Tekelec EAGLE® Provisioning Application Processor (EPAP)

EPAP Alarms on the T1200 Platform

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Chapter 1

Introduction

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This chapter provides general information about manual organization, the scope of this manual, its targeted audience, how to get technical assistance, and how to locate customer documentation on the Customer Support Site.

Overview

This manual describes all available alarms and provides their recovery procedures.

Scope and Audience

This manual describes platform and application alarms.

This manual is for maintenance personnel that are responsible for alarm resolution. When instructed by the application, use this manual to locate the platform alarm number and its recovery procedure. This manual also describes the System Healthcheck Utility, which generates a log file that can be provided to the Tekelec Customer Care Center for alarm resolution.

Manual Organization

This manual is organized into the following chapters:

Introduction contains general information about manual organization, scope and audience, related documentation, how to locate customer documentation on the Customer Support site, how to get technical assistance, and RMA requirements.

Problem Detection and Reporting provides information about problem detection and reporting.

Recovery Support describes the recommended backing up of the RTDB and presents additional recovery support procedures that may be referred to by alarms recovery actions.

Alarms provides recovery procedures for platform and application alarms.

General Procedures contains miscellaneous general procedures that are referred to within this manual

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.

Table 1: Admonishments

	**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*.)

Customer Care Center

The Tekelec Customer Care Center is your initial point of contact for all product support needs. A representative takes your call or email, creates a Customer Service Request (CSR) and directs your requests to the Tekelec Technical Assistance Center (TAC). Each CSR includes an individual tracking number. Together with TAC Engineers, the representative will help you resolve your request.

The Customer Care Center is available 24 hours a day, 7 days a week, 365 days a year, and is linked to TAC Engineers around the globe.

Tekelec TAC Engineers are available to provide solutions to your technical questions and issues 7 days a week, 24 hours a day. After a CSR is issued, the TAC Engineer determines the classification of the trouble. If a critical problem exists, emergency procedures are initiated. If the problem is not critical, normal support procedures apply. A primary Technical Engineer is assigned to work on the CSR and provide a solution to the problem. The CSR is closed when the problem is resolved.

Tekelec Technical Assistance Centers are located around the globe in the following locations:

Tekelec - Global

Email (All Regions): support@tekelec.com

- **USA and Canada**

  Phone:

  1-888-FOR-TKLC or 1-888-367-8552 (toll-free, within continental USA and Canada)

  1-919-460-2150 (outside continental USA and Canada)

  TAC Regional Support Office Hours:

  8:00 a.m. through 5:00 p.m. (GMT minus 5 hours), Monday through Friday, excluding holidays

- **Caribbean and Latin America (CALA)**

  Phone:

  USA access code +1-800-658-5454, then 1-888-FOR-TKLC or 1-888-367-8552 (toll-free)

  TAC Regional Support Office Hours (except Brazil):

  10:00 a.m. through 7:00 p.m. (GMT minus 6 hours), Monday through Friday, excluding holidays

  - **Argentina**

    Phone:

0-800-555-5246 (toll-free)

- **Brazil**

  Phone:

  0-800-891-4341 (toll-free)

  TAC Regional Support Office Hours:

  8:30 a.m. through 6:30 p.m. (GMT minus 3 hours), Monday through Friday, excluding holidays
- **Chile**

  Phone:

  1230-020-555-5468
- **Colombia**

  Phone:

  01-800-912-0537
- **Dominican Republic**

  Phone:

  1-888-367-8552
- **Mexico**

  Phone:

  001-888-367-8552
- **Peru**

  Phone:

  0800-53-087
- **Puerto Rico**

  Phone:

  1-888-367-8552 (1-888-FOR-TKLC)
- **Venezuela**

  Phone:

  0800-176-6497

- **Europe, Middle East, and Africa**

  Regional Office Hours:

  8:30 a.m. through 5:00 p.m. (GMT), Monday through Friday, excluding holidays

  - **Signaling**

    Phone:

    +44 1784 467 804 (within UK)
  - **Software Solutions**

    Phone:

+33 3 89 33 54 00

- **Asia**
  - **India**

    Phone:

    +91 124 436 8552 or +91 124 436 8553

    TAC Regional Support Office Hours:

    10:00 a.m. through 7:00 p.m. (GMT plus 5 1/2 hours), Monday through Saturday, excluding holidays
  - **Singapore**

    Phone:

    +65 6796 2288

    TAC Regional Support Office Hours:

    9:00 a.m. through 6:00 p.m. (GMT plus 8 hours), Monday through Friday, excluding holidays

Emergency Response

In the event of a critical service situation, emergency response is offered by the Tekelec Customer Care Center 24 hours a day, 7 days a week. The emergency response provides immediate coverage, automatic escalation, and other features to ensure that the critical situation is resolved as rapidly as possible.

A critical situation is defined as a problem with the installed equipment that severely affects service, traffic, or maintenance capabilities, and requires immediate corrective action. Critical situations affect service and/or system operation resulting in one or several of these situations:

- 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.

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, including the latest versions of Feature Notices.

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

- Hardware or Installation manuals are printed 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 Problem Reports (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.

Locate Product Documentation on the Customer Support Site

Access to Tekelec's Customer Support site is restricted to current Tekelec customers only. This section describes how to log into the Tekelec Customer Support site and locate a document. Viewing the document requires Adobe Acrobat Reader, which can be downloaded at www.adobe.com.

1. Log into the *Tekelec Customer Support* site.

Note: If you have not registered for this new site, click the **Register Here** link. Have your customer number available. The response time for registration requests is 24 to 48 hours.

2. Click the **Product Support** tab.
3. Use the Search field to locate a document by its part number, release number, document name, or document type. The Search field accepts both full and partial entries.
4. Click a subject folder to browse through a list of related files.
5. To download a file to your location, right-click the file name and select **Save Target As**.

Chapter 2

Problem Detection and Reporting

Topics:

- *Detecting and Reporting Problems.....17*
- *T1200 Application Server LEDs.....17*
- *Displaying Errors on EPAP GUI.....21*
- *Unsolicited Alarm and Information Messages...22*

This chapter provides information about problem detection and reporting by the platform operating system and the EPAP application.

Detecting and Reporting Problems

Problems are detected and reported by the platform operating system and the EPAP application.

- The 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 server (see *T1200 Application Server LEDs*).
  - An alarm message sent to the application which:
    - displays the alarm on the application GUI (see *Displaying Errors on EPAP GUI*).
    - sends the alarm message to the EAGLE 5 ISS which sends a UAM to the operator screen to notify the user (see *Unsolicited Alarm and Information Messages*).
  - 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 EPAP GUI* .

- The EPAP application running on the 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 (see *T1200 Application Server LEDs*).
  - An error displayed on the graphical user interface (GUI) banner (see *Displaying Errors on EPAP GUI*).
  - An error sent to to the EAGLE 5 ISS, which reports the error as a UAM alarm (see *Unsolicited Alarm and Information Messages*).
  - 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 EPAP GUI* .

T1200 Application Server LEDs

This section describes the LEDs found on the front and rear of the application server.

Server Panel LEDs

Figure 1: T1200 Application Server LEDs shows the T1200 application sever LEDs on the front panel

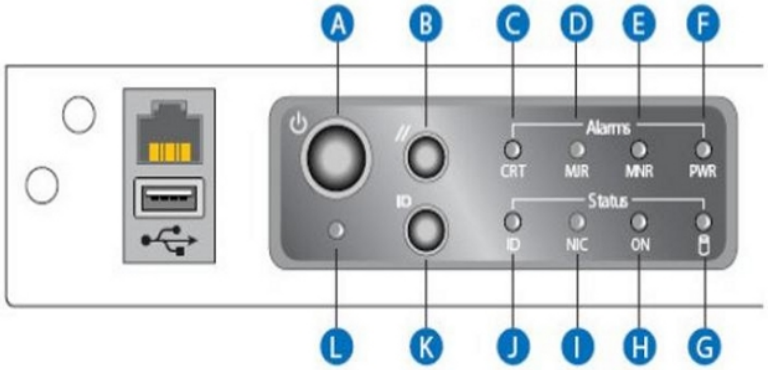

Figure 1: T1200 Application Server LEDs

Table 2: Front Panel LED Descriptions (T1200 AS)

Item	Feature	Description
Front Panel Switches		
A	Power switch	Toggles the system power
B	Reset switch	Resets the system
K	ID switch	Toggles the system ID LED
L	NMI switch	Asserts NMI to the server board
Front Panel Alarms LEDs		
C	Critical (yellow or red[a])	When continuously lit, this indicates the presence of a Critical System Fault, which is an error or event with a fatal system impact. In this case, the system cannot continue to operate. An example is the loss of a large section of memory, or other corruption that renders the system not operational.
D	Major (yellow or red[a])	When continuously lit, this indicates the presence of a Major System Fault, which is an error or event which has a discernible system impact. In this case, the system can continue to operate but in a degraded fashion (reduced performance or loss of non-fatal feature reduction). An example is the loss of one or two mirrored disks.

Item	Feature	Description
E	Minor (yellow)	When continuously lit, this indicates the presence of a Minor System Fault, which is an error or event that has little impact to actual system operation. An example is a correctable ECC error.
F	Power (yellow)	When continuously lit, this indicates the presence of a Power System Fault, which is an error or event that has little impact to actual system operation. An example is a correctable ECC error.
Front Panel Status LEDs		
G	Disk Activity / Fault LED (green or amber)	Indicates hard drive activity when green, or a hard drive fault when amber. This is an OR'ed display for all three internal drives. Remove the front bezel to observe the individual hard drive LEDs and identify a faulty drive.
H	Main Power LED (green)	When continuously lit, this indicates the presence of DC power in the server. The LED goes out when the power switch is turned off (standby mode) or the power source is disrupted.
I	NIC activity LED (green)	Indicates NIC activity
J	NIC activity LED (green)	This LED can be toggled remotely or by front panel ID switch for identification purposes.

[a]Critical and major alarm indicators are bi-color LEDs that can eb configured to be yellow or red. Yellow is the default.

Ethernet Connector LEDs

For each Ethernet connector, there are two status indicator LEDs integrated into the connector assembly, a green LED to the left of the connector and a bi-color LED to the right of the connector. The same LEDs are used for the RMM port.

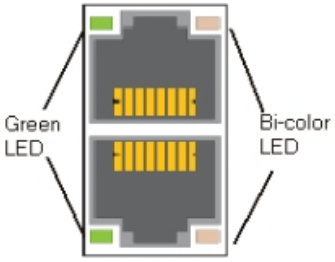

Figure 2: T1200 AS Ethernet Connectors

The green LED indicates the connection status for each port. If the port is connected to a network but there is no current activity, the green LED is continuously illuminated. When there is activity on the connected network, the green LED blinks.

The bi-color LED indicates the connection speed. If the green LED indicates a network connection but the bi-color LED is not lit, then the connection speed is 10 Mbps. If the bi-color LED shows a solid green indication, then the connection speed is 100 Mbps. If the bi-color LED is solid amber, then the connection speed is 1 Gbps.

DC Power Supply LEDs

The power supply provides a single, external, bi-color LED to indicate its status. *Figure 3: Power Supply LED* shows the power supply LEDs on the rear.

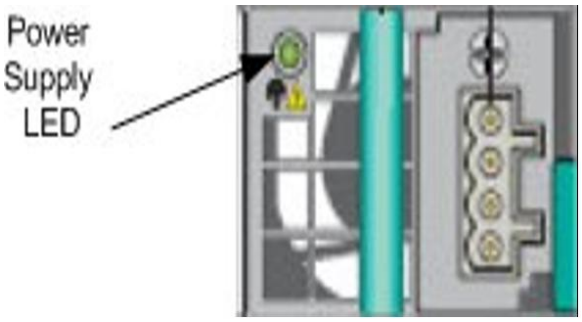

Figure 3: Power Supply LED

The LED blinks green when DC is applied to the PSU and standby voltages are available. The LED displays solid green when all the power outputs are available. The LED displays solid amber when the PSU has failed or shut down due to over-current or over-temperature.

See *Table 3: DC Power Supply LED Indicators* for LED conditions

Table 3: DC Power Supply LED Indicators

Power Supply Condition	Bi-color LED Indication
No DC power to all power supplies	OFF
No DC power to this power supply (for 1+1 configuration) OR	Amber

Power Supply Condition	Bi-color LED Indication
Power supply critical event causing a shutdown: Failure, fuse blown (1+1 only), OCP (12V), OVP (12V), fan failed	
Power supply warning events where the power supply continues to operate: High temp, high power/high current, slow fan	1 Hz blinking Amber
DC present/only 5 Vsb on (PS Off)	1 Hz blinking Green
Output ON and OK	Green

Displaying Errors on EPAP GUI

If the EPAP application detects an application error or receives an alarm message from the platform layer, the EPAP 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 4: Errors Displayed on EPAP GUI shows an example of errors displayed on the EPAP GUI.

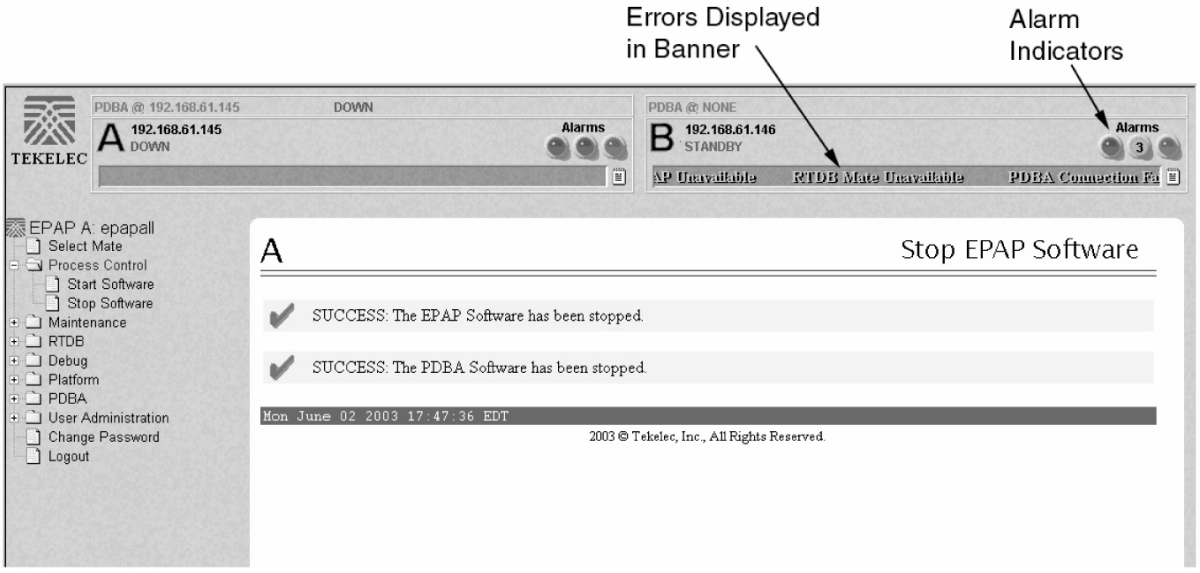

Figure 4: Errors Displayed on EPAP GUI

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 5: Viewing Alarm Details* shows an example.

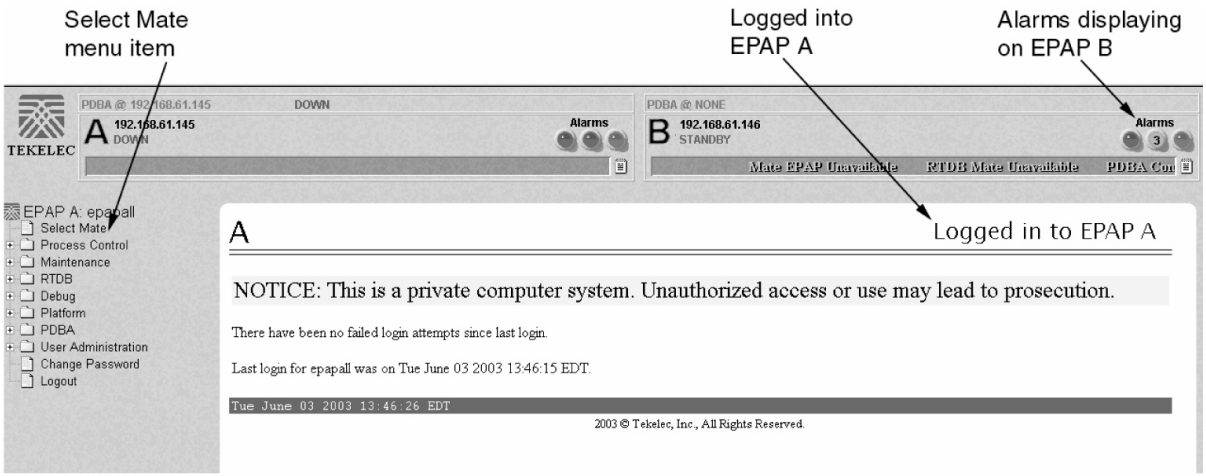

Figure 5: Viewing Alarm Details

When an alarm value in the Alarm View popup window represents multiple alarms, as shown in *Figure 5: Viewing Alarm Details*, the text of each of the alarms being reported is displayed. The individual alarm text is found in *Alarms Overview*. To correct the alarm condition, perform the associated procedure described in *Alarm Recovery Procedures*.

Unsolicited Alarm and Information Messages

The EAGLE 5 ISS displays only one alarm per EPAP at a time based on the highest priority. If a single error is detected, the EPAP application sends an error message to the EAGLE 5 ISS terminal to report the active alarm category. If multiple errors are detected, the EPAP 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 hardware and software are reported by the following UAMs, which are described in greater detail in the EAGLE 5 ISS *Unsolicited Alarm and Information Messages*. 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 platform and application errors, the operator receives this UAM:

```
UAM 0250 MPS available.
```

For information about the alarm data contained in UAMs, see *Alarms* .

Chapter 3

Recovery Support

Topics:

- *Daily Maintenace Procedures.....24*
- *System Health Check Overview.....29*
- *Running the System Health Check.....34*
- *Restoring Databases from Backup Files.....36*
- *Recovering From Alarms.....41*

The information in this section describes the recommended backing up of the RTDB and presents additional recovery support procedures that may be referred to by alarms recovery actions.

Daily Maintenace Procedures

Tekelec recommends that the Automatic PDB/RTDB Backup feature be used to backup all data stored in the PDB/RTDB. The manual backup procedures are included in this section if the database backup needs to be performed manually. Storing database backups in a secure off-site location ensures the ability to recover from system failures.

This section describes the following recommended daily maintenance procedures:

- *Backing Up the RTDB*
- *Backing Up the PDB*
- *Transferring RTDB and PDB Backup Files*

Backing Up the RTDB

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

1. Log in to the EPAP GUI on server A as the **epapall** user.

   For information about how to log in to the EPAP GUI, refer to *Accessing the EPAP GUI Interface*.
2. If you are not logged in to EPAP A, select the **Select Mate** option.
3. From the EPAP Menu, select **Process Control>Stop Software**.
4. In the Stop EPAP Software screen as shown in *Figure 6: Stop EPAP Software*, click **Stop EPAP Software**.

   Note: DO NOT select the option to stop the PDB along with the EPAP software.

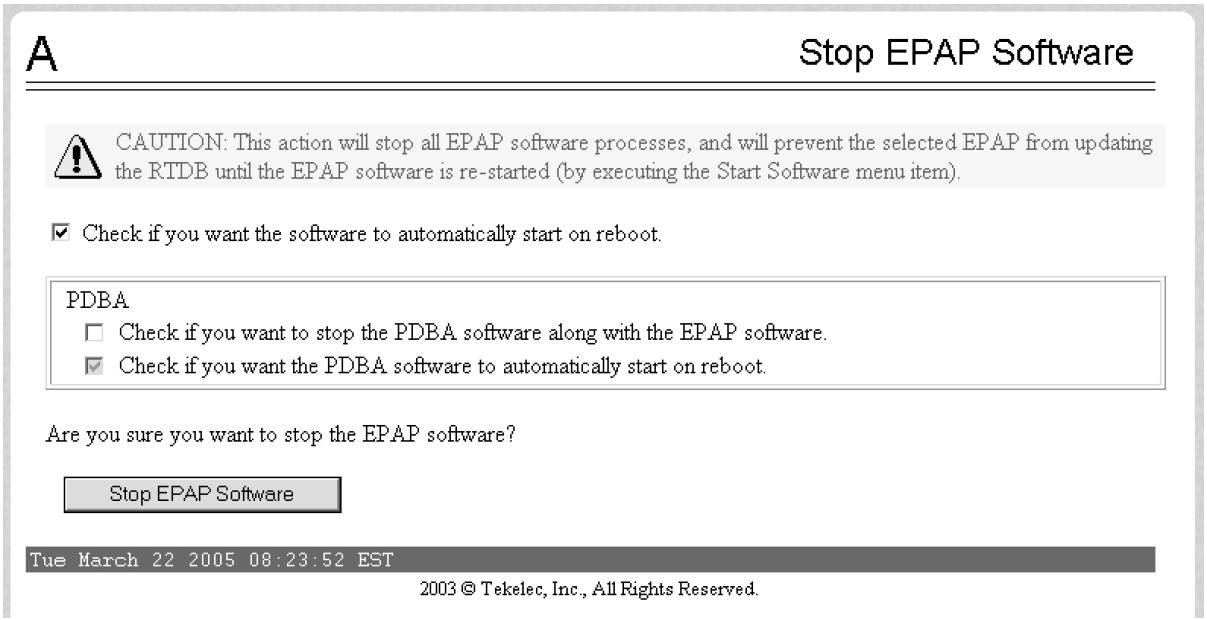

Figure 6: Stop EPAP Software

After the EPAP software has stopped successfully, the screen shown in *Figure 7: EPAP Software Successfully Stopped* is displayed.

Figure 7: EPAP Software Successfully Stopped

5. From the EPAP menu, select **RTDB>Maintenance>Backup RTDB** .

   The screen shown in *Figure 8: Backup the RTDB* is displayed.

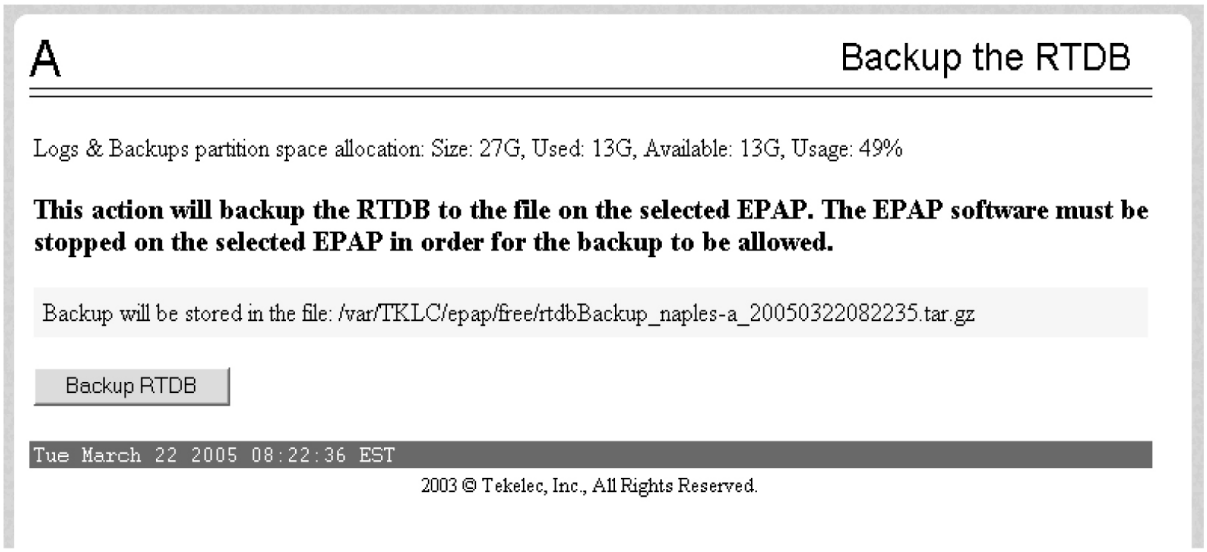

Figure 8: Backup the RTDB

6. Record the file name as shown in this example:

   `/var/TKLC/epap/free/rtdbBackup_naples-a20050322082516.tar.gz`

7. Click **Backup RTDB** .

   The screen shown in *Figure 9: Backup the RTDB Confirmation* displays a request for confirmation.

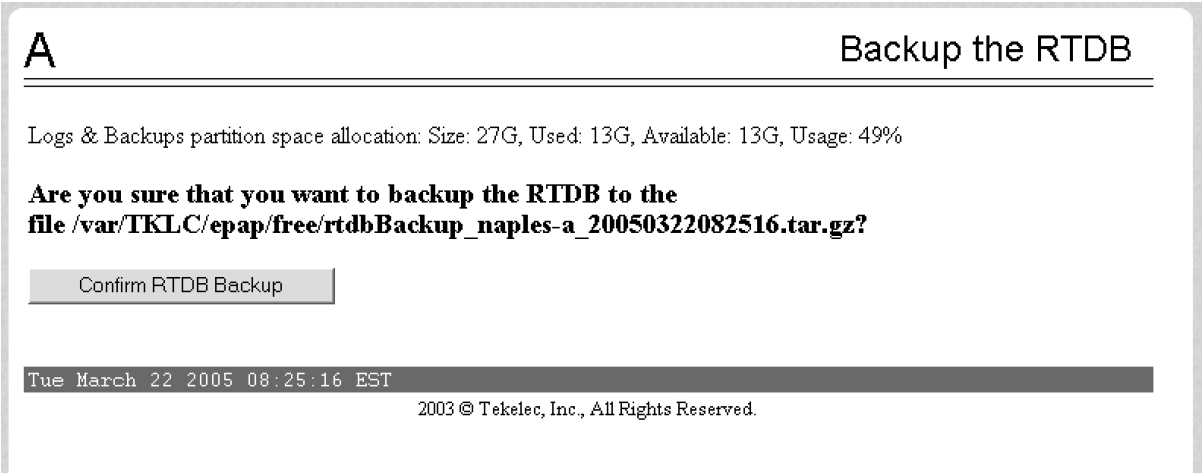

Figure 9: Backup the RTDB Confirmation

8. Click **Confirm RTDB Backup**.

   If the backup starts successfully, the following message scrolls through the GUI banner:

   ```
   Backup RTDB in progress.
   ```

   After the backup completes successfully, the screen shown in *Figure 10: Backup the RTDB - Success* is displayed.

Figure 10: Backup the RTDB - Success

9. Select **Process Control>Start Software** from the EPAP Menu.
10. On the Start EPAP Software screen shown in *Figure 11: Start EPAP Software*, click **Start EPAP Software**.

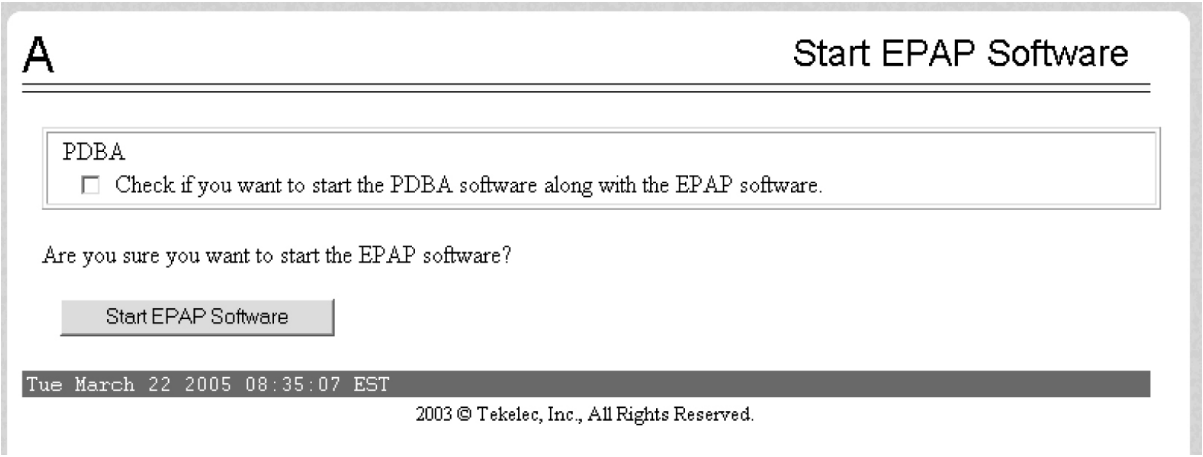

Figure 11: Start EPAP Software

After the EPAP software has started successfully, the screen in *Figure 12: Start EPAP Software - Success* is displayed.

Figure 12: Start EPAP Software - Success

11. This procedure is complete. Continue to *Backing Up the PDB*.

Backing Up the PDB

Perform this procedure once each day. The estimated time required to complete this procedure is one hour. PDB provisioning can take place while this procedure is being performed.

Note: Ensure that you perform this procedure on the same server on which you performed *Backing Up the RTDB*. Ensure that you performed *Backing Up the RTDB* first so that the RTDB backup level will be lower than the associated PDB backup level.

1. Log in to the EPAP GUI on server A as the **epapall** user.
   For information about how to log in to the EPAP GUI, refer to *Accessing the EPAP GUI Interface*.
2. If you are not logged in to EPAP A, select the **Select Mate** option.
3. From the EPAP Menu, select **PDBA>Maintenance>Backup>Backup the PDB**.
4. In the **Backup the PDB** screen shown in *Figure 13: Backup the PDB*, click **Backup PDB**.

Figure 13: Backup the PDB

The resulting screen, shown in *Figure 14: Backup PDB Confirmation*, displays a button to confirm the request to backup the PDB and the file name.

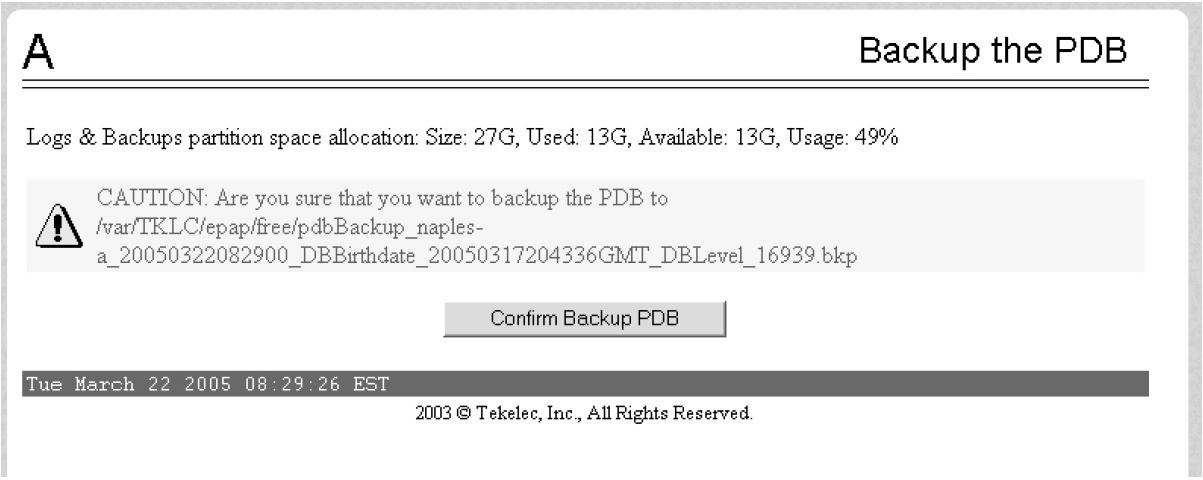

Figure 14: Backup PDB Confirmation

.

5. Record the file name.

   In this example, the file name is:

   ```
   /var/TKLC/epap/free/pdbBackup_naples-a_20050322082900_DBBirthdate_20050317204336GMT_DBLevel_16939.bkp
   ```

6. Click **Confirm Backup PDB**.

   While the backup is running, the following message scrolls through the GUI banner:

   ```
   Backup PDB in progress.
   ```

   After the backup completes successfully, the screen shown in *Figure 15: Backup the PDB - Success* is displayed:

Figure 15: Backup the PDB - Success

7. This procedure is complete. Continue to *Transferring RTDB and PDB Backup Files* .

Transferring RTDB and PDB Backup Files

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

1. Log in to the EPAP command line interface with user name `epapdev` and the password associated with that user name.
2. Use the Secure File Transfer Protocol (`sftp`) to transfer the following files to a remote, safe location:
   a) The RTDB backup file, whose name was recorded in *Step 6* of *Backing Up the RTDB*
   b) The PDB backup file, whose name was recorded in *Step 5* of *Backing Up the PDB*

System Health Check Overview

The server 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 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. *Alarms Overview* 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 EPAPGUI Platform Menu (see *Accessing the EPAP 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 4: System Health Check Operation summarizes the functions checked by `syscheck`.

Table 4: 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 2 GB of RAM is installed.
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 Shell daemon)

System Check	Function
	• `ntpd` (NTP daemon) • `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

System Check	Function
MPS Platform	Provide alarm if internal diagnostics detect any other error, such as server `syscheck` script failures.

Health Check Outputs

System health check utility `syscheck` output can be Normal (brief) or Verbose (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 the numbers of running modules.

```
Running modules in class disk...
        fs: Current file space use in "/" is 38%.
        fs: Current Inode used in "/" is 38%.
        fs: Current file space use in "/boot" is 12%.
        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 4%.
        fs: Current file space use in "/var/TKLC" is 21%.
        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/epap/rt" is 3%.
        fs: Current Inode used in "/var/TKLC/epap/rt" is 1%.
        fs: Current file space use in "/var/TKLC/epap/db" is 65%.
        fs: Current Inode used in "/var/TKLC/epap/db" is 1%.
        fs: Current file space use in "/var/TKLC/epap/logs" is 2%.
        fs: Current Inode used in "/var/TKLC/epap/logs" is 1%.
        fs: Current file space use in "/var/TKLC/epap/free" is 1%.
        fs: Current Inode used in "/var/TKLC/epap/free" is 1%.
        fs: 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.
      meta: 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: FilenameTypeSizeUsedPriority
      swap: /dev/md3               partition205624801000
      swap: /var/TKLC/swap/swap.1   file209713601
      swap: /var/TKLC/swap/swap.2   file209713602
      swap: /var/TKLC/swap/swap.3   file209713603
      swap: /var/TKLC/swap/swap.4   file209713604
      swap: /var/TKLC/swap/swap.5   file209713605
      swap: /var/TKLC/swap/swap.6   file209713606
      swap: /var/TKLC/swap/swap.7   file209713607
      swap: 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/epap/rt".
     write: Successfully read from file system "/var/TKLC/epap/db".
     write: Successfully read from file system "/var/TKLC/epap/logs".
     write: Successfully read from file system "/var/TKLC/epap/free".
     write: Return string: "OK"
     smart: Finished examining logs for disk: hdc.
     smart: Finished examining logs for disk: hda.
     smart: SMART status OK.
     smart: Return string: "OK"
                                OK
Running modules in class hardware...
fancontrol: Return string: "OK"
breaker: Module is disabled.
cmosbattery: Return string: "OK"
       fan: Server Fan Status OK.
       fan: Return string: "OK"
    powera: Return string: "OK"
    powerb: Return string: "OK"
      temp: Return string: "OK"
   voltage: Return string: "OK"
                                OK
Running modules in class net...
defaultroute: Module is disabled.
ping: Module is disabled.
                                OK
Running modules in class proc...
       ntp: *mate            LOCAL(0)        14 u   14   64  377    0.229    0.579
   0.062
       ntp: 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 3 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 maint...
       run: Found 1 instance(s) of the maint process.
       run: Checking rtdb...
       run: Found 1 instance(s) of the rtdb process.
       run: Checking topnode...
       run: Found 2 instance(s) of the topnode process.
       run: Checking prov...
       run: Found 1 instance(s) of the prov process.
       run: Checking provRMTP...
       run: Found 4 instance(s) of the provRMTP process.
       run: Checking provRcvr...
       run: Found 4 instance(s) of the provRcvr process.
       run: Checking pdba...  * run: ::MINOR:: 5000000000000002 -- Server Application
 Process Error
       run: Only 0 instance(s) of pdba running. 1 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 16 instance(s) of the mysqld process.
       run: Checking httpd...
       run: Found 1 instance(s) of the httpd process.
       run: 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: 1999.800 MHz... OK
       cpu: CPU 1 is on-line... OK
       cpu: CPU 1 speed: 1999.800 MHz... OK
       cpu: CPU 2 is on-line... OK
       cpu: CPU 2 speed: 1999.800 MHz... OK
       cpu: CPU 3 is on-line... OK
       cpu: CPU 3 speed: 1999.800 MHz... OK
       cpu: Return string: "OK"
       mem: Expected memory found
       mem: Skipping minimum expected memory check.
       mem: 2111262720 bytes (~2013.45703125 Mb) of RAM installed.
       mem: Return string: "OK"
                                  OK
Failures occured during system check. The failure log is available at:
  -->/var/TKLC/log/syscheck/fail_log
```

Note: If an error occurs, 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 *Alarms*.

Running the System Health Check

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

- *Running syscheck Through the EPAP GUI*
- *Running syscheck Using the syscheck Login*

Running syscheck Through the EPAP GUI

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

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

   The example in *Figure 16: Login window* shows a user is logged into EPAP A , while alarms are showing on EPAP B. To find out more information about conditions on the B server, run `syscheck` on that server.

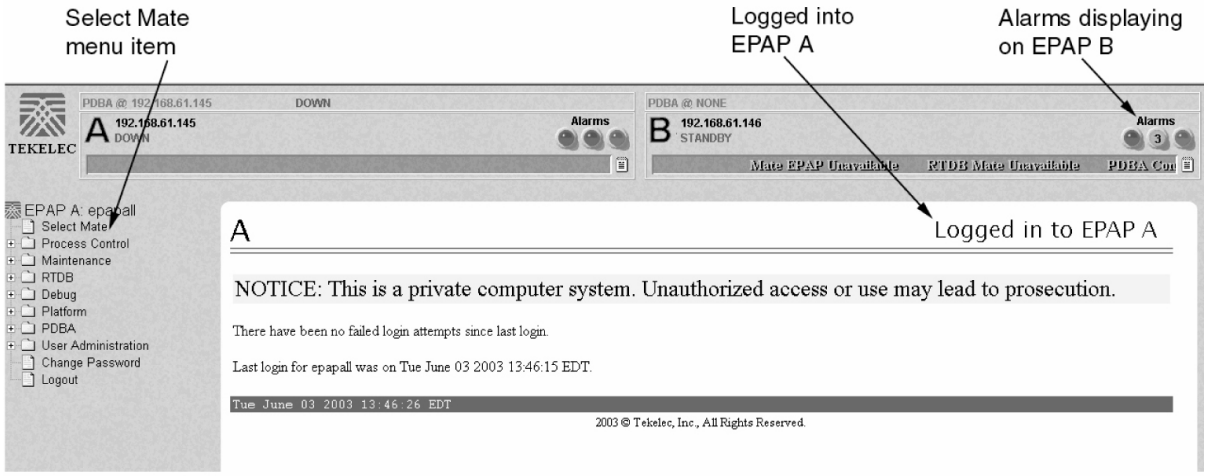

Figure 16: Login window

3. If it is necessary to switch to the other EPAP, click the **Select Mate** menu item.
4. When the GUI shows you are logged into the EPAP about which you want system health information, select **Platform>Run Health Check**. as shown in the following window.

Figure 17: Run Health Check

5. On the Run Health Checkwindow, 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 server.

   The system health check output data is displayed. The example shown in *Figure 18: Displaying System Health Check on EPAP GUI* shows Normal output with errors.

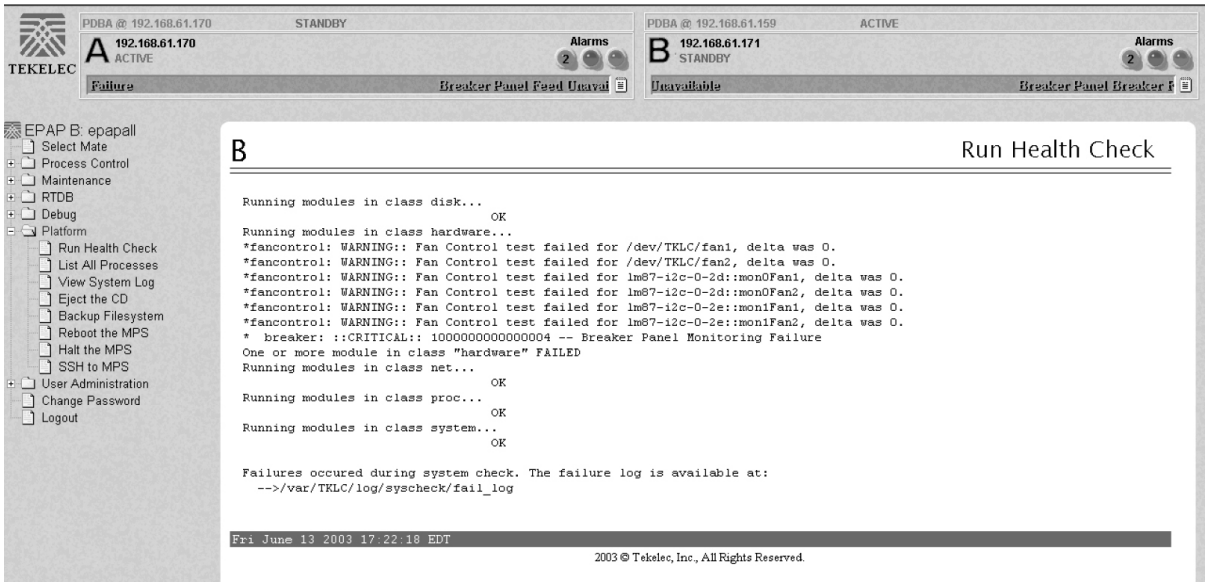

Figure 18: Displaying System Health Check on EPAP GUI

Running syscheck Using the syscheck Login

If the EPAP application has not been installed on the server or you are unable to log in to the EPAP 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*.

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

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

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

Restoring Databases from Backup Files

This section describes how restore the RTDB or PDB or both from backup files.

Restoring the RTDB from Backup Files

To restore the EPAP's RTDB from a backup file, contact Technical Services and Support, see *Customer Care Center*.

Note: Tekelec recommends that the RTDB be backed up daily (see section, *Backing Up the RTDB*). The RTDB for EPAP Release 5.3 and later cannot be restored from backups made on an EPAP release earlier than 5.3.

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

CAUTION

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

Text inset.

1. Log into the EPAP command line interface with user name `epapdev` and the password associated with that name.
2. Use the Secure File Transfer Protocol (`sftp`) to transfer the RTDB backup file (whose name was recorded in *List item.*) to the following location:

```
/var/TKLC/epap/free/
```

3. Log into the EPAP GUI (see *Accessing the EPAP GUI Interface*).
4. Select **Process Control>Stop Software** to ensure that no other updates are occurring. The screen in *Figure 19: Stop EPAP Software* displays:

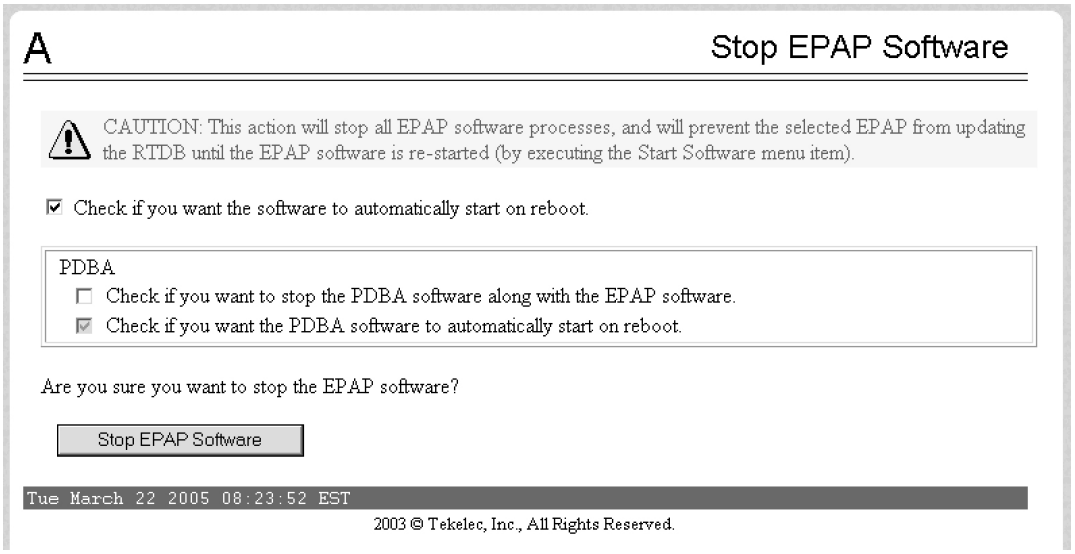

Figure 19: Stop EPAP Software

5. When you stopped the software on the selected EPAP, the screen in *Figure 20: Stop EPAP Software - Success* displays:

Figure 20: Stop EPAP Software - Success

6. Select **RTDB>Maintenance>Restore RTDB** . The screen shown in *Figure 21: Restoring the RTDB* displays:

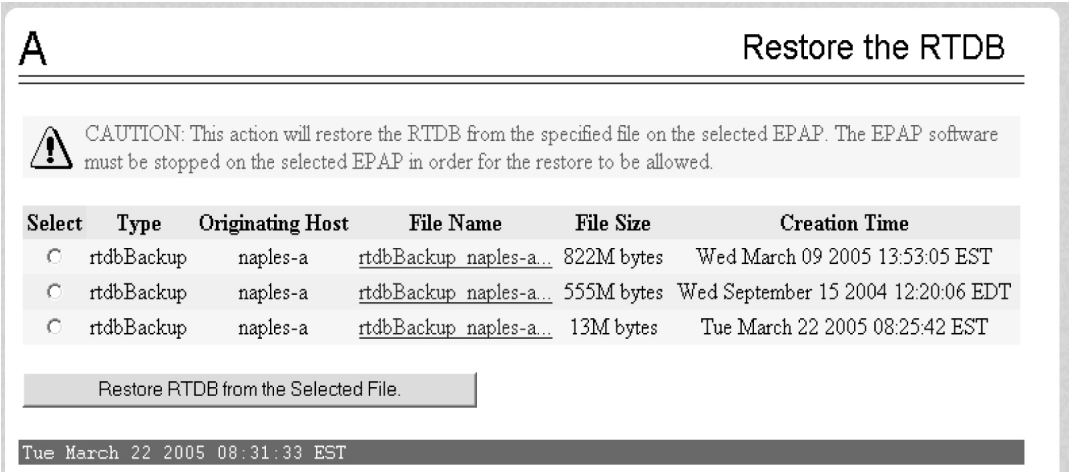

Figure 21: Restoring the RTDB

7. On the screen shown in *Figure 21: Restoring the RTDB*, select the file that was transferred in *List item.*. Click **Restore the RTDB from the Selected File**.
8. To confirm restoring a file, click **Confirm RTDB Restore** shown in the screen for RTDB in *Figure 22: Restore the RTDB Confirm*:

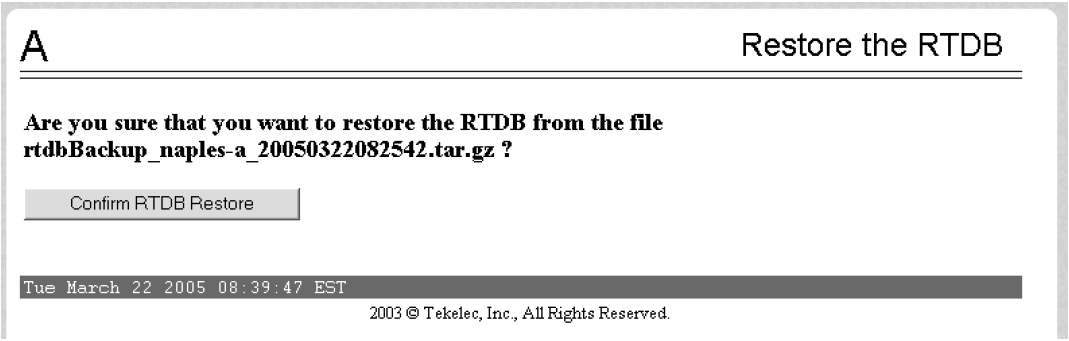

Figure 22: Restore the RTDB Confirm

9. When restoring the file is successful, the screen shown in *Figure 23: Restore the RTDB - Success* displays:

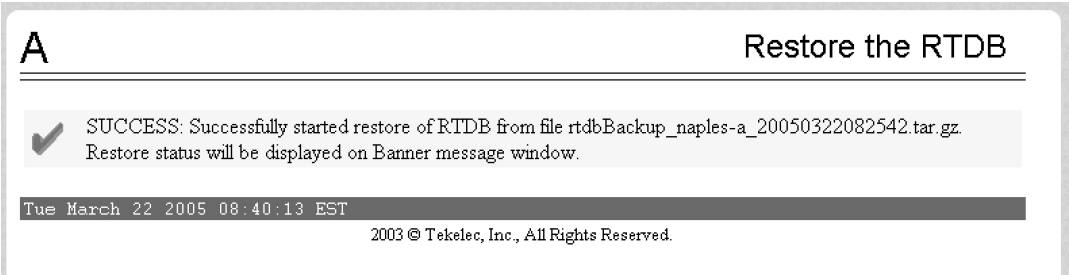

Figure 23: Restore the RTDB - Success

10. This procedure is complete.

Restoring the PDB from Backup Files

To restore the EPAP's PDB from a backup file, contact Technical Services and Support, see *Customer Care Center*.

Note: Tekelec recommends that the PDB be backed up daily (see section, *Backing Up the PDB*).

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

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

Text inset.

1. Log into the EPAP command line interface with user name `epapdev` and the password associated with that name.
2. Use the Secure File Transfer Protocol (`sftp`) to transfer the PDB backup file (whose name was recorded in *Step 7*) to the following location:

   ```
   /var/TKLC/epap/free/
   ```

3. Log into the EPAPGUI (see *Accessing the EPAP GUI Interface*).
4. Select **Process Control>Stop Software** to ensure that no other updates are occurring.

   The screen in *Figure 24: Stop EPAP Software* displays:

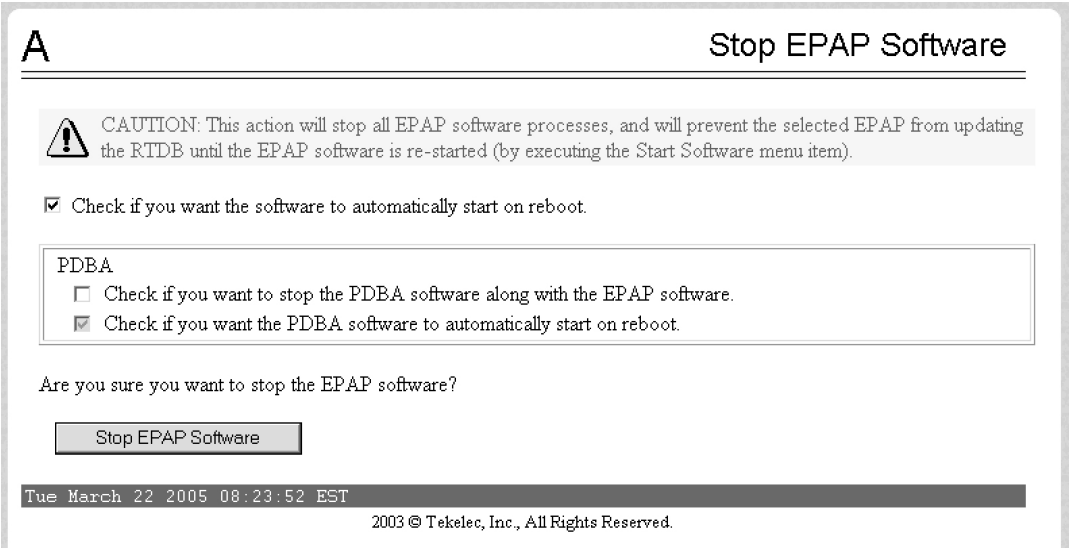

Figure 24: Stop EPAP Software

5. When you stopped the software on the selected EPAP, the screen in *Figure 25: Stop EPAP Software - Success* displays:

Figure 25: Stop EPAP Software - Success

6. Select **PDBA>Maintenance>Backup>Restore the PDB** .
   The screen shown in *Figure 26: Restoring the PDB* displays:

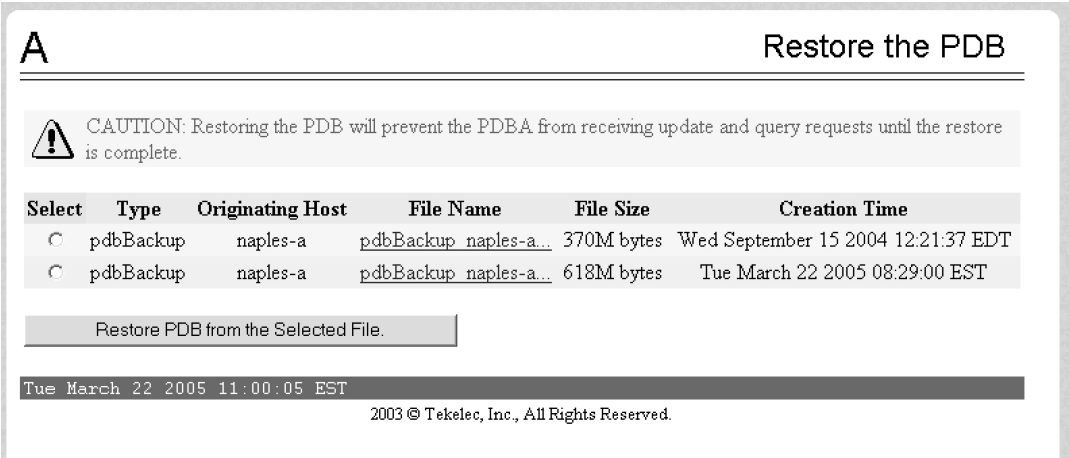

Figure 26: Restoring the PDB

7. On the screen shown in *Figure 26: Restoring the PDB*, select the file that was transferred in *Step 2*.
   Click **Restore the PDB from the Selected File**.
8. Click **Confirm PDB Restore**.
9. When restoring the file is successful, the screen displays a message about success.
10. This procedure is complete.

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 EPAP 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 EPAP GUI, perform the following:
  1. Procedure *Determine 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.

1. Log in to the **User Interface** screen of the EPAP GUI (see *Accessing the EPAP GUI Interface*).
2. After logging in to the EPAP, select **Maintenance>Decode MPS Alarm** from the menu.
3. Enter the 16-digit alarm string into the window on the **Decode MPS Alarm** screen, as shown in *Figure 27: Decode MPS Alarm Screen*.

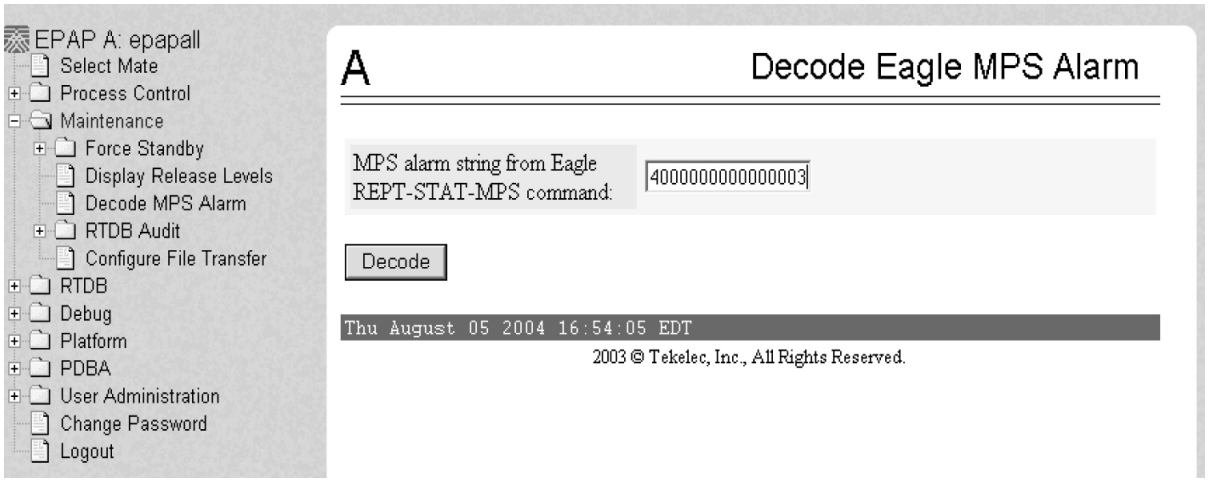

Figure 27: Decode MPS Alarm Screen

4. Click the **Decode** button.

   The system returns information on the Alarm Category (Critical Application, Major Platform) and error text, as shown in *Figure 28: Decoded MPS Alarm Information*.

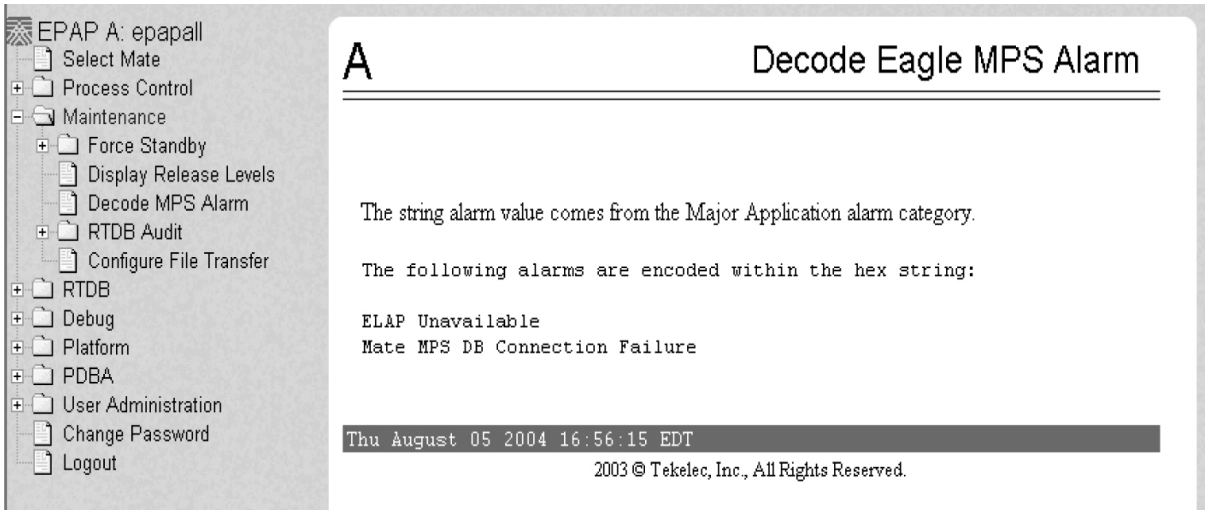

Figure 28: Decoded MPS Alarm Information

5. Find the alarm text string shown on the GUI in *Alarms Overview*. 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.

1. Record the alarm data string shown in the banner or the Alarm View on the EPAPGUI , or as decoded from *Decode Alarm Strings*.

2. Run `syscheck` in Verbose mode (see *Running syscheck Through the EPAP 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 *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 *Alarms* if instructed by an alarm recovery procedure to replace a FRU.
   - Refer to general procedures used in a number of alarm recovery procedures in *Alarms*

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

Chapter 4

Alarms

Topics:

- *Alarms Overview.....45*
- *Alarm Recovery Procedures.....48*
- *Critical Platform Alarms.....48*
- *Critical Application Alarms.....48*
- *Major Platform Alarms.....48*
- *Major Application Alarms.....61*
- *Minor Platform Alarms.....74*
- *Minor Application Alarms.....83*

This chapter provides recovery procedures for platform and application alarms.

Alarms Overview

This chapter describes recovery procedures to use when an alarm condition or other problem exists on the server. 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 5: Platform and Application Alarms*. The procedures for correcting alarm conditions are described in *Alarm Recovery Procedures*.

Note: Sometimes the alarm string may consist of multiple alarms and will have to be decoded in order to use the Alarm Recovery Procedures in this manual. If the alarm code is not listed in *Table 5: 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 5: Platform and Application Alarms shows the alarm numbers and alarm text for all alarms generated by the platform and the EPAP application. The order within a category is not significant.

Table 5: Platform and Application Alarms

Alarm Codes and Error Descriptor	UAM Number
Critical Platform Errors (There is only one critical EPAP Platform Alarm)	
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

Alarm Codes and Error Descriptor	UAM Number
3000000000000800 – Server Sync network error	0372
3000000000001000 - Server disk space shortage error	0372
3000000000001000 - Server disk space shortage error	0372
3000000000004000 - Server temperature error	0372
3000000000008000 – Server mainboard voltage error	0372
3000000000010000 – Server power feed error	0372
3000000000020000 - Server disk health test error	0372
3000000000040000 - Server disk unavailable error	0372
3000000001000000 – Breaker panel feed error	0372
3000000002000000 – Breaker panel breaker error	0372
3000000004000000 – Breaker panel monitoring error	0372
Major Application Errors	
4000000000000001 - Mate EPAP 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
4000000000001000 - RTDB 100% Full	0373
4000000000002000 - RTDB Resynchronization in Progress	0373
4000000000004000 - RTDB Reload Is Required	0373
4000000000008000 - Mate PDBA Unreachable	0373
4000000000010000 - PDBA Connection Failure	0373
4000000000020000 - PDBA Replication Failure	0373
4000000000040000 - RTDB DSM Over-Allocation	0375
4000000000080000 - RTDB Maximum Depth Reached	0375
4000000000100000 - No PDBA Proxy to Remote PDBA Connection	0375

Alarm Codes and Error Descriptor	UAM Number
4000000000200000 - DSM Provisioning Error	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 – 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
6000000000000020 - Standby PDBA Falling Behind	0375
6000000000000040 - RTDB Tree Error	0375
6000000000000080 - PDB Backup failed	0375
6000000000000100 - Automatic PDB Backup failed	0375
6000000000000200 - RTDB Backup failed	0375
6000000000000400 - Automatic RTDB Backup failed	0375
6000000000001000 - SSH tunnel not established	0375
NOTE: The order within a category is not significant.	

Alarm Recovery Procedures

This section provides recovery procedures for platform and application alarms. The alarm categories are listed by severity.

Critical Platform Alarms

1000000000002000 - Uncorrectable ECC memory error

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

Recovery

Contact the Tekelec *Customer Care Center* to request hardware replacement.

1000000000004000 - SNMP get failure

The server failed to receive SNMP information from the switch.

Recovery

1. Use the following command to verify the switch is active: `ping switch1A/B` (this requires command line access).
2. If the problem persists, contact the Tekelec *Customer Care Center*.

Critical Application Alarms

No critical EPAP alarms are generated.

Major Platform Alarms

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

3000000000000001 – Server fan failure

This alarm indicates that a fan on the application server is either failing or has failed completely. In either case, there is a danger of component failure due to overheating.

Recovery

Contact the Tekelec *Customer Care Center*.

3000000000000002 - Server internal disk error

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

Recovery

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

   Note: Refer to the T1200 *Maintenence Manual*, *Field Replaceablue Units (FRUs)* section for information about installing a hard disk drive.

3000000000000004 – Server RAID disk error

This alarm indicates that the offboard storage server had a problem with its hardware disks.

Recovery

Contact the Tekelec *Customer Care Center* and provide the system health check output.

3000000000000008 - Server Platform error

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

Recovery

1. Run syscheck in Verbose mode (see procedure *Running the System Health Check*.).
2. Contact 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's file systems.

Recovery

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

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.

Recovery

Rerun syscheck in verbose mode (see procedure *Running the System Health Check* .

- If the alarm has been cleared, the problem is solved.
- If the alarm has not been cleared, contact the *Customer Care Center*.

3000000000000040 – Server RAM shortage error

Not Implemented.

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

Recovery

Contact the Tekelec *Customer Care Center*.

3000000000000100 - Server provisioning network error

This alarm indicates that the connection between the server's eth0 interface and the customer network is not functioning properly. The eth0 interface is at the lower right port on the rear of the server.

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

Recovery

1. Verify that a customer-supplied cable labeled TO CUSTOMER NETWORK is securely connected to the lower right port on the rear of the server. Follow the cable to its connection point on the local network and verify this connection is also secure.
2. Test the customer-supplied cable labeled TO CUSTOMER NETWORK with an Ethernet Line Tester. If the cable does not test positive, replace it.
3. Have your network administrator verify that the network is functioning properly.
4. 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 Tekelec *Customer Care Center*.

3000000000000200 – Server Eagle Network A error

Note: If these three alarms exist, the probable cause is a failed mate server.

- 3000000000000200-Server Eagle Network A Error
- 3000000000000400-Server Eagle Network B Error
- 3000000000000800-Server Sync Network Error

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

- One or both of the servers is not operational.
- One or both of the switches is not powered on.
- The link between the switches is not working.

- The connection between server A and server B is not working.

Some of the connections between the servers and the hubs of the DSM networks (main and backup).

- The **eth01** interface (lower right port on the rear of the server A) connects to customer uplink.
- The **eth02** interface (upper right port on the rear of the server A) connects to port 3 of switch A.
- The **eth03** interface (upper left port on the rear of the server A) connects to port 3 of switch B.
- The **eth04** interface (lower left port on the rear of the server A) is an optional backup to the customer uplink.
- The interfaces on the switch are ports 1 through 20 (from left to ritght) located on the front of the switch.
- Ports 1 and 2 of switch A connect to ports 1 and 2 of switch B.
- Ports 5 through 21 of switch A can be used for links to the Main DSM ports (DSM A ports) on the EAGLE 5 ISS.

Recovery

1. Perform the following:
   a) Verify that both servers are powered on by confirming that the **POWER** LEDs on both servers are illuminated green.
   b) Verify that the hub is powered on.
   c) Verify that the switch does not have any fault lights illuminated.
   d) Verify that the **eth01** cable is securely connected to the lower right port on the server that is reporting the error.
   e) Trace the **eth01** cable to the switch. Verify that the **eth01** cable is securely connected at correct point of the customer uplink.
   f) Verify that the cable connecting the switches is securely connected at both switches.
2. Run `syscheck` (see *Running syscheck Through the EPAP GUI*).
   a) If the alarm is cleared, the problem is resolved.
   b) If the alarm is not cleared, continue with the next step.
3. Verify that the cable from **eth01** to the switch tests positive with an Ethernet Line Tester. Replace any faulty cables.
4. If the problem persists, call the *Customer Care Center*.

3000000000000400 – Server Eagle Network B error

Note: If these three alarms exist, the probable cause is a failed mate server.

- 3000000000000200-Server Eagle Network A Error
- 3000000000000400-Server Eagle Network B Error
- 3000000000000800-Server Sync Network Error

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

- One or both of the servers is not operational.
- One or both of the switches is not powered on.

- The link between the switches is not working.
- The connection between server A and server B is not working.

Some of the connections between the servers and the hubs of the DSM networks (main and backup).

- The **eth01** interface (lower right port on the rear of the server B) connects to customer uplink.
- The **eth02** interface (upper right port on the rear of the server B) connects to port 4 of switch A.
- The **eth03** interface (upper left port on the rear of the server B) connects to port 4 of switch B.
- The **eth04** interface (lower left port on the rear of the server B) is an optional backup to the customer uplink.
- The interfaces on the switch are ports 1 through 20 (from left to ritght) located on the front of the switch.
- Ports 1 and 2 of switch A connect to ports 1 and 2 of switch B.
- Ports 5 through 21 of switch B can be used for links to the Backup DSM ports (DSM B ports) on the EAGLE 5 ISS.

Recovery

1. Perform the following:
   a) Verify that both servers are powered on by confirming that the **POWER** LEDs on both servers are illuminated green.
   b) Verify that the switch is powered on.
   c) Verify that the switch does not have any fault lights illuminated.
   d) Verify that the **eth01** cable is securely connected to the server that is reporting the error.
   e) Trace the **eth01** cable to the switch. Verify that the **eth01** cable is securely connected to the correct point of the customer uplink.
   f) Verify that the cable connecting the switches is securely connected at both switches.
2. Run `syscheck` (see *Running syscheck Through the EPAP GUI*).
   a) If the alarm is cleared, the problem is resolved.
   b) If the alarm is not cleared, continue with the next step.
3. Verify that the cable from **eth1B** to the hub tests positive with an Ethernet Line Tester. Replace any faulty cables.
4. If the problem persists, call the *Customer Care Center* for assistance.

3000000000000800 – Server Sync network error

Note: If these three alarms exist, the probable cause is a failed mate server.

- 3000000000000200-Server Eagle Network A Error
- 3000000000000400-Server Eagle Network B Error
- 3000000000000800-Server Sync Network Error

This alarm indicates that the **eth03** connection between the two servers is not functioning properly. The **eth03** connection provides a network path over which the servers synchronize data with one another. The **eth03** interface is the upper left port on the rear of the server.

Note: The sync interface uses **eth03** and goes through the switch. All pairs are required.

Recovery

1. Verify that both servers are powered on by confirming that the **POWER** LEDs on both servers are illuminated green.
2. Verify that the **eth03** cable is securely connected to the upper left port on both Server A and Server B.
3. Test the **eth03** cable with an Ethernet Line Tester that is set to test a straight-through cable.
4. If the cable does not test positive, replace it.
5. If the problem persists, call the *Customer Care Center* for assistance.

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.

Recovery

1. Run syscheck in Verbose mode.
2. Contact the Tekelec *Customer Care Center*.

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 is occurring.

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.

Recovery

1. Run `syscheck` in Verbose mode.
   If the output should indicates:

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

   Go to *Step 2*, otherwise go to *Step 3*.
2. Perform the these substeps:
   a) Verify 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) If the alarm is cleared, the problem is resolved.

3. Contact the *Customer Care Center* with the `syscheck` output collected in the previous steps.

3000000000004000 - Server temperature error

The internal temperature within the server is unacceptably high.

Recovery

1. Ensure that nothing is blocking the fan's intake. Remove any blockage.
2. Verify that the temperature in the room is normal (see *Table 6: Server Environmental Conditions*). If it is too hot, lower the temperature in the room to an acceptable level.

Table 6: Server Environmental Conditions

Ambient Temperature	Operating: 5 degrees C to 40 degrees C Exceptional Operating Limit: 0 degrees C to 50 degrees C Storage: -20 degrees C to 60 degrees C
Relative Humidity	Operating: 5% to 85% non-condensing Storage: 5% to 950% 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 EPAP GUI*)
   - If the alarm has been cleared, the problem is resolved.
   - If the alarm has not been cleared, continue with the next step.
4. If the problem has not been resolved, contact the Tekelec *Customer Care Center*.

3000000000008000 – Server mainboard voltage error

This alarm indicates that one or more of the monitored voltages on the server mainboard have been detected to be out of the normal expected operating range.

Recovery

Contact the Tekelec *Customer Care Center*.

3000000000010000 – Server power feed error

This alarm indicates that one of the power feeds to the server has failed. If this alarm occurs in conjunction with any Breaker Panel alarm, there might be a problem with the breaker panel.

Recovery

1. Verify that all the server power feed cables to the server that is reporting the error are securely connected.
2. Run syscheck
   - If the alarm has been cleared, the problem is resolved.
   - If the alarm has not been cleared, continue with the next step.
3. Follow the power feed to its connection on the power source. Ensure that the power source is ON and that the power feed is properly secured.
4. Run syscheck
   - If the alarm has been cleared, the problem is resolved.
   - If the alarm has not been cleared, continue with the next step.
5. If the power source is functioning properly and the wires are all secure, have an electrician check the voltage on the power feed.
6. Run syscheck
   - If the alarm has been cleared, the problem is resolved.
   - If the alarm has not been cleared, continue with the next step.
7. If the problem has not been resolved, contact the Tekelec *Customer Care Center*.

3000000000020000 - Server disk health test error

Either the hard drive has failed or failure is imminent.

Recovery

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

3000000000040000 - Server disk unavailable error

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.

Recovery

Contact the Tekelec *Customer Care Center*.

3000000000080000 – Device error

This alarm indicates that the offboard storage server had a problem with its disk volume filling up.

Recovery

Contact the Tekelec *Customer Care Center*.

3000000000100000 – Device interface error

This alarm indicates that the IP bond is either not configured or down.

Recovery

Contact the Tekelec *Customer Care Center*.

3000000000200000 – Correctable ECC memory error

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

Recovery

No recovery necessary. If the condition persists, contact the Tekelec *Customer Care Center* to request hardware replacement.

3000000000400000 – Power Supply A error

This alarm indicates that power supply 1 (feed A) has failed.

Recovery

1. Verify that nothing is obstructing the airflow to the fans of the power supply.
2. Run syscheck in verbose mode (see procedure *Running the System Health Check*). The output will provide details about what is wrong with the power supply.
3. Contact the Tekelec *Customer Care Center* and provide them the syscheck verbose output. Power supply 1 (feed A) may need to be replaced.

3000000000800000 – Power Supply B error

This alarm indicates that power supply 2 (feed B) has failed.

Recovery

1. Verify that nothing is obstructing the airflow to the fans of the power supply.
2. Run syscheck in verbose mode (see procedure *Running the System Health Check*). The output will provide details about what is wrong with the power supply.

3. Contact the Tekelec *Customer Care Center* and provide them the syscheck verbose output. Power supply 2 (feed B) may need to be replaced.

3000000001000000 – Breaker panel feed error

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

Recovery

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 to be with the cable or the server itself. Look 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 the next step.
2. Verify that the cables that connect the servers to the breaker panel are not damaged and are securely fastened to both the Alarm Interface ports on the breaker panel and to the serial ports on both servers.
3. If the problem has not been resolved, call the Tekelec *Customer Care Center* to request that the breaker panel be replaced.

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 29: Breaker Panel LEDs*) identify whether the fault occurred on the input power or the output power, as follows:

- A power fault on input power (power from site source to the breaker panel) is indicated by one of the LEDs in the PWR BUS A or PWR BUS B group illuminated Red. In general, a fault in 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 frame equipment) 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 or some sort of power degradation or spike that causes one of the circuit breakers to trip.

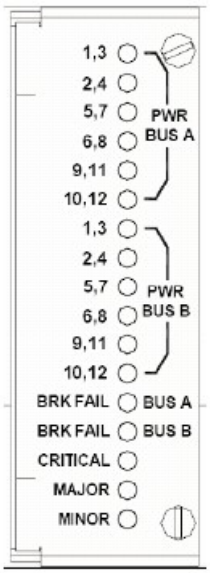

Figure 29: Breaker Panel LEDs

Recovery

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 to be with the cable or the server itself. Look 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 the next step.
2. Look at the breaker panel assignments in *Figure 30: Breaker Panel Setting*. For each breaker assignme/nt, verify that the corresponding LED in the PWR BUS A group and the PWR BUS B group is illuminated Green.

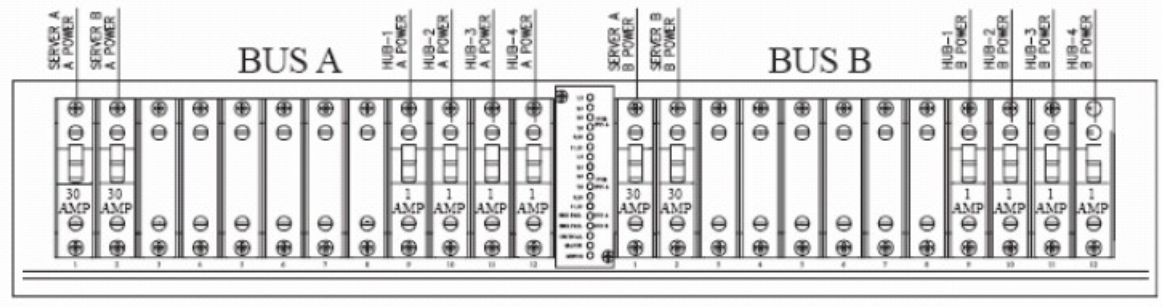

Figure 30: Breaker Panel Setting

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. Contact the Tekelec *Customer Care Center*.

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 respective Input Breakers has tripped. (A tripped breaker is indicated by the toggle located in the center position.) Perform the following steps to repair this issue:

a) For all tripped breakers, move the breaker down to the open (OFF) position and then back up to the closed (ON) position.
b) After all the tripped breakers have been reset, check the BRK FAIL LEDs again. If one of the BRK FAIL LEDs is still illuminated Red, skip to *Step 4* .

- If all of the BRK FAIL LEDs and all the LEDs in the PWR BUS A group and the PWR BUS B group are illuminated Green, there is most likely a problem with the serial connection between the server and the breaker panel. This 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. If any issues are discovered with these cable connections, make the necessary corrections and continue to the next step to verify that the alarm has been cleared, otherwise go to *Step 4*.

4. Run syscheck
   - If the alarm has been cleared, the problem is resolved.
   - If the alarm has not been cleared, continue with the next step.
5. If the problem has not been resolved, contact the Tekelec *Customer Care Center*.

3000000004000000 – Breaker panel monitoring error

This alarm indicates a failure in the hardware and/or software that monitors the breaker panel. This could mean there is a problem with the file I/O libraries, the serial device drivers, or the serial hardware itself.

Note: When this alarm occurs, the system health check is unable to monitor the breaker panel for faults. Thus, if this alarm is detected, it is imperative that the breaker panel 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 or
- 3000000002000000-Breaker Panel Breaker Error

until the Breaker Panel Monitoring Error has been corrected.

Recovery

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 to be with the cable or the server itself. Look 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 the next step.
2. Verify that both ends of the labeled serial cables are secured properly (for locations of serial cables, see the appropriate hardware manual).
3. Run syscheck
   - If the alarm has been cleared, the problem is resolved.

- If the alarm has not been cleared, continue with the next step.

4. Contact the Tekelec *Customer Care Center* and provide the system health check output.

3000000008000000 – Server HA Keepalive error

This alarm indicates that heartbeat process has detected that it has failed to receive a heartbeat packet within the timeout period.

Recovery

1. Determine if the mate server is currently down and bring it up if possible.
2. Determine if the keepalive interface is down.
3. Determine if heartbeart is running (service TKLCha status).

   Note: This step may require command line ability.

4. Contact the Tekelec *Customer Care Center*.

3000000080000000 – HP disk problem

This major alarm indicates that there is an issue with either a physical or logical disk in the HP disk subsystem. The message will include the drive type, location, slot and status of the drive that has the error.

Recovery

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

3000000100000000 – HP Smart Array controller problem

This major alarm indicates that there is an issue with an HP disk controller. The message will include the slot location, the component on the controller that has failed, and status of the controller that has the error.

Recovery

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

3000000200000000 – HP hpacucliStatus utility problem

This major alarm indicates that there is an issue with the process that caches the HP disk subsystem status for syscheck. This usually means that the hpacucliStatus daemon is either not running, or hung.

Recovery

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

3000000400000000 - Multipath device access link problem

One or more "access paths" of a multipath device are failing or are not healthy, or the multipath device does not exist.

Recovery

Contact the Tekelec *Customer Care Center*.

Major Application Alarms

The major application alarms involve the EPAP software, RTDBs, file system and logs.

4000000000000001 - Mate EPAP Unavailable

One EPAP has reported that the other EPAP is unreachable.

Recovery

1. Log in to the EPAPGUI (see *Accessing the EPAP GUI Interface*).
2. View the EPAP status on the banner.
   - If the mate EPAP status is DOWN, go to *Step 4* .
   - If the mate EPAP status is ACTIVE or STANDBY, go to *Step 7*.
3. Select the **Select Mate** menu item to change to the mate EPAP.
4. Select **Process Control>Start Software** to start the mate EPAP software.
5. View the EPAP status on the banner.
   - If the mate EPAP status is ACTIVE or STANDBY, the problem is resolved.
   - If the mate EPAP 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 EPAP Software*).
8. If the problem persists, run `savelogs` to gather system information for further troubleshooting (see *Saving Logs Using the EPAP GUI*), and contact the *Customer Care Center*.

4000000000000002 - RTDB Mate Unavailable

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

Recovery

1. Log in to the EPAPGUI (see *Accessing the EPAP GUI Interface*).
2. View the EPAP status on the banner.
   - If the mate EPAP status is DOWN, go to *Step 4*.
   - If the mate EPAP status is ACTIVE or STANDBY, go to *Step 7*.

3. Select the **Select Mate** menu item to change to the mate EPAP.
4. Select **Process Control>Start Software** to start the mate EPAP 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 EPAP Software*).
8. Select **RTDB>View RTDB Status** to verify that the RTDB status on both sides is coherent, as shown in *Figure 31: Coherent RTDB Status*.

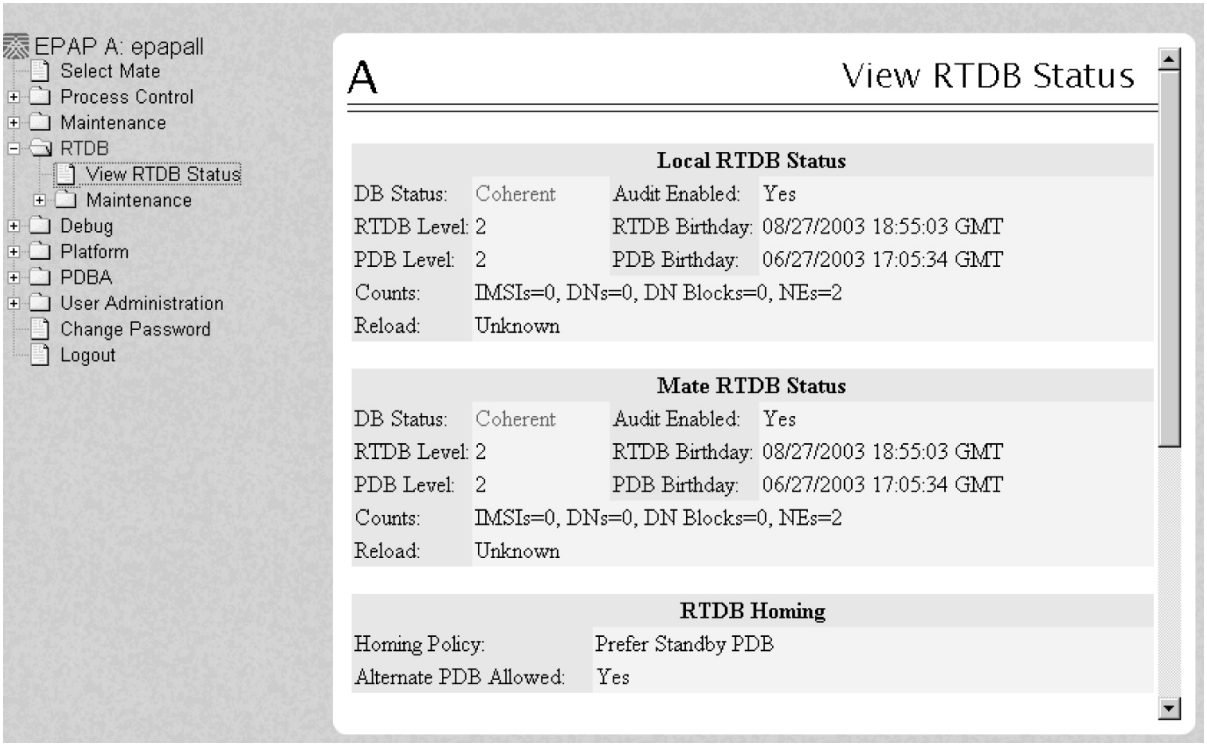

Figure 31: Coherent RTDB Status

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

4000000000000004 - Congestion

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

Recovery

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 "EPAP Available" notice, capture the log files on both EPAPs (see *Saving Logs Using the EPAP GUI*) and contact the *Customer Care Center*.

4000000000000020 - RMTP Channels Down

Both IP multicast mechanisms are down.

Recovery

1. Check the physical connections between the local server and the Service Module 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 EPAP Software*).
3. Capture the log files on both EPAPs (see *Saving Logs Using the EPAP GUI*) and contact the *Customer Care Center*.

4000000000000040 - Fatal Software Error

A major software component on the EPAP has failed.

Recovery

1. Perform *Restarting the EPAP Software*
2. Capture the log files on both EPAPs (see *Saving Logs Using the EPAP 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.

Recovery

Capture the log files on both EPAPs (see *Saving Logs Using the EPAP GUI*) and contact the *Customer Care Center*.

4000000000000100 - RTDB Inconsistent

This message indicates one or more of the following conditions:

- The real-time database for one or more Service Module cards is inconsistent with the current real-time database on the Active EPAP fixed disks
- RTDBs detect that it is ahead of an ACTIVE PDBA that it just connected to (probably a PDBA switchover has occurred, or a restore from a backup of PDB with a previous db level)
- RTDB timestamp of most recent level does not match the PDBAs record of that timestamp.

Recovery

1. Log in to the User Interface screen of EPAP A (see *Accessing the EPAP GUI Interface*)
2. Check the banner information above the menu to verify that you are logged into the EPAP A that is reporting the problem.

   If it is necessary to switch to EPAP A, click the **Select Mate** menu item.
3. From the menu, select **RTDB>View RTDB Status** to display status information about the RTDBs.

   Figure 32: RTDB Status shows an example.

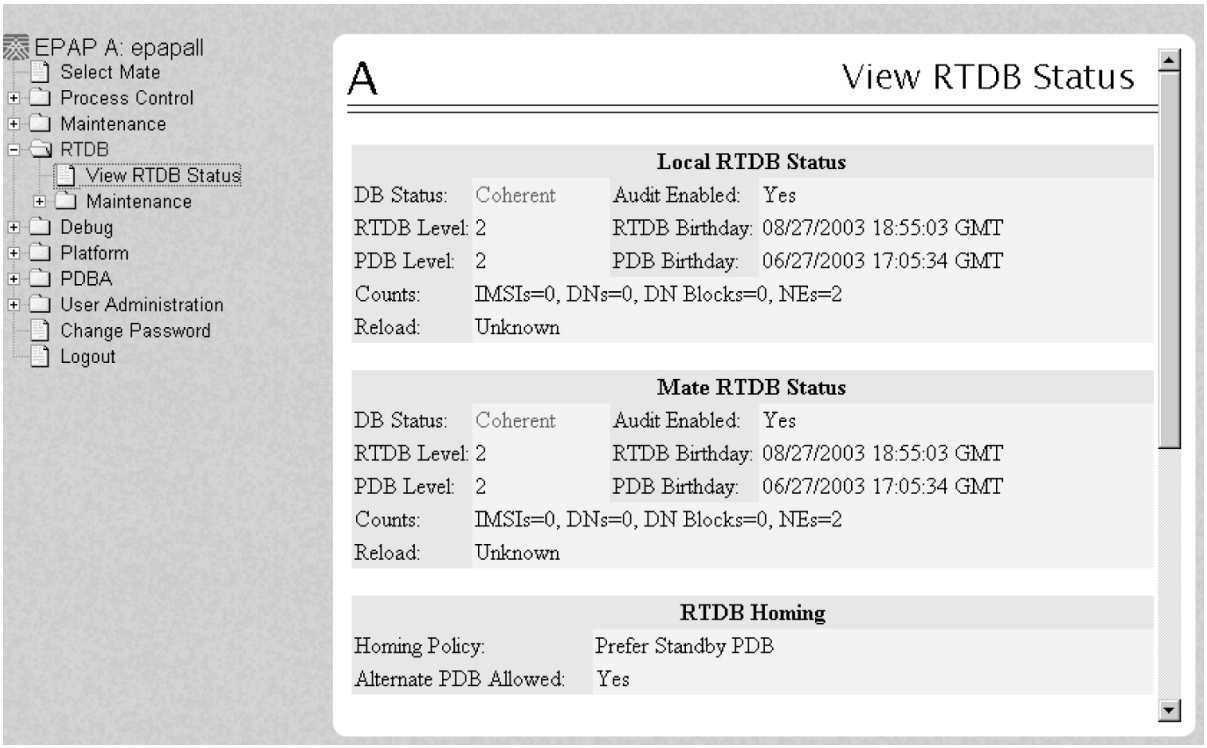

Figure 32: RTDB Status

4. Verify the PDB information on the RTDB Status view is correct before continuing.
5. Before attempting to copy the RTDB, the EPAP A software must be stopped by doing the following:

CAUTION: If the software is not stopped as directed in *Substep a* through *Substep c*, the RTDB will become corrupted.

   a) Select **Process Control>Stop Software** to stop the software.

      The following warning appears:

```
CAUTION: This action will stop all EPAP software processes, and will prevent
the selected EPAP from updating the RTDB until the EPAP software is re-started
 (by executing the Start Software menu item).
```

   b) On the **Stop EPAP Software** screen, make sure the following item on the screen is checked: **Check if you want the software to automatically start on reboot.**

c) Select the **Stop EPAP Software** button to stop the software.

6. Select **RTDB>Maintenance>Reload RTDB from PDBA** .

   The screen shown in *Figure 33: Reload RTDB from PDBA* is displayed.

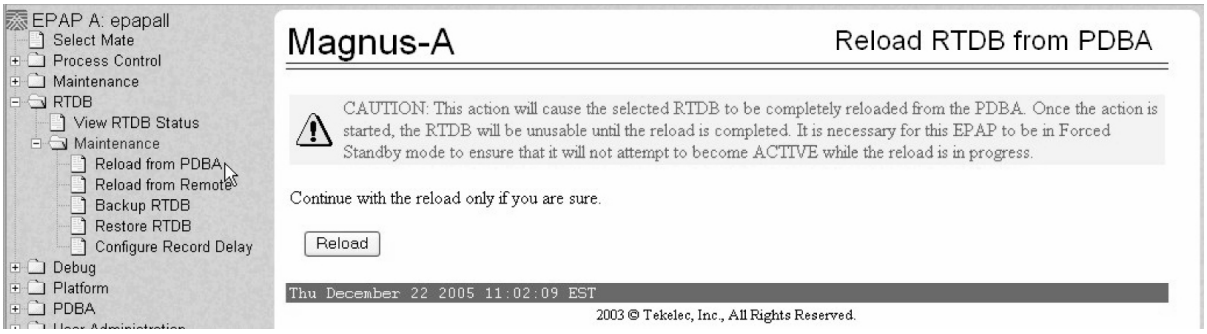

Figure 33: Reload RTDB from PDBA

7. Click the **Reload** button as shown in *Figure 33: Reload RTDB from PDBA*.
8. When the reload has completed, start the software on EPAP A by doing the following:
   a) Select **Process Control>Start Software** to start the software again.

      Make sure the following item on the screen is checked:

      Check if you want to start the PDBA software along with the EPAP software

   b) Select the **Start EPAP Software** button to start the software.
9. If the problem persists, capture the log files on both EPAPs (see *Saving Logs Using the EPAP 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
```

Recovery

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 EPAPs (see *Saving Logs Using the EPAP GUI*) and contact the *Customer Care Center*.

4000000000001000 - RTDB 100% Full

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

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

Recovery

Contact the *Customer Care Center* for assistance.

4000000000002000 - RTDB Resynchronization in Progress

This message indicates that the RTDB resynchronization is in progress.

Recovery

No further action is necessary.

4000000000004000 - RTDB Reload Is Required

This message indicates that the RTDB reload is required for one of the following reasons:

- The PDB Birthday on the EPAP reporting the error does not match the mate EPAP's PDB Birthday.
- 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.

Recovery

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

   If it is necessary to switch to the problem EPAP, click the **Select Mate** menu item.
3. From the menu, select **RTDB>View RTDB Status** to display status information about the RTDBs.

   Figure 34: RTDB Status shows an example.

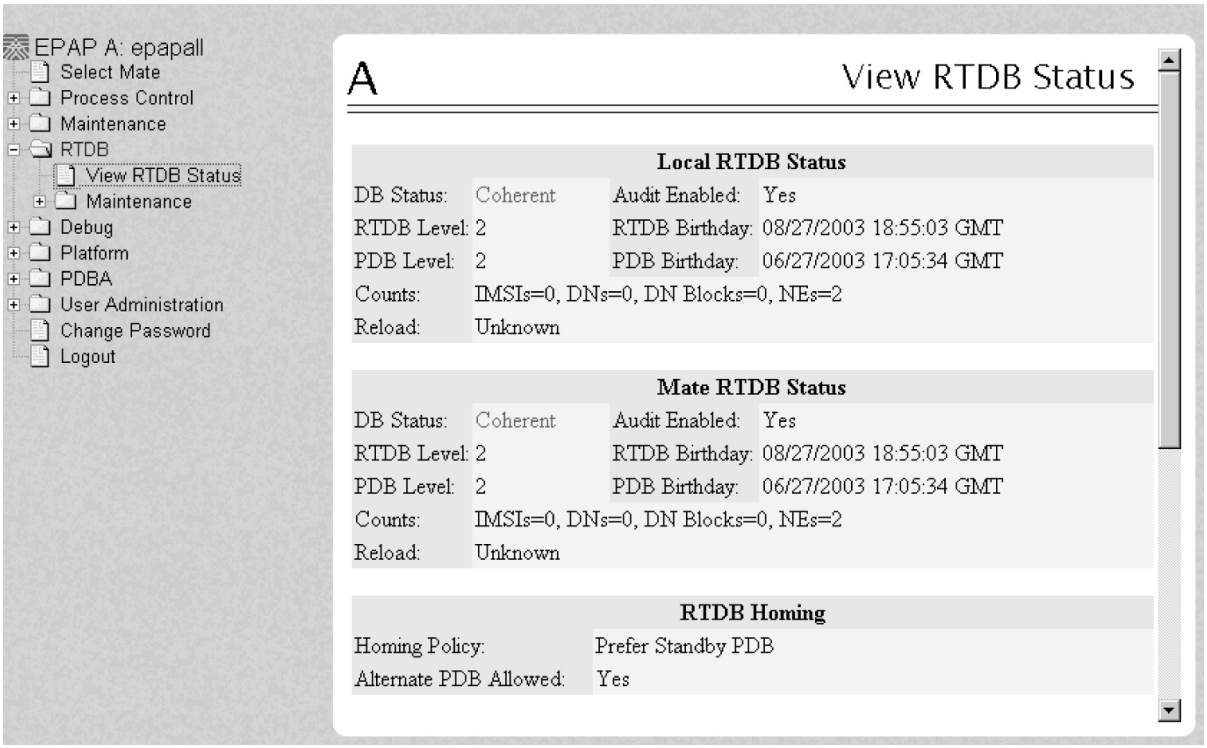

Figure 34: RTDB Status

4. If the RTDB birthdays for both the local RTDB and the mate RTDB are the same, you can copy the mate's RTDB to the local RTDB.

   If the RTDB birthdays are not the same, go to step *Step 11*.

5. Before attempting to copy the RTDB, you must stop the software on both sides by doing the following:

   CAUTION

   CAUTION: If you do not stop the software on both sides, as directed in substeps *Substep a* through *Substep f*, the RTDBs will become corrupted.

   a) Select **Process Control>Stop Software** to stop the software.

   The following warning appears:

   ```
   CAUTION: This action will stop all EPAP software processes, and will prevent
   the selected EPAP from updating the RTDB until the EPAP software is re-started
    (by executing the Start Software menu item).
   ```

   b) On the **Stop EPAP Software** screen, make sure the following item on the screen is checked:

   Check if you want the software to automatically start on reboot.

   c) Select the **Stop EPAP Software** button to stop the software.

   d) Select **Select Mate** from the menu.

   e) Repeat substeps *Substep a* through *Substep c* on the other side.

   f) Select **Select Mate** from the menu to return to the EPAP that is reporting the problem.

6. Verify that you are logged in to the side that is reporting the problem.

7. Select **RTDB>Maintenance>Reload from Remote**.

   The screen shown in *Figure 35: Reload RTDB from Mate EPAP* shows this function.

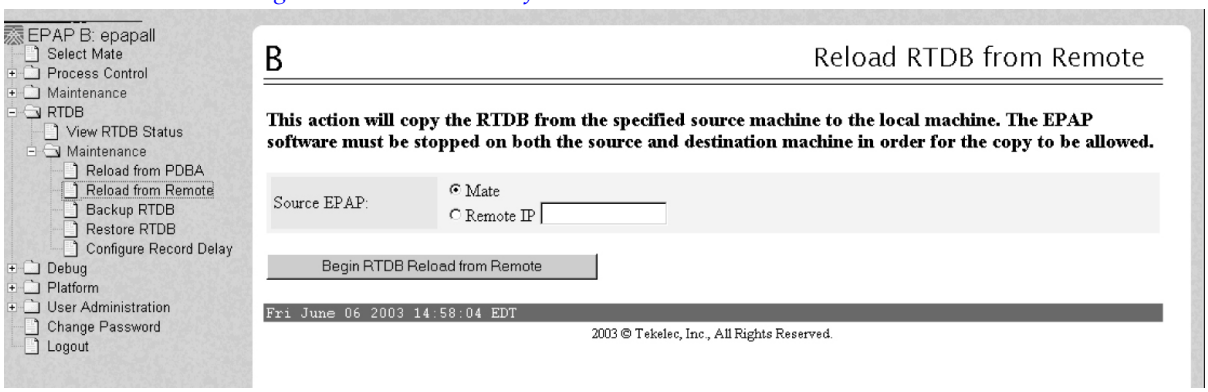

Figure 35: Reload RTDB from Mate EPAP

8. Ensure that the Mate radio button is filled in, as shown in *Figure 35: Reload RTDB from Mate EPAP* and click the **Begin RTDB Reload from Remote** button.
9. When the reload has completed, start the software on both sides by doing the following:
   a) Select **Process Control>Start Software** to start the software again.

      Make sure the following item on the screen is checked (this item applies only if performing this procedure on Side A):

      Check if you want to start the PDBA software along with the EPAP software.

   b) Select the **Start EPAP Software** button to start the software.
   c) Select **Select Mate** from the menu.
   d) Repeat substeps *Substep a* and *Substep b* on the other side.
10. If you wish to increase the size of the transaction logs, select **PDBA>Maintenance>Transaction Log Params>Change Params** as shown in *Figure 36: Changing Transaction Log Parameters*.

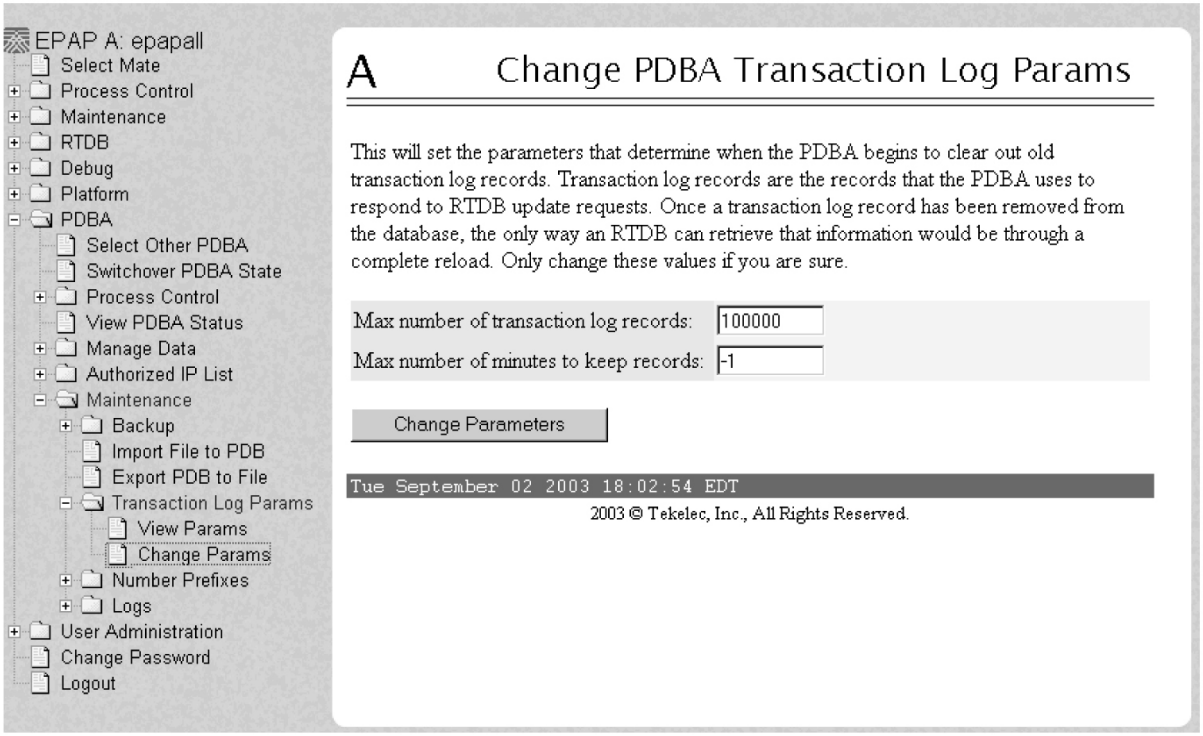

Figure 36: Changing Transaction Log Parameters

11. If the problem persists, contact the *Customer Care Center*.

4000000000008000 - Mate PDBA Unreachable

This message indicates that the other PDBA is unreachable.

Recovery

1. Log in to the **User Interface** screen of the EPAP GUI (see *Accessing the EPAP GUI Interface*).
2. Check the banner information above the menu for the PDBA status.
   a) If neither PDBA status is DOWN, go to *Step 7*.
   b) If status of one of the PDBAs is DOWN, continue with *Step 3*.

   Figure 37: PDBA Down shows an example in which the PDBA on EPAP B is DOWN.

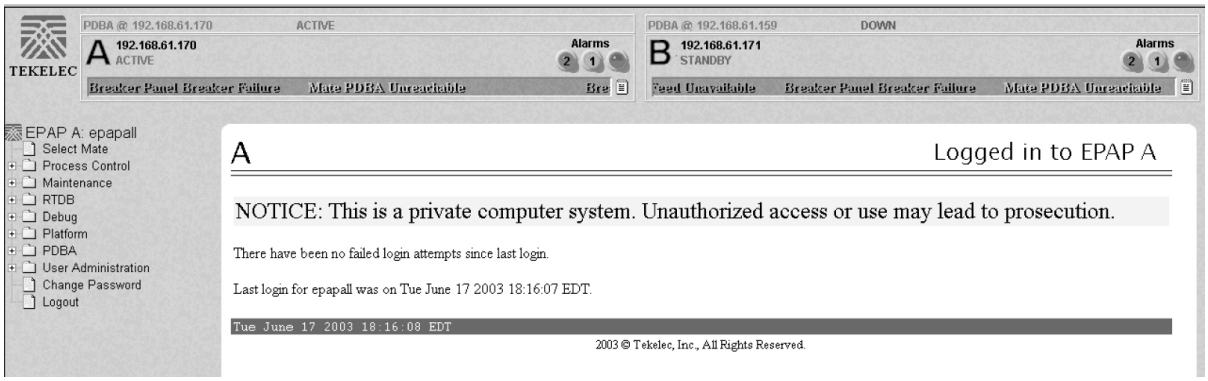

Figure 37: PDBA Down

3. Check the banner information above the menu to verify that you are logged into the EPAP whose PDBA is DOWN.

   If it necessary to switch to the other PDBA, select **PDBA>Select Other PDBA** .

4. Attempt to start the PDBA by selecting **PDBA>Process Control>Start PDBA Software**.

   The window shown in *Figure 38: Start PDBA* is displayed.

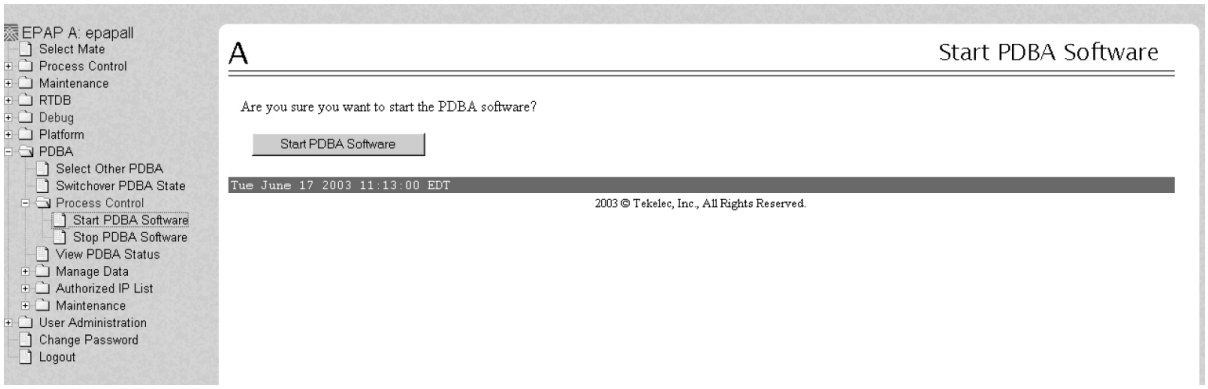

Figure 38: Start PDBA

5. Click the **Start PDBA Software** button.
6. When the PDBA software has been started, the window shown in *Figure 39: PDBA Started* displays, and within moments the banner will show the PDBA status as ACTIVE or STANDBY.

   If the status does not change to ACTIVE or STANDBY, continue to *Step 7*.

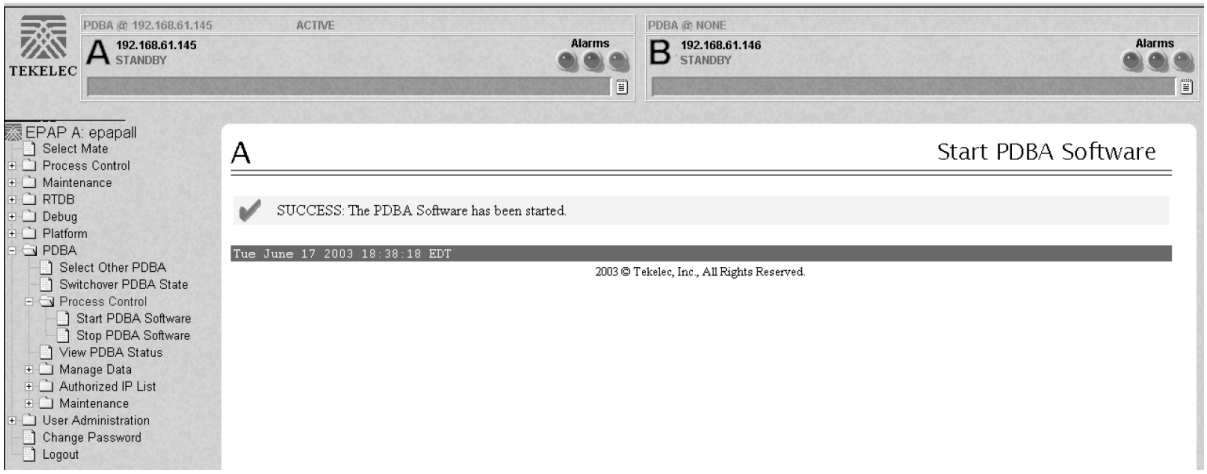

Figure 39: PDBA Started

7. Check the status of the provisioning network.

   If problems exist in the provisioning network, fix them.

8. If the problem persists, run `savelogs` (see *Saving Logs Using the EPAP GUI*), and contact the *Customer Care Center*.

4000000000010000 - PDBA Connection Failure

The local EPAP RTDB process cannot connect to the local PDBA.

Recovery

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

   Select **Select Mate** if necessary to switch to the problem EPAP.

3. Perform *Restarting the EPAP and PDBA*.
4. Select **RTDB>View RTDB Status** and determine the homing policy for the PDBA.

   In the example shown in *Figure 40: Determining the Homing Policy*, the Homing Policy shows that the Standby PDB is preferred for homing.

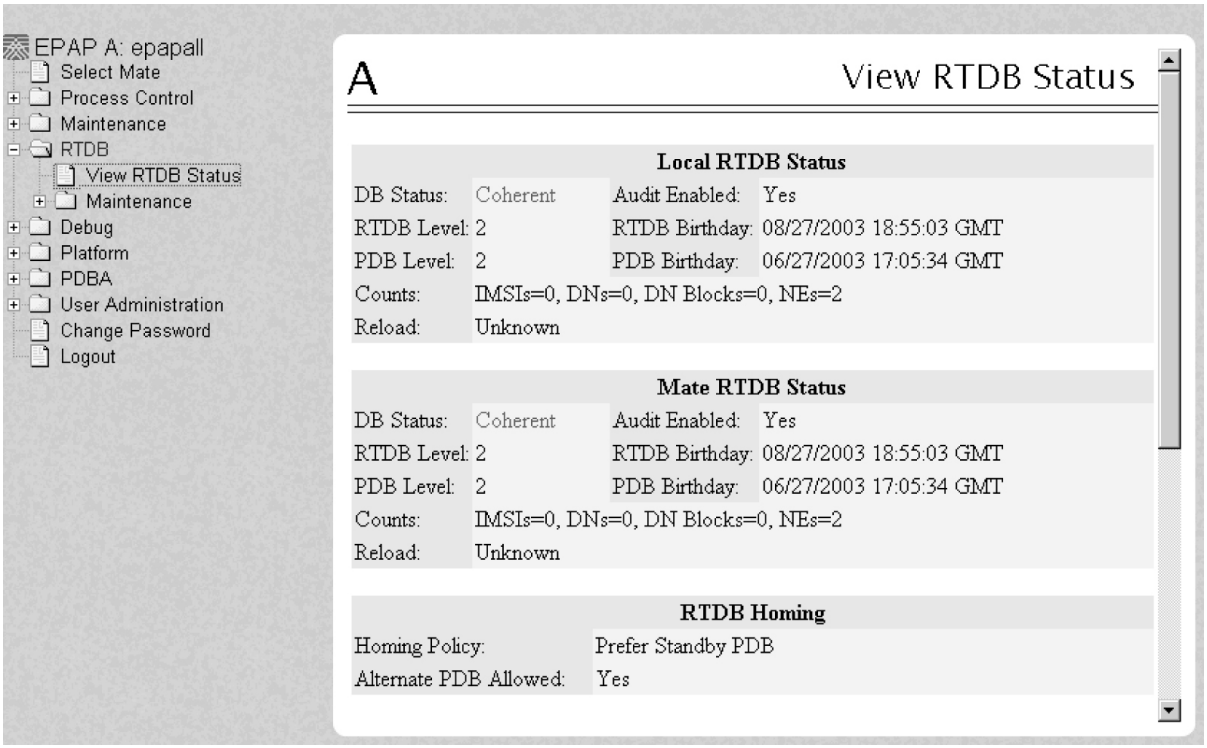

Figure 40: Determining the Homing Policy

5. At the EPAP indicated by the Homing Policy, repeat *Step 3* and *Step 4* to restart the PDBA.
6. If the problem persists, run `savelogs` (see *Saving Logs Using the EPAP GUI*), and contact the *Customer Care Center*.

4000000000020000 - PDBA Replication Failure

Provisioning data is no longer being exchanged from the Active PDB to the Standby PDB.

1. Run `savelogs` (see *Saving Logs Using the EPAP GUI*).
2. Contact the *Customer Care Center*.

4000000000040000 - RTDB DSM Over-Allocation

At least one Service Module 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.

Recovery

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

4000000000080000 - RTDB Maximum Depth Reached

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. RTDB data is stored as inverse tree structures. The trees have a maximum depth allowed.

Recovery

Contact the *Customer Care Center*.

4000000000100000 - No PDBA Proxy to Remote PDBA Connection

This message indicates that the PDBA Proxy feature is disabled or the software is down.

Recovery

1. Log in to the User Interface screen of EPAP A (see *Accessing the EPAP GUI Interface*)
2. Select **PDBA>View PDBA Status** to verify that the PDBA proxy feature is enabled.

   The Local Proxy Status items only appear if the PDBA Proxy feature is enabled (See *Figure 41: View PDBA Status Screen*).

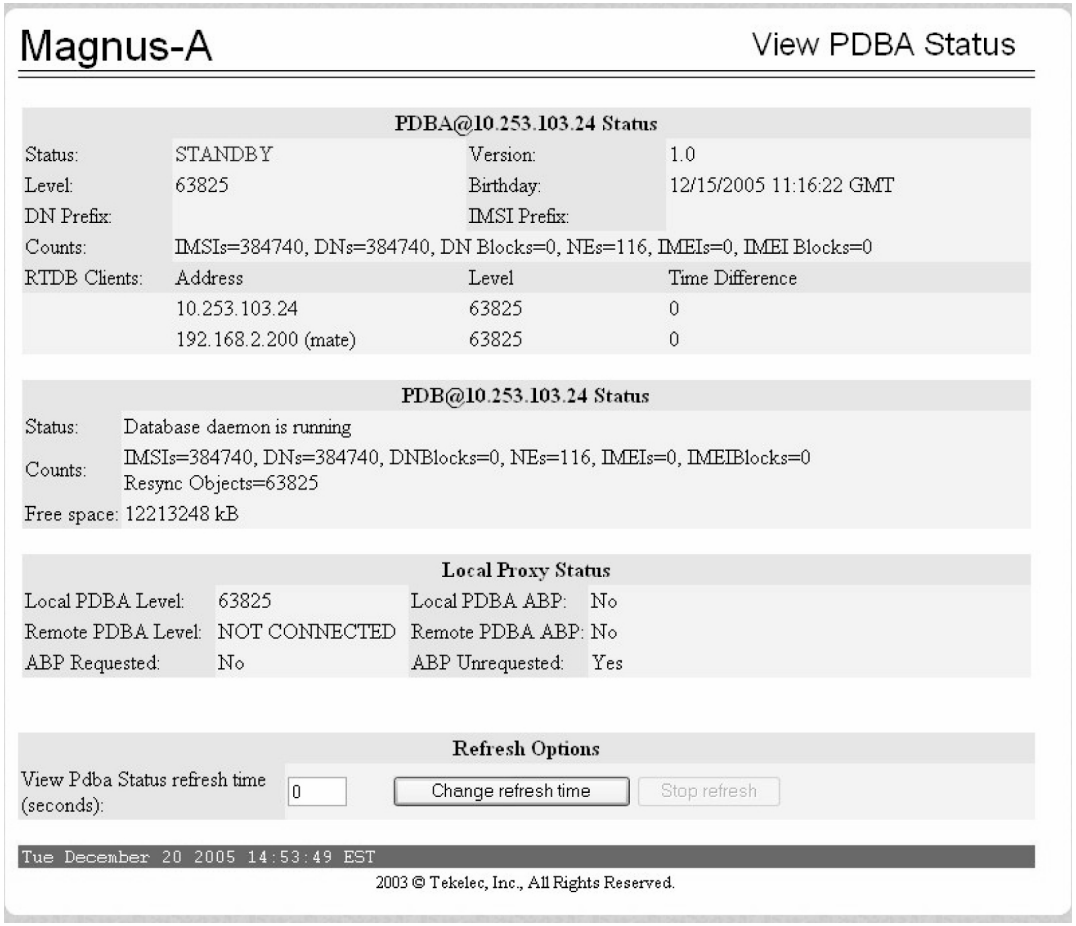

Figure 41: View PDBA Status Screen

3. Refer to *Restarting the EPAP and PDBA* to restart the PDBA.
4. If the problem persists, capture the log files on both EPAPs (see *Saving Logs Using the EPAP GUI*) and contact the *Customer Care Center*.

4000000000200000 - DSM Provisioning Error

A coherent DSM RTDB is more than 1000 levels behind the EPAP RTDB.

Recovery

Monitor this situation.

If it does not improve, contact the *Customer Care Center* for guidance.

4000000004000000 - RTDB MPS Over-Allocation

At least one Service Module 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.

Recovery

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

   If this did not clear the error, continue to the next step.
2. Contact the *Customer Care Center* .

4000000008000000 - PDB 100% Full

The PDB on the EPAP is at capacity. The EPAP PDB is not updating.

Note: This may be an indication to immediately make plans for an EPAP upgrade to increment data capacity of the PDB database.

You may be able to free up space by deleting unnecessary data in the PDB database.

Recovery

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 file system 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 file system.

- More than 80% (but less than 90%) of the total number of available files have been allocated on the file system.

Recovery

1. Run `syscheck` (see *Running syscheck Using the syscheck Login*)
2. Examine the syscheck output to determine if the filesystem `/var/TKLC/epap/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 EPAPGUI (see *Accessing the EPAP GUI Interface*)
   b) Select **Debug>Manage Logs & Backups**.

   A screen similar to *Figure 42: Manage Logs and Backups* 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.

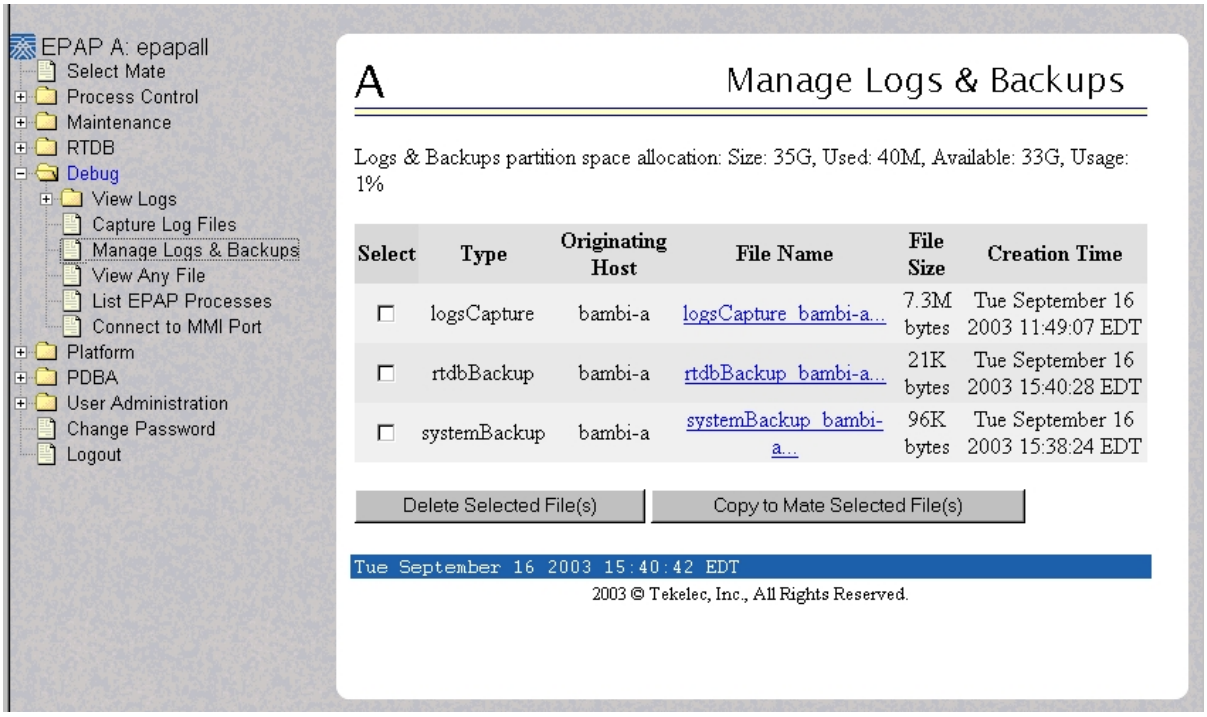

Figure 42: Manage Logs and Backups

   c) Click the checkbox of each file that you want to delete and then click **Delete Selected File(s)**.
4. Contact the Tekelec *Customer Care Center* and provide the system health check output.

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.

Recovery

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 EPAPGUI (see *Accessing the EPAP GUI Interface*)
3. Check the banner information above the menu to verify that you are logged into the problem EPAP 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 EPAPs (see *Saving Logs Using the EPAP 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 appropriate hardware manual).

Recovery

1. Run syscheck in verbose mode (see procedure *Running syscheck Through the EPAP GUI*)
2. Contact the *Customer Care Center* and provide the system health check output.

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: 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.

Recovery

Contact the Tekelec *Customer Care Center*.

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.

Recovery

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 server with username `epapconfig` (see *Accessing the EPAP GUI 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 server that is reporting the problem. In the following example, it is server A.

c) Enter option `2`, `Configure Network Interfaces Menu`, from the EPAP `Configuration Menu`.

```
MPS Side A:  hostname: mpsa-d1a8f8  hostid: 80d1a8f8
             Platform Version: x.x.x-x.x.x
             Software Version: EPAP x.x.x-x.x.x
             Wed Jul 17 09:51:47 EST 2002
 /-----EPAP 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              |
|----|-----------------------------------|
|  8 | PDB Configuration Menu            |
|----|-----------------------------------|
|  e | Exit                              |
\----------------------------------------/
Enter Choice:  2
```

d) Enter option `1`, `Configure Provisioning Network` from the `Configure Network Interfaces Menu`.

This displays the following 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        |
|----|---------------------------------------|
|  7 | Configure Provisioning VIP Addresses  |
|----|---------------------------------------|
|  e | Exit                                  |
```

```
\----------------------------------------/
Enter choice:  1
```

The following warning appears:

```
EPAP software and PDBA are running. Stop them? [N]
```

e) Type Y and press Enter.
The EPAP A provisioning network IP address displays:

```
Verifying connectivity with mate ...
Enter the EPAP 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 EPAP A provisioning network IP Address [192.168.61.90]:
Enter the EPAP B provisioning network IP Address [192.168.61.91]:
Enter the EPAP provisioning network netmask [255.255.255.0]:
Enter the EPAP 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 you have verifying 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 EPAP Configuration Menu.

2. Rerun `syscheck`. If the alarm has not been cleared, go to *Step 3*.
3. Contact Tekelec *Customer Care Center* for assistance.

5000000000000080 – Server temperature warning

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

Recovery

1. Ensure that nothing is blocking the fan's intake. Remove any blockage.
2. Verify that the temperature in the room is normal. If it is too hot, lower the temperature in the room to an acceptable level.

Table 7: Server Environmental Conditions

Ambient Temperature	Operating: 5 degrees C to 40 degrees C Exceptional Operating Limit: 0 degrees C to 50 degrees C Storage: -20 degrees C to 60 degrees C
Relative Humidity	Operating: 5% to 85% non-condensing Storage: 5% to 950% 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. Replace the filter (refer to the appropriate 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.

4. If the problem has not been resolved, contact the Tekelec *Customer Care Center* and provide the system health check output.

5000000000000100 – Server core file detected

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

Recovery

1. Run `savelogs` to gather system information (see *Running syscheck Through the EPAP GUI*")
2. Contact the Tekelec *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 NTP daemon (background process) has been unable to locate a server to provide an acceptable time reference for synchronization.

Recovery

Contact the Tekelec *Customer Care Center*.

5000000000000400 – 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.

Recovery

Contact the Tekelec *Customer Care Center*.

5000000000000800 – Server disk self test warning

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

Recovery

Contact the Tekelec *Customer Care Center*.

5000000000001000 – Device warning

This alarm indicates that either we are unable to perform an snmpget command on the configured SNMP OID or the value returned failed the specified comparison operation.

Recovery

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

5000000000002000 – Device interface warning

This alarm can be generated by either an SNMP trap or an IP bond error. If syscheck is configured to receive SNMP traps, this alarm indicates that a SNMP trap was received with the “set” state. If syscheck is configured for IP bond monitoring, this alarm can mean a slave device is not up, a primary device is not active or syscheck is unable to read bonding information from interface configuration files.

Recovery

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

5000000000004000 – Server reboot watchdog initiated

This alarm indicates that the hardware watchdog was not strobed by the software and so the server rebooted the server. This applies to only the last reboot and is only supported on a T1100 application server.

Recovery

Contact the Tekelec *Customer Care Center*.

5000000000008000 – Server HA failover inhibited

This alarm indicates that the server has been inhibited and therefore HA failover is prevented from occurring.

Recovery

Contact the Tekelec *Customer Care Center*.

5000000000010000 – Server HA Active to Standby transition

This alarm indicates that the server is in the process of transitioning HA state from Active to Standby.

Recovery

Contact the Tekelec *Customer Care Center*.

5000000000020000 – Server HA Standby to Active transition

This alarm indicates that the server is in the process of transitioning HA state from Standby to Active.

Recovery

Contact the Tekelec *Customer Care Center*.

5000000000040000 – Platform Health Check failure

This alarm is used to indicate a syscheck configuration error.

Recovery

Contact the Tekelec *Customer Care Center*.

5000000000080000 – NTP Offset Check failure

This minor alarm indicates that time on the server is outside the acceptable range (or offset) from the NTP server. The Alarm message will provide the offset value of the server from the NTP server and the offset limit that the application has set for the system.

Recovery

Contact the Tekelec *Customer Care Center*.

5000000000100000 – NTP Stratum Check failure

This alarm indicates that NTP is syncing to a server, but the stratum level of the NTP server is outside of the acceptable limit. The Alarm message will provide the stratum value of the NTP server and the stratum limit that the application has set for the system.

Recovery

Contact the Tekelec *Customer Care Center*.

5000000000200000 – SAS Presence Sensor Missing

This alarm indicates that the T1200 server drive sensor is not working.

Recovery

Contact the Tekelec *Customer Care Center* to get a replacement server.

5000000000400000 – SAS Drive Missing

This alarm indicates that the number of drives configured for this server is not being detected.

Recovery

Contact the Tekelec *Customer Care Center* to determine whether the issue is with a failed drive or failed configuration.

5000000001000000 – HP disk resync

This minor alarm indicates that the HP disk subsystem is currently resynchronizing after a failed or replaced drive, or some other change in the configuration of the HP disk subsystem. The output of the message will include the disk that is resynchronizing and the percentage complete. This alarm should eventually clear once the resync of the disk is completed. The time it takes for this is dependant on the size of the disk and the amount of activity on the system.

Recovery

1. Run syscheck in Verbose mode (see *Saving Logs Using the EPAP GUI*).
2. If the percent recovering is not updating, wait at least 5 minutes between subsequent runs of syscheck, then contact the *Customer Care Center* and provide the system health check output.

5000000010000000 – Invalid BIOS value

This alarm indicates that the HP server has detected that one of the setting for either the embedded serial port or the virtual serial port is incorrect.

Recovery

Contact the Tekelec *Customer Care Center*.

5000000020000000 – Server Kernel Dump File Detected

This alarm indicates that the kernel has crashed and debug information is available.

Recovery

1. Run syscheck in Verbose mode (see *Running the System Health Check*).
2. Contact the Tekelec *Customer Care Center*.

5000000040000000 – TPD Upgrade Failed

This alarm indicates that a TPD upgrade has failed.

Recovery

1. Run the following command to clear the alarm.
   `/usr/TKLC/plat/bin/alarmMgr –clear TKSPLATMI31`
2. Contact the Tekelec *Customer Care Center*.

Minor Application Alarms

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

6000000000000001 - RMTP Channel A Down

Channel A of the IP multicast mechanism is not available.

Recovery

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

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

6000000000000002 - RMTP Channel B Down

Channel B of the IP multicast mechanism is not available.

Recovery

1. Check the physical connections between the local EPAP(s), and the EPAP(s) and the Service Module cards on the EAGLE 5 ISS.

   Make sure the connectors are firmly seated.
2. Run `syscheck` (see *Running syscheck Through the EPAP GUI*).

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

6000000000000008 - RTDB 80% Full

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

Note: This is an indication to the user to immediately make plans for an EPAP upgrade or upgrade the Service Module card to add more memory.

Recovery

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 EPAP or for a Service Module card) is approaching its capacity.
3. Run `savelogs` on each EPAP (see *Saving Logs Using the EPAP GUI*), and contact the *Customer Care Center*.

6000000000000020 - Standby PDBA Falling Behind

This is an indication that there is a congestion condition affecting updates to the standby PDBA. The amount of time between an update being committed in the Active PDB and the same update being committed in the Standby PDB has reached an unacceptable level.

The EPAP attempts to automatically recover from this situation. This error can result from one of the following conditions:

- Provisioning activity is very heavy
- The provisioning network is experiencing errors or latency
- Server maintenance functions (such as backups, restores, imports, exports, etc) are occurring

Recovery

1. Periodically, verify that the level of the standby PDBA is catching up by selecting **PDBA>View PDBA Status** and comparing the Level of the Standby PDBA (on EPAP A in the example shown in *Figure 43: View PDBA Status*) to the Level of the Active PDBA (on EPAP B in the example).

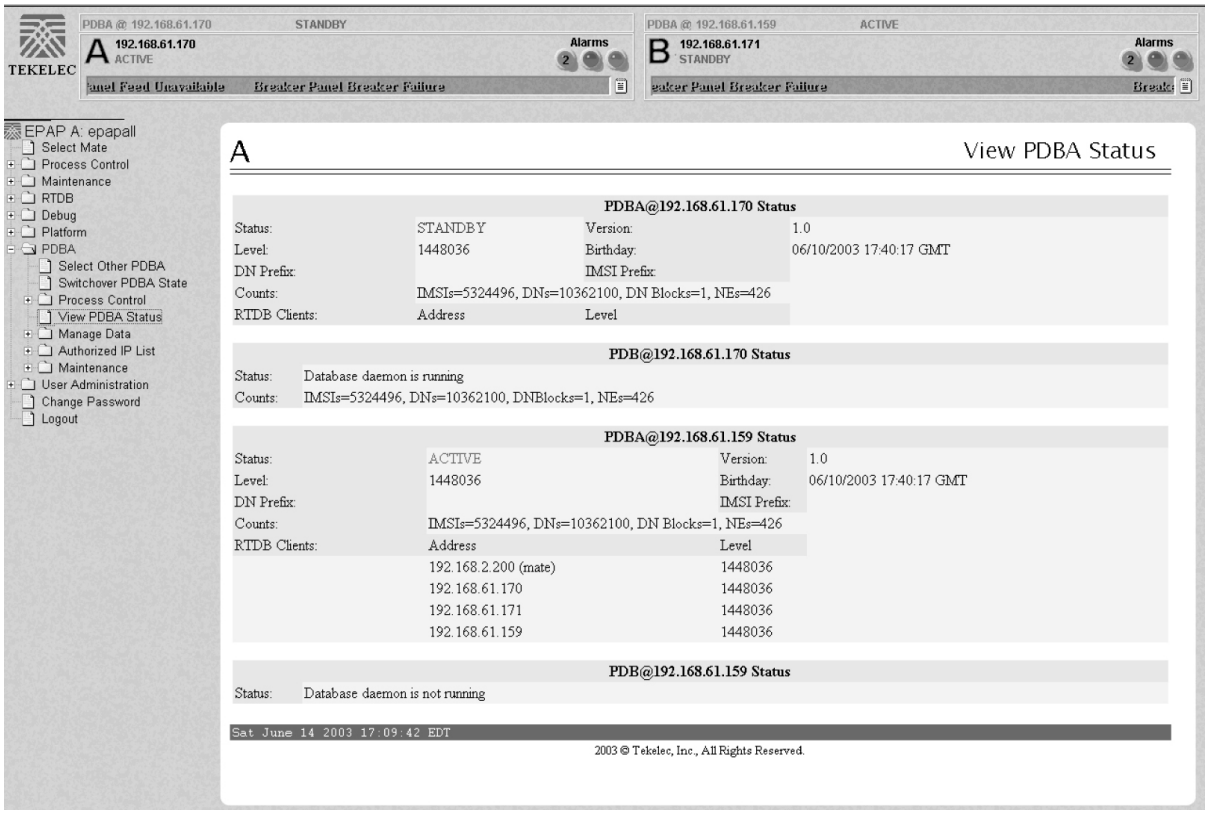

Figure 43: View PDBA Status

2. If the problem persists for more than two hours, run `savelogs` (see *Saving Logs Using the EPAP GUI*), and contact *Customer Care Center* for assistance.

6000000000000040 - RTDB Tree Error

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. RTDB data is stored as inverse tree structures. The trees have maximum theoretical depths based on the number of records in the tree.

Recovery

Contact the *Customer Care Center*.

6000000000000080 - PDB Backup failed

The PDB backup failed because of at least one of the following conditions:

- A manual backup script was not able to create PDB backup successfully
- A PDB backup was already in progress when Automatic PDB backup attempted to start
- A PDB restore was in progress when the Automatic PDB backup attempted to start

To verify the exact failure condition, refer to the error string in the log file.

Note: This alarm will also clear if the Automatic PDB/RTDB backup executes successfully during the next scheduled backup time.

Recovery

To clear this alarm immediately, perform one of the following:

- Cancel the Automatic PDB / RTDB backup via the EPAP GUI as follows:

  Note: Automatic PDB / RTDB Backup will have to be rescheduled if it is cancelled.

  1. Log in to the User Interface screen of the EPAP GUI (see *Accessing the EPAP GUI Interface*).
  2. From the menu, select **Maintenance>Automatic PDB/RTDB Backup** to display the automatic backup screen.
  3. From the **Automatic PDB/RTDB Backup** screen, select **None** as the **Backup Type.**
  4. Select the **Schedule Backup** button to complete the cancellation.

     Automatic PDB/RTDB Backup will have to be rescheduled. Refer to the EPAP *Administration Manual* to reschedule the Automatic PDB / RTDB Backup.

- Perform a manual backup via the EPAP GUI (see *Backing Up the RTDB*).

6000000000000100 - Automatic PDB Backup failed

The PDB backup failed because of at least one of the following conditions:

- The mate machine was not reachable.
- The SCP command to transfer of PDB backup file to mate fails
- The transfer of Automatic PDB Backup to Mate fails
- The transfer of Automatic PDB Backup to mate failed due to disk space shortage on mate
- The remote machine was not reachable
- The connection to remote host failed for SFTP of the PDB Backup file
- The SFTP to the remote host failed for Automatic PDB Backup
- The login or password configured for the Remote machine is wrong for the configured user
- The Destination File Path to store the PDB Backup file in Remote machine configured by the user does not exist
- The transfer of the Automatic PDB Backup to the remote failed due to disk space shortage on the remote

To verify the exact failure condition, refer to the error string in the log file.

Note: This alarm will clear if the Automatic PDB / RTDB backup executes successfully during the next scheduled backup time.

Recovery

To clear this alarm immediately, cancel the Automatic PDB/RTDB backup via the EPAP GUI, as described in *Substep a* through *Substep d*.

Note: Automatic PDB/RTDB Backup will have to be rescheduled if it is cancelled.

a) Log in to the User Interface screen of the EPAP GUI (see *Accessing the EPAP GUI Interface*).
b) From the menu, select **Maintenance>Automatic PDB/RTDB Backup** to display the **Automatic PDB/RTDB Backup** screen.
c) From the **Automatic PDB/RTDB Backup** screen, select **None** as the **Backup Type.**
d) Select the **Schedule Backup** button to complete the cancellation.

Note: Automatic PDB/RTDB Backup will have to be rescheduled. Refer to the *EPAP Administration Manual* to reschedule the Automatic PDB/RTDB Backup.

6000000000000200 - RTDB Backup failed

The RTDB backup failed because of at least one of the following conditions:

- The manual backup script (backupRtdb.pl) was not able to create RTDB Backup successfully.
- The EPAP software could not be successfully stopped in order for Automatic RTDB Backup to start.
- Another user has already stopped the EPAP Software before the script stops the EPAP Software for Automatic RTDB Backup
- Another user is currently stopping the EPAP Software. The Automatic RTDB Backup script cannot stop the EPAP Software.
- The GUI Server returned an error when trying to get a lock from it for Automatic RTDB Backup.
- Not able to connect to GUI server for Automatic RTDB Backup
- The EPAP software was not running when it was to be stopped for Automatic RTDB Backup
- The mate machine is not reachable.

To verify the exact failure condition, refer to the error string in the log file.

Note: This alarm will clear if the Automatic PDB/RTDB backup executes successfully during the next scheduled backup time.

Recovery

To clear this alarm immediately, perform one of the following:

- Cancel the Automatic PDB/RTDB backup via the EPAP GUI.

  Note: Automatic PDB/RTDB Backup will have to be rescheduled if it is cancelled.

  1. Log in to the User Interface screen of the EPAP GUI (see *Accessing the EPAP GUI Interface*).
  2. From the menu, select **Maintenance>Automatic PDB/RTDB Backup** to display the **Automatic PDB/RTDB Backup** screen.
  3. From the **Automatic PDB/RTDB Backup** screen, select **None** as the **Backup Type.**
  4. Select the **Schedule Backup** button to complete the cancellation. Automatic PDB/RTDB Backup will have to be rescheduled. Refer to the *EPAP Administration Manual* to reschedule the Automatic PDB/RTDB Backup.

- Perform a manual backup via the EPAP GUI as described in *Backing Up the RTDB*.

6000000000000400 - Automatic RTDB Backup failed

The RTDB backup failed because of at least one of the following conditions:

- The mate machine is not reachable.
- Automatic RTDB Backup file transfer to the Mate failed.
- Unable to connect to Remote host IP Address for Automatic RTDB Backup.
- Automatic RTDB Backup file transfer to the Remote failed.
- The incorrect login or password configured for Automatic RTDB Backup.
- The destination path does not exist in remote machine IP Address for Automatic RTDB Backup.

To verify the exact failure condition, refer to the error string in the log file.

Note: This alarm will clear if the Automatic PDB/RTDB backup executes successfully during the next scheduled backup time.

Recovery

To clear this alarm immediately, cancel the Automatic PDB / RTDB backup via the EPAP GUI as described in *Substep a* through *Substep d*.

Note: Automatic PDB/RTDB Backup will have to be rescheduled if it is cancelled.

a) Log in to the User Interface screen of the EPAP GUI (see *Accessing the EPAP GUI Interface*).
b) From the menu, select **Maintenance>Automatic PDB/RTDB Backup** to display the **Automatic PDB/RTDB Backup** screen.
c) From the **Automatic PDB/RTDB Backup** screen, select **None** as the **Backup Type.**
d) Select the **Schedule Backup** button to complete the cancellation. Automatic PDB/RTDB Backup will have to be rescheduled. Refer to the *EPAP Administration Manual* to reschedule the Automatic PDB/RTDB Backup.

6000000000001000 - SSH tunnel not established

One or more SSH tunnels has been enabled in the past, but the cron job was not able to re-establish the SSH tunnel with all of the Authorized PDBA Client IP addresses.

Recovery

- Verify that the Customer Provisioning Application (CPA) machine is up and running.
  - If the CPA machine is not running, restart it and wait for the alarm to clear.
  - If the CPA machine is running, or if the alarm does not clear, contact *Customer Care Center*.

6000000000002000 - RTDB 90% Full

The RTDB on the EPAP is approaching capacity (90%).

Note: This may be an indication to immediately make plans for an EPAP upgrade.

Recovery

1. At the EAGLE 5 ISS input terminal, enter the command `rept-stat-mps`.
2. Run savelogs on each EPAP (see *Saving Logs Using the EPAP GUI*).
3. Contact the *Customer Care Center*.

6000000000004000 - PDB 90% Full

The PDB on the EPAP is approaching capacity (90%).

Note: This may be an indication to immediately make plans for an EPAP upgrade.

Recovery

1. At the EAGLE 5 ISS input terminal, enter the command `rept-stat-mps`.
2. Run savelogs on each EPAP (see *Saving Logs Using the EPAP GUI*).
3. Contact the *Customer Care Center*.

6000000000008000 - PDB 80% Full

The PDB on the EPAP is approaching capacity (80%).

Note: This may be an indication to the user to immediately make plans for an EPAP upgrade.

Recovery

1. At the EAGLE 5 ISS input terminal, enter the command `rept-stat-mps`.
2. Run savelogs on each EPAP (see *Saving Logs Using the EPAP GUI*).
3. Contact the *Customer Care Center*.

6000000000010000 - PDB InnoDB Space 90% Full

The storage space in InnoDB Engine on the EPAP is approaching capacity (90%).

Note: This may be an indication to immediately make plans for an EPAP upgrade to allocate more InnoDB space.

Recovery

1. At the EAGLE 5 ISS input terminal, enter the command `rept-stat-mps`.
2. Run savelogs on each EPAP (see *Saving Logs Using the EPAP GUI*).
3. Contact the *Customer Care Center*.

Appendix A

General Procedures

Topics:

- *Accessing the EPAP GUI Interface.....91*
- *Connecting the Local Access Terminal.....92*
- *Accessing the EPAP Text Interface.....93*
- *Restarting the EPAP and PDBA.....93*
- *Restarting the EPAP Software.....96*
- *Saving Logs Using the EPAP GUI 98*

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

Accessing the EPAP GUI Interface

EPAP 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 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 EPAP 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 EPAP GUI interface.

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 EPAP application.

   The login screen shown in *Figure 44: EPAP User Interface Screen* appears.

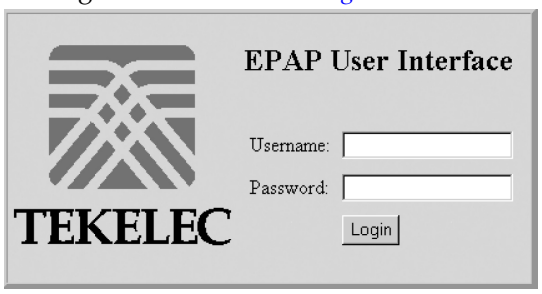

Figure 44: EPAP User Interface Screen

   If using Firefox, the following message will be displayed when logging into the EPAP 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 44: EPAP User Interface Screen* does not show the release number that appears on the EPAP User Interface Login window because this manual covers multiple EPAP 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 8: Usernames* 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 *EPAP Administration Manual*.

Table 8: Usernames

EPAP UI Login Name	Access Granted
epapmaint	Maintenance menu and all sub menus

EPAP UI Login Name	Access Granted
epappdba	Database menu and all sub menus
epapdebug	Debug menu and all sub menus
epapplatform	Platform menu and all sub menus
uiadmin	User Administration menu
epapall	All of the menus in this Table

3. Continue with the procedure that invoked this procedure.

Connecting the Local Access Terminal

The Local Access Terminal can be used for the following purposes:

- Accessing the EPAP text interface
- Running `syscheck`

Use the following procedure to connect the Local Access Terminal.

1. Connect the workstation you will use as the Local Access Terminal to Port 3 of the DB44 to DB9 (X4) cable (P/N 830-0972-01), shown in *Figure 45: DB44 to DB9 (X4) Cable*.

   Port 0 of this cable connects to PCI card 8. (For more information about the location of PCI card 8, refer to the *Tekelec 1000* Application Server *Hardware Manual*; for more information about this cable, refer to the *Signaling Products Integrated Applications Installation Manual*.

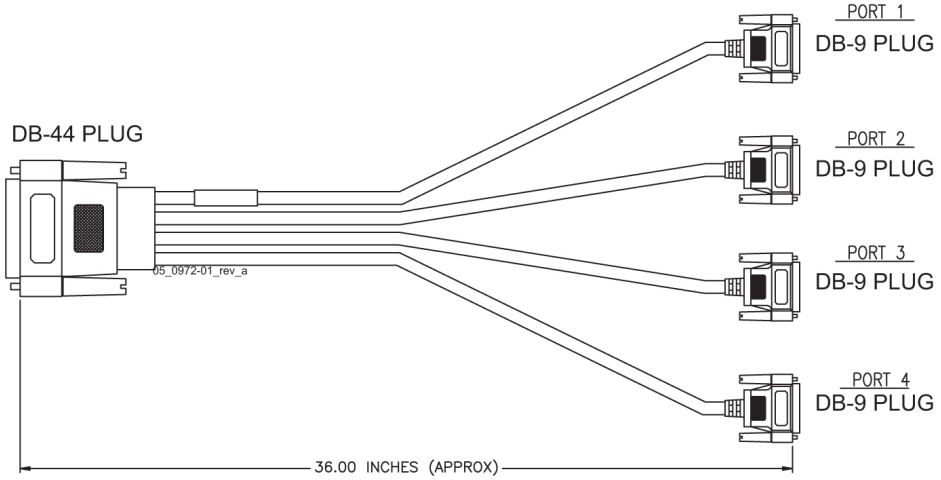

Figure 45: DB44 to DB9 (X4) Cable

2. When the prompt appears on the Local Access Terminal, enter either of the following usernames and associated passwords:
   a) To access the EPAP text interface, enter the `epapconfig` username and the password provided by your system administrator.
      For more information about the EPAP text interface, see *Accessing the EPAP Text Interface*.
   b) 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 EPAP Text Interface

The EPAP text-based user interface is accessed through the Local Access Terminal. The text-based user interface is used for initial configuration of the EPAP 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 EPAP application, refer to the *EPAP Administration Manual*.

1. Connect the Local Access Terminal to the server you need to access (see *Connecting the Local Access Terminal*).
2. Log in with username epapconfig and the password provided by your system administrator.
3. Continue with the procedure that invoked this procedure.

Restarting the EPAP and PDBA

This procedure is invoked by procedures in *Alarms*.

CAUTION: Perform this procedure only when directed to by one of the procedures in *Alarms*. This is not a standalone procedure.

1. Log in to the User Interface screen of the EPAP GUI (see *Accessing the EPAP GUI Interface*).
2. Check the banner information above the menu to verify that you are logged into the problem EPAP indicated in the UAM.
   If it is necessary to switch to the problem EPAP, select **Select Mate**.
3. From the **epapmaint** screen, select **Process Control>Stop Software**.
   The screen shown in *Figure 46: Stop Software Confirmation* appears:

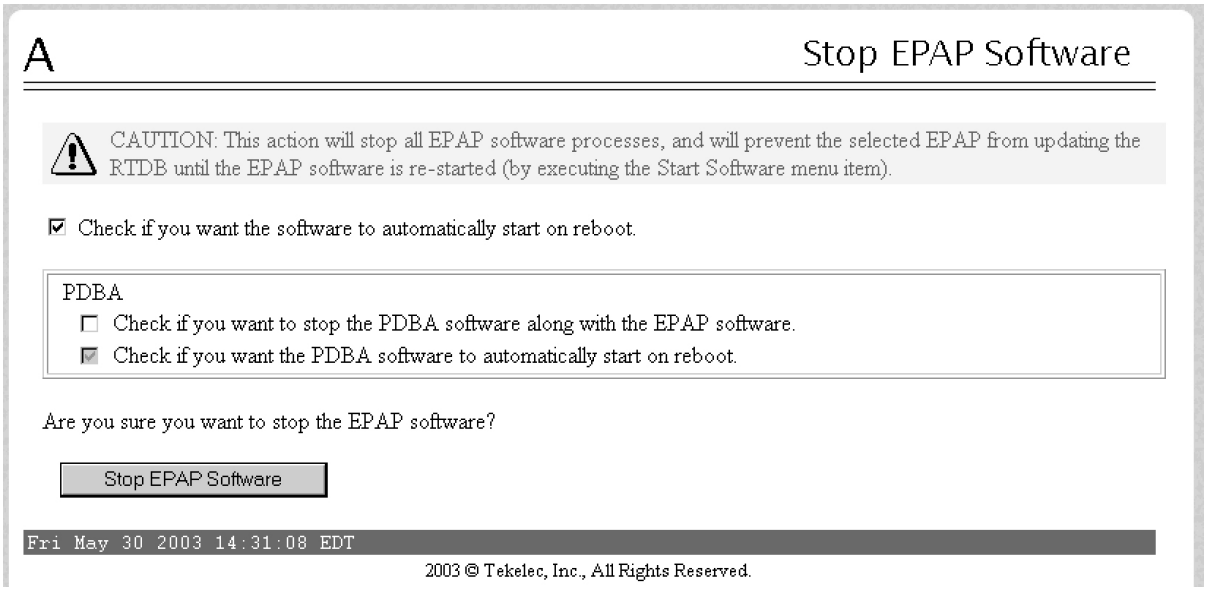

Figure 46: Stop Software Confirmation

4. On the **Stop EPAP Software** screen, make sure the following checkboxes are all checked, so that the PDBA software is stopped along with the EPAP software and so that both the PDBA and EPAP software are automatically restarted on reboot (see *Figure 47: Stop Software* for an example):
   a) **Check to cause the software to automatically start on reboot**
      This checkbox causes the EPAP software to automatically reboot.
   b) **Check to stop the PDBA software along with the EPAP software**
   c) **Check to cause the PDBA software to automatically start on reboot**

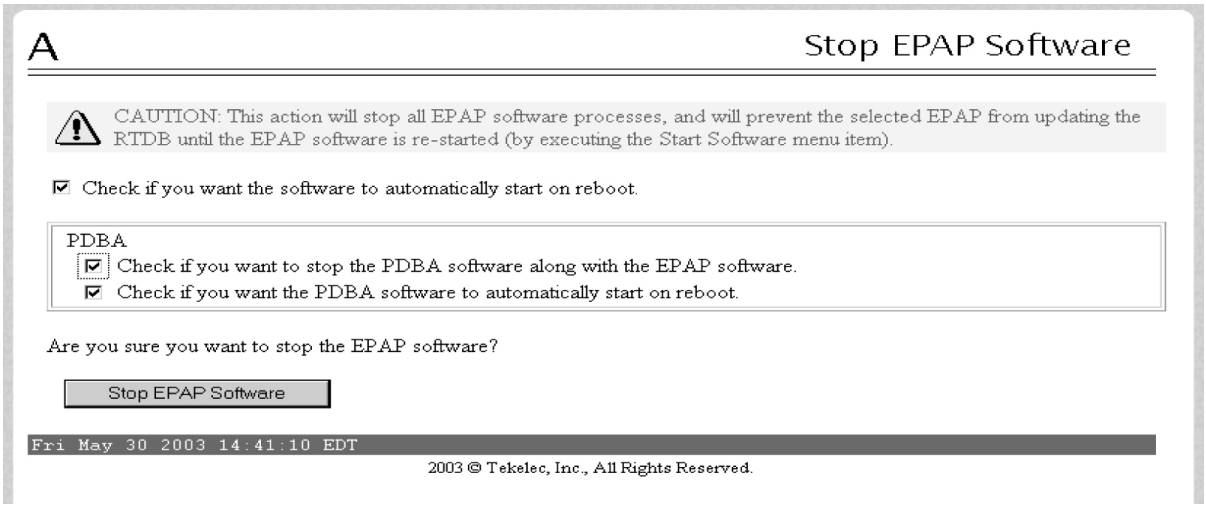

Figure 47: Stop Software

5. Click the **Stop EPAP Software** button to stop the software.
   The screen shown in *Figure 48: Stop Software Completion Screen* appears (the PDBA item appears only if performing this procedure on Side A).

Figure 48: Stop Software Completion Screen

6. Select **Process Control>Start Software**.
7. From the **Start EPAP Software** screen, make sure the checkboxes are checked as shown in *Figure 49: Start EPAP Software* (this item applies only if performing this procedure on Side A):

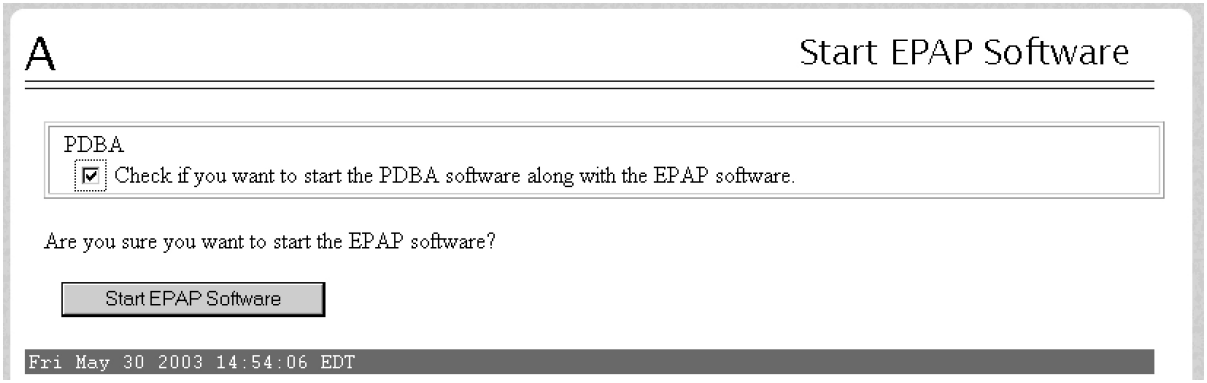

Figure 49: Start EPAP Software

8. Click the **Start EPAP Software** button to start the software.
   The screen shown in *Figure 50: Start Software Completion Screen* confirms that the software has started (the PDBA item appears only if performing this procedure on Side A):

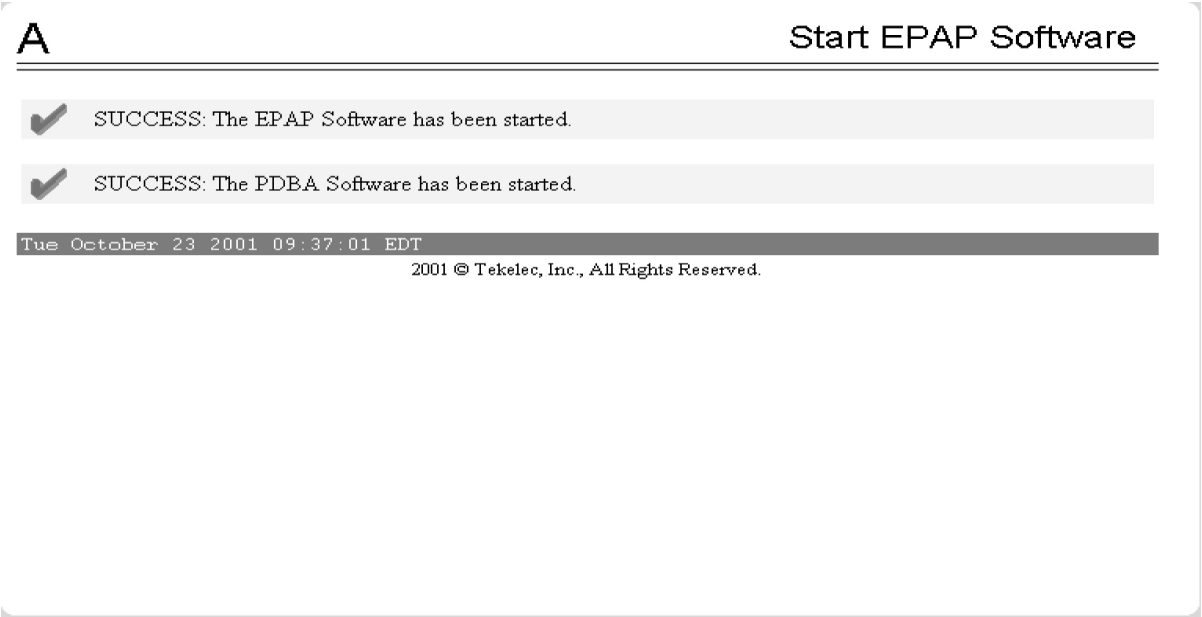

Figure 50: Start Software Completion Screen

Restarting the EPAP Software

This procedure is used when referenced by one of the procedures in *Alarms*.

CAUTION

CAUTION: Perform this procedure only when directed to by one of the procedures in *Alarms*. This is not a standalone procedure.

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

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

   The screen shown in *Figure 51: Stop Software Confirmation* appears:

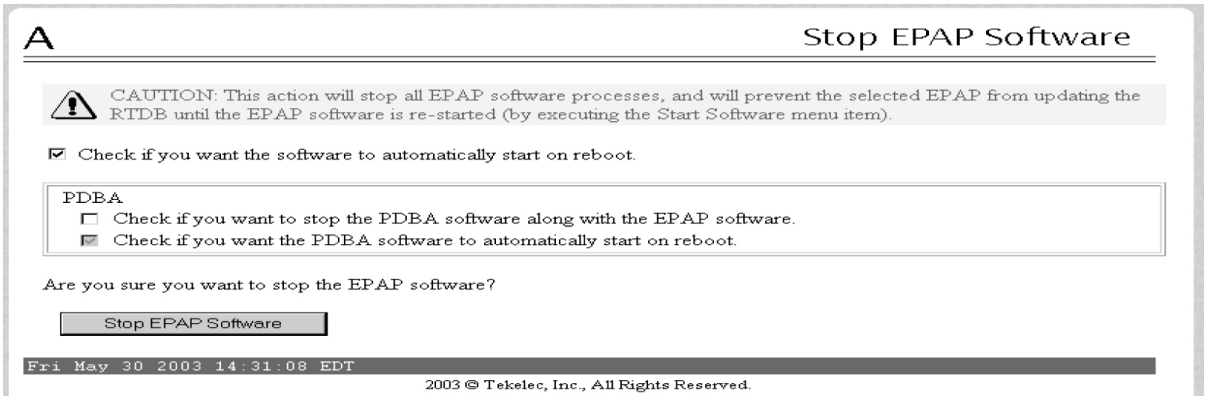

Figure 51: Stop Software Confirmation

4. On the **Stop EPAP Software** screen, make sure the checkboxes are checked as shown in *Figure 51: Stop Software Confirmation*.
5. Click the **Stop EPAP Software** button to stop the software.
   The screen shown in *Figure 52: Stop Software Completion Screen* appears.

Figure 52: Stop Software Completion Screen

6. Select **Process Control>Start Software**.
7. From the **Start EPAP Software** screen, make sure the checkboxes are checked as shown in *Figure 53: Start EPAP Software*:

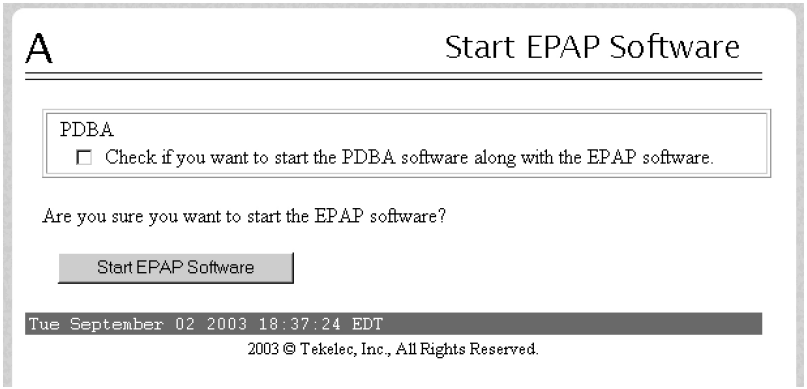

Figure 53: Start EPAP Software

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

The screen shown in *Figure 54: Start Software Completion Screen* confirms that the software has started:

Figure 54: Start Software Completion Screen

Saving Logs Using the EPAP GUI

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

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

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

   If it is necessary to switch to the problem EPAP, 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 55: Capture Logs File Screen*.

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

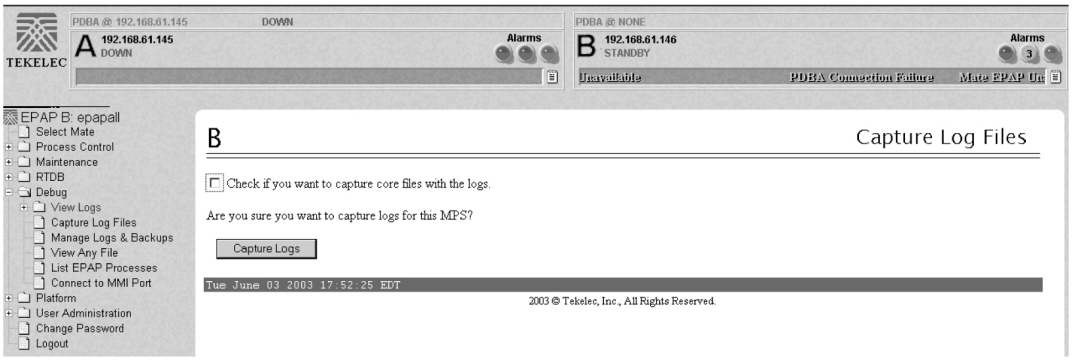

Figure 55: Capture Logs File Screen

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

After completion, verify the following response:

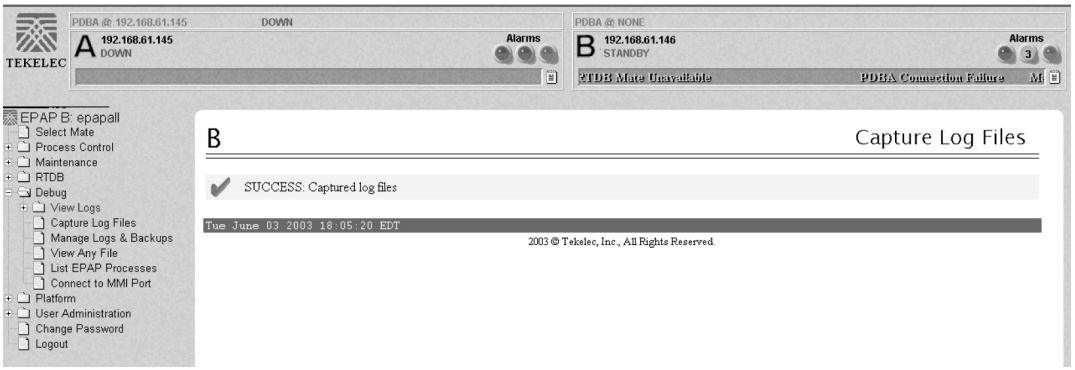

Figure 56: Capture Logs Success

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 server 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 57: Deleting Captured Log Files*.

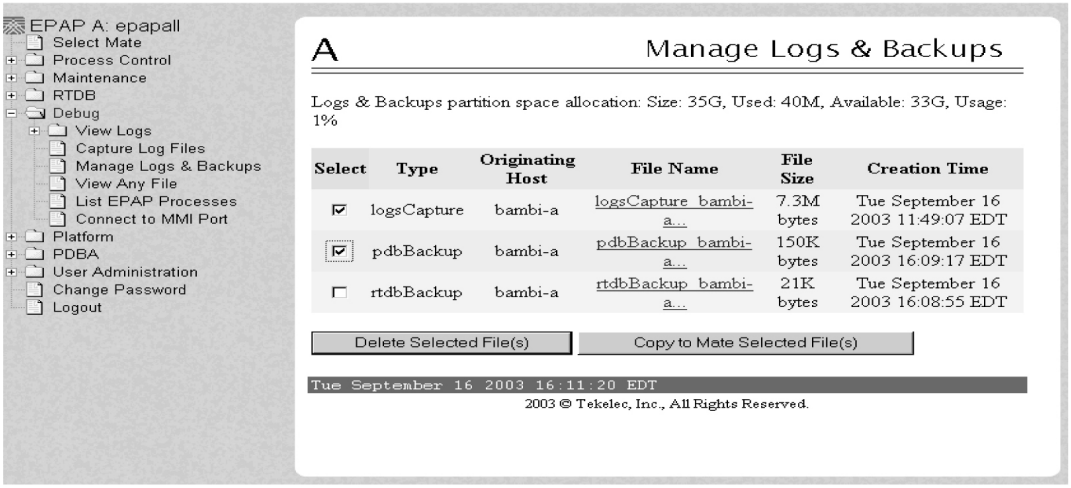

Figure 57: Deleting Captured Log Files

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When the log files have been deleted, the GUI displays confirmation, as shown in *Figure 58: Delete Log Files Success*.

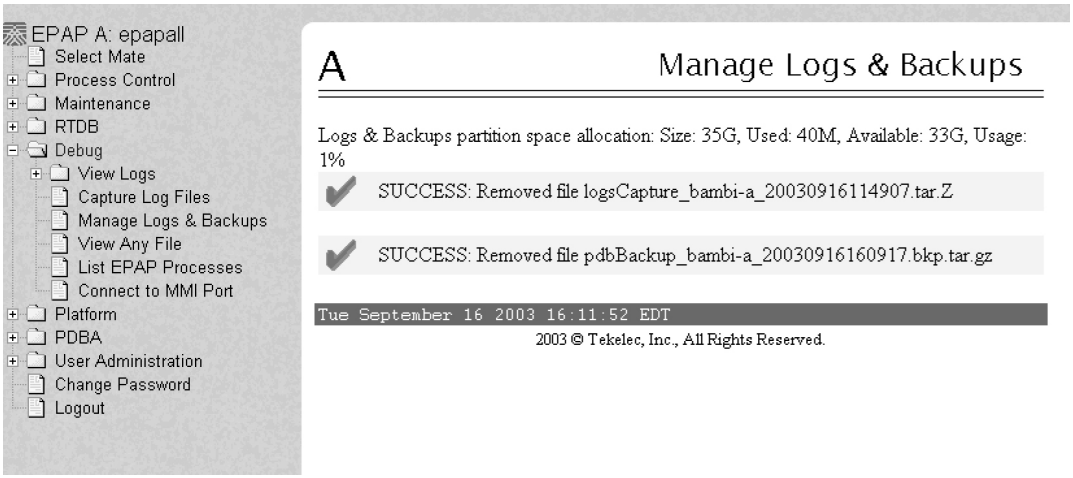

Figure 58: Delete Log Files Success

Glossary

C

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.
CMOS	Complementary Metal Oxide Semiconductor CMOS semiconductors use both NMOS (negative polarity) and PMOS (positive polarity) circuits. Since only one of the circuit types is on at any given time, CMOS chips require less power than chips using just one type of transistor.

D

daemon	A process that runs in the background (rather than under the direct control of a user) and performs a specified operation at predefined times or in response to certain events. Generally speaking, daemons are assigned names that end with the letter "d." For example, sentryd is the daemon that runs the Sentry utility.
DO	Derived Object
DSM	Database Service Module. The DSM provides large capacity SCCP/database functionality. The DSM is an application card that supports network specific functions

D

	such as EAGLE Provisioning Application Processor (EPAP), Global System for Mobile Communications (GSM), EAGLE Local Number Portability (ELAP), and interface to Local Service Management System (LSMS).

E

EPAP	EAGLE Provisioning Application Processor

F

FRU	Field Replaceable Unit A circuit board or part that can be quickly and easily removed and replaced by the user or by a technician without having to send the entire product or system to a repair facility.

G

GB	Gigabyte — 1,073,741,824 bytes
GUI	Graphical User Interface The term given to that set of items and facilities which provide the user with a graphic means for manipulating screen data rather than being limited to character based commands.

I

IP	Internet Protocol IP specifies the format of packets, also called datagrams, and the addressing scheme. The network layer for the TCP/IP protocol suite widely used on Ethernet networks, defined in STD 5, RFC 791. IP is a connectionless, best-effort packet switching protocol. It provides

I

	packet routing, fragmentation and re-assembly through the data link layer.
IP Address	The location of a device on a TCP/IP network. The IP Address is either a number in dotted decimal notation which looks something like (IPv4), or a 128-bit hexadecimal string such as (IPv6).

L

LED	Light Emitting Diode An electrical device that glows a particular color when a specified voltage is applied to it.

M

MPS	Multi-Purpose Server The Multi-Purpose Server provides database/reload functionality and a variety of high capacity/high speed offboard database functions for applications. The MPS resides in the General Purpose Frame. Messages Per Second A measure of a message processor's performance capacity. A message is any Diameter message (Request or Answer) which is received and processed by a message processor.

N

NTP	Network Time Protocol

P

PCI	Peripheral Component Interface Point Code International Protocol Control Information

P

	Peripheral Component Interconnect
PDB	Provisioning Database
PDBA	Provisioning Database Application There are two Provisioning Database Applications (PDBAs), one in EPAP A on each EAGLE 5 ISS. They follow an Active/Standby model. These processes are responsible for updating and maintaining the Provisioning Database (PDB).

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
Route	A signaling path from an LSP to an RSP using a specified Link Set
RTDB	Real Time Database

S

SCP	Service Control Point Service Control Points (SCP) are network intelligence centers where databases or call processing information is stored. The primary function of SCPs is to respond to queries from other SPs by retrieving the requested information from the appropriate database, and sending

S

	it back to the originator of the request.
	Secure Copy
SFTP	SSH File Transfer Protocol (sometimes also called Secure File Transfer Protocol)
	A client-server protocol that allows a user on one computer to transfer files to and from another computer over a TCP/IP network over any reliable data stream. It is typically used over typically used with version two of the SSH protocol.
SNMP	Simple Network Management Protocol.
	An industry-wide standard protocol used for network management.
	The SNMP agent maintains data variables that represent aspects of the network. These variables are called managed objects and are stored in a management information base (MIB). The SNMP protocol arranges managed objects into groups.

U

UAM	Unsolicited Alarm Message
	A message sent to a user interface whenever there is a fault that is service-affecting or when a previous problem is corrected. Each message has a trouble code and text associated with the trouble condition.
UI	User Interface
UIM	Unsolicited Information Message

U

A message sent to a user interface whenever there is a fault that is not service-affecting or when a previous problem is corrected. Each message has a trouble code and text associated with the trouble condition.