal emulation software, initiate a session to each server that contains a modem by dialing the access number assigned to the analog line connected to the modem in the Out-of-Band Management (OOBM) card.
2. Log in with user name **syscheck** and password **syscheck** (see Running syscheck Using the syscheck Login).
   - If the modem is operational, this login executes the System Health Check utility **syscheck**. When **syscheck** completes, it immediately logs out and disconnects the dial-up session.
   - If the login does not work, contact the Customer Care Center .
3. Exit the terminal emulation software.

Detecting and Reporting Problems

Problems are detected and reported by the MPS platform and the ELAP application.

- The MPS platform constantly monitors its operational status using the System Health Check utility **syscheck**. This utility can be initiated also by the user. For more details about **syscheck**, see System Health Check Overview .

  If **syscheck** detects a fault or error, the user is notified by:

  — The appropriate alarm LED illuminated on the front of the MPS server (see MPS Alarm LEDs).

  — An alarm message sent to the MPS application which:

  ♦ displays the alarm on the application GUI (see Displaying Errors on ELAP GUI).

  ♦ sends the alarm message to the EAGLE 5 ISS which sends a UAM to the operator screen to notify the user (see MPS UAMs).

  — The **syscheck** test results logged to a file available for the Customer Care Center . If logs are to be saved to send to the Customer Care Center , see Saving Logs Using the ELAP GUI .

- The ELAP application running on the MPS server can detect application errors. If an application problem is detected, the user is notified by:
  - — The appropriate alarm LED illuminated on the front of the MPS server (see MPS Alarm LEDs).
  - — An error displayed on the graphical user interface (GUI) banner (see Displaying Errors on ELAP GUI).
  - — An error sent to to the EAGLE 5 ISS, which reports the error as a UAM alarm (see MPS UAMs).
  - — The error recorded in an application log file. If logs are to be saved to send to the Customer Care Center , see Saving Logs Using the ELAP GUI .

MPS Alarm LEDs

The front of the MPS server has three LEDs to indicate alarms, as shown in **Figure 3-12** .

Figure 3-12. MPS Alarm LEDs

The alarms indicate the state of the MPS, as indicated in **Table 3-1** .

Table 3-1. MPS Alarm LED Indications

Alarm LED	Color	Indication
Critical	Green	No critical platform or application alarms currently exist.
	Red	One or more critical platform or application alarms currently exist.

Alarm LED	Color	Indication
Major	Green	No major platform or application alarms currently exist.
	Red	One or more major platform or application alarms currently exist.
Minor	Green	No minor platform or application alarms currently exist.
	Amber	One or more minor platform or application alarms currently exist.

An alarm LED remains red or amber while an error condition remains active for that severity level. If alarm conditions are active for more than one platform alarm level, every applicable LED is illuminated red or amber, not only the most severe alarm level.

Figure 3-12 shows the LEDs that correspond to the platform alarm categories.

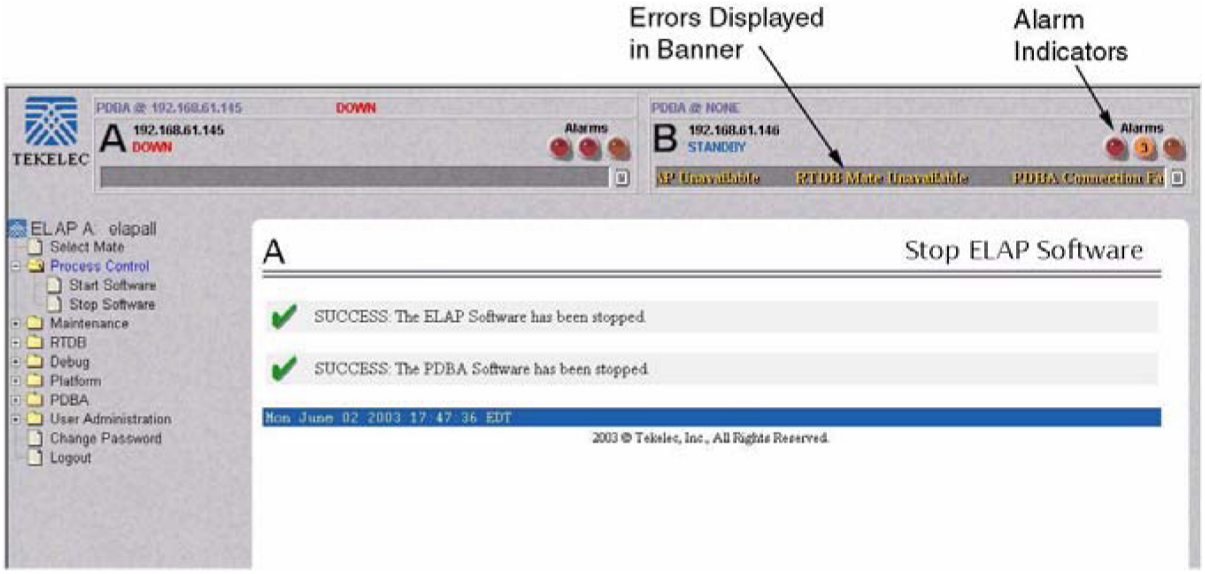
Displaying Errors on ELAP GUI

If the ELAP application detects an application error or receives an alarm message from the MPS platform layer, the ELAP application displays the error on the graphical user interface (GUI):

- With a text message running across the banner.
- By illuminating the alarm level indicator on the GUI that corresponds to the alarm level of the error. If that alarm level indicator is already illuminated, the number shown on the indicator is incremented. For details about the alarms represented by the indicator, click the alarm button.

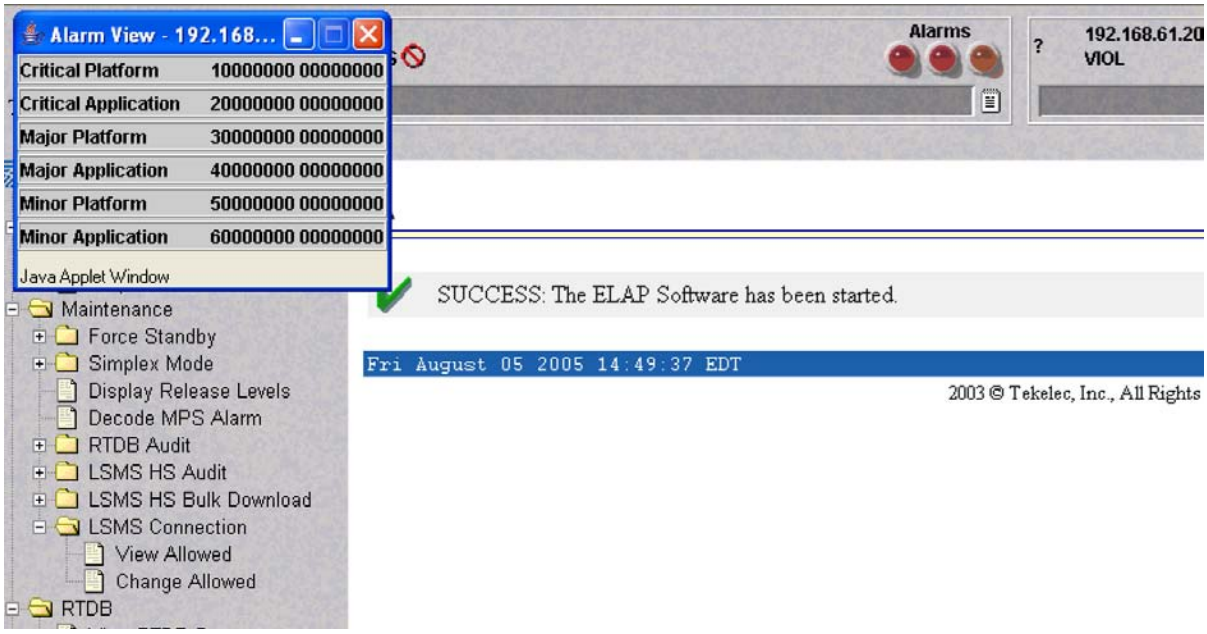
Figure 3-13 shows an example of errors displayed on the ELAP GUI.

Figure 3-13. Errors Displayed on ELAP GUI



To obtain additional information about the alarms, click any lighted alarm indicator. A pop-up window is displayed, showing the number of each type of alarm and listing the text of each existing alarm in each type. Figure 3-14 shows an example.

Figure 3-14. Viewing Alarm Details



Alarm values reported in the **Figure 3-14** may represent multiple alarms. To determine which alarms are indicated, perform Decode Alarm Strings . After determining which alarms are being reported, find the individual alarm numbers in MPS Alarm Recovery Procedures .

MPS UAMs

The EAGLE 5 ISS displays only one alarm per ELAP at a time based on the highest priority. If a single error is detected, the ELAP application sends an error message to the EAGLE 5 ISS terminal to report the active alarm category. If multiple errors are detected, the ELAP application sends an error message to the EAGLE 5 ISS terminal to report the most severe active alarm category.

If multiple alarms of the same severity exist and their severity is the highest alarm severity currently active, a combination alarm code is sent to the EAGLE 5 ISS. The EAGLE 5 ISS issues the appropriate UAM to the operator.

Errors detected in the MPS hardware and software are reported by the following UAMs, which are described in greater detail in the *Signaling Products Maintenance Manual*.

- Critical Platform Alarms are reported by the EAGLE 5 ISS in UAM 0370.
- Critical Application Alarms are reported to the EAGLE 5 ISS in UAM 0371.
- Major Platform Alarms are reported to the EAGLE 5 ISS in UAM 0372.
- Major Application Alarms are reported to the EAGLE 5 ISS in UAM 0373.
- Minor Platform Alarms are reported to the EAGLE 5 ISS in UAM 0374.
- Minor Application Alarms are reported to the EAGLE 5 ISS in UAM 0375.

When all error conditions are corrected for all MPS platform errors and application errors, the operator receives this UAM:

```
UAM 0250 MPS available.
```

For information about the alarm data contained in UAMs, see Chapter 4 MPS Platform and Application Alarms.

System Health Check Overview

The MPS runs a self-diagnostic utility program called **syscheck** to monitor itself. The system health check utility **syscheck** tests the server hardware and platform software. Checks and balances verify the health of the MPS server and platform software for each test, and verify the presence of required application software.

If the **syscheck** utility detects a problem, an alarm code is generated. The alarm code is a 16-character data string in hexadecimal format. All alarm codes are ranked by severity: critical, major, and minor. **Table 4-1** lists the platform alarms and their alarm codes.

The **syscheck** output can be in either of the following forms (see Health Check Outputs for output examples):

- Normal— results summary of the checks performed by **syscheck**
- Verbose—detailed results for each check performed by **syscheck**

The **syscheck** utility can be run in the following ways:

- The operator can invoke **syscheck** :
  - — From the ELAPGUI Platform Menu (see Accessing the ELAP GUI Interface). The user can request **Normal** or **Verbose** output.
  - — By logging in as a **syscheck** user (see Running syscheck Using the syscheck Login). Only **Normal** output is produced.
- **syscheck** runs automatically by timer at the following frequencies:
  - — Tests for critical platform errors run automatically every 30 seconds.
  - — Tests for major and minor platform errors run automatically every 60 seconds.

Functions Checked by syscheck

Table 3-2 summarizes the functions checked by **syscheck**.

Table 3-2. System Health Check Operation

System Check	Function
Disk Access	Verify disk read and write functions continue to be operable. This test attempts to write test data in the file system to verify disk operability. If the test shows the disk is not usable, an alarm is reported to indicate the file system cannot be written to.
Smart	Verify that the **smartd** service has not reported any problems.
File System	Verify the file systems have space available to operate. Determine what file systems are currently mounted and perform checks accordingly. Failures in the file system are reported if certain thresholds are exceeded, if the file system size is incorrect, or if the partition could not be found. Alarm thresholds are reported in a similar manner.
Swap Space	Verify that disk swap space is sufficient for efficient operation.
Memory	Verify that 8 GB of RAM is installed.

System Check	Function
Network	Verify that all ports are functioning by pinging each network connection (provisioning, sync, and DSM networks). Check the configuration of the default route.
Process	Verify that the following critical processes are running. If a program is not running the minimum required number of processes, an alarm is reported. If more than the recommended processes are running, an alarm is also reported. • **sshd** (Secure Shelldaemon) • **ntpd** (NTPdaemon) • **syscheck** (System Health Check daemon)
Hardware Configuration	Verify that the processor is running at an appropriate speed and that the processor matches what is required on the server. Alarms are reported when a processor is not available as expected.
Cooling Fans	Verify that all fans are running within the expected revolutions per minute (rpm) range. Cooling fans ensure that the components on the server operate at the optimum temperature. Each server has six fans. All cooling fans are checked for fan failure.
Main Power Feeds	Verify that: • Main power is supplied to both server power inputs. • Power supplies are working properly.
Power Relay Unit	Verify that all configured power feeds are within specification. Verify that no breakers have opened (tripped). The breaker panel has a set of relays that allow information about the breaker panel status to be sent to all attached servers. The **syscheck** utility monitors this information. The following error conditions can be detected: • Breaker Panel Breaker Error: To recover, verify all breakers and power feeds (see 3000000002000000 - Breaker Panel Breaker Error). • Breaker Panel Feed Error: To recover, verify that the breaker panel monitoring cable is installed correctly and is not damaged (see 3000000001000000 - Breaker Panel Feed Error).
Voltages	Measure all monitored voltages on the server mainboard. Verify that all monitored voltages are within the expected operating range.
Temperature	Measure the following temperatures and verify that they are within a specified range. • Air temperature • Processors internal temperature
MPS Platform	Provide alarm if internal diagnostics detect any other error, such as MPS**syscheck** script failures.

Health Check Outputs

System health check utility **syscheck** output can be either Normal (brief) or Verbose (more detailed), depending upon how **syscheck** was initiated. The following examples show Normal and Verbose output formats.

Normal Output

Following is an example of Normal output:

```
Running modules in class disk...
                                    OK
Running modules in class hardware...
                                    OK
Running modules in class net...
                                    OK
Running modules in class proc...
```

```
                                    OK
Running modules in class system...
                                    OK
The log is available at:
  -->/var/TKLC/log/syscheck/fail_log
```

Verbose Output Containing Errors

If an error occurs, the system health check utility **syscheck** provides alarm data strings and diagnostic information for platform errors in its output. The following portion of Verbose output contains detected errors with the breaker panel and with the numbers of running modules.

```
Running modules in class disk...
        fs: Current file space use in "/" is 26%.
        fs: Current Inode used in "/" is 36%.
        fs: Current file space use in "/boot" is 8%.
        fs: Current Inode used in "/boot" is 1%.
        fs: Current file space use in "/usr" is 25%.
        fs: Current Inode used in "/usr" is 9%.
        fs: Current file space use in "/var" is 20%.
        fs: Current Inode used in "/var" is 3%.
        fs: Current file space use in "/var/TKLC" is 19%.
        fs: Current Inode used in "/var/TKLC" is 1%.
        fs: Current file space use in "/tmp" is 4%.
        fs: Current Inode used in "/tmp" is 1%.
        fs: Current file space use in "/var/TKLC/elap/rt" is 41%.
        fs: Current Inode used in "/var/TKLC/elap/rt" is 1%.
        fs: Current file space use in "/var/TKLC/elap/db" is 1%.
        fs: Current Inode used in "/var/TKLC/elap/db" is 1%.
        fs: Current file space use in "/var/TKLC/elap/logs" is 3%.
        fs: Current Inode used in "/var/TKLC/elap/logs" is 1%.
        fs: Current file space use in "/var/TKLC/elap/free" is 1%.
        fs: Current Inode used in "/var/TKLC/elap/free" is 1%.
Return string: "OK"
      meta: Checking md status on system.
      meta: md Status OK, with 11 active volumes.
      meta: Checking md configuration on system.
      meta: Server md configuration OK.
Return string: "OK"
      swap: Checking amount of swap space on server.
      swap: Swap space is OK.
      swap: Swap available:  16736200
      swap: /sbin/swapon -s output ->
      swap: Filename                      Type            Size    Used    Priority
      swap: /dev/md3                          partition   2056248 0       1000
      swap: /var/TKLC/swap/swap.1             file                2097136 0       1
      swap: /var/TKLC/swap/swap.2             file                2097136 0       2
      swap: /var/TKLC/swap/swap.3             file                2097136 0       3
      swap: /var/TKLC/swap/swap.4             file                2097136 0       4
      swap: /var/TKLC/swap/swap.5             file                2097136 0       5
      swap: /var/TKLC/swap/swap.6             file                2097136 0       6
      swap: /var/TKLC/swap/swap.7             file                2097136 0       7
Return string: "OK"
     write: Successfully read from file system "/".
     write: Successfully read from file system "/boot".
     write: Successfully read from file system "/usr".
     write: Successfully read from file system "/var".
     write: Successfully read from file system "/var/TKLC".
     write: Successfully read from file system "/var/TKLC/swap".
     write: Successfully read from file system "/tmp".
     write: Successfully read from file system "/var/TKLC/elap/rt".
     write: Successfully read from file system "/var/TKLC/elap/db".
     write: Successfully read from file system "/var/TKLC/elap/logs".
     write: Successfully read from file system "/var/TKLC/elap/free".
Return string: "OK"
     smart: Finished examining logs for disk: sda.
     smart: Finished examining logs for disk: sdb.
     smart: SMART status OK.
```

```
Return string: "OK"
                                OK
Running modules in class hardware...
fancontrol: Checking Server Fan Controls.
fancontrol: Saving current DCC and manual control values before proceeding.
fancontrol: Recording fan speeds at 100%.
fancontrol: Device: mon0,Fan_C1: 2960 RPM (div = 8, min = 1394 RPM), CHIP: lm87-i2c-0-2d
fancontrol: Device: mon0,Fan_C2: 3068 RPM (div = 8, min = 1394 RPM), CHIP: lm87-i2c-0-2d
fancontrol: Device: mon1,Fan_A1: 2928 RPM (min = 1398 RPM), CHIP: lm93-i2c-0-2e
fancontrol: Device: mon1,Fan_A2: 2890 RPM (min = 1398 RPM), CHIP: lm93-i2c-0-2e
fancontrol: Device: mon1,Fan_B1: 2848 RPM (min = 1398 RPM), CHIP: lm93-i2c-0-2e
fancontrol: Device: mon1,Fan_B2: 2973 RPM (min = 1398 RPM), CHIP: lm93-i2c-0-2e
fancontrol: Testing fan controls at 0% with delta of 1000.
fancontrol: Device: mon0,Fan_C1: 1721 RPM (div = 8, min = 1394 RPM), CHIP: lm87-i2c-0-2d OK.
Delta: 1239.
fancontrol: Device: mon0,Fan_C2: 1757 RPM (div = 8, min = 1394 RPM), CHIP: lm87-i2c-0-2d OK.
Delta: 1311.
fancontrol: Device: mon1,Fan_A1: 1739 RPM (min = 1398 RPM), CHIP: lm93-i2c-0-2e OK.  Delta:
1189.
fancontrol: Device: mon1,Fan_A2: 1732 RPM (min = 1398 RPM), CHIP: lm93-i2c-0-2e OK.  Delta:
1158.
fancontrol: Device: mon1,Fan_B1: 1755 RPM (min = 1398 RPM), CHIP: lm93-i2c-0-2e OK.  Delta:
1093.
fancontrol: Device: mon1,Fan_B2: 1778 RPM (min = 1398 RPM), CHIP: lm93-i2c-0-2e OK.  Delta:
1195.
fancontrol: Server Fan Controls OK.
Return string: "OK"
   breaker: No breaker alarm on /dev/ttyS2 breaker panel.
   breaker: No power feed alarm on /dev/ttyS2 breaker panel.
Return string: "OK"
cmosbattery: Checking CMOS battery voltage.
cmosbattery: CMOS Voltage OK. mon1,battv_mon: +3.14 V (min = +2.00 V, max = +3.30 V), CHIP:
lm93-i2c-0-2e
cmosbattery: ALL CMOS Battery Voltages OK.
Return string: "OK"
       fan: Checking Status of Server Fans.
       fan: Fan is OK. mon0,Fan_C1: 1834 RPM (div = 8, min = 1394 RPM), CHIP: lm87-i2c-0-2d
       fan: Fan is OK. mon0,Fan_C2: 1896 RPM (div = 8, min = 1394 RPM), CHIP: lm87-i2c-0-2d
       fan: Fan is OK. mon1,Fan_A1: 1739 RPM (min = 1398 RPM), CHIP: lm93-i2c-0-2e
       fan: Fan is OK. mon1,Fan_A2: 1732 RPM (min = 1398 RPM), CHIP: lm93-i2c-0-2e
       fan: Fan is OK. mon1,Fan_B1: 1755 RPM (min = 1398 RPM), CHIP: lm93-i2c-0-2e
       fan: Fan is OK. mon1,Fan_B2: 1778 RPM (min = 1398 RPM), CHIP: lm93-i2c-0-2e
       fan: Server Fan Status OK.
Return string: "OK"
       psu: Checking status of Server Power Feeds.
       psu: Power feed OK. powera: ON, CHIP: Power Monitor
       psu: Power feed OK. powerb: ON, CHIP: Power Monitor
       psu: Checking status of Server Supplies.
       psu: Power supply OK. Status: OK, CHIP: pcf8574-i2c-0-22
       psu: Power supply OK. Status: OK, CHIP: pcf8574-i2c-0-23
Return string: "OK"
      temp: Checking server temperature.
      temp: Server Temp OK. mon0,AmbT: +29 C (high = +60˚C, warn = +57˚C, low = +0˚C), CHIP:
lm87-i2c-0-2d
      temp: Server Temp OK. mon0,amb_cpu0_temp: +35 C (high = +60˚C, warn = +57˚C, low =
+0˚C), CHIP: lm87-i2c-0-2d
      temp: Server Temp OK. mon0,amb_ddr_temp: +32 C (high = +65˚C, warn = +61˚C, low = +0˚C),
CHIP: lm87-i2c-0-2d
      temp: Server Temp OK. mon1,cpu0: +40 C (high = +80˚C, warn = +76˚C, low = +0˚C), CHIP:
lm93-i2c-0-2e
      temp: Server Temp OK. mon1,cpu1: +38 C (high = +80˚C, warn = +76˚C, low = +0˚C), CHIP:
lm93-i2c-0-2e
      temp: Server Temp OK. mon1,AmbT: +33 C (high = +65˚C, warn = +61˚C, low = +0˚C), CHIP:
lm93-i2c-0-2e
      temp: Server Temp OK. !Prochot #1: Throttle Percent = 0, Throttle Percent Average = 0,
CHIP: lm93-i2c-0-2e
      temp: Server Temp OK. !Prochot #2: Throttle Percent = 0, Throttle Percent Average = 0,
CHIP: lm93-i2c-0-2e
      temp: Server Temp OK. !VRD Hot #1: 0, CHIP: lm93-i2c-0-2e
      temp: Server Temp OK. !VRD Hot #2: 0, CHIP: lm93-i2c-0-2e
Return string: "OK"
   voltage: Checking server voltages.
```

```
   voltage: Voltage is OK. mon0,+V1_8: +1.80 V (min = +1.72 V, max = +1.88 V), CHIP:
lm87-i2c-0-2d
   voltage: Voltage is OK. mon0,+V3_3: +3.30 V (min = +3.16 V, max = +3.44 V), CHIP:
lm87-i2c-0-2d
   voltage: Voltage is OK. mon0,+V5_pci: +5.00 V (min = +4.74 V, max = +5.26 V), CHIP:
lm87-i2c-0-2d
   voltage: Voltage is OK. mon0,+V12: +12.00 V (min = +11.38 V, max = +12.63 V), CHIP:
lm87-i2c-0-2d
   voltage: Voltage is OK. mon1,+V1.5: +1.49 V (min = +1.42 V, max = +1.57 V), CHIP:
lm93-i2c-0-2e
   voltage: Voltage is OK. mon1,VCC_CPU0: +1.30 V (min = +1.16 V, max = +1.35 V), CHIP:
lm93-i2c-0-2e
   voltage: Voltage is OK. mon1,VCC_CPU1: +1.30 V (min = +1.16 V, max = +1.35 V), CHIP:
lm93-i2c-0-2e
   voltage: Voltage is OK. mon1,+V5_0: +5.02 V (min = +4.76 V, max = +5.25 V), CHIP:
lm93-i2c-0-2e
   voltage: Voltage is OK. mon1,VTT: +1.20 V (min = +1.13 V, max = +1.26 V), CHIP:
lm93-i2c-0-2e
   voltage: Voltage is OK. mon1,+V3_3: +3.33 V (min = +3.14 V, max = +3.46 V), CHIP:
lm93-i2c-0-2e
   voltage: Voltage is OK. mon1,CPU0_VID: +1.337 V, CHIP: lm93-i2c-0-2e
   voltage: Voltage is OK. mon1,CPU1_VID: +1.337 V, CHIP: lm93-i2c-0-2e
   voltage: Server Voltages OK.
Return string: "OK"
Return string: "OK"
                                OK
Running modules in class net...
defaultroute: Module is disabled.
      ping: prova-ip network connection OK
      ping: provb-ip network connection OK
      ping: dsmm-a network connection OK
      ping: dsmm-b network connection OK
      ping: dsmb-a network connection OK
      ping: dsmb-b network connection OK
      ping: sync-a network connection OK
      ping: sync-b network connection OK
Return string: "OK"
                                OK
Running modules in class proc...
       ntp: *LOCAL(0)        LOCAL(0)        13 l   62   64  377    0.000    0.000   0.008
Return string: "OK"
       run: Checking smartd...
       run: Found 1 instance(s) of the smartd process.
       run: Checking atd...
       run: Found 1 instance(s) of the atd process.
       run: Checking crond...
       run: Found 1 instance(s) of the crond process.
       run: Checking sshd...
       run: Found 2 instance(s) of the sshd process.
       run: Checking syscheck...
       run: Found 1 instance(s) of the syscheck process.
       run: Checking syslogd...
       run: Found 1 instance(s) of the syslogd process.
       run: Checking jrs... * run: ::MINOR:: 5000000000000002 -- Server Application Process Error
run: Only 0 instance(s) of jrs running. 1 instance(s) required!
       run: Checking maint... * run: ::MINOR:: 5000000000000002 -- Server Application Process Error
run: Only 0 instance(s) of maint running. 1 instance(s) required!
       run: Checking rtdb... * run: ::MINOR:: 5000000000000002 -- Server Application Process Error
run: Only 0 instance(s) of rtdb running. 1 instance(s) required!
      run: Checking topnode... * run: ::MINOR:: 5000000000000002 -- Server Application Process Error
run: Only 0 instance(s) of topnode running. 2 instance(s) required!
       run: Checking prov... * run: ::MINOR:: 5000000000000002 -- Server Application Process Error
run: Only 0 instance(s) of prov running. 1 instance(s) required!
       run: Checking provRMTP... * run: ::MINOR:: 5000000000000002 -- Server Application Process
Error run: Only 0 instance(s) of provRMTP running. 4 instance(s) required!
       run: Checking provRcvr... * run: ::MINOR:: 5000000000000002 -- Server Application Process
Error run: Only 0 instance(s) of provRcvr running. 4 instance(s) required!
       run: Checking exinit...
       run: Found 1 instance(s) of the exinit process.
       run: Checking gs...
       run: Found 1 instance(s) of the gs process.
       run: Checking mysqld...
```

```
       run: Found 1 instance(s) of the mysqld process.
       run: Checking httpd...
       run: Found 1 instance(s) of the httpd process. Return string: "Absolute threshold of running
processes was not met." One or more module in class "proc" FAILED
Running modules in class system...
       cpu: Found "4" CPU(s)... OK
       cpu: CPU 0 is on-line... OK
       cpu: CPU 0 speed: 3200.227 MHz... OK
       cpu: CPU 1 is on-line... OK
       cpu: CPU 1 speed: 3200.227 MHz... OK
       cpu: CPU 2 is on-line... OK
       cpu: CPU 2 speed: 3200.227 MHz... OK
       cpu: CPU 3 is on-line... OK
       cpu: CPU 3 speed: 3200.227 MHz... OK
Return string: "OK"
       mem: Expected memory found
       mem: Skipping minimum expected memory check.
       mem: 8400478208 bytes (~8011.3203125 Mb) of RAM installed.
Return string: "OK"
Return string: "OK"
                                OK
No modules selected in class: services...


Failures occured during system check. The failure log is available at:
  -->/var/TKLC/log/syscheck/fail_log

MI::Unable to connect to maint process.
Alarm dispatch utility No such file or directory is not functioning. No message was sent.
Will turn lights on|off only. Server alarm string = 1000000000000000.
MI::Unable to connect to maint process.
Alarm dispatch utility No such file or directory is not functioning. No message was sent.
Will turn lights on|off only. Server alarm string = 2000000000000000.
MI::Unable to connect to maint process.
Alarm dispatch utility No such file or directory is not functioning. No message was sent.
Will turn lights on|off only. Server alarm string = 3000000000000000.
MI::Unable to connect to maint process.
Alarm dispatch utility No such file or directory is not functioning. No message was sent.
Will turn lights on|off only. Server alarm string = 4000000000000000.
MI::Unable to connect to maint process.
Alarm dispatch utility No such file or directory is not functioning. No message was sent.
Will turn lights on|off only. Server alarm string = 5000000000000002.
MI::Unable to connect to maint process.
Alarm dispatch utility No such file or directory is not functioning. No message was sent.
Will turn lights on|off only. Server alarm string = 6000000000000000.
```

NOTE: When errors occur, the `syscheck` output also includes the alarm number and text that is generated. The example above highlights the alarm in bold text. For the explanation of alarm codes in the alarm strings and how to respond to them, refer to Chapter 4 MPS Platform and Application Alarms.

Recovering from Problems

This section describes the following recovery procedures:

- Restoring the RTDB from Backup Files
- Recovering From Alarms

Restoring the RTDB from Backup Files

This section describes the procedure for restoring the RTDB from backup files.

NOTE : Tekelec recommends that the RTDB be backed up daily (see section, Daily Maintenance).

NOTE: The RTDB for ELAP Release 4.0 and later CANNOT be restored from backups made on an ELAP release earlier than 4.0.

Use the following procedure to restore the RTDB from a previously prepared backup file.

CAUTION: Contact the Customer Care Center before performing this procedure.

Procedure

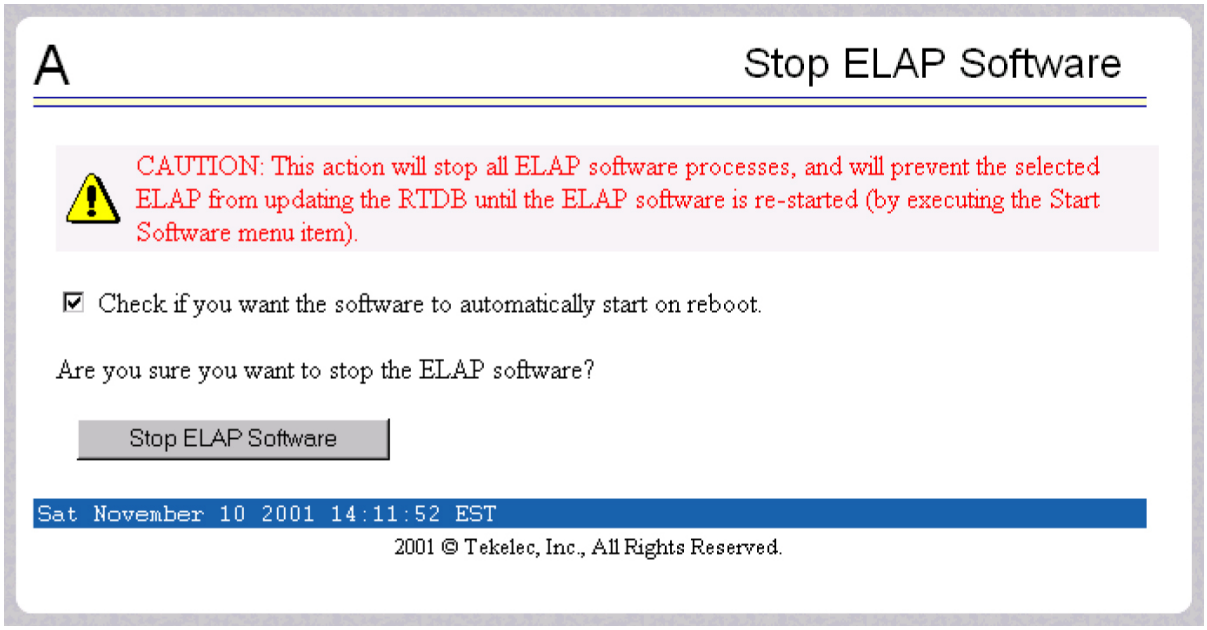
1. Contact the Customer Care Center .
2. Log in to the ELAP command line interface with user name **elapdev** and the password associated with that user name.
3. Use the Secure File Transfer Protocol (**sftp**) to transfer the RTDB backup file, whose name was recorded in Step 10 of Backing Up the RTDB , to the following location:

   ```
   /var/TKLC/elap/free/
   ```

4. Log in to the ELAP GUI (see Accessing the ELAP GUI Interface).
5. Select **Process Control>Stop Software** to ensure that no other updates are occurring.

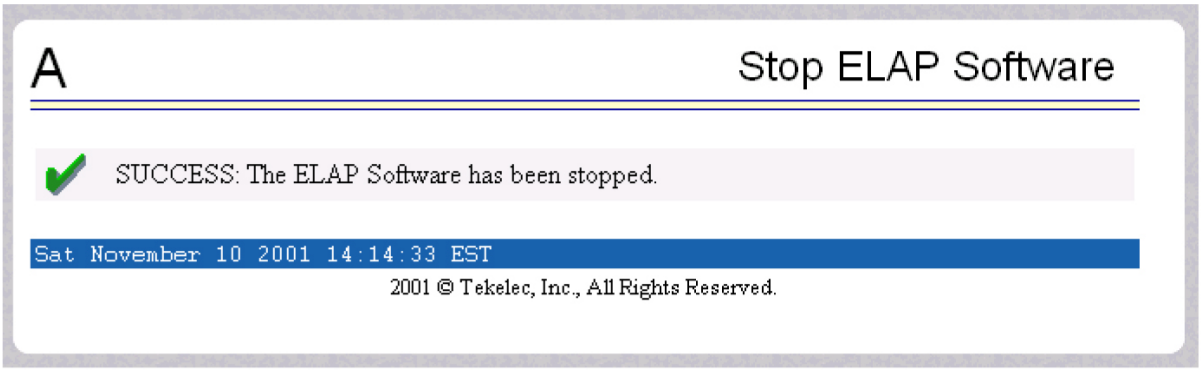
   The screen shown in **Figure 3-15** is displayed.

Figure 3-15. Stop ELAP Software



After the software on the selected ELAP has stopped, the screen shown in **Figure 3-16** is displayed.

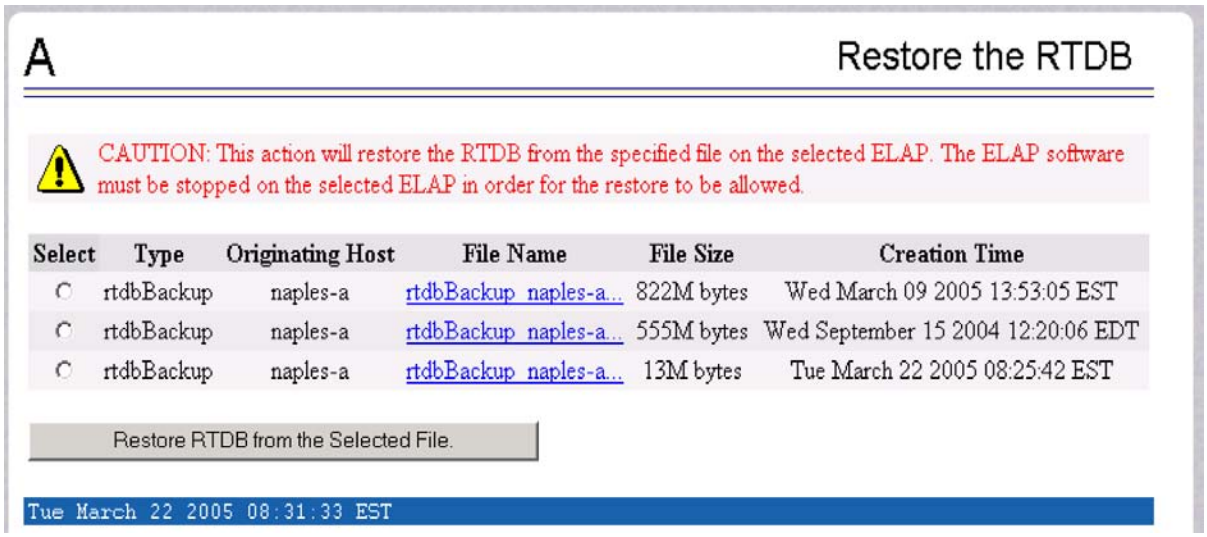
Figure 3-16. Stop ELAP Software - Success



6. Select **RTDB>Maintenance>Restore RTDB**.

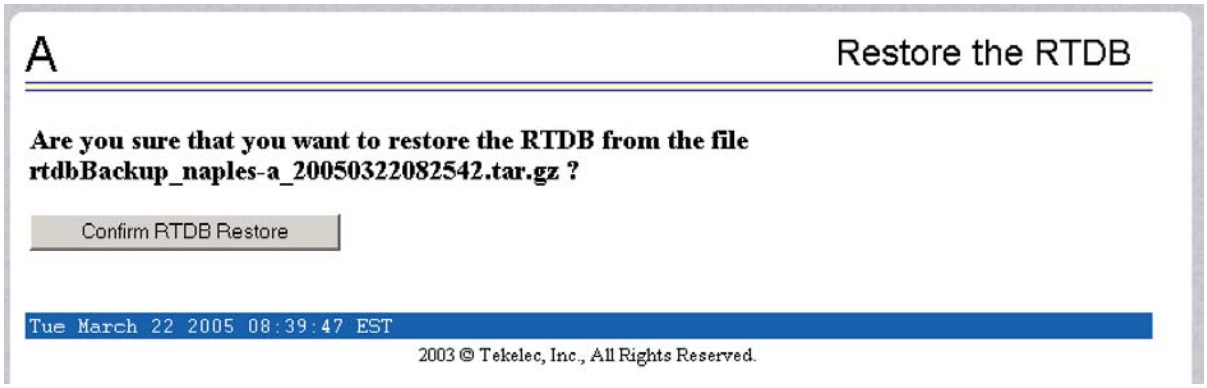
   The screen shown in **Figure 3-17** is displayed.

Figure 3-17. Restoring the RTDB



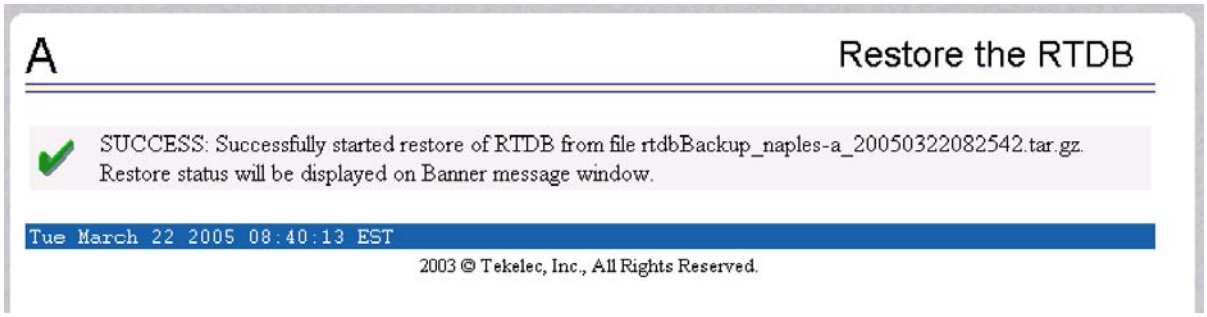
7. On the screen shown in **Figure 3-17** , select the file that was transferred in Step 3 . Click **Restore the RTDB from the Selected File**.
8. To confirm restoring a file, click **Confirm RTDB Restore** shown in **Figure 3-18** .

Figure 3-18. Restore the RTDB Confirm



After the file is successfully restored, the screen shown in **Figure 3-19** is displayed.

Figure 3-19. Restore the RTDB - Success



Recovering From Alarms

Alarms are resolved in order of severity level from highest to lowest. When combination alarms are decoded into their individual component alarms, the customer can decide in which order to resolve the alarms because all alarms are of equal severity. For assistance in deciding which alarm to resolve first or how to perform a recovery procedure, contact the Customer Care Center .

Evaluate the following problems to find the appropriate recovery procedure as follows:

- If the problem being investigated **is no longer displayed** on the ELAP GUI, perform the following:
  1. Procedure Decode Alarm Strings
  2. Procedure Determine Alarm Cause
  3. Recovery procedure to which you are directed by procedure Determine Alarm Cause
- If the problem being investigated **is being reported currently** on the ELAP GUI, perform the following:
  1. ProcedureDetermine Alarm Cause
  2. Recovery procedure to which you are directed by procedure Determine Alarm Cause

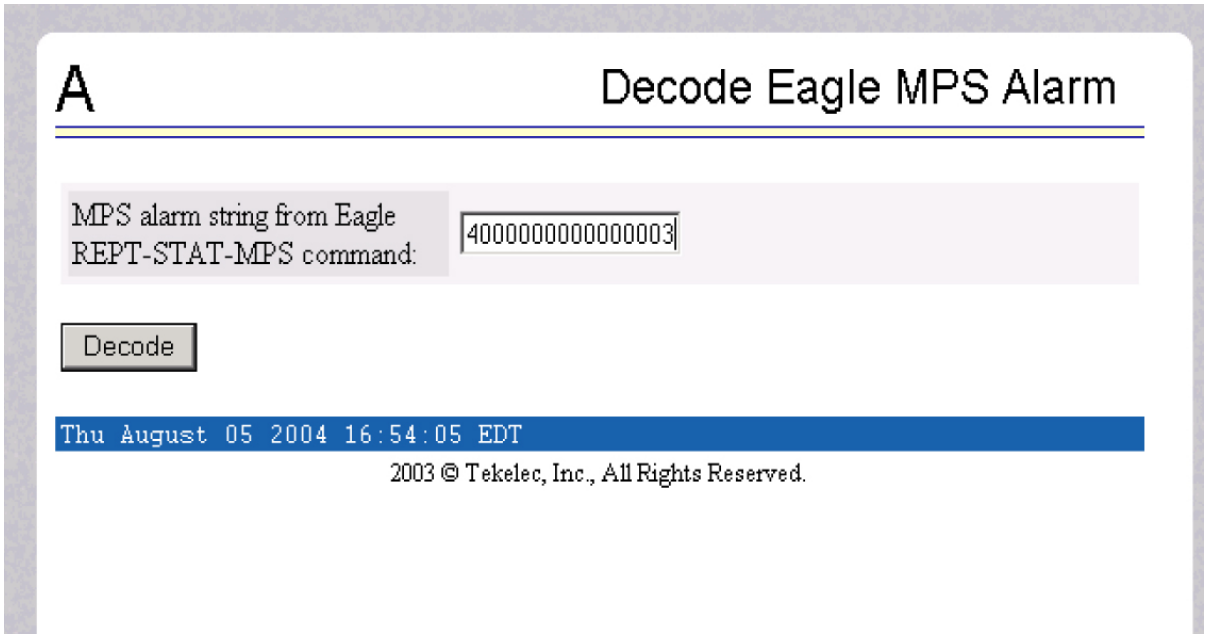
Decode Alarm Strings

Use the following procedure to decode alarm strings that consist of multiple alarms.

Procedure

1. Log in to the **User Interface** screen of the ELAP GUI (see Accessing the ELAP GUI Interface).
2. After logging in to the ELAP, select **Maintenance>Decode MPSAlarm** from the menu.
3. Enter the 16-digit alarm string into the window on the **Decode MPSAlarm** screen, as shown in **Figure 3-20** .

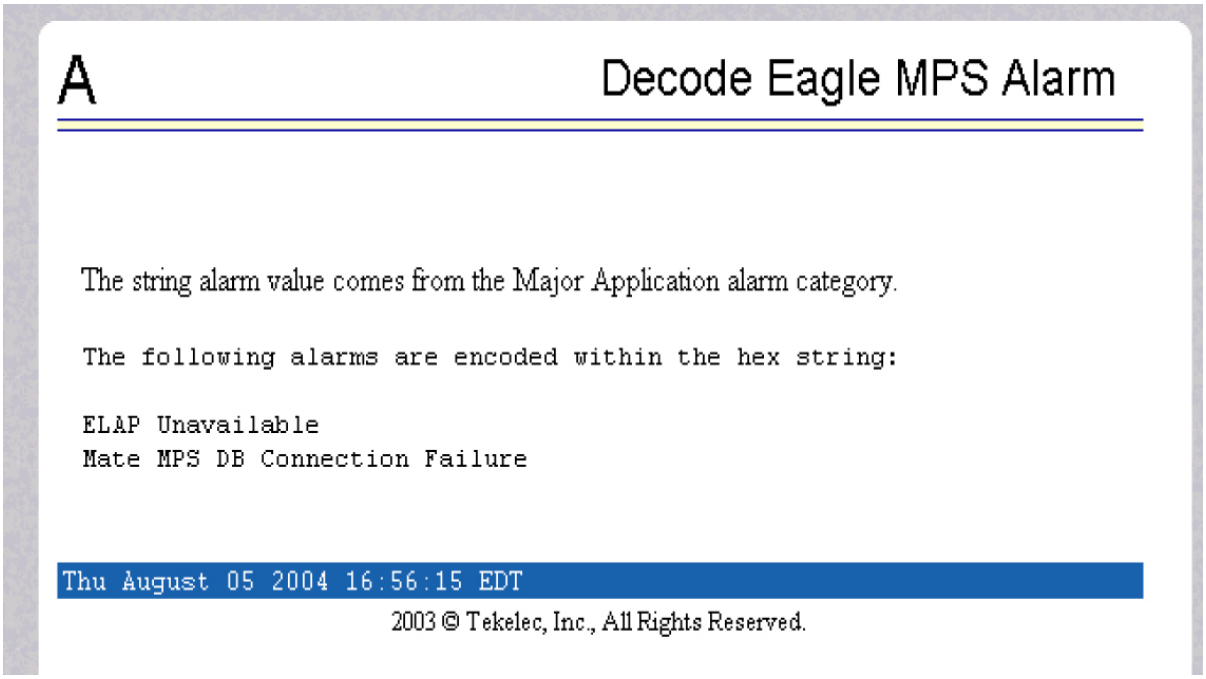
Figure 3-20. Decode MPS Alarm Screen



4. Click the **Decode** button.

   The system returns information on the Alarm Category (Critical Application, Major Platform) and error text, as shown in **Figure 3-21** .

Figure 3-21. Decoded MPS Alarm Information



5. Find the alarm text string shown on the GUI in **Table 4-1** . Note the corresponding alarm number change. Perform procedure Determine Alarm Cause .

   NOTE: For combination errors, multiple procedures may be required to resolve the problem.

Determine Alarm Cause

Use this procedure to find information about recovering from an alarm.

Procedure

1. Record the alarm data string shown in the banner or the Alarm View on the ELAPGUI , or as decoded from Decode Alarm Strings .
2. Run **`syscheck`** in Verbose mode (see Running syscheck Through the ELAP GUI).
3. Examine the **`syscheck`** output for specific details about the alarm.
4. Find the recovery procedure for the alarm in the procedures shown in Chapter 4 MPS Platform and Application Alarms. The alarms are ordered by ascending alarm number.

   Other procedures may be required to complete an alarm recovery procedure:

   - Refer to procedures for replacing Field Replaceable Units (FRUs) in Chapter 5 MPS Field Replaceable Units if instructed by an alarm recovery procedure to replace a FRU.
   - Refer to general procedures used in a number of alarm recovery procedures in Appendix A General Procedures.

5. If the alarm persists after performing the appropriate procedure, call the Customer Care Center .

4

MPS Platform and Application Alarms

Introduction

This chapter describes recovery procedures to use when an alarm condition or other problem exists on the MPS system. For information about how and when alarm conditions are detected and reported, see Detecting and Reporting Problems .

When an alarm code is reported, locate the alarm in **Table 4-1** . The procedures for correcting alarm conditions are described in MPS Alarm Recovery Procedures .

> **NOTE: Sometimes the alarm string may consist of multiple alarms and will have to be decoded in order to use the MPSAlarm Recovery Procedures in this manual. If the alarm code is not listed in Table 4-1 , "Platform and Application Alarms," see Decode Alarm Strings .**

Platform and application errors are grouped by category and severity. The categories are listed from most to least severe:

- Critical Platform Alarms
- Critical Application Alarms
- Major Platform Alarms
- Major Application Alarms
- Minor Platform Alarms
- Minor Application Alarms

Table 4-1 shows the alarm numbers and alarm text for all alarms generated by the MPS platform and the ELAP application. The order within a category is not significant.

Table 4-1. Platform and Application Alarms

Alarm Codes and Error Descriptor	UAM Number
Critical Platform Errors	
1000000000000200 - Uncorrectable ECC Memory Error	0370
Critical Application Errors	
2000000000000001 - LSMS DB Maintenance Required	0371
Major Platform Errors	
3000000000000001 - Server Fan Failure	0372
3000000000000002 - Server Internal Disk Error	0372
3000000000000008 - Server Platform Error	0372
3000000000000010 - Server File System Error	0372
3000000000000020 - Server Platform Process Error	0372
3000000000000080 - Server Swap Space Shortage Failure	0372
3000000000000100 - Server Provisioning Network Error	0372
3000000000000200 - Server Eagle Network A Error	0372
3000000000000400 - Server Eagle Network B Error	0372
3000000000000800 - Server Sync Network Error	0372
3000000000001000 - Server Disk Space Shortage Error	0372
3000000000002000 - Server Default Route Network Error	0372
3000000000004000 - Server Temperature Error	0372
3000000000008000 - Server Mainboard Voltage Error	0372
3000000000010000 - Server Power Feed Unavailable	0372
3000000000020000 - Server Disk Health Test Error	0372
3000000000040000 - Server Disk Unavailable Error	0372
3000000000200000 - Correctable ECC Memory Error	0372
3000000000400000 - Server Power Supply 1 Error	0372
3000000000800000 - Server Power Supply 2 Error	0372
3000000001000000 - Breaker Panel Feed Error	0372
3000000002000000 - Breaker Panel Breaker Error	0372
3000000004000000 - Breaker Panel Monitoring Error	0372
Major Application Errors	

Alarm Codes and Error Descriptor	UAM Number
4000000000000001 - Mate ELAP Unavailable	0373
4000000000000002 - RTDB Mate Unavailable	0373
4000000000000004 - Congestion	0373
4000000000000020 - RMTP Channels Down	0373
4000000000000040 - Fatal Software Error	0373
4000000000000080 - RTDB Corrupt	0373
4000000000000100 - RTDB Inconsistent	0373
4000000000000200 - RTDB Incoherent	0373
4000000000000400 - JRS to RTDB Connection Down	0373
4000000000000800 - Transaction Log Full	0373
4000000000001000 - RTDB 100% Full	0373
4000000000002000 - RTDB Resynchronization in Progress	0373
4000000000004000 - RTDB Reload Is Required	0373
4000000000040000 - RTDB DSM Over-Allocation	0375
4000000000080000 - RTDB Maximum Depth Reached	0375
Minor Platform Errors	
5000000000000001 - Server Disk Space Shortage Warning	0374
5000000000000002 - Server Application Process Error	0374
5000000000000004 - Server Hardware Configuration Error	0374
5000000000000020 - Server Swap Space Shortage Warning	0374
5000000000000040 - Server Default Router Not Defined	0374
5000000000000080 - Server Temperature Warning	0374
5000000000000100 - Server Core File Detected	0374
5000000000000200 - Server NTP Daemon Not Synchronized	0374
5000000000000400 - Server CMOS Battery Voltage Low	0374
5000000000000800 - Server Disk Self Test Warning	0374
5000000000004000 - Server Reboot Watchdog Initiated	0374
Minor Application Errors	
6000000000000001 - RMTP Channel A Down	0375
6000000000000002 - RMTP Channel B Down	0375
6000000000000008 - RTDB 80% Full	0375
6000000000000010 - Minor Software Error	0375
6000000000000040 - RTDB Tree Error	0375
NOTE: The order within a category is not significant.	

MPS Alarm Recovery Procedures

This section provides recovery procedures for the MPS and ELAP alarms, listed by alarm category and Alarm Code (alarm data string) within each category.

Critical Platform Alarms

Critical platform alarms are issued if uncorrectable memory problems are detected.

1000000000000200 - Uncorrectable ECC Memory Error

This alarm indicates that chipset has detected an uncorrectable (multiple-bit) memory error that the Error-Correcting Code (ECC) circuitry in the memory is unable to correct.

Procedure

1. Contact the Customer Care Center to request hardware replacement.

Critical Application Alarms

This section describes the critical application alarms.

2000000000000001 - LSMS DB Maintenance Required

This alarm indicates that database maintenance is required.

Procedure

1. Call Customer Care Center for assistance.

Major Platform Alarms

Major platform alarms involve MPS hardware components, memory, and network connections.

3000000000000001 - Server Fan Failure

This alarm indicates that one or more of the fans in the system has failed.

> **NOTE: For this alarm to clear, the underlying failure condition must be consistently undetected for a number of polling intervals. Therefore, the alarm may continue to be reported for several minutes after corrective actions are completed.**

Procedure

1. Refer to the procedure for replacing a fan assembly in the *Tekelec 1100 Application Server Hardware Manual*.

   With the front lid open to access the fan assemblies, determine whether an object is interfering with the fan rotation. If an object is interfering with fan rotation, remove the object and go to Step 3 .
2. If visual inspection does not indicate the presence of physical interference, perform the following substeps to determine which server fan assembly needs replacing and to replace the fan assembly.

   a. Run **syscheck** in Verbose mode (see Running the System Health Check).

   Find the section of **syscheck** output about fans, which looks similar to the following:

```
fan: Checking Status of Server Fans.
```

```
       fan: Fan is OK. mon0,Fan_C1: 1896 RPM (div = 8, min = 1394 RPM), CHIP: lm87-
i2c-0-2d
       fan: Fan is OK. mon0,Fan_C2: 2191 RPM (div = 8, min = 1394 RPM), CHIP: lm87-
i2c-0-2d
       fan: Fan is OK. mon1,Fan_A1: 1867 RPM (min = 1398 RPM), CHIP: lm93-i2c-0-2e
       fan: Fan is OK. mon1,Fan_A2: 1867 RPM (min = 1398 RPM), CHIP: lm93-i2c-0-2e
*      fan: ::MAJOR:: 3000000000000001 -- Server Fan Failure
       fan: Fan RPM is too low, mon1,Fan_B1: 0 RPM (min = 1398 RPM), CHIP: lm93-i2c-0-2e
*      fan: ::MAJOR:: 3000000000000001 -- Server Fan Failure
       fan: Fan RPM is too low, mon1,Fan_B2: 0 RPM (min = 1398 RPM), CHIP: lm93-i2c-0-2e
Return string: "One or more fans failed status check."
```

b. Use the **syscheck** output and **Table 4-2** to determine which fan assembly contains the failed fan.

For example, the sample **syscheck** output above lists the fans labeled as **Fan_B1** and **Fan_B2** as failed, indicating that the right rear fan assembly needs to be replaced.

Table 4-2. Mapping Fan Assembly Name to Location

Fan Assembly Name Used by syscheck	Fan Assembly Location
A	Right front fan assembly
B	Right rear fan assembly
C	Left fan assembly

c. Replace the indicated fan tray using the procedure for replacing a fan assembly in the *Tekelec 1100 Application Server Hardware Manual*, then go to Step 3.

3. Run **syscheck** (see Running the System Health Check).

- If the alarm has been cleared, the problem is resolved.
- If the alarm has not been cleared, continue to the next step.

4. If the problem has not been resolved, contact the Customer Care Center.

3000000000000002 - Server Internal Disk Error

This alarm indicates that the server is experiencing issues replicating data to one or more of its mirrored disk drives. This could indicate that one of the server disks has failed or is approaching failure.

Procedure

1. Run **syscheck** in Verbose mode (see Running the System Health Check).
2. Call the Customer Care Center and provide the system health check output.

3000000000000008 - Server Platform Error

This alarm indicates a major platform error such as a corrupt system configuration or missing files, or indicates that **syscheck** itself is corrupt.

Procedure

1. Run **syscheck** in Verbose mode (see Running the System Health Check).
2. Call the Customer Care Center and provide the system health check output.

3000000000000010 - Server File System Error

This alarm indicates that **syscheck** was unsuccessful in writing to at least one of the server file systems.

Procedure

1. Call Customer Care Center for assistance.

3000000000000020 - Server Platform Process Error

This alarm indicates that either the minimum number of instances for a required process are not currently running or too many instances of a required process are running.

Procedure

1. Contact Customer Care Center for recovery procedures.

3000000000000080 - Server Swap Space Shortage Failure

This alarm indicates that the server's swap space is in danger of being depleted. This is usually caused by a process that has allocated a very large amount of memory over time.

> **NOTE: In order for this alarm to clear, the underlying failure condition must be consistently undetected for a number of polling intervals. Therefore, the alarm may continue to be reported for several minutes after corrective actions are completed.**

Procedure

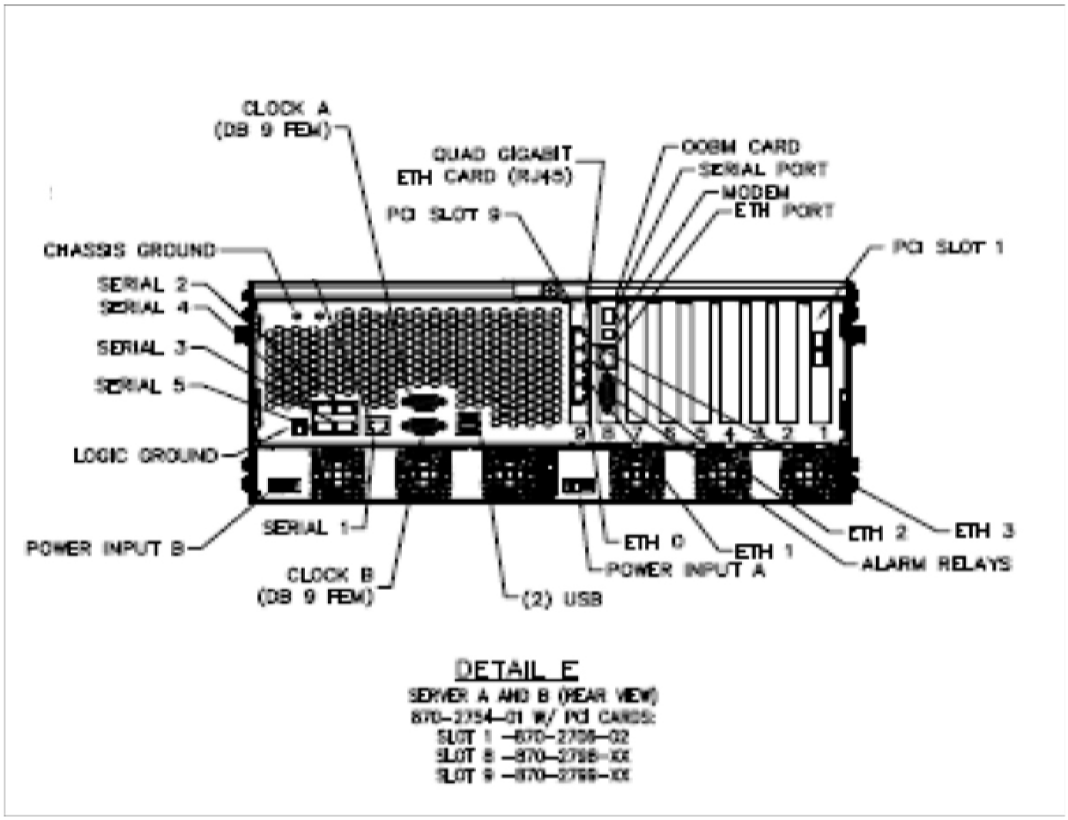
1. Call Customer Care Center for assistance.

3000000000000100 - Server Provisioning Network Error

This alarm indicates that the connection between the server **eth0** interface and the customer network is not functioning properly. The **eth0** interface is at the bottom of the Quad Gigabit Eth Card in PCI slot 9, as shown in **Figure 4-1** .

> **NOTE: The interface identified as eth0 in the hardware is identified as eth91 by software (for example, in syscheck output).**

Figure 4-1. T1100 MPS Server Rear View



Procedure

1. Perform the following substeps to verify that the network configuration is correct.

a. Log in as **`elapconfig`** on the MPS console.

Enter option **`1`**, **`Display Configuration`**, from the ELAP Configuration Menu.

```
 /-----ELAP Configuration Menu----------\
/----------------------------------------\
|  1 | Display Configuration             |
|----|-----------------------------------|
|  2 | Configure Network Interfaces Menu |
|----|-----------------------------------|
|  3 | Set Time Zone                     |
|----|-----------------------------------|
|  4 | Exchange Secure Shell Keys        |
|----|-----------------------------------|
|  5 | Change Password                   |
|----|-----------------------------------|
|  6 | Platform Menu                     |
|----|-----------------------------------|
|  7 | Configure NTP Server              |
|----|-----------------------------------|
|  e | Exit                              |
\----------------------------------------/
Enter Choice:  1
```

Output similar to the following is displayed. The network configuration information related to the provisioning network is highlighted in bold.

```
MPS Side A:  hostname: bahamas-a  hostid: a8c0ca3d
             Platform Version: 2.0.2-4.0.0_50.26.0
             Software Version: ELAP 1.0.1-4.0.0_50.31.0
             Wed Sep  7 15:05:55 EDT 2005
ELAP A Provisioning Network IP Address = 192.168.61.202
ELAP B Provisioning Network IP Address = 192.168.61.203
Provisioning Network Netmask = 255.255.255.0
Provisioning Network Default Router = 192.168.61.250
ELAP A Backup Prov Network IP Address  = Not configured
ELAP B Backup Prov Network IP Address  = Not configured
Backup Prov Network Netmask            = Not configured
Backup Prov Network Default Router     = Not configured
ELAP A Sync Network Address            = 192.168.2.100
ELAP B Sync Network Address            = 192.168.2.200
ELAP A Main DSM Network Address        = 192.168.120.100
ELAP B Main DSM Network Address        = 192.168.120.200
ELAP A Backup DSM Network Address      = 192.168.121.100
ELAP B Backup DSM Network Address      = 192.168.121.200
ELAP A HTTP Port                       = 80
ELAP B HTTP Port                       = 80
ELAP A HTTP SuExec Port                = 8001
ELAP B HTTP SuExec Port                = 8001
ELAP A Banner Connection Port          = 8473
ELAP B Banner Connection Port          = 8473
ELAP A Static NAT Address              = Not configured
ELAP B Static NAT Address              = Not configured
ELAP A LSMS Connection Port            = 7483
ELAP B LSMS Connection Port            = 7483
ELAP A EBDA Connection Port            = 1030
ELAP B EBDA Connection Port            = 1030
Time Zone                              = America/New_York

Press return to continue...
```

b. Verify that the provisioning network IP address, netmask, and network default router IP address for the server reporting this alarm are correct.

If configuration changes are needed, refer to the *ELAP Administration Manual*.

2. Verify that the customer-supplied cable labeled **TO CUSTOMER NETWORK** is securely connected to the lower port of the quad-port card in PCI slot 9. This port is labeled **eth0** in **Figure 4-1** .

Trace the cable to its connection point on the local network and verify that this connection is also secure.

3. Test the customer-supplied cable labeled **TO CUSTOMER NETWORK** with an Ethernet Line Tester.

If the cable does not test positive, replace it.

4. Request that your network administrator verify that the network is functioning properly.

5. If no other nodes on the local network are experiencing problems and the fault has been isolated to the server or the network administrator is unable to determine the exact origin of the problem, contact the Customer Care Center for assistance.

3000000000000200 - Server Eagle Network A Error

NOTE: If the three alarms 3000000000000200 - Server Eagle Network A Error , 3000000000000400 - Server Eagle Network B Error , and 3000000000000800 - Server Sync Network Error exist, the probable cause is a failed mate server.

This alarm indicates that there is an error in the Main DSM network, which connects to the DSM A ports. The error may be due to one or more of the following conditions:

- One or both of the servers is not operational.

- One or both of the hubs is not powered on.
- The link between the hubs is not working.
- The connection between MPS server A and MPS server B is not working.

To view the connections between the servers and the hubs of the DSM networks (main and backup), refer to the ELAP Interconnect T1100.

- The **eth1** interface is second port from the bottom of the quad-port card in PCI slot 9 on the server.
- Port 2 of hub 1 connects to the **eth1** interface on Server B.
- Port 2 of hub 2 connects to the **eth1** interface on Server A.

NOTE: The interface identified as eth1 in the hardware is identified as eth92 by software (for example, in `syscheck` output).

- Ports 4 through 16 on hubs 1 and 2 connect to the Main DSM ports (DSM A ports) on the EAGLE 5 ISS.

Procedure

1. Perform the following:

a. Verify that both servers are powered on by ensuring that the **POWER**LEDs on both servers are illuminated green.

b. Verify that the hub is powered on.

c. Verify that the hub does not have any fault lights illuminated.

2. Perform the following substeps to verify that the network configuration is correct.

a. Log in as **`elapconfig`** on the MPS console.

Enter option **`1`**, **`Display Configuration`**, from the ELAP Configuration Menu.

```
 /-----ELAP Configuration Menu----------\
/----------------------------------------\
|  1 | Display Configuration             |
|----|-----------------------------------|
|  2 | Configure Network Interfaces Menu |
|----|-----------------------------------|
|  3 | Set Time Zone                     |
|----|-----------------------------------|
|  4 | Exchange Secure Shell Keys        |
|----|-----------------------------------|
|  5 | Change Password                   |
|----|-----------------------------------|
|  6 | Platform Menu                     |
|----|-----------------------------------|
|  7 | Configure NTP Server              |
|----|-----------------------------------|
|  e | Exit                              |
\----------------------------------------/
Enter Choice:  1
```

Output similar to the following is displayed. The network configuration information related to the EAGLE Network A (the Main DSM network) is highlighted in bold.

```
MPS Side A:  hostname: bahamas-a  hostid: a8c0ca3d
             Platform Version: 2.0.2-4.0.0_50.26.0
             Software Version: ELAP 1.0.1-4.0.0_50.31.0
```

```
              Wed Sep  7 15:05:55 EDT 2005

ELAP A Provisioning Network IP Address = 192.168.61.202
ELAP B Provisioning Network IP Address = 192.168.61.203
Provisioning Network Netmask           = 255.255.255.0
Provisioning Network Default Router    = 192.168.61.250
ELAP A Backup Prov Network IP Address  = Not configured
ELAP B Backup Prov Network IP Address  = Not configured
Backup Prov Network Netmask            = Not configured
Backup Prov Network Default Router     = Not configured
ELAP A Sync Network Address            = 192.168.2.100
ELAP B Sync Network Address            = 192.168.2.200
ELAP A Main DSM Network Address = 192.168.120.100
ELAP B Main DSM Network Address = 192.168.120.200
ELAP A Backup DSM Network Address      = 192.168.121.100
ELAP B Backup DSM Network Address      = 192.168.121.200
ELAP A HTTP Port                       = 80
ELAP B HTTP Port                       = 80
ELAP A HTTP SuExec Port                = 8001
ELAP B HTTP SuExec Port                = 8001
ELAP A Banner Connection Port          = 8473
ELAP B Banner Connection Port          = 8473
ELAP A Static NAT Address              = Not configured
ELAP B Static NAT Address              = Not configured
ELAP A LSMS Connection Port            = 7483
ELAP B LSMS Connection Port            = 7483
ELAP A EBDA Connection Port            = 1030
ELAP B EBDA Connection Port            = 1030
Time Zone                              = America/New_York

Press return to continue...
```

b. Verify that the Main DSM Network IP address for the server reporting this alarm is correct.

If configuration changes are needed, refer to the *ELAP Administration Manual*.

3. Check the cable labeled from **HUB-*X* PORT 2 TO SERVER *Y* SLOT 9 ETH 1**. (***X*** is **2** and ***Y*** is **A**, if server A is reporting this alarm. ***X*** is **1** and ***Y*** is **B**, if server B is reporting this alarm.)

- Verify that the cable is securely connected to the **eth1** port (second port from the bottom of the quad-port card in PCI slot 9) on the server that is reporting the error.
- Trace the cable to the hub and verify that it is securely connected at port 2 on the hub.

4. Verify that the cable connecting the hubs is securely connected at both hubs.

This cable is labeled **FROM HUB 3 PORT 1 TO HUB 4 PORT 1X**.

5. Run **`syscheck`** (see Running the System Health Check).

- If the alarm is cleared, the problem is resolved.
- If the alarm is not cleared, go to Step 6 .

6. Verify that the cable from **eth1** on the server reporting the error to the hub tests positive with an Ethernet Line Tester. Replace any faulty cables.

7. If the problem persists, contact the Customer Care Center for assistance.

3000000000000400 - Server Eagle Network B Error

NOTE: If the three alarms 3000000000000200 - Server Eagle Network A Error , 3000000000000400 - Server Eagle Network B Error , and 3000000000000800 - Server Sync Network Error exist, the probable cause is a failed mate server.

This alarm indicates that there is an error in the Backup DSM network, which connects to the DSM B ports. The error may be due to one or more of the following conditions:

- One or both of the servers is not operational.
- One or both of the hubs is not powered on.
- The link between the hubs is not working.
- The connection between MPS server A and MPS server B is not working.

To view the connections between the servers and the hubs of the DSM networks (both main and backup), refer to the ELAP Interconnect T1100.

- The **eth2** interface is second port from the top of the quad-port card in PCI slot 9 on the server.
- Port 2 of hub 3 connects to the **eth2** interface on Server B.
- Port 2 of hub 4 connects to the **eth2** interface on Server A.

  NOTE: The interface identified as eth2 in the hardware is identified as eth93 by software (for example, in `syscheck` output).

- Ports 4 through 16 on hubs 3 and 4 connect to the Backup DSM ports (DSM B ports) on the EAGLE 5 ISS.

Procedure

1. Perform the following:

a. Verify that both servers are powered on by ensuring that the **POWER** LEDs on both servers are illuminated green.

b. Verify that the hub is powered on.

c. Verify that the hub does not have any fault lights illuminated.

2. Perform the following substeps to verify that the network configuration is correct.

a. Log in as **`elapconfig`** on the MPS console.

Enter option **`1`**, **`Display Configuration`**, from the ELAP Configuration Menu.

```
 /-----ELAP Configuration Menu----------\
/----------------------------------------\
|  1 | Display Configuration             |
|----|-----------------------------------|
|  2 | Configure Network Interfaces Menu |
|----|-----------------------------------|
|  3 | Set Time Zone                     |
|----|-----------------------------------|
|  4 | Exchange Secure Shell Keys        |
|----|-----------------------------------|
|  5 | Change Password                   |
|----|-----------------------------------|
|  6 | Platform Menu                     |
|----|-----------------------------------|
|  7 | Configure NTP Server              |
|----|-----------------------------------|
|  e | Exit                              |
```

```
\---------------------------------------/
Enter Choice:  1
```

Output similar to the following is displayed. The network configuration information related to the EAGLE Network B (the Backup DSM network) is highlighted in bold.

```
MPS Side A:  hostname: bahamas-a  hostid: a8c0ca3d
             Platform Version: 2.0.2-4.0.0_50.26.0
             Software Version: ELAP 1.0.1-4.0.0_50.31.0
             Wed Sep  7 15:05:55 EDT 2005

ELAP A Provisioning Network IP Address = 192.168.61.202
ELAP B Provisioning Network IP Address = 192.168.61.203
Provisioning Network Netmask           = 255.255.255.0
Provisioning Network Default Router    = 192.168.61.250
ELAP A Backup Prov Network IP Address  = Not configured
ELAP B Backup Prov Network IP Address  = Not configured
Backup Prov Network Netmask            = Not configured
Backup Prov Network Default Router     = Not configured
ELAP A Sync Network Address            = 192.168.2.100
ELAP B Sync Network Address            = 192.168.2.200
ELAP A Main DSM Network Address        = 192.168.120.100
ELAP B Main DSM Network Address        = 192.168.120.200
ELAP A Backup DSM Network Address = 192.168.121.100
ELAP B Backup DSM Network Address = 192.168.121.200
ELAP A HTTP Port                       = 80
ELAP B HTTP Port                       = 80
ELAP A HTTP SuExec Port                = 8001
ELAP B HTTP SuExec Port                = 8001
ELAP A Banner Connection Port          = 8473
ELAP B Banner Connection Port          = 8473
ELAP A Static NAT Address              = Not configured
ELAP B Static NAT Address              = Not configured
ELAP A LSMS Connection Port            = 7483
ELAP B LSMS Connection Port            = 7483
ELAP A EBDA Connection Port            = 1030
ELAP B EBDA Connection Port            = 1030
Time Zone                              = America/New_York

Press return to continue...
```

b. Verify that the Backup DSM Network IP address for the server reporting this alarm is correct.

If configuration changes are needed, refer to the *ELAP Administration Manual*.

3. Check the cable labeled from **HUB-*X* PORT 2 TO SERVER *Y* SLOT 9 ETH2**. (***X*** is **4** and ***Y*** is **A**, if server A is reporting this alarm. ***X*** is **3** and ***Y*** is **b**, if server B is reporting this alarm.)

a. Verify that the cable is securely connected to the **eth2** port (third port from the bottom of the quad-port card in PCI slot 9) on the server that is reporting the error.

b. Trace the cable to the hub and verify that it is securely connected at port 2 on the hub.

4. Verify that the cable connecting the hubs is securely connected at both hubs.

This cable is labeled **FROM HUB 3 PORT 1 TO HUB 4 PORT 1X.**

5. Run **`syscheck`** (see Running the System Health Check).

a. If the alarm is cleared, the problem is resolved.

b. If the alarm is not cleared, go to Step 6.

6. Verify that the cable from **eth2** on the server to the hub tests positive with an Ethernet Line Tester. Replace any faulty cables.

7. If the problem persists, contact the Customer Care Center.

3000000000000800 - Server Sync Network Error

> **NOTE: If the three alarms, 3000000000000200 - Server Eagle Network A Error , 3000000000000400 - Server Eagle Network B Error , and 3000000000000800 - Server Sync Network Error exist, the probable cause is a failed mate server.**

This alarm indicates that the **eth3** connection between the two servers is not functioning properly. This is the network over which the servers synchronize data with one another. The **eth3** interface is the upper port of PCI 9 on the server.

> **NOTE: The interface identified as eth3 in the hardware is identified as eth94 by software (for example, in `syscheck` output).**

A direct connection is made between the two servers; no hub is used in this connection. A straight-through Ethernet cable must be used for this connection, and all pairs are required.

Procedure

1. Verify that both servers are booted up by ensuring that the **POWER**LEDs on both servers are illuminated green.
2. Perform the following substeps to verify that the network configuration is correct.

   a. Log in as **`elapconfig`** on the MPS console.

   Enter option **`1`**, **`Display Configuration`**, from the ELAP Configuration Menu.

```
 /-----ELAP Configuration Menu----------\
/----------------------------------------\
|  1 | Display Configuration             |
|----|-----------------------------------|
|  2 | Configure Network Interfaces Menu |
|----|-----------------------------------|
|  3 | Set Time Zone                     |
|----|-----------------------------------|
|  4 | Exchange Secure Shell Keys        |
|----|-----------------------------------|
|  5 | Change Password                   |
|----|-----------------------------------|
|  6 | Platform Menu                     |
|----|-----------------------------------|
|  7 | Configure NTP Server              |
|----|-----------------------------------|
|  e | Exit                              |
\----------------------------------------/
Enter Choice:  1
```

   Output similar to the following is displayed. The network configuration information related to the Sync Network is highlighted in bold.

```
MPS Side A:  hostname: bahamas-a  hostid: a8c0ca3d
             Platform Version: 2.0.2-4.0.0_50.26.0
             Software Version: ELAP 1.0.1-4.0.0_50.31.0
             Wed Sep  7 15:05:55 EDT 2005
ELAP A Provisioning Network IP Address = 192.168.61.202
ELAP B Provisioning Network IP Address = 192.168.61.203
Provisioning Network Netmask           = 255.255.255.0
Provisioning Network Default Router    = 192.168.61.250
ELAP A Backup Prov Network IP Address  = Not configured
ELAP B Backup Prov Network IP Address  = Not configured
Backup Prov Network Netmask            = Not configured
Backup Prov Network Default Router     = Not configured
ELAP A Sync Network Address = 192.168.2.100
ELAP B Sync Network Address = 192.168.2.200
ELAP A Main DSM Network Address        = 192.168.120.100
ELAP B Main DSM Network Address        = 192.168.120.200
```

```
ELAP A Backup DSM Network Address      = 192.168.121.100
ELAP B Backup DSM Network Address      = 192.168.121.200
ELAP A HTTP Port                       = 80
ELAP B HTTP Port                       = 80
ELAP A HTTP SuExec Port                = 8001
ELAP B HTTP SuExec Port                = 8001
ELAP A Banner Connection Port          = 8473
ELAP B Banner Connection Port          = 8473
ELAP A Static NAT Address              = Not configured
ELAP B Static NAT Address              = Not configured
ELAP A LSMS Connection Port            = 7483
ELAP B LSMS Connection Port            = 7483
ELAP A EBDA Connection Port            = 1030
ELAP B EBDA Connection Port            = 1030
Time Zone                              = America/New_York

Press return to continue...
```

b. Verify that the Sync Network IP address for the server reporting this alarm is correct.

If configuration changes are needed, refer to the *ELAP Administration Manual*.

3. Verify that the cable labeled **FROM SERVER A SLOT 9 ETH3 TO SERVER B SLOT 9 ETH 3** is securely connected to the **eth3** port (upper port of the quad-port card in PCI slot 9) on both Server A and Server B.
4. Test this cable with an Ethernet Line Tester that is set to test a straight-through cable.

   If the cable does not test positive, replace it.

5. If the problem persists, contact Customer Care Center .

3000000000001000 - Server Disk Space Shortage Error

This alarm indicates that one of the following conditions has occurred:

- A filesystem has exceeded a failure threshold, which means that more than 90% of the available disk storage has been used on the filesystem.
- More than 90% of the total number of available files have been allocated on the filesystem.
- A filesystem has a different number of blocks than it had when installed.

Procedure

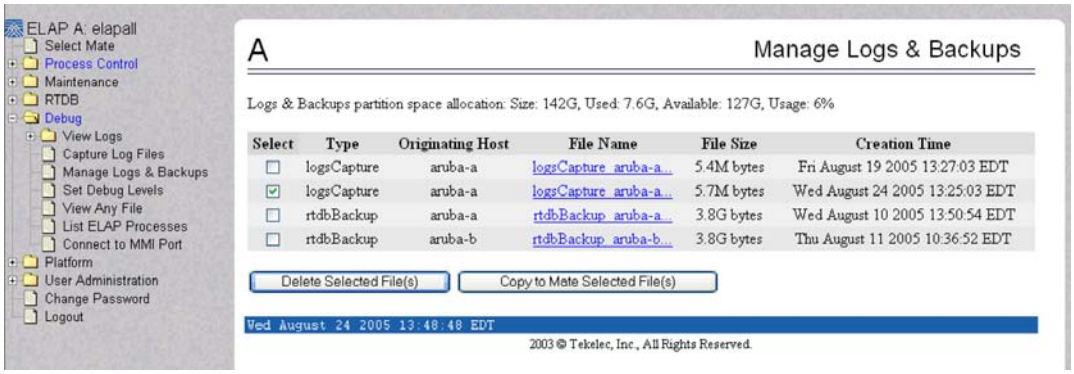
1. Run **`syscheck`** (see Running syscheck Through the ELAP GUI).
2. Examine the syscheck output to determine if the filesystem **`/var/TKLC/elap/free`** is low on space. If it is, continue to the next step; otherwise go to Step 4
3. If possible, recover space on the free partition by deleting unnecessary files:

   a. Log in to the ELAP GUI (see Running syscheck Through the ELAP GUI).

   b. Select **Debug>Manage Logs & Backups**.

   A screen similar to **Figure 4-2** is displayed. This screen displays the information about the total amount of space allocated for and currently used by logs and backups. The display includes logs and backup files which might be selected for deletion to recover additional disk space.

Figure 4-2. Manage Logs and Backups



c. Click the checkbox of each file that you want to delete and then click **Delete Selected File(s)**.

4. Call Customer Care Center for assistance.

3000000000002000 - Server Default Route Network Error

This alarm indicates that the default network route of the server is experiencing a problem. Running **syscheck** in Verbose mode will provide information about which type of problem.

CAUTION

CAUTION: When changing the network routing configuration of the server, verify that the modifications will not impact the method of connectivity for the current login session. The route information must be entered correctly and set to the correct values. Incorrectly modifying the routing configuration of the server may result in total loss of remote network access.

Procedure

1. Run **syscheck** in Verbose mode (see Running the System Health Check).

The output should indicate one of the following errors:

- `The default router at <IP_address> cannot be pinged.`

  This error indicates that the router may not be operating or is unreachable. If the **syscheck** Verbose output returns this error, go to Step 2 .

- `The default route is not on the provisioning network.`

  This error indicates that the default route has been defined in the wrong network. If the **syscheck** Verbose output returns this error, go to Step 3 .

- `An active route cannot be found for a configured default route.`

  This error indicates that a mismatch exists between the active configuration and the stored configuration. If the **syscheck** Verbose output returns this error, go to Step 4 .

NOTE: If the syscheck Verbose output does not indicate one of the errors above, go to Step 5 .

2. Perform the following substeps when **syscheck** Verbose output indicates:

`The default router at <IP_address> cannot be pinged`

a. Verify that the network cables are firmly attached to the server, network switch, router, hub, and any other connection points.

b. Verify that the configured router is functioning properly.

Request that the network administrator verify the router is powered on and routing traffic as required.

c. Request that the router administrator verify that the router is configured to reply to pings on that interface.

d. Run **syscheck**.

- If the alarm is cleared, the problem is resolved and this procedure is complete.
- If the alarm is not cleared, go to Step 5.

3. Perform the following substeps when **syscheck** Verbose output indicates:

```
The default route is not on the provisioning network
```

a. Obtain the proper Provisioning Network netmask and the IP address of the appropriate Default Route on the provisioning network.

This information is maintained by the customer network administrators.

b. Log in to the MPS with user name **elapconfig** (see Accessing the ELAP Text Interface).

The server designation at this site is displayed as well as **hostname**, **hostid**, **Platform Version**, **Software Version**, and the date. Verify that the side displayed is the MPS that is reporting the problem. In this example, it is MPS A. Enter option **2**, **Configure Network Interfaces Menu**, from the ELAP Configuration Menu.

```
MPS Side A:  hostname: mpsa-d1a8f8  hostid: 80d1a8f8
             Platform Version: x.x.x-x.x.x
             Software Version: ELAP x.x.x-x.x.x
             Wed Jul 17 09:51:47 EST 2005
 /-----ELAP Configuration Menu----------\
/----------------------------------------\
|  1 | Display Configuration             |
|----|-----------------------------------|
|  2 | Configure Network Interfaces Menu |
|----|-----------------------------------|
|  3 | Set Time Zone                     |
|----|-----------------------------------|
|  4 | Exchange Secure Shell Keys        |
|----|-----------------------------------|
|  5 | Change Password                   |
|----|-----------------------------------|
|  6 | Platform Menu                     |
|----|-----------------------------------|
|  7 | Configure NTP Server              |
|----|-----------------------------------|
|  e | Exit                              |
\----------------------------------------/
Enter Choice:  2
```

c. Enter option **1**, **Configure Provisioning Network**, from the Configure Network Interfaces Menu.

The submenu for configuring communications networks and other information is displayed.

```
 /----Configure Network Interfaces Menu-----\
```

```
/-----------------------------------------\
|  1 | Configure Provisioning Network      |
|----|-------------------------------------|
|  2 | Configure Sync Network              |
|----|-------------------------------------|
|  3 | Configure DSM Network               |
|----|-------------------------------------|
|  4 | Configure Backup Provisioning Network |
|----|-------------------------------------|
|  5 | Configure Forwarded Ports           |
|----|-------------------------------------|
|  6 | Configure Static NAT Addresses      |
|----|-------------------------------------|
|  e | Exit                                |
\-----------------------------------------/

Enter choice:  1
```

This warning is displayed.

```
ELAP software is running. Stop it? [N] Y
```

d. Type **Y** and press **Enter**.

e. If the LSMS Connection has not been previously disabled, the following prompt is displayed. Type **Y** and press **Enter**.

```
The LSMS Connection is currently enabled. Do you want to disable it? [Y]  Y
```

This confirmation is displayed.

```
The LSMS Connection has been disabled.
```

The ELAP A provisioning network IP address is displayed.

```
Verifying connectivity with mate ...
Enter the ELAP A provisioning network IP Address [192.168.61.90]:
```

f. Press **Enter** after each address is displayed until the Default Route address displays.

```
Verifying connectivity with mate ...
Enter the ELAP A provisioning network IP Address [192.168.61.90]: Enter the ELAP B
provisioning network IP Address [192.168.61.91]: Enter the ELAP provisioning network
netmask [255.255.255.0]:
Enter the ELAP provisioning network default router IP Address: 192.168.61.250
```

g. If the default router IP address is incorrect, type the correct address and press **Enter**.

h. After the Provisioning Network configuration information is verified and corrected, type **e** to return to the Configure Network Interfaces Menu.

i. Type **e** again to return to the ELAP Configuration Menu.

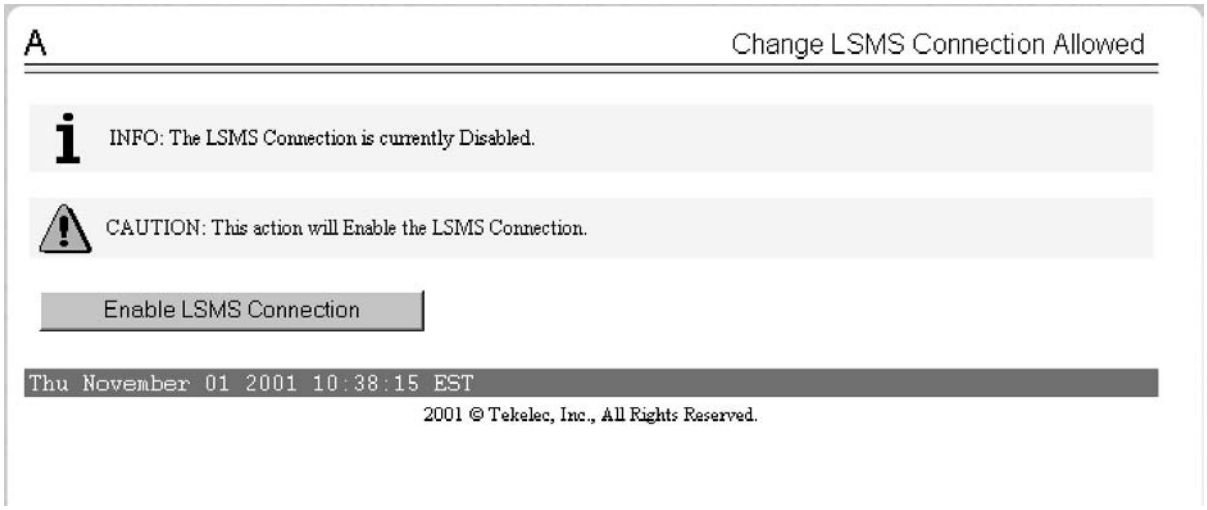
j. Run **syscheck**.

- If the alarm is cleared, the problem is resolved. Restart the ELAP software and enable the connection to the LSMS as described in Substep k , Substep l , and Substep m .
- If the alarm is not cleared, go to Step 5 .

k. Restart the ELAP software (see Restarting the ELAP Software).

l. Select **Maintenance>LSMS Connection>Change Allowed**: a window similar to the example shown in **Figure 4-3** displays.

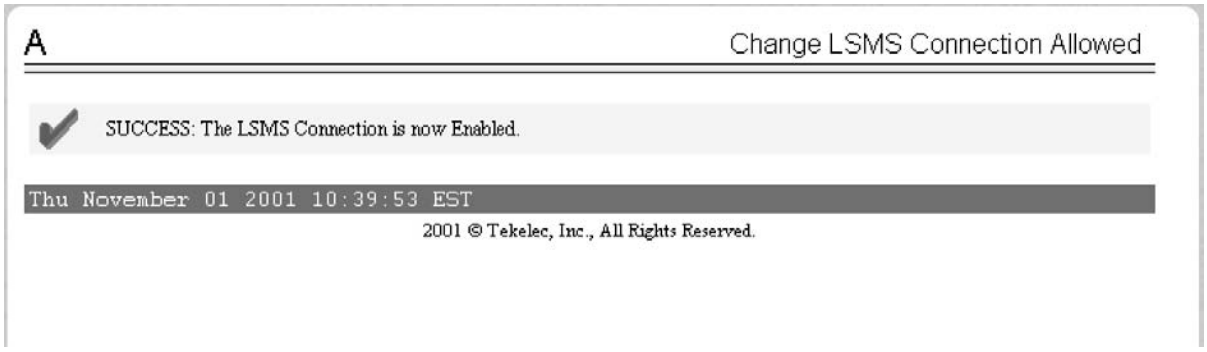
Figure 4-3. Enable LSMS Connection Window



m. Click the **Enable LSMS Connection** button.

After the connection is enabled, the workspace displays the information shown in **Figure 4-4** .

Figure 4-4. LSMS Connection Enabled



This procedure is complete.

4. Perform the following substeps to reboot the server if the **`syscheck`** Verbose output indicates the following error:

```
An active route cannot be found for a configured default route, . .
```

a. Log in as **`elapconfig`** on the MPS console.

Enter option **`6`**, **`Platform Menu`**, from the ELAP Configuration Menu.

```
 /-----ELAP Configuration Menu----------\
/----------------------------------------\
|  1 | Display Configuration             |
|----|-----------------------------------|
|  2 | Configure Network Interfaces Menu |
|----|-----------------------------------|
|  3 | Set Time Zone                     |
|----|-----------------------------------|
```

```
|  4 | Exchange Secure Shell Keys        |
|----|-----------------------------------|
|  5 | Change Password                   |
|----|-----------------------------------|
|  6 | Platform Menu                     |
|----|-----------------------------------|
|  7 | Configure NTP Server              |
|----|-----------------------------------|
|  e | Exit                              |
\-----------------------------------------/
Enter Choice:  6
```

b. Enter option **3**, **Reboot MPS**, from the ELAP Platform Menu.

At the prompt, enter the identifier of the MPS to which you are logged in (**A** or **B**); in this example, **A** is used.

```
 /-----ELAP Platform Menu-\
/--------------------------\
|  1 | Initiate Upgrade    |
|----|---------------------|
|  2 | Eject CD            |
|----|---------------------|
|  3 | Reboot MPS          |
|----|---------------------|
|  4 | Halt MPS            |
|----|---------------------|
|  5 | MySQL Backup        |
|----|---------------------|
|  6 | RTDB Backup         |
|----|---------------------|
|  e | Exit                |
\--------------------------/
Enter Choice:  3

Reboot MPS A, MPS B or BOTH? [BOTH]:  A
Reboot local MPS...
```

c. Wait for the reboot to complete.

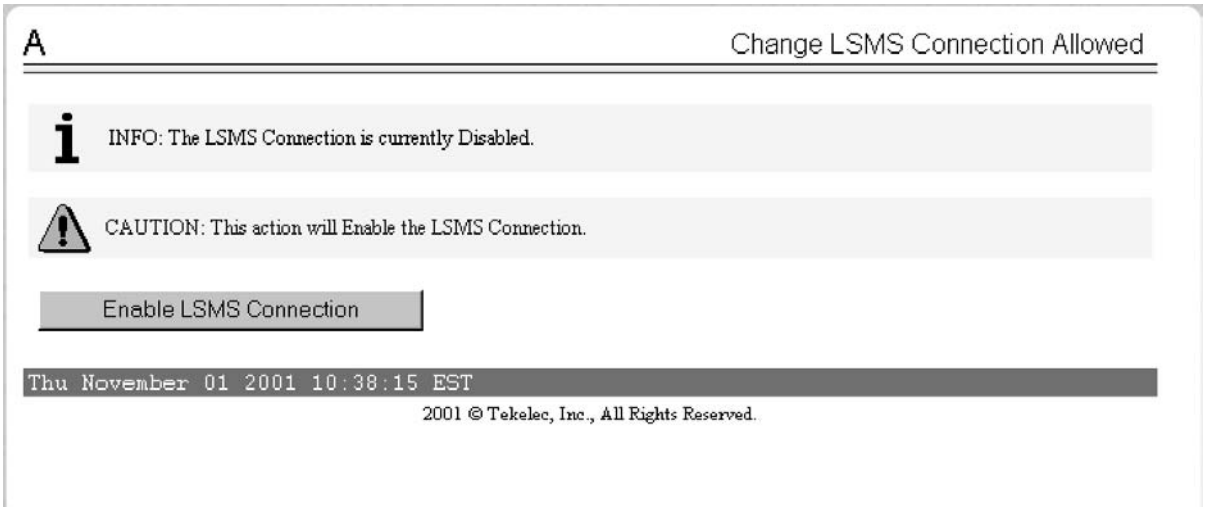
d. Run **syscheck**.

- If the alarm is cleared, the problem is resolved. Restart the ELAP software and enable the connection to the LSMS as described in Substep e , Substep f , and Substep g .
- If the alarm is not cleared, go to Step 5 .

e. Restart the ELAP software (see Restarting the ELAP Software).

f. Select **Maintenance>LSMS Connection>Change Allowed**: a window similar to the example shown in **Figure 4-5** displays.

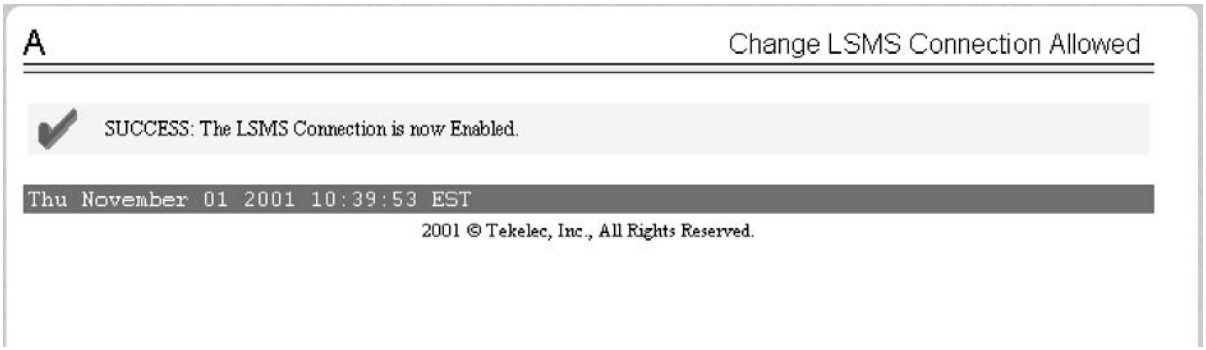
Figure 4-5. Enable LSMS Connection Window



g. Click the Enable LSMS Connection button.

After the connection is enabled, the workspace displays the information shown in **Figure 4-6** .

Figure 4-6. LSMS Connection Enabled



This procedure is complete.

5. Contact the Customer Care Center for further assistance. Provide the **`syscheck`** output collected in the previous steps.

3000000000004000 - Server Temperature Error

This alarm indicates that the internal temperature within the server is unacceptably high.

Procedure

1. Verify that nothing is blocking the fan intake (see **Figure 4-7**).
   Remove any blockage.

Figure 4-7. Server Fans

2. Verify that the temperature in the room is normal (see **Table 4-3**).

   If the room temperature is too hot, lower the temperature in the room to an acceptable level.

Table 4-3. Server Environmental Conditions

Ambient Temperature	Normal Operating Temperature Range: 5 degrees C to 40 degrees C Exceptional Operating Limit: -5 degrees C to 50 degrees C (operation for no more than 96 hours duration at extremes and at elevations of less than 1800 meters) Storage: -20 degrees C to 60 degrees C
Relative Humidity	Operating: 5% to 85% non-condensing Storage: 5% to 95% non-condensing
Elevation	Operating: -300m to +300m Storage: -300m to +1200m
Heating, Ventilation, and Air Conditioning	Capacity must compensate for up to 5100 BTUs/hr for each installed frame. Calculate HVAC capacity as follows: Determine the wattage of the installed equipment. Use the formula: watts x 3.143 = BTUs/hr

NOTE: Be prepared to wait an appropriate period of time before continuing with the next step. Environmental conditions must be below alarm threshold levels consistently before the alarm clears. The alarm may take up to five minutes to clear after conditions improve. After the room temperature returns to an acceptable level, `syscheck` may not show the alarm cleared for up to ten minutes.

3. Run **`syscheck`** (see Running syscheck Through the ELAP GUI).

   a. If the alarm has been cleared, the problem is resolved.

   b. If the alarm has not been cleared, continue with Step 4 .

4. Replace the filter by performing the procedure in *Tekelec 1100 Applications Server Hardware Manual*.

NOTE: Be prepared to wait an appropriate period of time before continuing with the next step. Environmental conditions must be below alarm threshold levels consistently before the alarm clears. The alarm may take up to five minutes to clear after conditions

improve. After the room temperature returns to an acceptable level, `syscheck` may not show the alarm cleared for up to ten minutes.

5. Run **`syscheck`** (see Running syscheck Through the ELAP GUI).
   a. If the alarm is cleared, the problem is resolved.
   b. If the alarm is not cleared, continue with Step 6 .
6. If the problem is not resolved, call the Customer Care Center for assistance.

3000000000008000 - Server Mainboard Voltage Error

This alarm indicates that at least one monitored voltages on the server mainboard is not within the normal operating range.

Procedure

1. Contact the Customer Care Center for assistance.

3000000000010000 - Server Power Feed Unavailable

This alarm indicates that one of the power feeds to the server has failed. For more information about power feeds, see Breaker Panel .

If this alarm occurs in conjunction with any Breaker Panel alarm, a problem with the breaker panel may exist. Refer to the Breaker Panel alarm procedures: 3000000001000000 - Breaker Panel Feed Error , 3000000002000000 - Breaker Panel Breaker Error , and 3000000004000000 - Breaker Panel Monitoring Error .

Procedure

1. Locate the server supplied by the faulty power feed. Verify that all connections to the power supply units are connected securely. To determine where the cables connect to the servers, see the Power Connections and Cables page of the ELAP Interconnect T1100.
2. Run **`syscheck`** (see Running syscheck Through the ELAP GUI).
   a. If the alarm is cleared, the problem is resolved.
   b. If the alarm is not cleared, go to Step 3 .
3. Trace the power feed to its connection on the power source.
   Verify that the power source is on and that the power feed is properly secured (see 3000000001000000 - Breaker Panel Feed Error).
4. Run **`syscheck`** (see Running syscheck Through the ELAP GUI).
   a. If the alarm is cleared, the problem is resolved.
   b. If the alarm is not cleared, go to Step 5 .
5. If the power source is functioning properly and all connections are secure, request that an electrician check the voltage on the power feed.
6. Run **`syscheck`** (see Running syscheck Through the ELAP GUI).
   a. If the alarm is cleared, the problem is resolved.
   b. If the alarm is not cleared, go to Step 7 .
7. If the problem is not resolved, call the Customer Care Center for assistance.

3000000000020000 - Server Disk Health Test Error

This alarm indicates that the hard drive has failed or failure is imminent.

Procedure

1. Immediately contact the Customer Care Center for assistance with a disk replacement.

3000000000040000 - Server Disk Unavailable Error

This alarm indicates that the **smartd** service is not able to read the disk status because the disk has other problems that are reported by other alarms. This alarm appears only while a server is booting.

Procedure

1. Perform the recovery procedures for the other alarms that accompany this alarm.

3000000000200000 - Correctable ECC Memory Error

This alarm indicates that chipset has detected a correctable (single-bit) memory error that has been corrected by the Error-Correcting Code (ECC) circuitry in the memory.

Procedure

1. No recovery necessary.

   If the condition persists, contact the Customer Care Center to request hardware replacement.

3000000000400000 - Server Power Supply 1 Error

This alarm indicates that Power Supply 1 (Feed A) has failed.

Procedure

1. Verify that the airflow to the fans of the power supply is not obstructed.
2. Run **syscheck** in Verbose mode (see Running the System Health Check).

   The **syscheck** Verbose output provides details about the power supply status.

3. Contact the Customer Care Center for further assistance. Provide the **syscheck** Verbose output.

   Replacement of Power Supply 1 (Feed A) may be necessary.

3000000000800000 - Server Power Supply 2 Error

This alarm indicates that Power Supply 2 (Feed B) has failed.

Procedure

1. Verify that the airflow to the fans of the power supply is not obstructed.
2. Run **syscheck** in Verbose mode (see Running the System Health Check).

The **syscheck** Verbose output provides details about the power supply status.

3. Contact the Customer Care Center for further assistance. Provide the **syscheck** Verbose output.

   Replacement of Power Supply 2 (Feed B) may be necessary.

3000000001000000 - Breaker Panel Feed Error

This alarm indicates that the server is not receiving information from the breaker panel relays.

Procedure

1. Verify that the same alarm is displayed by both servers. The single breaker panel normally sends alarm information to both servers.

   - If this alarm is displayed by only one server, the problem is most likely with the cable or the server displaying the alarm. Check for other alarms that indicate a problem with the server and perform the recovery procedures for those alarms first.
   - If this alarm is displayed by both servers, go to Step 2 .

2. Verify that the cables that connect the servers to the breaker panel are not damaged and are securely connected to both the Alarm Interface ports on the breaker panel and also to the serial ports on both servers.

   Refer to the ELAP Interconnect T1100 for the locations of these ports.

3. If the problem is not resolved, contact the Customer Care Center to request that the breaker panel be replaced (see Breaker Panel Replacement Procedure).

3000000002000000 - Breaker Panel Breaker Error

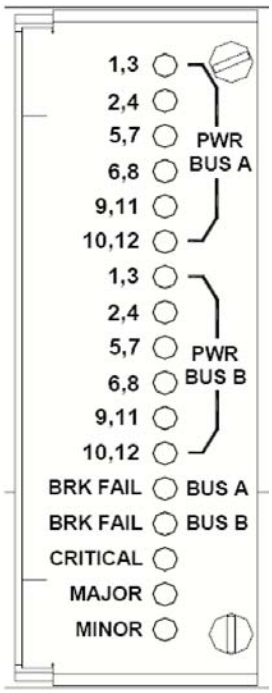
This alarm indicates that a power fault has been identified by the breaker panel. The LEDs on the center of the breaker panel (see **Figure 4-8**) identify whether the fault occurred on the input power or the output power.

- A power fault on input power (power from site source to the breaker panel) is indicated as one of the LEDs in the **PWR BUS A** or **PWR BUS B** group illuminated red. In general, a fault on the input power means that power has been lost to the input power circuit.

  NOTE: LEDs in the PWR BUS A or PWR BUS B group that correspond to unused feeds are not illuminated. LEDs in these groups that are not illuminated do not indicate problems.

- A power fault on output power (power from the breaker panel to other equipment in the frame) is indicated by either **BRK FAIL BUS A** or **BRK FAIL BUS B** illuminated red. This type of fault can be caused by a surge, power degradation, or spike that causes one of the circuit breakers to trip.

Figure 4-8. Breaker Panel LEDs



Procedure

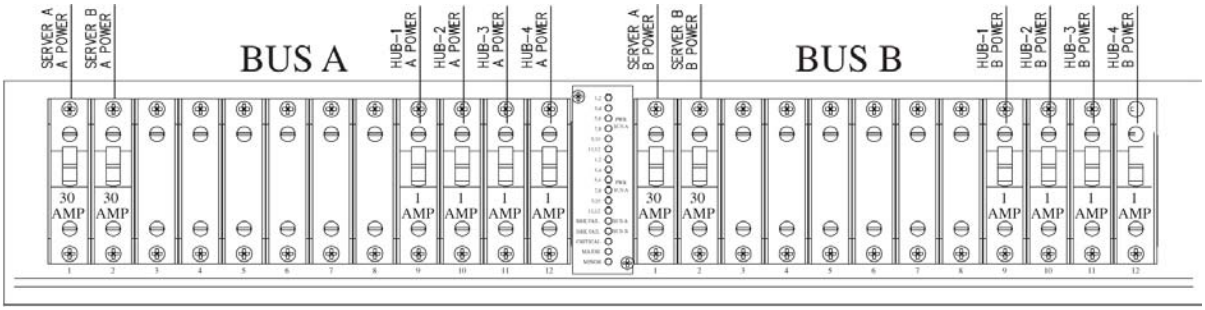
1. Verify that the same alarm is displayed by both servers. The single breaker panel normally sends alarm information to both servers.

- If this alarm is displayed by only one server, the problem is most likely with the cable or the server displaying the alarm. Check for other alarms that indicate a problem with the server and perform the recovery procedures for those alarms first.
- If this alarm is displayed by both servers, go to Step 2 .

2. Refer to the breaker panel assignments in **Figure 4-9** .

For each breaker assignment, verify that the associated LEDs in the **PWR BUS A** group and the **PWR BUS B** group are illuminated green.

Figure 4-9. Breaker Panel Settings



If one of the LEDs in the **PWR BUS A** group or the **PWR BUS B** group is illuminated red, a problem has been detected with the corresponding input power feed. Perform these steps to correct the problem:

a. Refer to the ELAP Power Requirements T1100.

Verify that the customer-provided source for the affected power feed is operational. If the power source is functioning properly, request that an electrician remove the plastic cover from the rear of the breaker panel and verify the power source is connected securely to the input power feed connector on the rear of the breaker panel. Correct any issues.

b. Check the LEDs in the **PWR BUS A** group and the **PWR BUS B** group.

- If the LEDs are illuminated green, the issue is resolved. Go to Step 4 to verify that the alarm has cleared.
- If the LEDs are illuminated red, continue to Substep c.

c. Requst that the electrician verify the integrity of the input power feed.

The nominal input voltage range is from -41VDC to -60VDC. If the supplied input voltage is not within the nominal range, the input power source must be repaired or replaced.

NOTE: Verify that the voltmeter is connected properly. The locations of the BAT and RTN connections are reversed between the two sides of the rear of the breaker panel.

If the measured voltage is within the acceptable range, the breaker panel may be malfunctioning. The breaker panel must be replaced; (see Breaker Panel Replacement Procedure).

d. Check the LEDs in the **PWR BUS A** group and the **PWR BUS B** group after the necessary actions have been performed to correct any issues.

- If the LEDs are illuminated green, the issue is resolved and go to Step 4 to verify that the alarm has cleared.
- If the LEDs are illuminated red, go to Step 5.

3. Check the **BRK FAIL** LEDs for **BUS A** and for **BUS B**.

If one of the **BRK FAIL** LEDs is illuminated red, then one or more of the Input Breakers has tripped. A tripped breaker is indicated by the toggle located in the center position. Perform the following steps to correct the tripped breakers:

a. For all tripped breakers, switch the breaker to the open (**off**) position and then to the closed (**on**) position.

b. After all tripped breakers are reset, check the **BRK FAIL** LEDs.

If one of the **BRK FAIL** LEDs is illuminated red, go to Step 5.

4. If all of the **BRK FAIL** LEDs and all the LEDs in the **PWR BUS A** group and the **PWR BUS A** group are illuminated green, the most probable cause is a problem with the serial connection between the server and the breaker panel.

The serial connection is used by the system health check to monitor the breaker panel for failures. Verify that both ends of the labeled serial cables are properly secured. For locations of the serial cables, refer to ELAP Interconnect T1100. Correct any issues observed with these cable connections and continue to the next step to verify that the alarm has cleared; otherwise, go to Step 5.

5. Run **`syscheck`** (see Running the System Health Check).

- If the alarm has been cleared, the problem is resolved.
- If the alarm is not cleared, continue to the next step.

6. If the problem is not resolved, contact the Customer Care Center for further asistance.

3000000004000000 - Breaker Panel Monitoring Error

This alarm indicates a failure in the hardware, software, or both that monitors the breaker panel. The probable cause may be a problem with the file I/O libraries, the serial device drivers, or the serial hardware.

> **NOTE: When this alarm occurs, the system health check is unable to monitor the breaker panel for faults. If this alarm is detected, the breaker panel must be carefully examined for the existence of faults. The LEDs on the breaker panel will be the only indication of the occurrence of either alarm 3000000001000000 - Breaker Panel Feed Error -Breaker Panel Feed Error or 3000000002000000 - Breaker Panel Breaker Error -Breaker Panel Breaker Error until the Breaker Panel Monitoring Error is corrected.**

Procedure

1. Verify that the same alarm is displayed by both servers. The single breaker panel normally sends alarm information to both servers.
   - If this alarm is displayed by only one server, the problem is most likely with the cable or the server displaying the alarm. Check for other alarms that indicate a problem with the server and perform the recovery procedures for those alarms first.
   - If this alarm is displayed by both servers, go to Step 2 .
2. Verify that both ends of the labeled serial cables are securely connected. For locations of the serial cables, see the ELAP Interconnect T1100.
3. Run **`syscheck`** (see Running the System Health Check).
   - If the alarm is cleared, the problem is resolved.
   - If the alarm is not cleared, continue to the next step.
4. Contact the Customer Care Center for further assistance.

Major Application Alarms

The major application alarms involve the ELAP software, RTDBs, file system, JRS connection, and logs.

4000000000000001 - Mate ELAP Unavailable

One ELAP has reported that the other ELAP is unreachable.

Procedure

1. Log in to the ELAP GUI (see Accessing the ELAP GUI Interface).
2. View the ELAP status on the banner.
   - If the mate ELAP status is DOWN, go toStep 4 .

- If the mate ELAP status is ACTIVE or STANDBY, go to Step 7 .

3. Select the **Select Mate** menu item to change to the mate ELAP.
4. Select **Process Control>Start Software** to start the mate ELAP software.
5. View the ELAP status on the banner.

   - If the mate ELAP status is ACTIVE or STANDBY, the problem is resolved.
   - If the mate ELAP status is still DOWN, continue with Step 6 .

6. Select the **Select Mate** menu item to change back to the side that reported the alarm.
7. Stop and start the software on the side that is reporting the alarm (see Restarting the ELAP Software).
8. If the problem persists, run **`savelogs`** to gather system information for further troubleshooting (see Saving Logs Using the ELAP GUI), and contact the Customer Care Center .

4000000000000002 - RTDB Mate Unavailable

The local ELAP cannot use the direct link to the Standby for RTDB database synchronization.

Procedure

1. Log in to the ELAP GUI (see Accessing the ELAP GUI Interface).
2. View the ELAP status on the banner.

   - If the mate ELAP status is DOWN, go to Step 4 .
   - If the mate ELAP status is ACTIVE or STANDBY, go to Step 7 .

3. Select the **Select Mate** menu item to change to the mate ELAP.
4. Select **Process Control>Start Software** to start the mate ELAP software.
5. Determine whether the alarm has cleared by verifying whether it is still being displayed in the banner or in the Alarm View window.

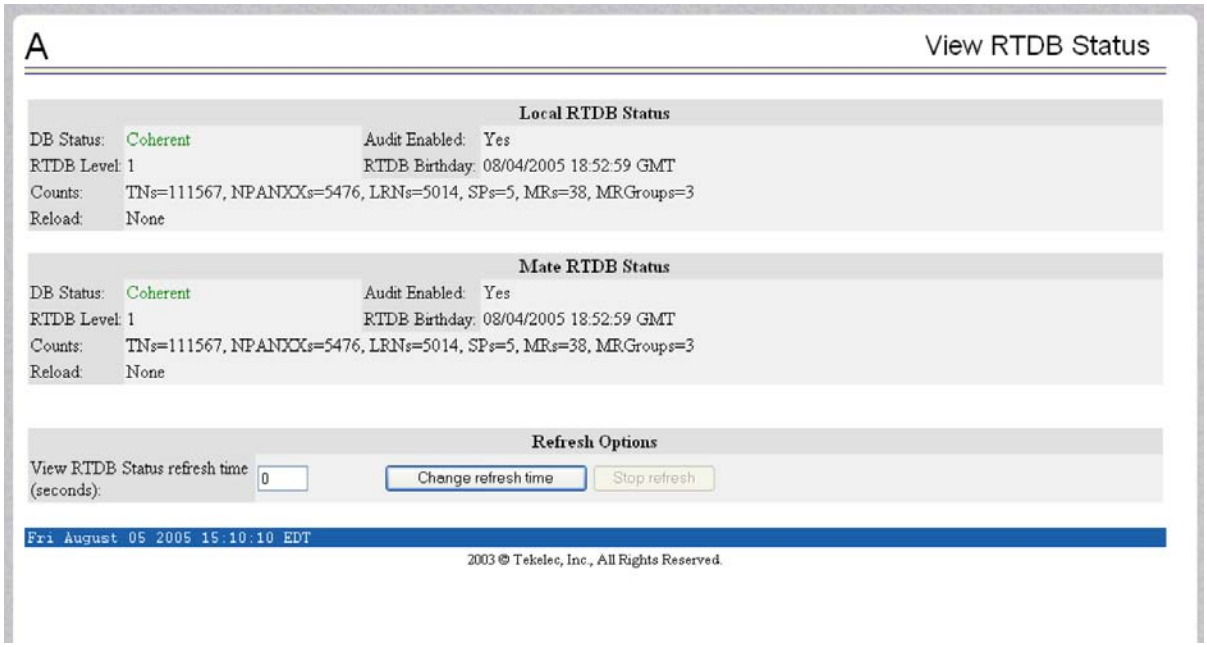
   - If the alarm has cleared, the problem is resolved.
   - If the alarm has not yet cleared, continue with Step 6 .

6. Ensure that you are logged into the side opposite from the side reporting the alarm.

   If it is necessary to change sides, select the **Select Mate** menu item to change to the side opposite the side that reported the alarm.

7. Stop and start the software on the side that is reporting the alarm (see Restarting the ELAP Software).
8. Select **RTDB>View RTDB Status** to verify that the RTDB status on both sides is coherent, as shown in **Figure 4-10** .

Figure 4-10. Coherent RTDB Status



9. If the problem persists, run **`savelogs`** to gather system information for further troubleshooting (see Saving Logs Using the ELAP GUI), and contact the Customer Care Center .

4000000000000004 - Congestion

The ELAP RTDB database record cache used to keep updates currently being provisioned is above 80% capacity.

Procedure

1. At the EAGLE 5 ISS input terminal, enter the **`rept-stat-mps`** command to verify the status.

   Refer to the *Commands Manual* to interpret the output.

2. If the problem does not clear within 2 hours with an "ELAP Available" notice, capture the log files on both ELAPs (see Saving Logs Using the ELAP GUI) and contact the Customer Care Center .

4000000000000020 - RMTP Channels Down

Both IP multicast mechanisms are down.

Procedure

1. Check the physical connections between the local MPS and the DSM cards on the EAGLE 5 ISS.

   Make sure the connectors are firmly seated.

2. Stop and restart the software on the side that is reporting the alarm (see Restarting the ELAP Software).
3. Capture the log files on both ELAPs (see Saving Logs Using the ELAP GUI) and contact the Customer Care Center .

4000000000000040 - Fatal Software Error

A major software component on the ELAP has failed.

Procedure

1. Perform Restarting the ELAP Software
2. Capture the log files on both ELAPs (see Saving Logs Using the ELAP GUI) and contact the Customer Care Center .

4000000000000080 - RTDB Corrupt

A real-time database is corrupt. The calculated checksum did not match the checksum value stored for one or more records.

Procedure

1. Capture the log files on both ELAPs (see Saving Logs Using the ELAP GUI) and contact the Customer Care Center .

4000000000000100 - RTDB Inconsistent

The real-time database for one or more DSM cards is inconsistent with the current real-time database on the Active ELAP fixed disks.

Procedure

1. Capture the log files on both ELAPs (see Saving Logs Using the ELAP GUI) and contact the Customer Care Center .

4000000000000200 - RTDB Incoherent

This message usually indicates that the RTDB database download is in progress.

When the download is complete, the following UIM message will appear:

```
0452 - RTDB reload complete
```

Procedure

1. If this alarm displays while an RTDB download is in progress, no further action is necessary.
2. If this alarm displays when an RTDB download is not in progress, capture the log files on both ELAPs (see Saving Logs Using the ELAP GUI) and contact the Customer Care Center .

4000000000000400 - JRS to RTDB Connection Down

A major software component on the ELAP has failed.

Procedure

1. Perform Accessing the ELAP GUI Interface .
2. Capture the log files on both ELAPs (see Saving Logs Using the ELAP GUI).

4000000000000800 - Transaction Log Full

The transaction log is full.

Procedure

1. Contact the Customer Care Center .

4000000000001000 - RTDB 100% Full

The RTDB on the ELAP is at capacity. The ELAP RTDB is not updating.

You may be able to free up space by deleting unnecessary data in the database. The ELAP must be upgraded in order to add disk capacity.

Procedure

1. Contact the Customer Care Center for assistance.

4000000000002000 - RTDB Resynchronization in Progress

This message indicates that the RTDB resynchronization is in progress.

Procedure

1. No further action is necessary.

4000000000004000 - RTDB Reload Is Required

This message indicates that the RTDB reload is required because the transaction logs did not contain enough information to resynchronize the databases (the transaction logs may be too small).

CAUTION: If both sides are reporting this error, contact the Customer Care Center .

If only one side is reporting this error, use the following procedure.

Procedure

1. Log in to the User Interface screen of the ELAP (see Accessing the ELAP Text Interface)
2. Refer to the *LNPDatabase Synchronization Manual* for the correct procedures.
3. If the problem persists, contact the Customer Care Center .

4000000000040000 - RTDB DSM Over-Allocation

At least one DSM card in the attached EAGLE 5 ISS has insufficient memory to provision the RTDB entry. No more provisioning will be allowed to the RTDB until this issue is resolved.

Procedure

1. Install DSM cards in the attached EAGLE 5 ISS with sufficient memory to accommodate the expected size of the RTDB.

4000000000080000 - RTDB Maximum Depth Reached

RTDB data is stored as inverse tree structures. The trees have a maximum depth allowed. This alarm indicates that the maximum depth has been reached for a tree. If the alarm was initiated during a data update, the update will continually fail until there is manual intervention.

Procedure

1. Contact the Customer Care Center .

Minor Platform Alarms

Minor platform alarms involve disk space, application processes, RAM, and configuration errors.

5000000000000001 - Server Disk Space Shortage Warning

This alarm indicates that one of the following conditions has occurred:

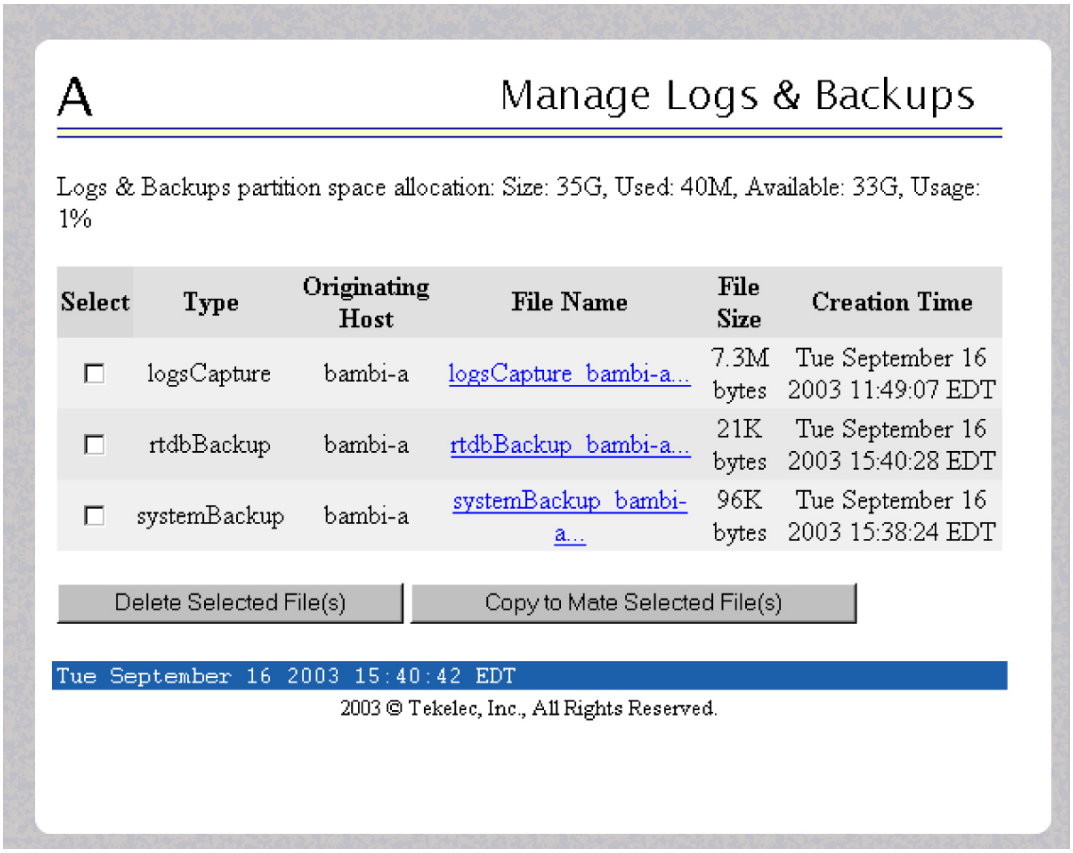
- A filesystem has exceeded a warning threshold, which means that more than 80% (but less than 90%) of the available disk storage has been used on the filesystem.
- More than 80% (but less than 90%) of the total number of available files have been allocated on the filesystem.

Procedure

1. Run **`syscheck`** (see Running syscheck Through the ELAP GUI)
2. Examine the syscheck output to determine if the filesystem **`/var/TKLC/elap/free`** is the one that is low on space, if so, continue to Step 3 ; otherwise skip to Step 4 .
3. You may be able to free up space on the free partition by deleting unnecessary files, as follows:
   a. Log in to the ELAPGUI (see Accessing the ELAP GUI Interface)
   b. Select **Debug>Manage Logs & Backups**.

      A screen similar to **Figure 4-11** displays. This screen displays the information about the total amount of space allocated for, and the amount of space currently used by logs and backups, and it lists logs and backup files that you might choose to delete, freeing up additional disk space.

Figure 4-11. Manage Logs and Backups



c. Click the checkbox of each file that you want to delete and then click **Delete Selected File(s)**.

4. Call the Customer Care Center for assistance.

5000000000000002 - Server Application Process Error

This alarm indicates that either the minimum number of instances for a required process are not currently running or too many instances of a required process are running.

Procedure

1. If a 3000000000000020 - Server Platform Process Error alarm is also present, execute the recovery procedure associated with that alarm before proceeding.
2. Log in to the User Interface screen of the ELAP GUI (see Accessing the ELAP GUI Interface)
3. Check the banner information above the menu to verify that you are logged into the problem ELAP indicated in the UAM.

If it is necessary to switch to the other side, select **Select Mate**.

4. Open the Process Control folder, and select the **Stop Software** menu item.
5. Open the Process Control folder, and select the **Start Software** menu item.
6. Capture the log files on both ELAPs (see Saving Logs Using the ELAP GUI) and contact the Customer Care Center .

5000000000000004 - Server Hardware Configuration Error

This alarm indicates that one or more of the server's hardware components are not in compliance with Tekelec specifications (refer to the Tekelec 1100 Application Server Hardware Manual).

Procedure

1. Run **syscheck** in verbose mode (see Running syscheck Through the ELAP GUI).
2. Call the Customer Care Center for assistance.

5000000000000020 - Server Swap Space Shortage Warning

This alarm indicates that the swap space available on the server is less than expected. This is usually caused by a process that has allocated a very large amount of memory over time.

NOTE: In order for this alarm to clear, the underlying failure condition must be consistently undetected for a number of polling intervals. Therefore, the alarm may continue to be reported for several minutes after corrective actions are completed.

Procedure

1. Call the Customer Care Center for assistance.

5000000000000040 - Server Default Router Not Defined

This alarm indicates that the default network route is either not configured or the current configuration contains an invalid IP address or hostname.

CAUTION: When changing the server's network routing configuration it is important to verify that the modifications will not impact the method of connectivity for the current login session. It is also crucial that this information not be entered incorrectly or set to improper values. Incorrectly modifying the server's routing configuration may result in total loss of remote network access.

Procedure

1. Perform the following substeps to define the default router:

   a. Obtain the proper Provisioning Network netmask and the IP address of the appropriate Default Route on the provisioning network.

   These are maintained by the customer network administrators.

   b. Log in to the MPS with username elapconfig (see Accessing the ELAP Text Interface).

   The server designation at this site is displayed as well as **hostname**, **hostid**, **Platform Version**, **Software Version**, and the date. Ensure that the side displayed is the MPS that is reporting the problem. In this example, it is MPS A. Enter option **2**, Configure Network Interfaces Menu, from the ELAP Configuration Menu.

```
MPS Side A:  hostname: mpsa-d1a8f8  hostid: 80d1a8f8
             Platform Version: x.x.x-x.x.x
             Software Version: ELAP x.x.x-x.x.x
             Wed Jul 17 09:51:47 EST 2005

 /-----ELAP Configuration Menu----------\
/----------------------------------------\
|  1 | Display Configuration             |
```

```
|----|-----------------------------------|
|  2 | Configure Network Interfaces Menu |
|----|-----------------------------------|
|  3 | Set Time Zone                     |
|----|-----------------------------------|
|  4 | Exchange Secure Shell Keys        |
|----|-----------------------------------|
|  5 | Change Password                   |
|----|-----------------------------------|
|  6 | Platform Menu                     |
|----|-----------------------------------|
|  7 | Configure NTP Server              |
|----|-----------------------------------|
|  e | Exit                              |
\-----------------------------------------/
Enter Choice:  2
```

c. Enter option **1**, Configure Provisioning Network from the Configure Network Interfaces Menu.

This displays the submenu for configuring communications networks and other information.

```
 /----Configure Network Interfaces Menu-----\
/-------------------------------------------\
|  1 | Configure Provisioning Network        |
|----|---------------------------------------|
|  2 | Configure Sync Network                |
|----|---------------------------------------|
|  3 | Configure DSM Network                 |
|----|---------------------------------------|
|  4 | Configure Backup Provisioning Network |
|----|---------------------------------------|
|  5 | Configure Forwarded Ports             |
|----|---------------------------------------|
|  6 | Configure Static NAT Addresses        |
|----|---------------------------------------|
|  e | Exit                                  |
\-------------------------------------------/
Enter choice:  1
```

The following warning appears:

ELAP software is running. Stop it?

d. Type **Y** and press Enter.

If the LSMS Connection has not been previously disabled, the following prompt appears:

```
The LSMS Connection is currently enabled. Do you want to disable it? [Y]  Y
```

e. Type **Y** and press Enter.

The following confirmation appears:

```
The LSMS Connection has been disabled.
```

The ELAP A provisioning network IP address displays:

```
Verifying connectivity with mate ...
Enter the ELAP A provisioning network IP Address [192.168.61.90]:
```

f. Press Enter after each address is displayed until the Default Route address displays:

```
Verifying connectivity with mate ...
Enter the ELAP A provisioning network IP Address [192.168.61.90]: Enter the ELAP B
provisioning network IP Address [192.168.61.91]: Enter the ELAP provisioning network
netmask [255.255.255.0]:
Enter the ELAP provisioning network default router IP Address: 192.168.61.250
```

g. If the default router IP address is incorrect, correct it, and press Enter.

h. After vverifying or correcting the Provisioning Network configuration information, enter **e** to return to the Configure Network Interfaces Menu.

i. Enter **e** again to return to the ELAP Configuration Menu.

2. Rerun **syscheck**.

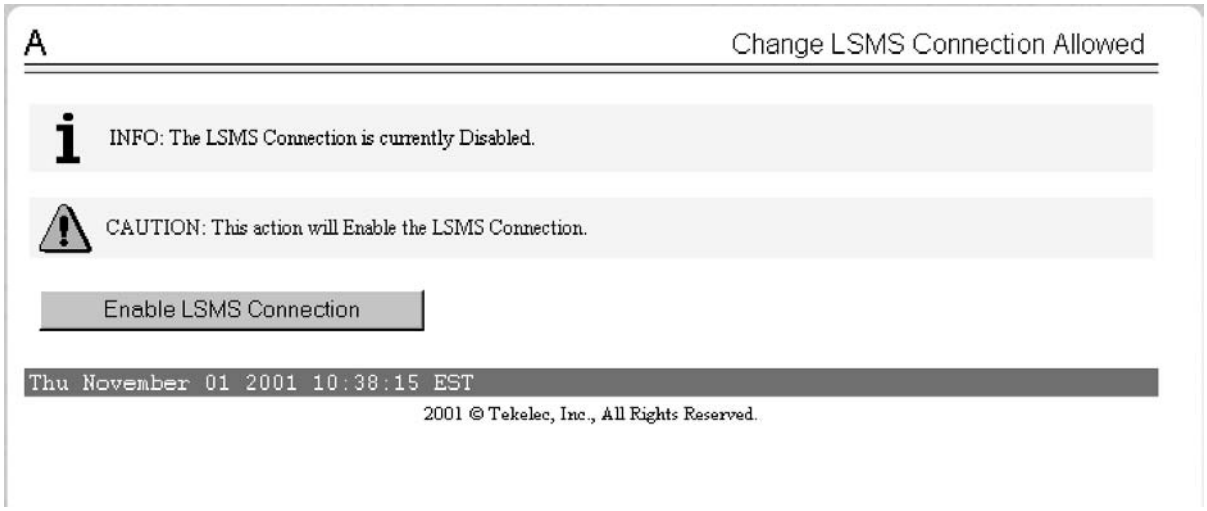
- If the alarm has not been cleared, contact the Customer Care Center for further assistance. Make the **syscheck** output available to them. This procedure is complete.
- If the alarm has been cleared, the problem is solved, and you can restart the ELAP software and enable the connection to the LSMS as described in Step 3 .

3. Perform the following substeps to restart the ELAP and enable the LSMS connection.

a. Restart the ELAP software (see Restarting the ELAP Software).

b. Select **Maintenance>LSMS Connection>Change Allowed**: a window similar to the example shown in **Figure 4-12** displays.

Figure 4-12. Enable LSMS Connection Window

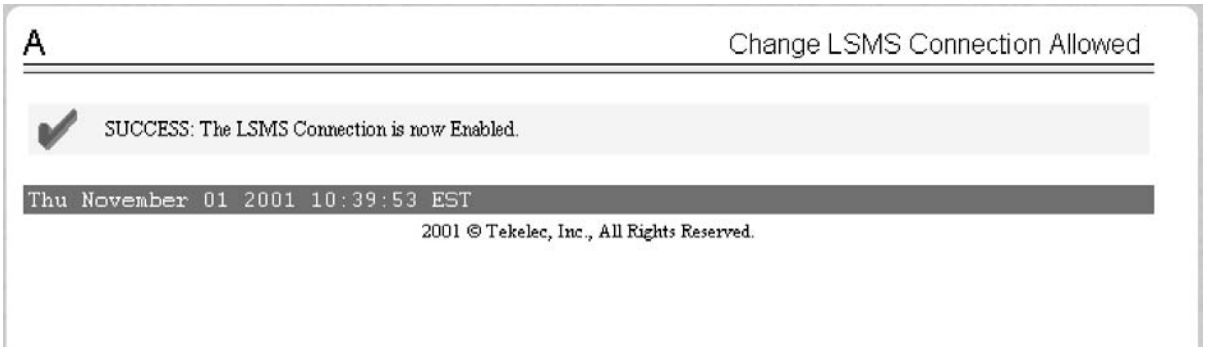


c. Click the Enable LSMS Connection button.

When the connection has been enabled, the workspace displays the information shown in**Figure 4-13** .sw

.

Figure 4-13. LSMS Connection Enabled



5000000000000080 - Server Temperature Warning

This alarm indicates that the internal temperature within the server is outside of the normal operating range. A 3000000000000001 - Server Fan Failure may also exist along with this warning.

Procedure

1. Ensure that nothing is blocking the fan's intake (see **Figure 4-14**) and remove any blockage.

Figure 4-14. Server Fans

2. Verify that the temperature in the room is normal (see **Table 4-4**). If it is too hot, lower the temperature in the room to an acceptable level.

Table 4-4. Server Environmental Conditions

Ambient Temperature	Normal Operating Temperature Range: 5 degrees C to 40 degrees C Exceptional Operating Limit: -5 degrees C to 50 degrees C (operation for no more than 96 hours duration at extremes and at elevations of less than 1800 meters)

	Storage: -20 degrees C to 60 degrees C
Relative Humidity	Operating: 5% to 85% non-condensing Storage: 5% to 95% non-condensing
Elevation	Operating: -300m to +300m Storage: -300m to +1200m
Heating, Ventilation, and Air Conditioning	Capacity must compensate for up to 5100 BTUs/hr for each installed frame. Calculate HVAC capacity as follows: Determine the wattage of the installed equipment. Use the formula: watts x 3.143 = BTUs/hr

NOTE: Be prepared to wait the appropriate period of time before continuing with the next step. Conditions need to be below alarm thresholds consistently for the alarm to clear. The alarm may take up to five minutes to clear after conditions improve. It may take about ten minutes after the room returns to an acceptable temperature before `syscheck` shows the alarm cleared.

3. Run **`syscheck`** (see Running syscheck Through the ELAP GUI). If the alarm has not been cleared, continue with Step 4
4. Replace the filter (refer to the Tekelec T1100 Application Server Hardware Manual).

NOTE: Be prepared to wait the appropriate period of time before continuing with the next step. Conditions need to be below alarm thresholds consistently for the alarm to clear. The alarm may take up to five minutes to clear after conditions improve. It may take about ten minutes after the filter is replaced before `syscheck` shows the alarm cleared.

5. Run **`syscheck`** (see Running syscheck Through the ELAP GUI). If the alarm has not been cleared, continue with Step 6 .
6. If the problem has not been resolved, call Customer Care Center for assistance.

5000000000000100 - Server Core File Detected

This alarm indicates that an application process has failed and debug information is available.

Procedure

1. Run **`savelogs`** to gather system information (see Running syscheck Through the ELAP GUI ")
2. Contact the Customer Care Center .

   They will examine the files in **`/var/TKLC/core`** and remove them after all information has been extracted.

5000000000000200 - Server NTP Daemon Not Synchronized

This alarm indicates that the NTPdaemon (background process) has been unable to locate a server to provide an acceptable time reference for synchronization.

Procedure

1. Contact the Customer Care Center .

5000000000000400 - Server CMOS Battery Voltage Low

The presence of this alarm indicates that the CMOS battery voltage has been detected to be below the expected value. This alarm is an early warning indicator of CMOS battery end-of-life failure which will cause problems in the event the server is powered off.

Procedure

1. Contact the Customer Care Center .

5000000000000800 - Server Disk Self Test Warning

A non-fatal disk issue (such as a sector cannot be read) exists.

Procedure

1. Contact the Customer Care Center .

5000000000004000 - Server Reboot Watchdog Initiated

This alarm indicates that the server has been rebooted due to a hardware watchdog.

Procedure

1. Contact the Customer Care Center .

Minor Application Alarms

Minor application alarms involve the ELAP RMTP channels, RTDB capacity, and software errors.

6000000000000001 - RMTP Channel A Down

Channel A of the IP multicast mechanism is not available.

Procedure

1. Check the physical connections between the local ELAP(s), and the ELAP(s) and the DSM cards on the EAGLE 5 ISS. Make sure the connectors are firmly seated.
2. Run **`syscheck`** (see Running syscheck Through the ELAP GUI)

   If you cannot log in, go to Step 5 .
3. Perform Restarting the ELAP Software .
4. Capture the log files on both ELAPs (see Saving Logs Using the ELAP GUI ")
5. Contact the Customer Care Center .

6000000000000002 - RMTP Channel B Down

Channel B of the IP multicast mechanism is not available.

Procedure

1. Check the physical connections between the local ELAP(s), and the ELAP(s) and the DSM cards on the EAGLE 5 ISS.

   Make sure the connectors are firmly seated.

2. Run **syscheck** (see Running syscheck Through the ELAP GUI).

   If you cannot log in, go to Step 5 .

3. Perform Restarting the ELAP Software .
4. Capture the log files on both ELAPs (see Saving Logs Using the ELAP GUI).
5. Contact the Customer Care Center .

6000000000000004 - Security Log 50 Perc Full

The security log is 50 percent full.

Procedure

1. No action is necessary.

   This is an information message.

6000000000000008 - RTDB 80% Full

The RTDB on the ELAP or DSM is approaching capacity (80%).

NOTE: This is an indication to the user to immediately make plans for an ELAP upgrade or upgrade the DSM card to add more memory.

Procedure

1. At the EAGLE 5 ISS input terminal, enter the **rept-stat-mps** command.
2. Refer to the output to determine which specific database (for an ELAP or for a DSM card) is approaching its capacity.
3. Run **savelogs** on each ELAP (see Saving Logs Using the ELAP GUI), and contact the Customer Care Center .

6000000000000010 - Minor Software Error

A minor software error has been detected.

Procedure

1. Run **syscheck** (see Running syscheck Through the ELAP GUI).
2. Contact the Customer Care Center .

   Have the system health check data available.

6000000000000040 - RTDB Tree Error

RTDB data is stored as inverse tree structures. The trees have maximum theoretical depths based on the number of records in the tree. This alarm indicates either that the depth is greater than the theoretical maximum or that some other general problem has been found with a tree.

Procedure

1. Contact the Customer Care Center .

5

MPS Field Replaceable Units

Introduction

Field Replaceable Units (FRUs) are units of hardware that the customer can replace in the field. The following type of FRUs are described in this section:

- **Table 5-1** lists the FRUs that are specific to the MPS. The procedures to replace these FRUs are described in the referenced manuals.
- **Table 5-2** lists the FRUs that are common to all Tekelec 1100AS implementations and for which replacement is described in the referenced manuals.
- **Table 5-3** lists FRUs that are common to all Tekelec 1100AS implementations, but for which additional recovery actions must be performed by Customer Care Center .

General FRU Guidelines

Use the following guidelines when you replace any FRU:

- When unpacking, check the shipping carton for damage.
- Always use a static strap when handling the components.

- Read the instructions prior to performing the replacement or maintenance.
- Do not use excessive force when installing or removing the component. Damage to a connector may result. Apply even pressure when installing the component.
- When the procedures instruct you to install a component, you can also remove an existing component for replacement purposes.
- Always test the installed or replaced component to ensure correct operation.

Locating FRU Replacement Procedures

Table 5-1 through Table 5-3 list the FRU part numbers and replacement procedures to perform.

Table 5-1. MPS-Specific FRUs

FRU	Tekelec Part Number	Replace with	Replacement Procedure
Breaker Panel	870-1814-01	8701814-01	Breaker Panel Replacement Procedure
Hub	804-1198-01[1] or 804-1198-R01	804-1198-R01	Hub Replacement Procedure

Table 5-2 lists the FRUs whose replacement procedures are described in the *Tekelec T1100Application Server Hardware Manual*.

NOTE: All steps needed to replace the FRUs shown in Table 5-2 are contained in the referenced procedure. No other action is required.

Table 5-2. Tekelec T1100 AS FRUs (No Further Action Required)

FRU	Replacement Procedure
Fan Filter	*Tekelec 1100 Application Server Hardware Manual* (this replacement can be performed while the MPS is in service)
Fan Assembly	*Tekelec 1100 Application Server Hardware Manual* (this replacement can be performed while the MPS is in service)

Table 5-3 lists the FRUs whose replacement procedures are described in the *Tekelec T1100 Application Server Hardware Manual.*

CAUTION: Replacing one of the FRUs in Table 5-3 usually requires additional action to ensure that system and application data is also properly restored. Although general guidelines are shown here, always contact the Customer Care Center for assistance with a complete replacement procedure.

Table 5-3. Tekelec T1100 AS FRUs (Further Action Required)

FRU	Outline of Replacement Procedure
MPS Server (Tekelec 1100 AS)	1. Contact the Customer Care Center to perform the remaining steps. 2. Shut down the software, as described in MPS Server Power Down Procedure . 3. Replace the server, as described in the *Tekelec T1100Application Server Hardware Manual* . 4. Ensure that system and application data is properly restored.
Disk Drive	1. Contact Customer Care Center to perform the remaining steps. 2. Prepare for removing the disk by removing from the mirroring software all references to the failed disk.

[1] This FRU is functionally equivalent to the one specified by the replacement part number.

FRU	Outline of Replacement Procedure
	3. Replace the disk drive, as described in the *Tekelec T1100Application Server Hardware Manual.* 4. Ensure that system and application data is properly restored.
PCI cards or PCI Express cards	1. Contact the Customer Care Center to perform the remaining steps. 2. Shut down MPS server using MPS Server Power Down Procedure . 3. Replace PCI card, as described in the *Tekelec T1100 Applications Server Hardware Manual.* 4. Reboot the MPS using Rebooting the MPS .
CD/DVD Drive Assembly	1. Contact the Customer Care Center to perform the remaining steps. 2. Shut down MPS server using MPS Server Power Down Procedure . 3. Replace the CD/DVD Drive Assembly, as described in the *Tekelec T1100 Applications Server Hardware Manual.* 4. Reboot the MPS using Rebooting the MPS .
Always contact Customer Care Center when attempting to replace a FRU in this table.	

Fan Replacement Procedure

The Tekelec T1100 AS fan assembly can be replaced while the MPS is in service. For detailed replacement procedures, refer to the *Tekelec T1100Application Server Hardware Manual* .

Breaker Panel Replacement Procedure

This procedure explains how to remove the breaker panel. For more information about how the breaker panels are configured, see Breaker Panel .

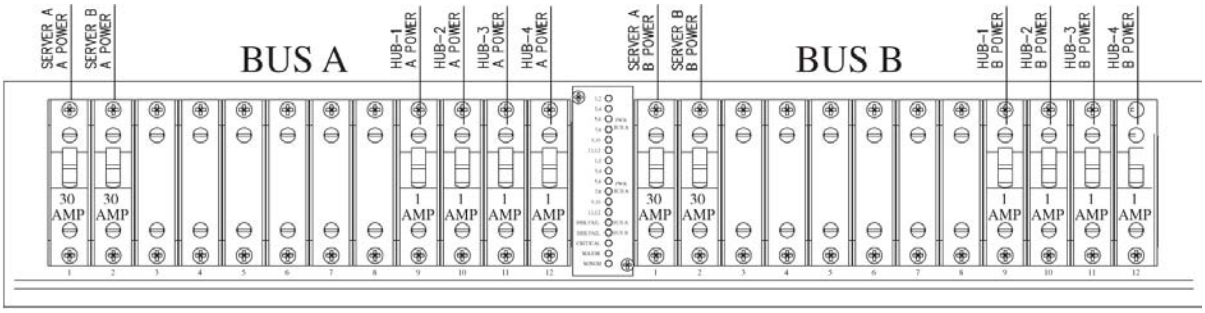
DANGER: Breaker panels contain high current capacities which can be dangerous to personnel and equipment. Before replacing a breaker panel, contact the Customer Care Center .

Procedure

1. Shut down both servers (see MPS Server Power Down Procedure).
2. Turn off the breakers for the MPS Server and the hubs at the failed breaker panel.

   See **Figure 5-1** to identify the appropriate breakers.

Figure 5-1. Breaker Panel Settings



3. Turn off the breakers at the main power panel for the “A” and “B” power sources to the failed breaker panel.
4. Verify that power is not present on the leads by checking with a Volt Ohm Meter at the “A” and “B” power input leads on the back of the failed breaker panel.
5. Disconnect the BATT and RTN leads from the power source for “A” and “B” at the breaker panel you want to remove.

   Mark or label each cable as you remove it.

   Tape or insulate all disconnected power leads.

6. Disconnect from the failed breaker panel all BATT and RTN leads for the hubs and MPS Servers A and B.
7. Disconnect the alarm cable from the failed breaker panel.
8. Disconnect the frame ground from the failed breaker panel.
9. Remove the screws that hold the failed breaker panel in the frame.
10. Remove the failed breaker panel.
11. Place the new breaker panel in the frame.
12. Replace the screws that hold the breaker panel in the frame.
13. Reconnect all cables accoring to the ELAPInterconnect T1100.

Hub Replacement Procedure

This procedure explains how to remove a hub. For more information about the hubs, see Hubs .

Procedure

1. Turn off the power switch on the rear of the hub to be replaced and on the rear of the other hub on the same network as the hub to be replaced.

   CAUTION

   CAUTION: Always turn off the power to both the hub to be replaced and to the other hub on its network. That is, turn the power off to both hubs 1 and 2 (main network) or to both hubs 3 and 4 (backup network)—but not to both pairs of hubs at once.

2. At the breaker panel, turn off the hub breakers (breakers 9 through 12 on the A side and on the B side).
3. Disconnect the BATT and RTN leads from the breaker panel for “A” and “B”.
4. Disconnect the frame ground.
5. Make sure that all RJ45 cables are labeled, and disconnect all the RJ45 cables.
6. Remove the screws that hold the hub in the frame.
7. Remove the hub.
8. Place the new hub in the frame.
9. Replace the screws that hold the hub in the frame.

10. Reconnect all the RJ45 cables according to the ELAP Interconnect T1100.
11. Reconnect all power connections according to the ELAP Interconnect T1100.
12. Make sure that the other hub on the same network is also powered up.

MPS Server Power Down Procedure

Use the following procedure to shut down the MPS software and turn off power to the MPS server. For more information about the Halt MPS interface menu item, refer to the *ELAP Administration Manual*. Use this procedure before performing the following replacement procedures:

- Replacing a Tekelec T1100 AS main unit (after shutting down the MPS server, refer to the *Tekelec T1100Application Server Hardware Manual* for the procedure for replacing the server)
- Replacing a disk drive (after shutting down the MPS server, refer to the *Tekelec T1100Application Server Hardware Manual* for the procedure for replacing the disk drive)

NOTE: After the replacement is complete, power up and test the MPS Server.

The following procedure includes details on how to shut down the MPS Server from the ELAP GUI. For more information about the Halt MPS interface menu item, refer to the *ELAP Administration Manual*.

CAUTION: Performing this procedure will cause interruption of service.

WARNING: DONOT perform the last step (to turn off the breakers) until Step 1 through Step 5 are complete.

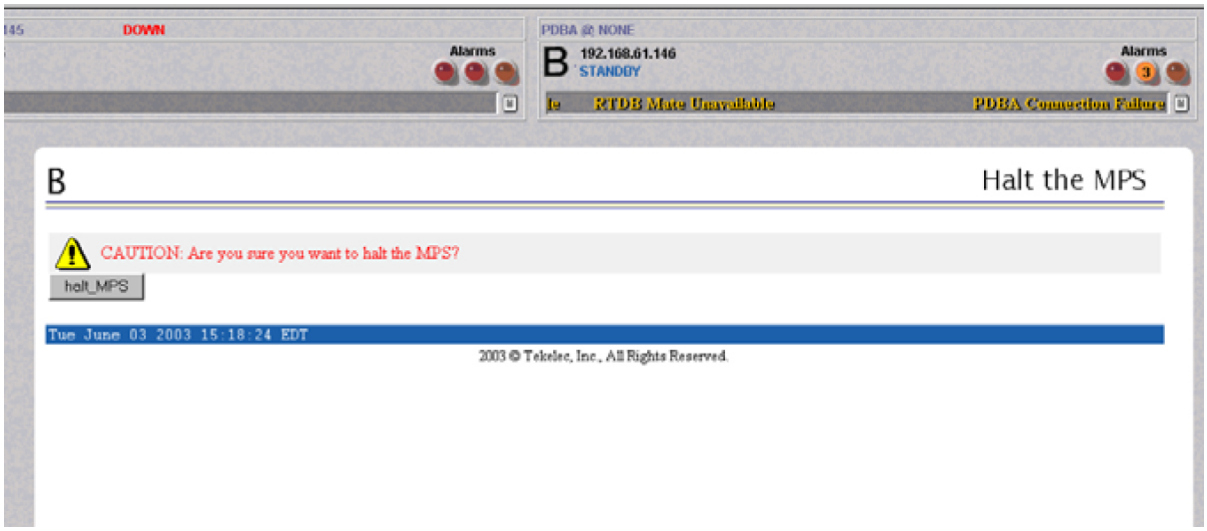
Procedure

1. Login to the User Interface screen of the ELAP (see Accessing the ELAP GUI Interface).
2. Check the banner information above the menu to verify that you are logged into the problem ELAP indicated in the UAM.

   If it is necessary to switch to the proper ELAP associated with the MPS to be powered down, select the **Select Mate** menu item.
3. When you are logged into the MPS to be powered down, select **Platform>Halt the MPS** menu item to stop the MPS.

   The screen shown in **Figure 5-2** is displayed:

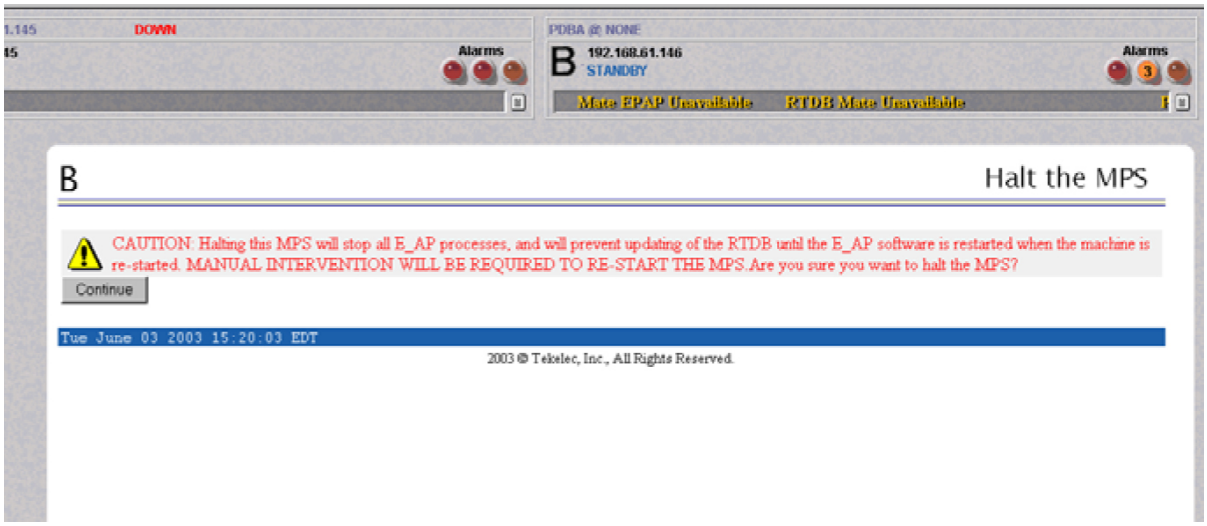
Figure 5-2. Halting the MPS



4. Click the **halt_MPS** button.

The confirmation message shown in **Figure 5-3** appears:

Figure 5-3. Halting the MPS Confirmation



5. Click the **Continue** button.

NOTE: The ELAP software and the MPS Server are now shut down. The MPS Server can be powered down.

WARNING

WARNING: DO NOT continue with Step 6 to turn off the breakers until Step 1 through Step 5 are complete.

6. To power down the MPS Server, turn off breakers A1 and B1 on the appropriate breaker panels for the MPS Server that is to be shut down (seeStep 2 of Breaker Panel Replacement Procedure).

For more information about breaker panels, see Breaker Panel .

The selected MPS Server is shut down and powered down.

Disk Drive Replacement Procedure

WARNING: Disk drive replacement should be performed only by the Customer Care Center . If a disk drive needs to be replaced, contact the Customer Care Center .

When the Customer Care Center replaces a disk drive, they perform the following functions:

Procedure

1. Once the disk that is failed has been determined, prepare for removing the disk by removing from the mirroring software all references to the failed disk.
2. Replace the disk drive hardware, as described in the *Tekelec T1100Application Server Hardware Manual*.
3. Configure the new disk.

PCI Card or PCI Express Card Replacement Procedure

WARNING: Replacement of PCI cards and PCI Express cards should be performed only by Tekelec Technical Services. If a PCI card or PCI Express card needs to be replaced, contact the Customer Care Center .

When Tekelec Technical Services replaces a PCI card or PCI Express card, they perform the following functions:

1. Contact the Customer Care Center . They will perform the remaining steps.
2. Shut down the MPS Server using MPS Server Power Down Procedure .
3. Replace the PCI card hardware as described in the *Tekelec 1100 Applications Server Hardware Manual*.
4. Reboot the MPS using Rebooting the MPS .

Tekelec T1100 AS Main Unit Replacement Procedure

Prior to replacing the main unit, the MPS Server must be shut down (see MPS Server Power Down Procedure).

For a detailed procedure for replacing the main unit, refer to the *Tekelec T1100 Application Server Hardware Manual*. Contact the Customer Care Center) to perform the steps to configure the new disk.

A

General Procedures

Introduction

This chapter contains miscellaneous general procedures that are referred to within this manual.

Accessing the ELAP GUI Interface

ELAP employs a web-based user interface. It uses the typical client-server paradigm. The front end appears on an Internet browser. The back end operates on the MPS platform. The front end is officially supported on Microsoft® Internet Explorer, version 5.0 or later, and on Mozilla® Firefox®, version 1.0.2 or later. When using Firefox, you will encounter the following message when logging into the ELAP GUI:

```
CAUTION: The User Interface may not function correctly with the browser you are using.
Microsoft Internet Explorer, version 5 and later, has been certified for this application
```

Use the following procedure to access the main screen of the ELAP GUI interface.

Procedure

1. Using the selected browser (Internet Explorer 5.0 or later or Mozilla Firefox 1.0.2 or later), enter the IP address for your ELAP application.

The login screen shown in Figure A-1 appears.

Figure A-1. ELAP User Interface Screen

If using Firefox, the following message will be displayed when logging into the ELAP GUI:

```
CAUTION: The User Interface may not function correctly with the browser you are using.
Microsoft Internet Explorer, version 5 and later, has been certified for this application
```

NOTE: Figure A-1 does not show the release number that appears on the ELAP User Interface Login window because this manual covers multiple ELAP releases.

2. Enter the appropriate username and password.

   Specify a username that has permission to access the menu items indicated in the procedure to be performed. Table A-1 shows the default usernames. Additional usernames can be defined by selecting the User Administration menu item. For more information about assigning usernames, refer to the *ELAP Administration Manual*.

Table A-1. Usernames

ELAP UI Login Name	Access Granted
elapmaint	Maintenance menu and all sub menus
elappdba	Database menu and all sub menus
elapdebug	Debug menu and all sub menus
elapplatform	Platform menu and all sub menus
uiadmin	User Administration menu
elapall	All of the menus in this Table

3. Continue with the procedure that invoked this procedure.

Connecting to the Server Command Line

You can connect to the ELAP server command line for the following purposes:

- Accessing the ELAP text interface (see Accessing the ELAP Text Interface)
- Running **syscheck** (see Running the System Health Check)

It is possible to connect to the ELAP server command line in any of the following ways:

- Use a secure shell (**ssh**) utility to connect to either server's IP address. This connection will be made through the port that is identified as **eth0** on the ELAP Interconnect T1100 and is identified as **eth91** by the software. For more information, see Using ssh to Connect to the Server Command Line .

- Use the **ppp** utility to connect to the modem that is installed in the server's OOBM (Out-of-Band Management) card and then use **ssh** to connect to the server's IP address (see Connecting to a Server's OOBM Modem).

- Connect a cable, Part Number 830-0058-xx (xx represents the cable length), to serial port 4 on the server B (see Connecting a Local Access Terminal to Server's Serial Port)

Using ssh to Connect to the Server Command Line

You can log into either ELAP server from any terminal using a **ssh** (Secure Shell) utility.

> **NOTE: If your terminal does not already have ssh installed, PuTTY is a free ssh utility for Windows that you can download from the web.**

Use the following procedure to **ssh** to the server command line.

Procedure

1. From a command-line prompt on your terminal, enter the following command to start a secure shell session with an ELAP server: **ssh <username>@<server_IP_address>**

   where **<server_IP_address>** is the IP address of the server and **<username>** is either of the following:

   - ELAPconfig—for accessing the ELAP text interface, enter the ELAPconfig username and the password provided by your system administrator. For more information about the ELAP text interface, see Accessing the ELAP Text Interface .

   - syscheck—for runing the **syscheck** utility, enter syscheck as the username and syscheck as the password. For more information about running syscheck from this interface, see Running syscheck Using the syscheck Login .

Connecting to a Server's OOBM Modem

Use the following procedure to connect to the server command line through the modem in the server's OOBM (Out-of-Band Management) card.

Procedure

1. Use the **ppp** utility to connect the modem located in the OOBM card in server A.

   For information about setting up the **ppp** utility, refer to the *ELAP Administration Manual*.

2. When the prompt appears, perform Using ssh to Connect to the Server Command Line .

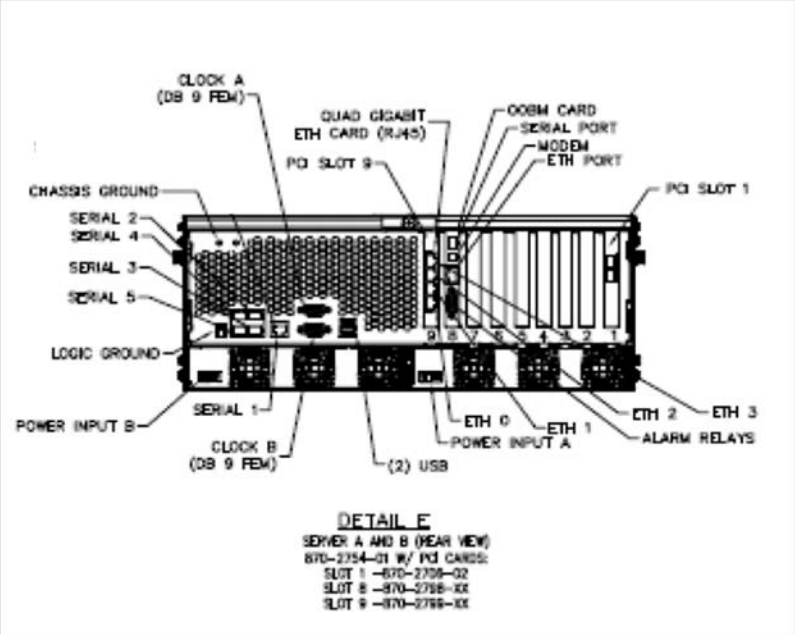
Connecting a Local Access Terminal to Server's Serial Port

Use the following procedure to connect a cable, Part Number 830-0058-xx, to serial port 4 on the server.

Procedure

1. Connect the workstation you will use as the Local Access Terminal to Serial port 4 on the server (see **Figure A-2**).

Figure A-2. Serial Port 4 on MPS Server



2. Set the terminal to match how the serial port is configured by the MPS:
   - 9600 baud
   - Parity 7E1
3. When the prompt appears on the Local Access Terminal, enter either of the following usernames and associated passwords:
   - To access the ELAP text interface, enter the ELAPconfig username and the password provided by your system administrator. For more information about the ELAP text interface, see Accessing the ELAP Text Interface .
   - To run the **syscheck** utility, enter syscheck as the username and syscheck as the password. For more information about running syscheck from this interface, see Running syscheck Using the syscheck Login

Accessing the ELAP Text Interface

The ELAP text-based user interface is accessed through the Local Access Terminal. The text-based user interface is used for initial configuration of the ELAP application. Some errors described in this manual result from errors in the initial configuration, and recovery from them requires that you access the text interface.

For information about the initial configuration of the ELAP application, refer to the *ELAP Administration Manual*.

Procedure

1. Connect the Local Access Terminal to the MPS server you need to access (see Connecting a Local Access Terminal to Server's Serial Port).
2. Log in with username elapconfig and the password provided by your system administrator.
3. Continue with the procedure that invoked this procedure.

Running the System Health Check

The operator can run **syscheck** to obtain the operational status of the MPS platform with one of the following procedures:

- Running syscheck Through the ELAP GUI
- Running syscheck Using the syscheck Login

Running syscheck Through the ELAP GUI

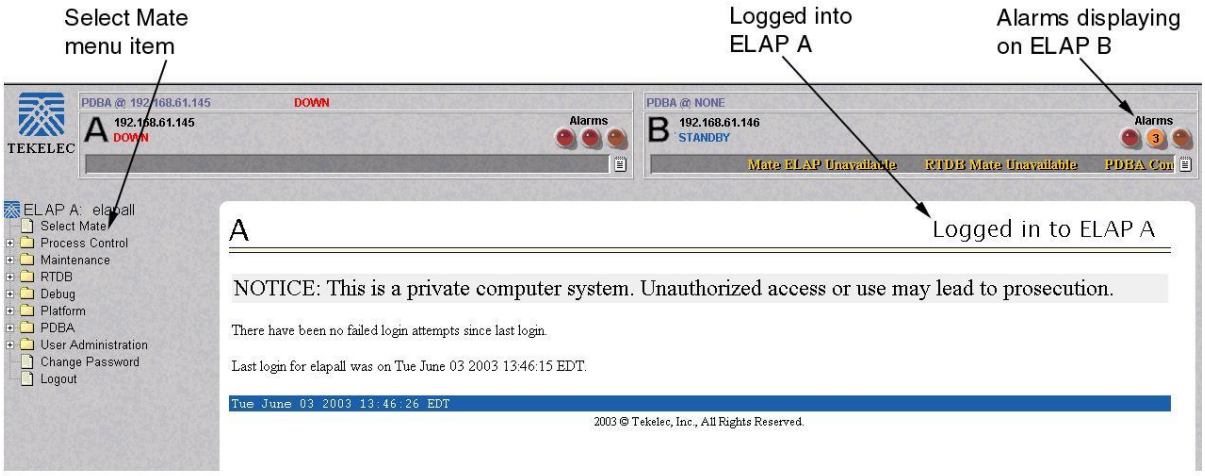
Refer to the *ELAP Administration Manual* for more details and information about logins and permissions.

Procedure

1. Log in to the User Interface screen of the ELAP GUI (see Accessing the ELAP GUI Interface).
2. Check the banner information above the menu to verify that the ELAP about which system health information is sought is the one that is logged into.

   The example in **Figure A-3** shows a user is logged into ELAP A, while alarms are showing on ELAP B. To find out more information about conditions on the B server, run **syscheck** on that server.

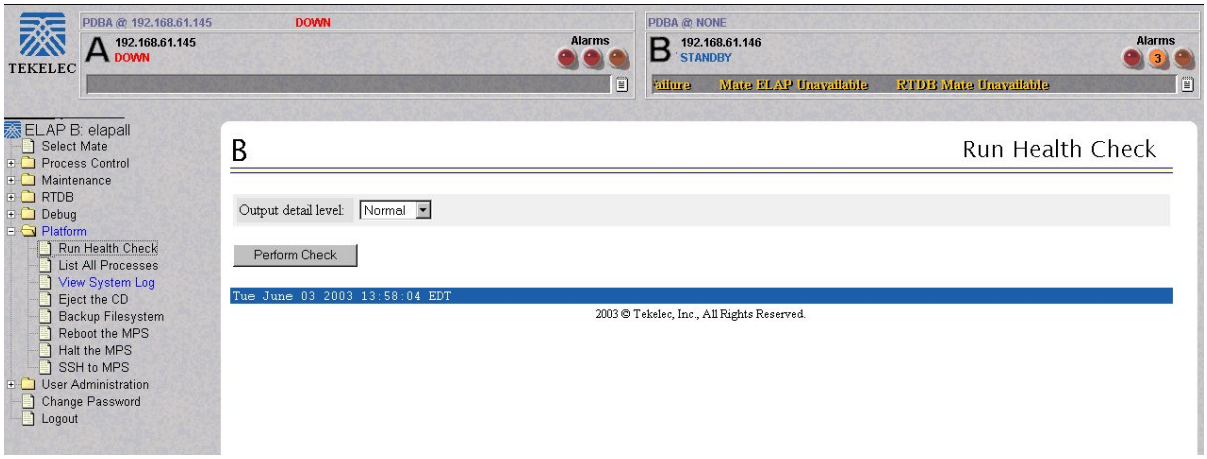
Figure A-3. Logged In Screen



3. If it is necessary to switch to the other ELAP, click the **Select Mate** menu item.

4. When the GUI shows you are logged into the ELAP about which you want system health information, select **Platform>Run Health Check**. as shown in the following screen.

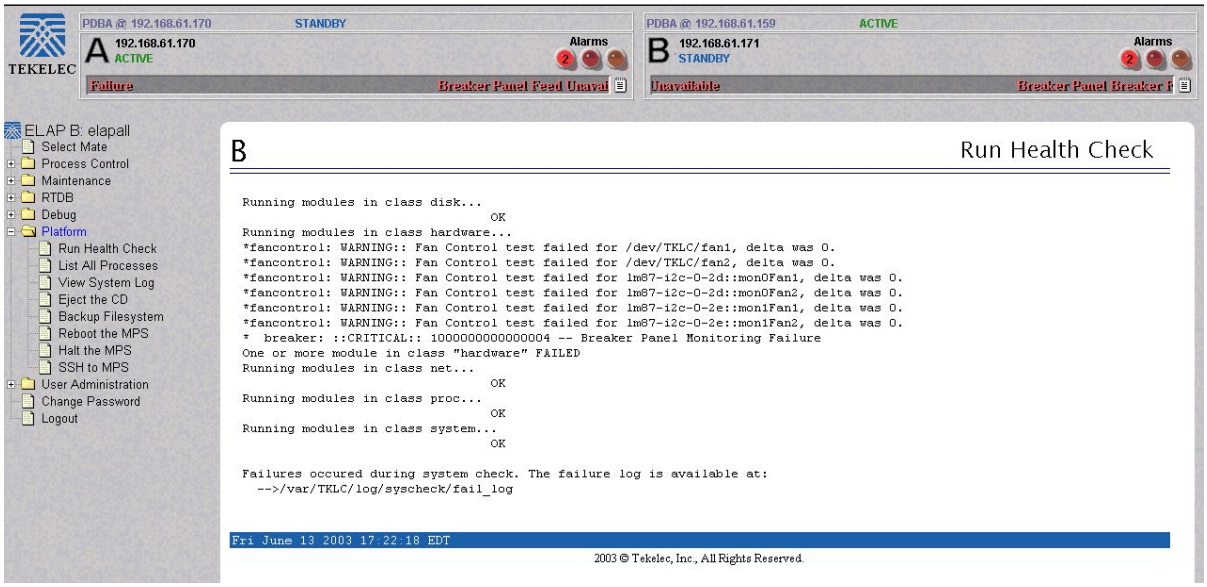
Figure A-4. Run Health Check



5. On the Run Health Check screen, use the pull-down menu to select Normal or Verbose for the **Output detail level** desired.
6. Click the **Perform Check** button to run the system health check on the selected MPS.

   The system health check output data will display on the screen. The example shown in **Figure A-5** shows Normal output with errors.

Figure A-5. Displaying System Health Check on ELAP GUI



Running syscheck Using the syscheck Login

If the ELAP application has not been installed on the MPS or you are unable to log in to the ELAP user interface, you cannot run **syscheck** through the GUI. Instead, you can run **syscheck** from the **syscheck** login, and report the results to the Customer Care Center .

Procedure

1. Connect the Local Access Terminal to the MPS server whose status you want to check (see Connecting to the Server Command Line).
2. Log in as the **syscheck** user.

```
Login:  syscheck
Password:  syscheck
```

The **syscheck** utility runs and its output is displayed to the screen.

Saving Logs Using the ELAP GUI

During some corrective procedures, it may be necessary to provide Tekelec with information about the MPS for help in clearing an alarm. These log files are used to aid the Customer Care Center when troubleshooting the MPS.

Use the following procedure to save logs using menu selections from the ELAP GUI.

Procedure

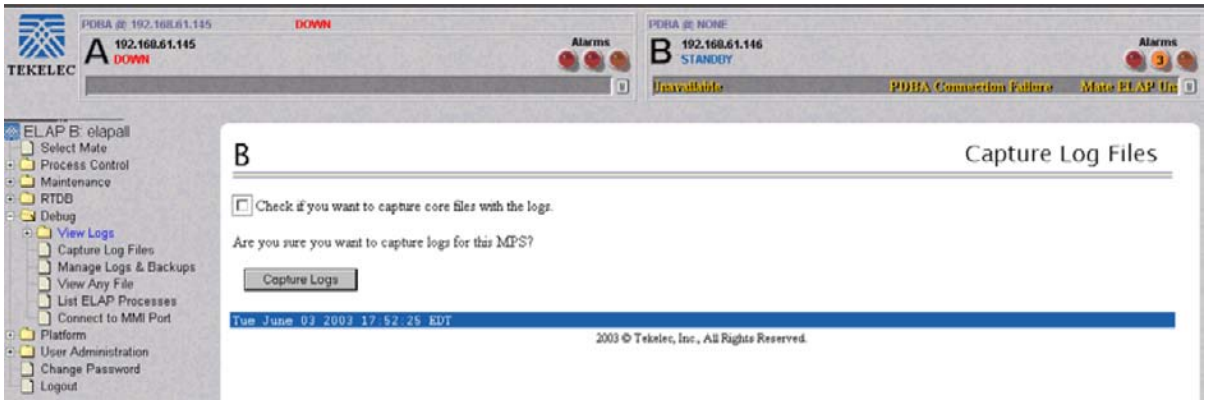
1. Login to the User Interface screen of the ELAP GUI (see Accessing the ELAP GUI Interface).
2. Check the banner information above the menu to verify that you are logged into the problem ELAP indicated in the UAM.

   If it is necessary to switch to the problem ELAP, click the **Select Mate** menu item.

3. From the menu, select **Debug>Capture Log Files.**
4. Deselect (if necessary) the box labeled Check if you want to capture core files with the Logs, as shown in **Figure A-6** .

   NOTE: Contact the Customer Care Center for assistance before capturing core files with the log files.

Figure A-6. Capture Logs File Screen



5. Click the **Capture Logs** button to capture the log files.

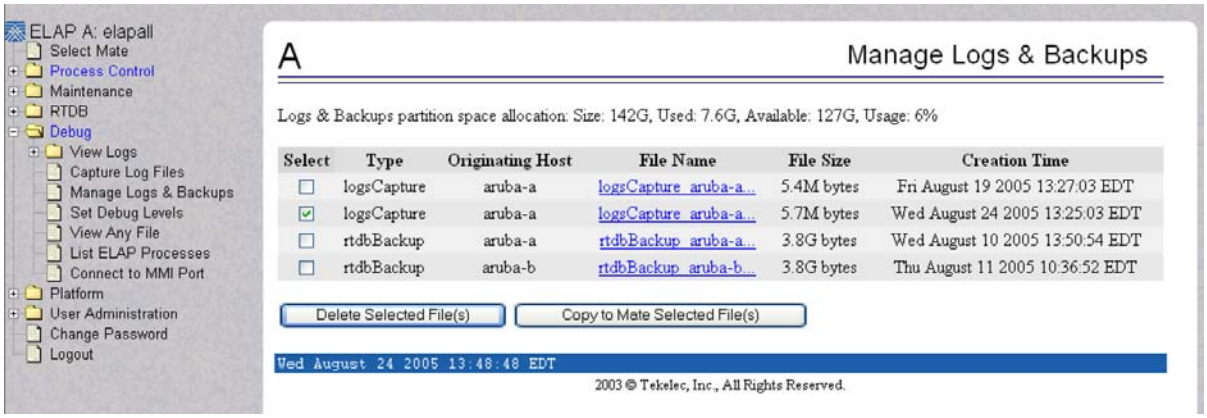
   After completion, verify the following response:

Figure A-7. Capture Logs Success

6. Contact the Customer Care Center to analyze and check the log files.
7. When the Customer Care Center has finished analyzing the logs files, delete them from the MPS by selecting **Debug>Manage Logs Files and Backups** to open the **Manage Logs and Backups** Screen.
8. Click the checkboxes for the files you want to delete and then click the **Delete Selected File(s)** button.

   An example is shown in **Figure A-8** .

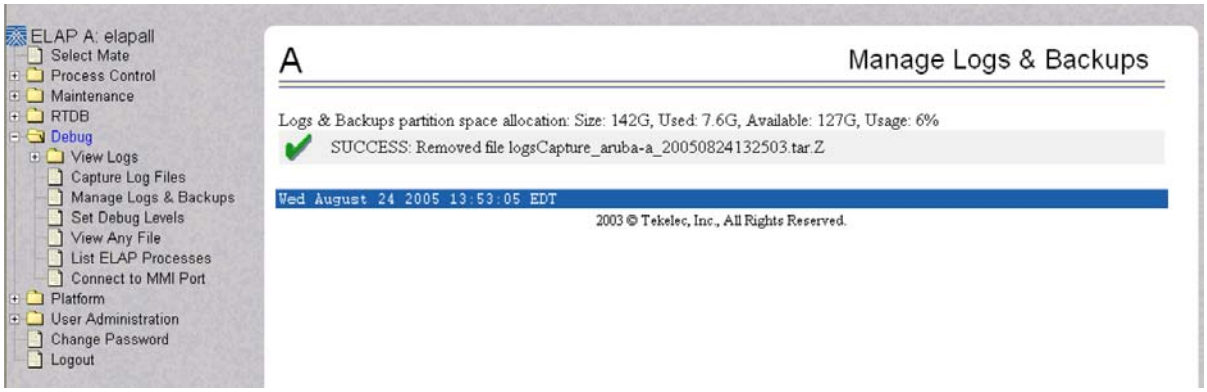
Figure A-8. Deleting Captured Log Files



.

When the log files have been deleted, the GUI displays confirmation, as shown in **Figure A-9** .

Figure A-9. Delete Log Files Success



Restarting the ELAP Software

This procedure is used when referenced by one of the procedures in Chapter 4 MPS Platform and Application Alarms.

CAUTION

CAUTION: Perform this procedure only when directed to by one of the procedures in Chapter 4 MPS Platform and Application Alarms. This is not a standalone procedure.

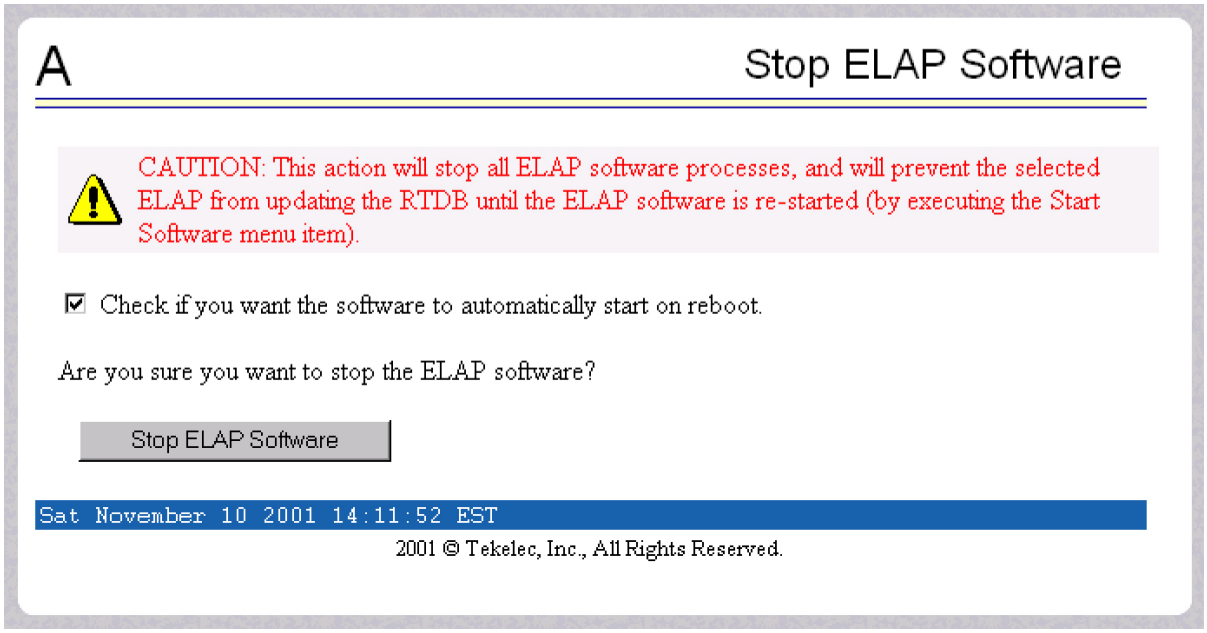
Procedure

1. Log in to the User Interface screen of the ELAP GUI (see Accessing the ELAP GUI Interface).
2. Check the banner information above the menu to verify that you are logged into the problem ELAP indicated in the UAM.

   If it is necessary to switch to the problem ELAP, select **Select Mate**.
3. From the **elapmaint** screen, select **Process Control>Stop Software**.

   The screen shown in **Figure A-10** appears:

Figure A-10. Stop Software Confirmation



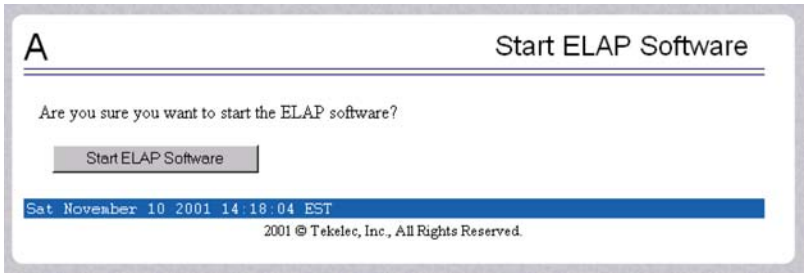
4. On the **Stop ELAP Software** screen, make sure the checkbox is checked as shown in **Figure A-10** .
5. Click the **Stop ELAP Software** button to stop the software.

   The screen shown in **Figure A-11** appears.

Figure A-11. Stop Software Completion Screen

6. Select **Process Control>Start Software**.
7. From the **Start ELAP Software** screen, make sure the checkboxes are checked as shown in **Figure A-12** :

Figure A-12. Start ELAP Software



8. Click the **Start ELAP Software** button to start the software.

   The screen shown in **Figure A-13** confirms that the software has started:

Figure A-13. Start Software Completion Screen

Rebooting the MPS

This procedure is used when referenced by one of the procedures in Chapter 4 MPS Platform and Application Alarms.

CAUTION: Perform this procedure only when directed to by one of the procedures in Chapter 4 MPS Platform and Application Alarms. This is not a standalone procedure.

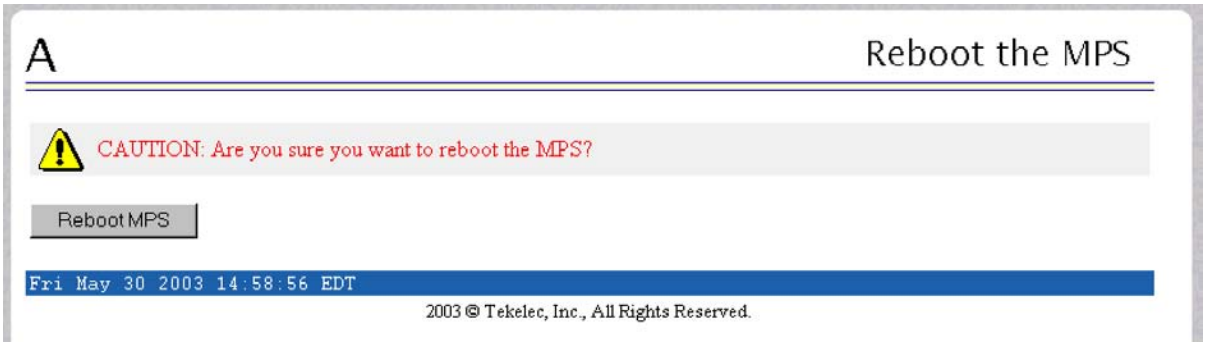
Procedure

1. Login to the **User Interface** screen of the ELAP GUI (see Accessing the ELAP GUI Interface).
2. Check the banner information above the menu to verify that you are logged into the problem ELAP indicated in the UAM.

   Select **Select Mate** if necessary to switch to the problem ELAP.
3. Select **Platform>Reboot the MPS**.

   The screen shown in **Figure A-14** appears:

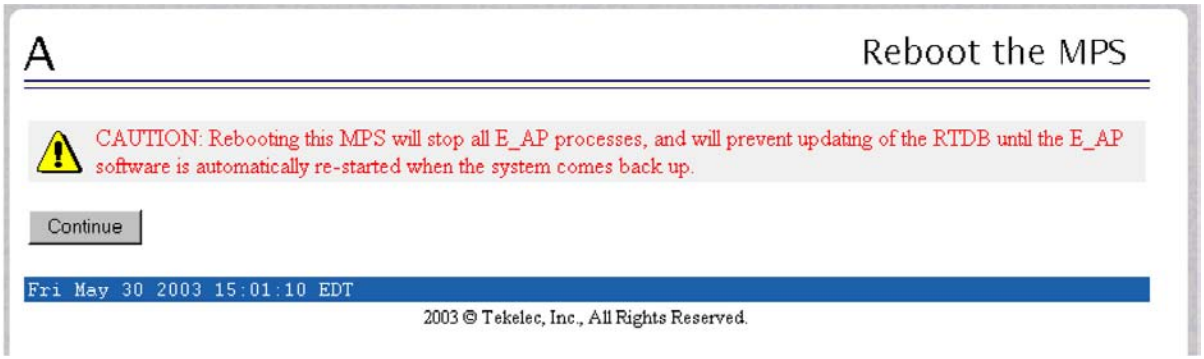
Figure A-14. Request Reboot of the MPS



4. Click the **Reboot the MPS** button to restart the MPS.

   The screen shown in **Figure A-15** is displayed.

Figure A-15. Confirm Requested Reboot the MPS



5. Click the **Continue** button.

The screen shown in **Figure A-16** is displayed.

Figure A-16. Reboot Information

This will reboot the ELAP and also start the ELAP software. The connection to the ELAP will be lost.

6. At the EAGLE 5 ISS input terminal, enter the **`rept-stat-mps`** command to verify the status of the ELAP.

Refer to the *Commands Manual* to interpret the output.

7. If the problem has not been resolved, contact the Customer Care Center for assistance.

Have the system health check data available.

8. Return to the procedure that directed you to perform this procedure.

Glossary

A

AS	Application Server

B

BATT	Battery, including. Power supply cable

C

CD	Carrier Detect Compact Disk
Channel	A single Time-Division-Multiplexed (TDM) timeslot within a channelized E1/T1 port. Generically, channels can be used for transporting signaling, digitized voice, or data information. Unused channels typically are filled with defined idle codes designed to maintain sufficient ones density to ensure frame-level synchronization.
CLLI	Common Language Location Identifier
CMOS	Complementary Metal Oxide Semiconductor
CSR	Customer Service Request

D

daemon	A process that runs in the background and performs a specified operation at predefined times or in response to certain events.
Database	All data that can be administered by the user, including cards, destination point codes, gateway screening tables, global title translation tables, links, LNP services, LNP service providers, location routing numbers, routes, shelves, subsystem applications, and 10 digit telephone numbers.
DHCP	Dynamic Host Configuration Protocol
DO	Derived Object
DSM	Database Service Module.

E

ECC	Error Correction Coded
ELAP	EAGLE LNP Application Processor

F

FRU	Field Replaceable Unit

G

GB	Gigabyte — 1,073,741,824 bytes

GMT	Greenwich Mean Time
GUI	Graphical User Interface

I

IP	Intelligent Peripheral Internet Protocol
IP^7	Tekelec's Internet Protocol to SS7 Interface
IPM	Implementation Project Management IMT Power and Multiplexer Card Initial Product Manufacture
ISO	International Standards Organization
ISS	Integrated Signaling System

L

LAN	Local Area Network See also STP LAN.
LED	Light Emitting Diode
LNP	Local Number Portability
LSMS	Local Service Management System

M

MPS	Multi-Purpose Server

N

NTP	Network Time Protocol

P

PCI	Peripheral Component Interface Point Code International Protocol Control Information
PPP	Point-to-Point Protocol

R

RAM	Random Access Memory A type of computer memory that can be accessed randomly; that is, any byte of memory can be accessed without touching the preceding bytes.
RMTP	Reliable Multicast Transport Protocol
ROM	Read Only Memory
Route	A path to another signaling point.
RTDB	DSM Real-time database

T

TPD	Tekelec Platform Development

U

UAM	Unsolicited Alarm Message.
UI	User Interface
UIM	Unsolicited Information Message

W

WAN	Wide Area Network

Index