EAGLE® Provisioning Application Processor (EPAP)

Release 9.0

Feature Notice

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TEKELEC

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U.S. Patent Numbers:

5,008,929, 5,953,404, 6,167,129, 6,324,183, 6,327,350, 6,606,379, 6,639,981, 6,647,113, 6,662,017, 6,735,441, 6,745,041, 6,765,990, 6,795,546, 6,819,932, 6,836,477, 6,839,423, 6,885,872, 6,901,262, 6,914,973, 6,940,866, 6,944,184, 6,954,526, 6,954,794, 6,959,076, 6,965,592, 6,967,956, 6,968,048, 6,970,542

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Introduction

Feature Notices are distributed to customers with each new release of software.

The *Feature Notice* includes a brief feature overview, lists new hardware required if any, provides the hardware baseline for this release, and explains how to find the *Release Notice* and other customer documentation for the EAGLE Provisioning Application Processor (EPAP) Release 9.0 on the Customer Support Site (see "How to Locate Documentation on the Customer Support Site" on page FN-39).

New Features

EPAP 9.0 introduces the following features.

- EPAP Support for SSH on PDBI
- Automatic PDB Export Enhancement
- EPAP Support for HTTPS on GUI
- Support Java 1.5 on EPAP
- RTDB Retrieve
- Support for 32 Prepaid SMS Intercepts—EPAP

Important Operational Changes

New or changed GUI (Graphical User Interface) screens are discussed with the relevant feature.

Compatibility

EPAP 9.0 is fully compatible with EAGLE 5 ISS Release 37.0. Table FN-1 identifies the compatibility of EPAP 9.0 with other products.

Table FN-1. Compatibility Matrix—EPAP 9.0

Product	Release	Compatibility
EAGLE 5 ISS	34.0	PC
	35.0	PC
	35.1	PC
	35.2	PC
	36.0	FC
	37.0	FC
ELAP	N / A	N / A
LSMS	N / A	N / A
IMF	N / A	N / A
FTRA	N / A	N / A
Harris	N / A	N / A
SEAS	N / A	N / A
Tekelec 500 EDGE	N / A	N / A
IDCA	N / A	N / A
ECAP	N / A	N / A

EPAP Support for SSH on PDBI

The EPAP Support for SSH on PDBI feature provides support for Secure Shell (SSH) on the EPAP Provisioning Database Interface (PDBI) for customers who want additional security protection.

For more details, see “EPAP Support for SSH on PDBI” on page FN-4.

Automatic PDB Export Enhancement

The Automatic PDB Export Enhancement feature provides more flexible scheduling for automatic PDBA exports. Scheduling an automatic PDBA export is now very similar to the way tasks or appointments can be scheduled in a calendar manager.

For more details, see “Automatic PDB Export Enhancement” on page FN-10.

EPAP Support for HTTPS on GUI

The EPAP Support for HTTPS on GUI feature allows the user to choose whether the connection from the web server to the EPAP GUI supports only standard HTTP (Hypertext Transfer Protocol), only secure HTTP (HTTPS), or both.

In previous releases, the EPAP GUI used only the standard HTTP protocol. The data transfer between the web server and the GUI is not encrypted with standard HTTP. Therefore, it can be captured and viewed by any network analyzer with access to the TCP/IP connection.

Secure HTTP (HTTPS) supports encryption of the data exchanged between the web server and the browser to facilitate data privacy.

For more details, see “EPAP Support for HTTPS on GUI” on page FN-16.

Support Java 1.5 on EPAP

The EPAP GUI has been upgraded to be compatible with Java 1.5. The EPAP GUI now requires Java 1.5 or later.

For more details, see “Support Java 1.5 on EPAP” on page FN-21.

RTDB Retrieve

The RTDB Retrieve feature allows the user to query (from the web GUI) data that resides in the RTDB (Real-Time Database). This feature enables the user to compare data in the PDB (Provisioning Database) with data in the RTDB to verify that they are consistent.

In previous releases of EPAP, queries on EPAP have been supported only by the PDB. The ability to retrieve RTDB data assists in troubleshooting cases where data is absent on EAGLE 5 ISS, but present in the PDB.

Data returned from RTDB is presented on the EPAP GUI in a format that is similar to data from the PDB. This similarity makes it easier to compare data between the two databases when a discrepancy is suspected.

For more details, see “RTDB Retrieve” on page FN-22.

Support for 32 Prepaid SMS Intercepts

The Support for 32 Prepaid SMS Intercepts feature increases the number of supported Prepaid SMS Intercepts to 32 (from 8 in previous releases of EPAP). Supported GTT (Global Title Translation) destinations have been expanded to 32, and IN SCP (Intelligent Network Service Control Point) platforms and EPAP portability types have been expanded to 32 from 8.

For more details, see “Support for 32 Prepaid SMS Intercepts—EPAP” on page FN-32.

EPAP Support for SSH on PDBI

Description

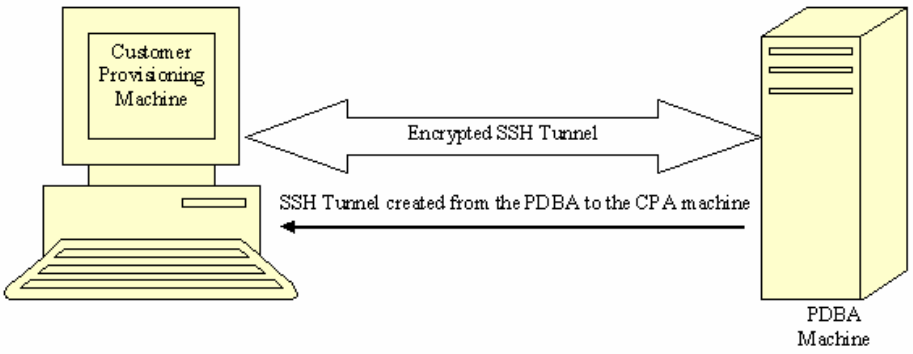
The EPAP Support for SSH on PDBI feature provides support for SSH (secure shell) on the EPAP Provisioning Database Interface (PDBI) for customers who want additional security protection.

SSH is a robust, commercial-grade, and full-featured toolkit that implements security and network encryption.

In previous EPAP releases, the customer provisioning application (CPA) connected to the EPAP only through a non-secure TCP / IP connection. Provisioning sent by the CPA was non-secure, because the data was not encrypted and could be seen by packet sniffers in the network.

To make the data transfer between the CPA and the PDBA (Provisioning Database Application) machine secure, SSH tunneling (also called remote port forwarding) is used to securely connect the PDBA machine to the CPA machine, as shown in Figure FN-1.

Figure FN-1. SSH Tunnel Between the CPA and PDBA Machines



Remote Port Forwarding

Remote Port Forwarding refers to the SSH tunneling approach where the SSH tunnel is created from the client side of the tunnel towards the server side. In the EPAP implementation, the CPA machine is the server and the PDBA machine is the client.

The PDBA machine user specifies a particular port number (configurable from GUI) to be opened on the CPA machine. Any data received on this port on the CPA machine is forwarded to the PDBA machine's IP address and the port number, 5873, through the secured SSH tunnel.

NOTE: To implement Remote Port Forwarding to work, the CPA machine must have the OpenSSH suite installed and the SSH daemon must be running.

Request/Response Cycle in SSH Tunnel

When an SSH tunnel is in use, a complete request and response cycle takes place as follows:

1. The CPA sends a connect request to its local port number used for creating the tunnel.
2. The SSH encrypts the request message and sends it to the PDBA machine's SSH client port.
3. On the PDBA machine, the SSH client decrypts the message and forwards it to the PDBA port.
4. The PDBA gets the request message in unencrypted form and sends an unencrypted response to the SSH client.
5. The SSH client encrypts the response message and sends it to the SSH port on the CPA machine.
6. On the CPA machine, the SSH daemon decrypts the message and forwards it to the CPA. The CPA receives the message unencrypted.

EPAP GUI Changes

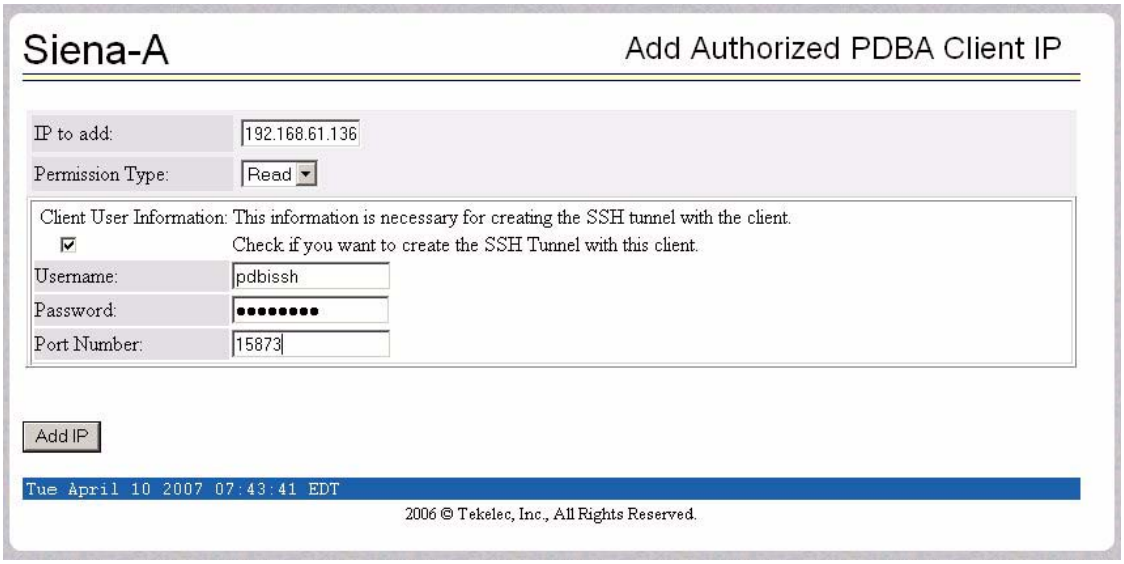
The following EPAP GUI screens in the **PDBA>Authorized IP List** menu have been modified for the EPAP Support for SSH on PDBI feature:

- Add Authorized PDBA Client IP
- Modify Authorized PDBA Client IP
- Remove Authorized PDBA Client IP
- List All Authorized PDBA Client IPs

Add Authorized PDBA Client IP

The Add Authorized PDBA Client IP screen has been changed to include information needed to enable SSH tunneling, as shown in Figure FN-2.

Figure FN-2. Add Authorized PDBA Client IP



In addition to IP to add and Permission Type fields, which were included in screens in previous releases, the new screen contains the following changes:

- A check box to indicate whether an SSH tunnel is to be created from the PDBA machine to the CPA machine.
- Fields for entering the username and password of the CPA machine.
- A field for entering the port number of the CPA machine. This port number will be used for creating the tunnel.

An SSH tunnel is created only if the check box is checked and all the other fields are completed.

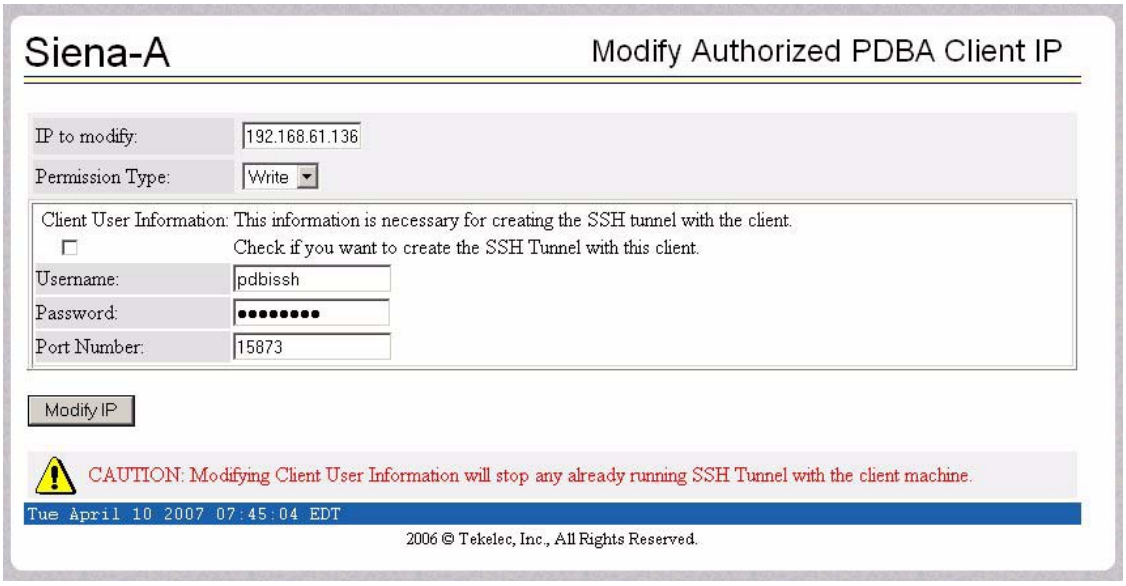
NOTE: Only IPs with WRITE permissions are allowed to create the SSH tunnel. Also, the PDBA machine does not store the password of the client machine user. The password is used for one-time SSH key exchange only.

Modify Authorized PDBA Client IP

The Modify Authorized PDBA Client IP screen has been changed to allow the user to modify the SSH tunneling parameters, as shown in Figure FN-3.

In previous EPAP releases, the user could modify only the Permission Type of an existing IP. In this release, the user can modify the Permission Type, and can also change whether to use SSH tunneling and change the username, password, and port number to be used for SSH tunneling.

Figure FN-3. Modify Authorized PDBA Client IP



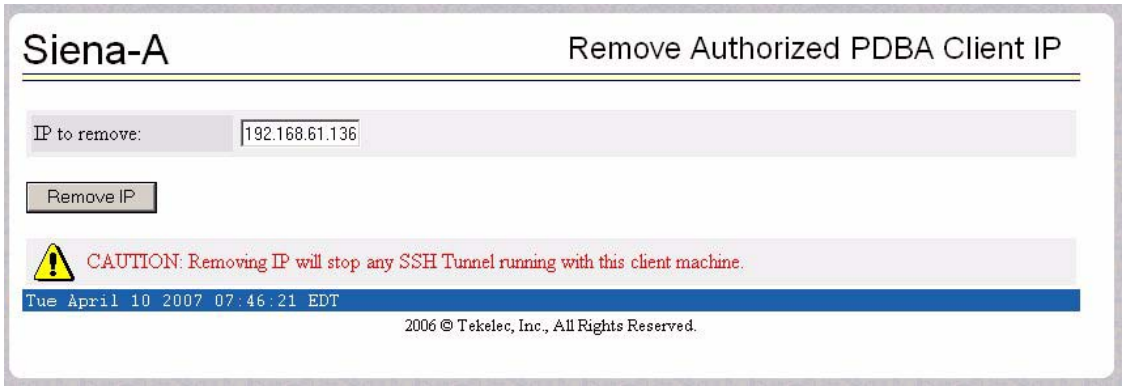
When the user modifies the SSH tunneling information, any existing tunnel is broken and a new tunnel is created based on the inputs.

NOTE: Only IPs with WRITE permissions are allowed to modify the SSH tunnel. Also, the PDBA machine does not store the password of the client machine user. the password is used for one-time SSH key exchange only.

Remove Authorized PDBA Client IP

The Remove Authorized PDBA Client IP screen has been changed to display a CAUTION message to indicate that removal of the IP address stops any SSH tunnel that is already running, as shown in Figure FN-4.

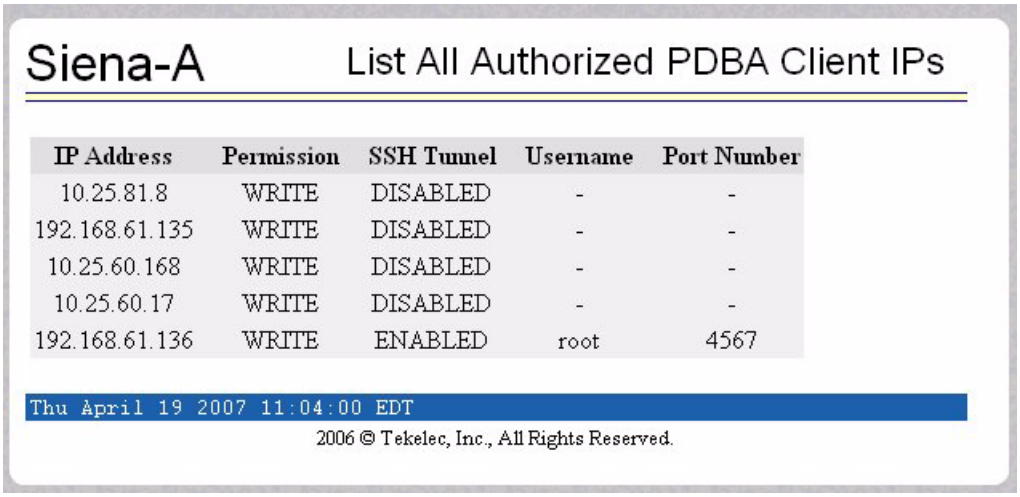
Figure FN-4. Remove Authorized PDBA Client IP



List All Authorized PDBA Client IPs

The List All Authorized PDBA Client IP screen has been changed to display whether the SSH Tunnel is enabled, and the username and port number used for creating the tunnel, as shown in Figure FN-5.

Figure FN-5. List All Authorized PDBA Client IP



Hardware Requirements

There are no additional hardware requirements for this feature.

Limitations

This SSH tunneling feature works only for customer provisioning systems with 'Write' permissions. A system with 'Read' permissions is not allowed to use the SSH tunnel with the PDBA machine.

Alarms

The following alarm is displayed when the SSH tunnel cannot be re-established.

Table FN-2. SSH on PDBI Alarms

Problem	Alarm Code	Text String	Conditions that enable clearing of alarms	Error string in log files
If SSH tunneling has been established, and the cron job is not able to reestablish the SSH tunnel with all the Authorized IP addresses	6000000000001000	SSH tunnel not established	Successful establishment of the SSH tunnel with all Authorized IP addresses	SSH tunnel not established with the $IP_address

The following error messages are displayed to the user if the SSH tunnel cannot be established.

Table FN-3. SSH Tunnel Error Messages

Error Code	Error Message
E1098	Unable to establish SSH tunnel to $IP_address machine.
E1099	Username / Password combination incorrect.

Automatic PDB Export Enhancement

Description

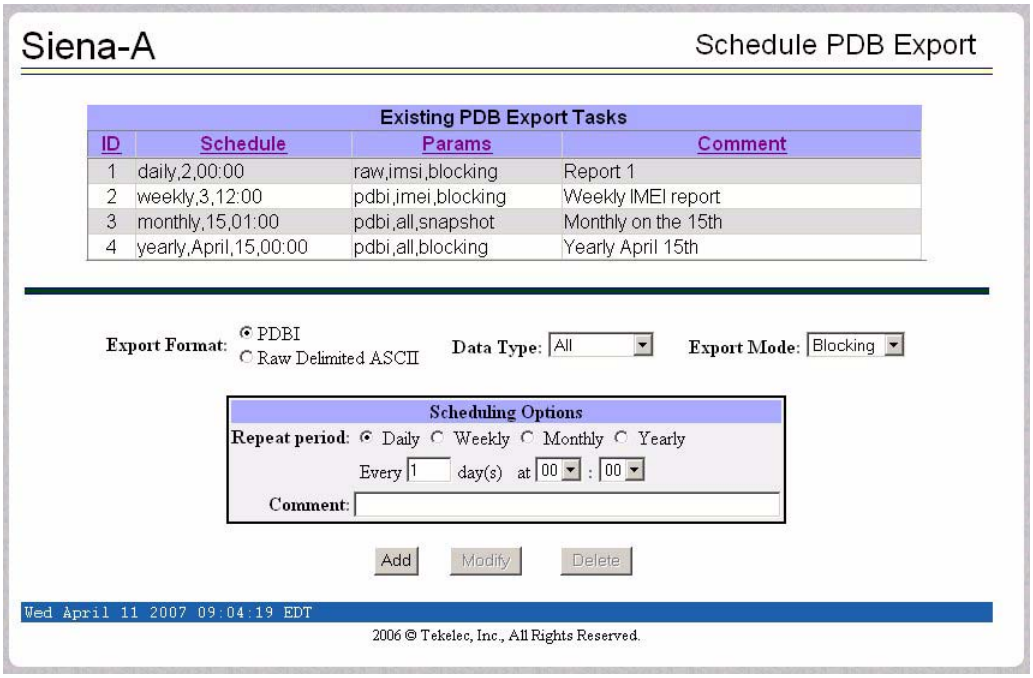
The Automatic PDB Export Enhancement feature provides more flexible scheduling for automatic PDB (Provisioning Database) exports. With more options to choose from, scheduling an automatic PDB export is now very similar to the way tasks or appointments can be scheduled in a calendar manager.

In addition to the previously available choices for export format, mode, and data type, these enhancements allow the user to:

- View, modify, or delete existing reports
- Choose from multiple options for the frequency of the export:
  - Daily
  - Weekly
  - Monthly
  - Yearly
- Choose the time of day to start the export
- Add comments to describe the export

The Schedule Export PDB screen (from the EPAP menu, select **PDBA>Maintenance>Schedule Export**), has been changed as shown in Figure FN-6 on page FN-11.

Figure FN-6. Schedule PDB Export Screen

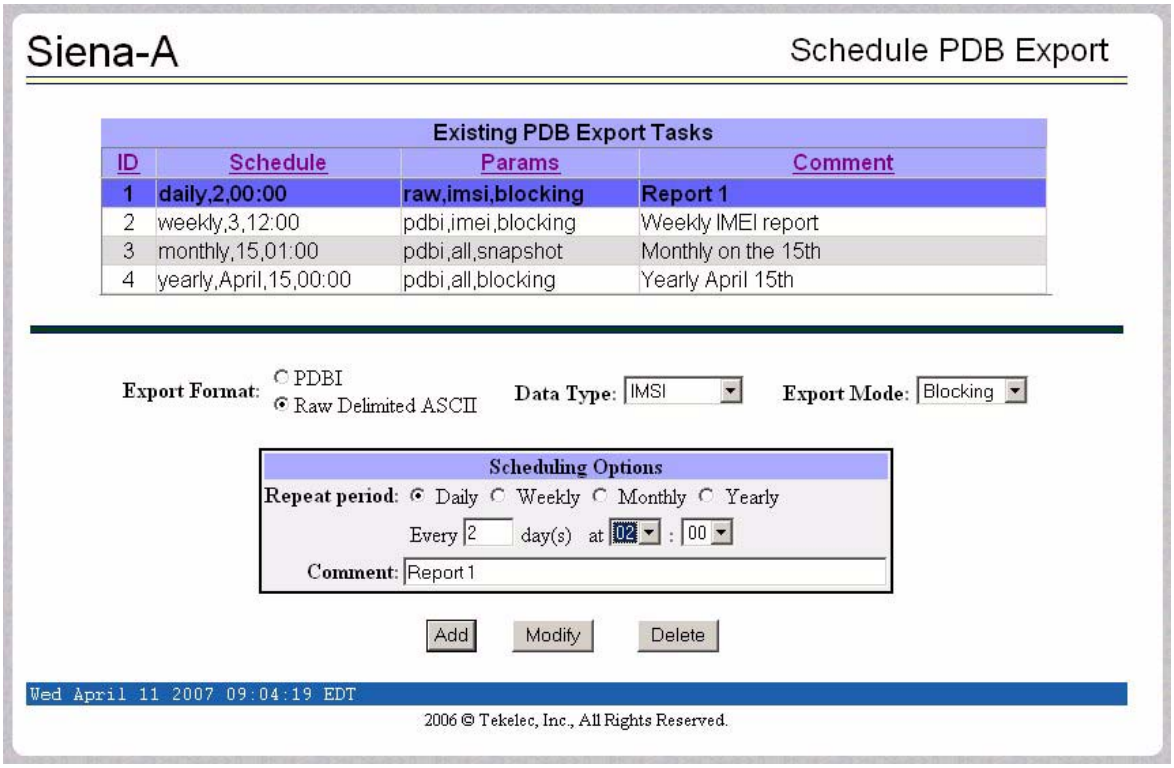


Existing PDB Export Tasks

The Existing PDB Export Tasks portion at the top of the screen displays all currently scheduled exports in table format. Clicking on a column heading causes the entries in that column to be sorted, either alphabetically or numerically, depending on whether the column entries start with a letter or a number. Clicking the column again sorts the entries in the opposite order.

Clicking on a row causes the data contained in that task to be displayed in the data entry fields below the table, for viewing, modification, or deletion. Figure FN-7 on page FN-12 shows the task in the first row highlighted, and its corresponding scheduling data is displayed in the Scheduling Options field.

Figure FN-7. Existing PDB Export Task Selected



Export Specific Fields

The following fields are the same as in previous releases:

- Export format
- Data type
- Export mode

For more information about these fields, refer to the *Provisioning Database Interface Manual*.

Scheduling Options

The Scheduling Options section of the Schedule PDB Export screen allows the user to choose how often to repeat the scheduled export and to specify the exact day and time. The appearance of this section changes depending on which radio button in the Repeat Period is selected:

- The following fields are the same among the various Repeat Period selections (for more information about fields that differ depending on the Repeat Period selected, see "Variable Fields in Scheduling Options" on page FN-13):
  - **Start Time:** Select the values for the hour and minute to start the scheduled export from the two drop-down boxes at the right of the Scheduling Options section. The hour drop-down uses a 24-hour clock. For example, if you want the export to start at 10:30 PM, select 22 from the left drop-down box and select 30 from the right drop-down box.
  - **Comment:** Use this optional field to add comments about this export. The content of this field is displayed on the GUI, but it is not stored otherwise.

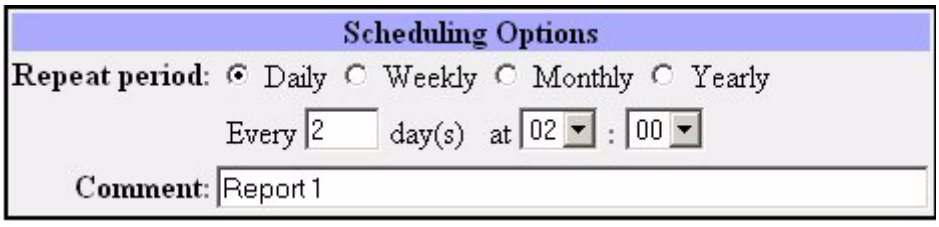
Variable Fields in Scheduling Options

The following sections describe how the Scheduling Options fields change depending on the Repeat Period that is selected.

Daily Repeat Period

To schedule an export to be run every N days, select the Daily radio button, specify a number (N) to indicate that the export should be run every N days, select the time, and optionally enter a comment, as shown in Figure FN-8.

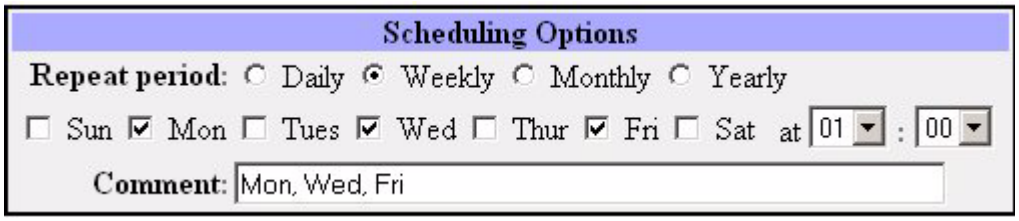
Figure FN-8. Daily Scheduling Options



Weekly Repeat Period

To schedule an export to be run each week, select the Weekly radio button, select one or more days of the week, select the time, and optionally enter a comment, as shown in Figure FN-9.

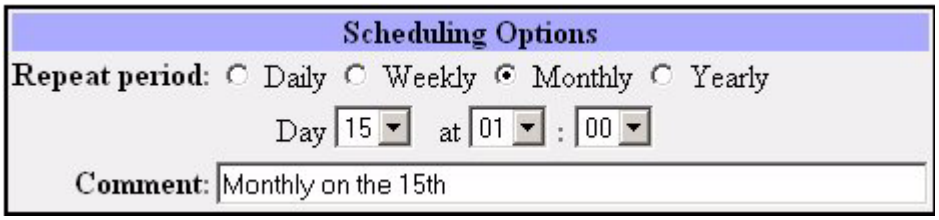
Figure FN-9. Weekly Scheduling Options



Monthly Repeat Period

To schedule an export to be run one day each month, select the Monthly radio button, select a numeric day of the month, select the time, and optionally enter a comment, as shown in Figure FN-10.

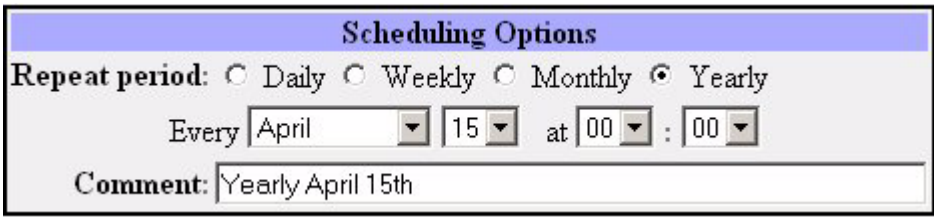
Figure FN-10. Monthly Repeat Options



Yearly Repeat Period

To schedule an export to be run one day each year, select the Yearly radio button, select a numeric day of the year, select the time, and optionally enter a comment, as shown in Figure FN-11.

Figure FN-11. Yearly Repeat Options



Add, Modify, and Delete Buttons

The Add, Modify, and Delete buttons are located at the bottom of the Schedule PDB Export screen.

Add Button

To add a scheduled PDB export, enter all the data to describe the export, and click the Add button.

If the task, as described by the current data in the data entry fields, does not exactly match an existing task, a new task is scheduled. If the task exactly matches an existing task, an error message is displayed.

Modify Button

To modify a scheduled PDB export, click that export task in the Existing PDB Export Tasks table, change any data that describes the export, and click the Modify button.

The Modify button is selectable only when an entry in the Existing PDB Export Tasks table at the top of the screen has been selected and one or more fields on the screen has been changed.

If the task, as described by the current data in the data entry fields, does not exactly match an existing task, a new task is scheduled. If the task exactly matches an existing task, an error message is displayed.

Delete Button

To delete a scheduled PDB export, click that export in the Existing PDB Export Tasks table, and click the Delete button.

The Delete button is selectable only when an entry in the Existing PDB Export Tasks table at the top of the screen has been selected.

Hardware Requirements

There are no additional hardware requirements for this feature.

Limitations

There are no identified limitations for this feature.

Alarms

There are no alarms identified for this feature.

EPAP Support for HTTPS on GUI

Description

The EPAP Support for HTTPS on GUI feature allows users to configure whether the GUI can be accessed only by standard HTTP (Hypertext Transfer Protocol) or only by HTTPS (Secure Hypertext Transfer Protocol) or by both.

In previous releases of EPAP, the EPAP GUI used only standard HTTP protocol. The data transfer between the web server and the GUI is not encrypted with standard HTTP protocol; therefore, it can be captured by any network analyzer and viewed.

Secure HTTP (HTTPS) supports encryption of data exchanged between the web server and the browser. This facilitates data privacy.

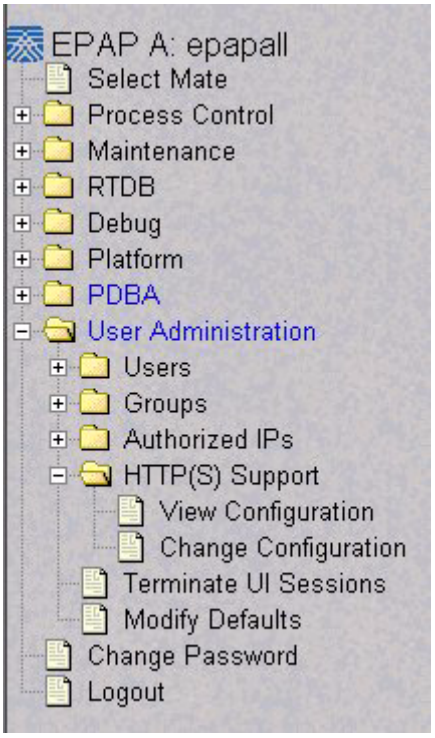
With the addition of this feature, the EPAP now allows the user to configure the use of either HTTP or HTTPS, or both, for the EPAP GUI. The user can disable HTTP. The ability to configure HTTP and HTTPS and the ability to disable HTTP can be limited to a specific user class or group.

When the HTTPS interface is used for the first time, the security certificate needs to be imported to the client machine. For information about importing the secure certificate, refer to the *EPAP Administration Manual*.

GUI Changes

New menu items have been added to the **User Administration** menu as shown in Figure FN-12 on page FN-17.

Figure FN-12. HTTP(S) Menu



The UI user groups shown in Table FN-4 have the access permission to these menu items; any UI user that belongs to these UI groups has these access permissions.

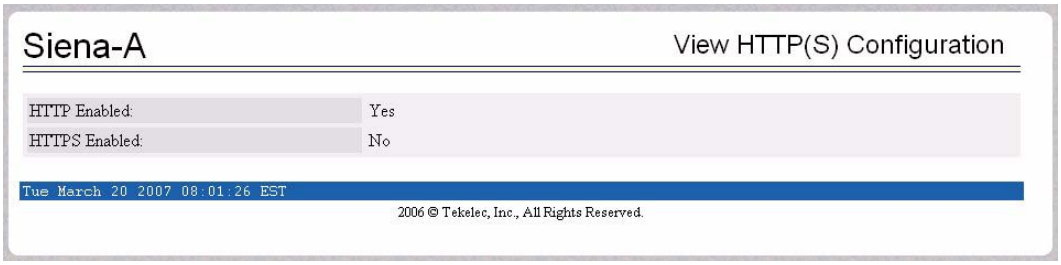
Table FN-4. HTTPS User Access

UI User Group	Default UI Users	Access Permissions
admin	uiadmin epapall	View Configuration Change Configuration
read-only	No default user	View Configuration

View HTTP(S) Configuration

This screen displays whether the use of HTTP and HTTPS for the EPAP GUI is enabled or disabled by the user. This is a read-only screen, and the user cannot perform any change from this screen.

Figure FN-13. View HTTP(S) Configuration Screen

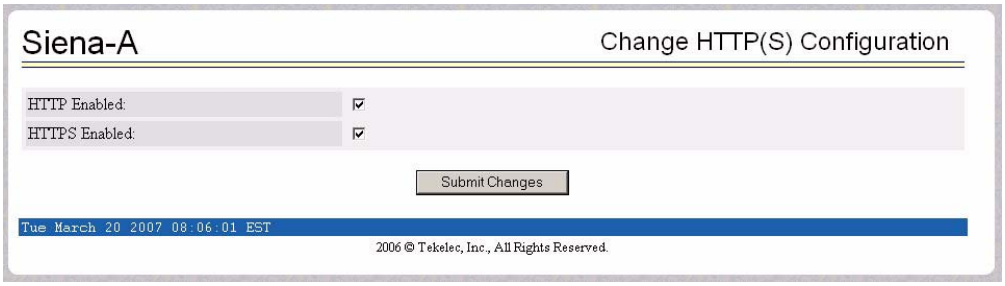


Change HTTP(S) Configuration

This screen is used to change the configuration for use of either HTTP or HTTPS, or both, for the EPAP GUI. This screen has the following user input fields as shown in Figure FN-14 on page FN-18.

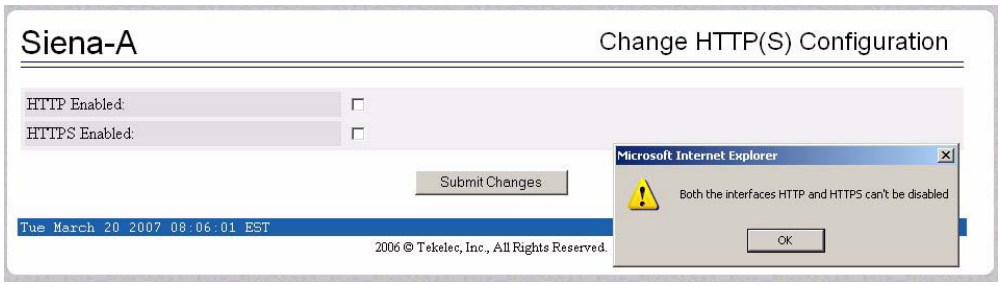
- **HTTP Enabled checkbox:** By default, this checkbox is checked. To disable the use of HTTP for the EPAP GUI, uncheck this box.
- **HTTPS Enabled checkbox:** By default, this checkbox is unchecked. To enable the use of HTTPS for the EPAP GUI, check this box.

Figure FN-14. Change HTTP(S) Configuration Screen



The user cannot disable both HTTP and HTTPS interfaces simultaneously. If the user attempts to do so, an alert message is displayed as shown in Figure FN-15 on page FN-19.

Figure FN-15. Disabled HTTP or HTTPS Alert Message



If the HTTP interface is disabled, any existing GUI sessions that use HTTP will stop working. If the HTTPS interface is disabled, any existing GUI sessions that use HTTPS will stop working. (In each case, a browser error that says "The page cannot be displayed" is displayed.)

The following banner messages scroll on the EPAP GUI when the HTTP or HTTPS interface is disabled.

Table FN-5. EPAP GUI Banner Messages

Condition	Banner Message	Message ID	Duration or Condition for Clearing the Banner
HTTP interface is disabled	HTTP interface disabled	HTTP_DISABLED	1 minute
HTTPS interface is disabled	HTTPS interface disabled	HTTPS_DISABLED	1 minute

Starting the Non-secure Web-based GUI

To start the non-secure web GUI, first start a web browser (Internet Explorer). In the Address field, enter either of the following URLs and press Go:

- `http://<EPAP_server_IP_address>/`
- `< EPAP_server_IP_address>`
- `< EPAP_server_hostname>`

If the HTTP interface is disabled, the browser displays an error page "The page cannot be displayed".

Starting the Secure Web-based GUI

To start the secure web-based GUI, first start a web browser (Internet Explorer). In the Address field, enter any of the following URLs and press 'Go':

- `https://<EPAP_server_IP_address>/`
- `https://<EPAP_server_hostname>/`

If the HTTPS interface is disabled, the browser displays an error page "The page cannot be displayed".

Hardware Requirements

There are no additional hardware requirements for this feature.

Limitations

There are no identified limitations for this feature.

Alarms

There are no alarms identified for this feature.

Support Java 1.5 on EPAP

Description

EPAP has been updated to be compatible with the latest version of Java, which is Java 1.5. The EPAP GUI now requires Java 1.5 or later. If your browser does not support Java 1.5, when you attempt to connect to the EPAP GUI, your browser will be prompted to install Java 1.5. The Java installation process is described in the *EPAP Administration Manual*.

Hardware Requirements

There are no additional hardware requirements for this feature.

Limitations

There are no identified limitations for this feature.

Alarms

There are no alarms identified for this feature.

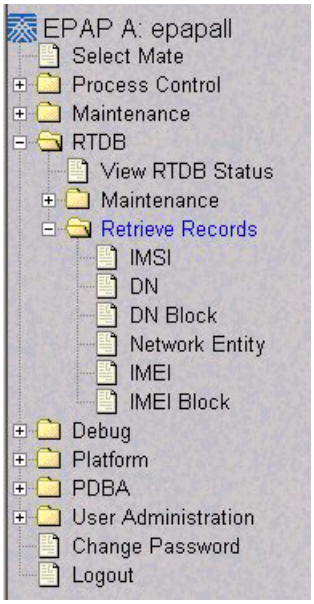
RTDB Retrieve

Description

The RTDB Retrieve feature allows the user to query (from the web GUI) data that resides in the RTDB (Real-Time Database). This feature enables the user to compare data in the PDB (Provisioning Database) with data in the RTDB to verify that they are consistent.

New menu items been added to the EPAP menu, as shown in Figure FN-16.

Figure FN-16. RTDB Retrieve Menu



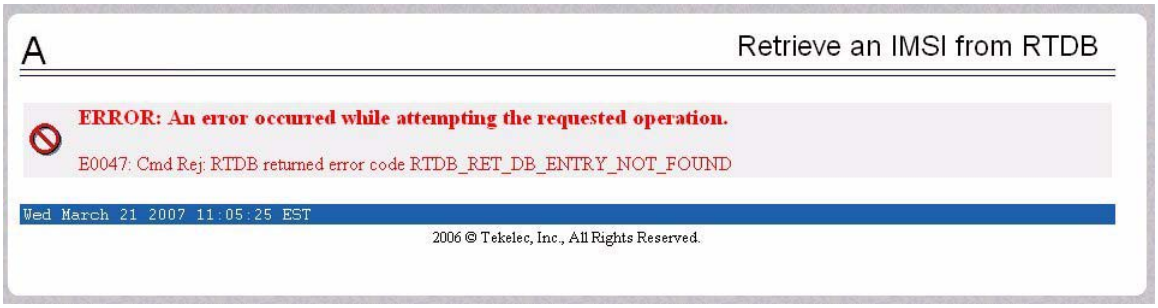
RTDB retrieval screens are selectively revocable to users and groups by User Interface administrators.

Data can be retrieved while application software is running.

Input screens look like the PDBA (Provisioning Database Application) input screen sections for single retrieval of the same data type. Output screens look like the PDBA output screen for the same data type.

A failure message will identify an item as not found if this is the cause of lookup failure, as shown in the example in Figure FN-17.

Figure FN-17. RTDB Entry Not Found



The following sections describe the types of RTDB data that can be retrieved:

- Single DNs
- DN Blocks
- Network Entities
- Single IMSIs
- IMEIs
- IMEI Blocks

Single DNs

Figure FN-18 shows the new EPAP screen for retrieving RTDB data about a single DN (Dialed Number).

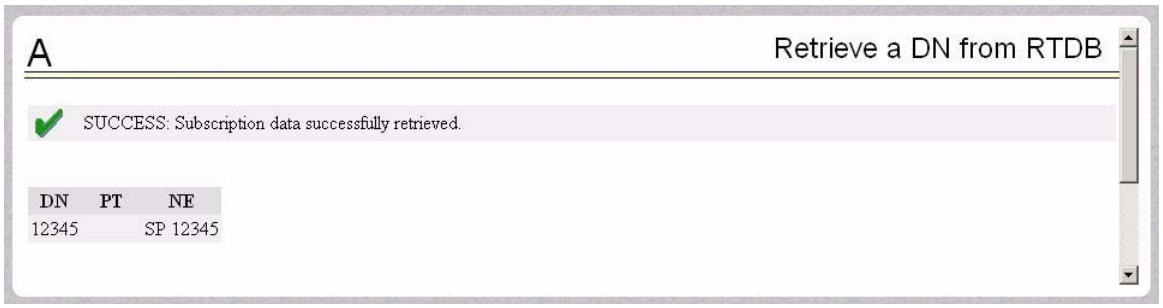
Figure FN-18. Retrieve DN Information from RTDB

The output displays the following information about single DNs, as shown in Figure FN-19:

- ID
- Portability type (PT)
- Associated SP or RN
- Network Entity (NE) data, as described in "Network Entities" on page FN-26, if the DN being retrieved is associated with an NE.

If a DN cannot be found in the single DN database, the DN Block database is searched.

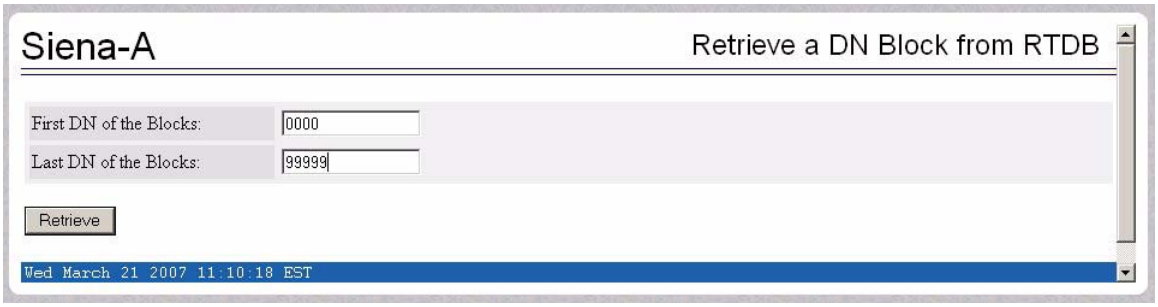
Figure FN-19. Output for Retrieve a DN from RTDB



DN Blocks

Figure FN-20 shows the new EPAP screen for retrieving RTDB data about a DN block.

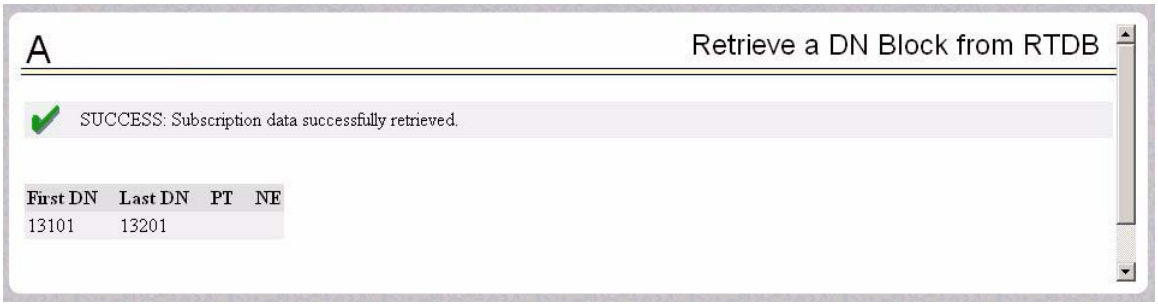
Figure FN-20. Retrieve DN Block Information from RTDB



The output displays the following information about a DN block, as shown in Figure FN-21:

- First DN
- Last DN
- Portability type (PT)
- Associated SP (Signaling Point) or RN (Routing Number)
- Network Entity (NE) data, as described in "Network Entities" on page FN-26, if the DN Block being retrieved is associated with an NE.

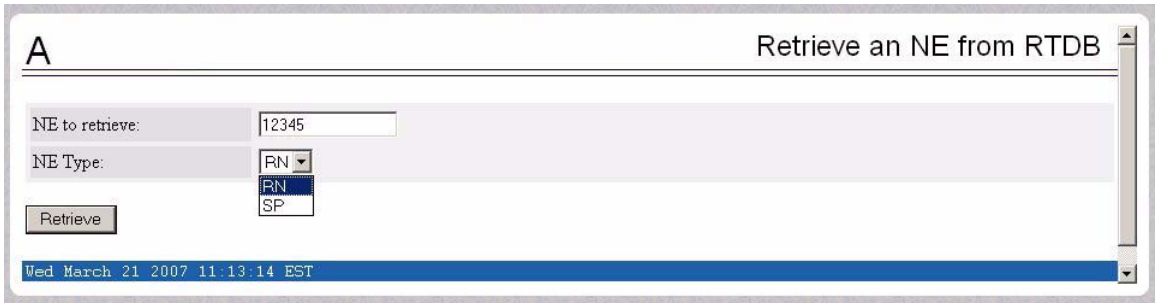
Figure FN-21. Output for Retrieve a DN Block from RTDB



Network Entities

Figure FN-22 shows the new EPAP screen for retrieving RTDB data about a Network Entity (NE).

Figure FN-22. Retrieve an NE from RTDB

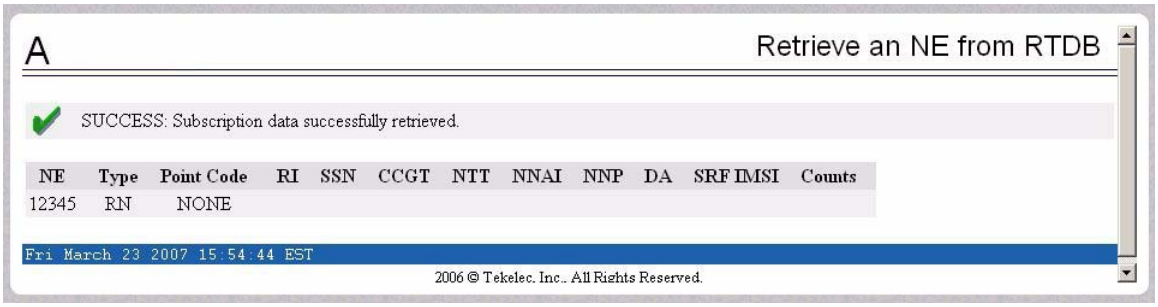


The output displays the following information about a network entity, as shown in Figure FN-23 and Figure FN-24:

- ID
- Type (RN or SP)
- Point code
- Routing indicator (RI)
- Subsystem number (SSN)
- Cancel Called Global Title (CCGT)
- New Translation Type (NTT)
- New Nature of Address Indicator (NNAI)
- New Numbering Plan (NNP)
- Digit Action (DA)
- SRF IMSI (Signaling Relay Function International Mobile Subscriber Identity)
- DN Reference Count
- IMSI Reference Count

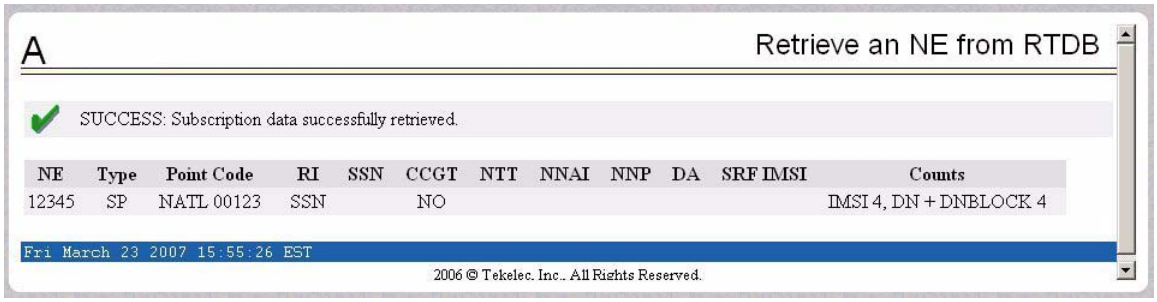
If the NE type is RN, the output displays the data shown in Figure FN-23.

Figure FN-23. Output for Retrieve an RN NE from RTDB



If the NE type is SP, the output displays the data shown in Figure FN-24.

Figure FN-24. Output for Retrieve an SP NE from RTDB



Single IMSIs

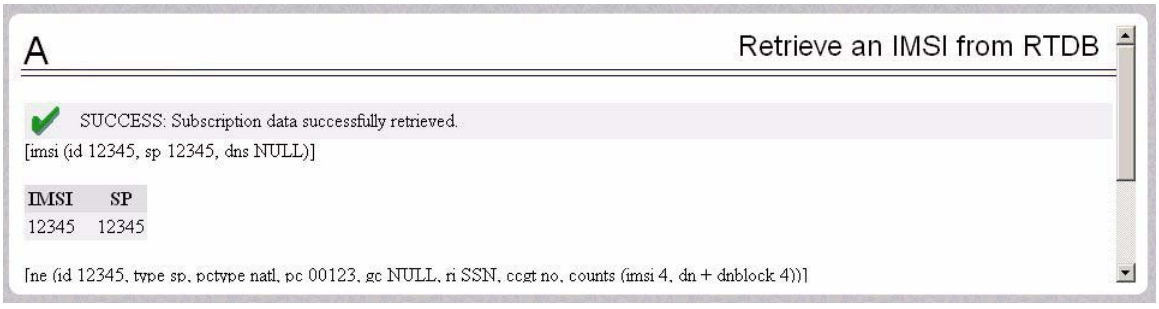
Figure FN-25 shows the new EPAP screen for retrieving RTDB data about an IMSI (International Mobile Subscriber Identity).

Figure FN-25. Retrieve an IMSI from RTDB

The output displays the following information about an IMSI, as shown in Figure FN-26:

- IMSI ID
- SP
- NE data, as described in "Network Entities" on page FN-26, for the Service Provider the IMSI is associated with.
- IMEI data, as described in "IMEIs" on page FN-29, if the IMSI being retrieved is associated with an IMEI.

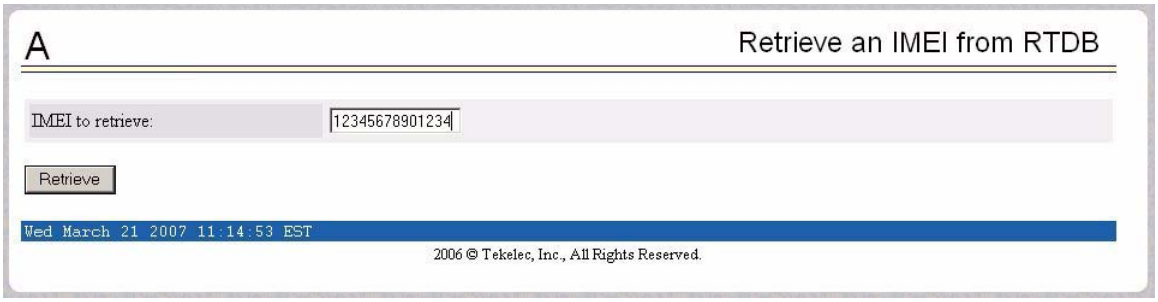
Figure FN-26. Output for Retrieve an IMSI from RTDB



IMEIs

Figure FN-27 shows the new EPAP screen for retrieving RTDB data about a single IMEI (International Mobile Equipment Identity).

Figure FN-27. Retrieve an IMEI from RTDB

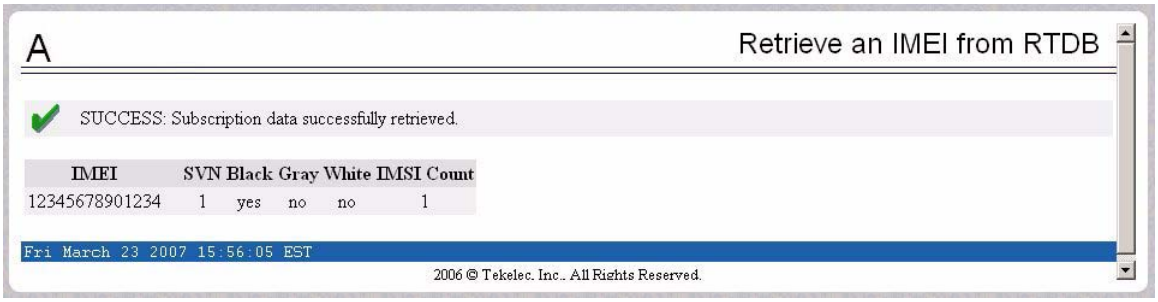


The output displays the following information about an IMEI, as shown in Figure FN-28:

- IMEI ID
- Software version (SVN)
- Black list indicator
- Gray list indicator
- White list indicator
- An IMSI reference count to show the number of IMSIs that are associated with an IMEI.

The IMEI lookup is performed on the IMEI blocks database when an IMEI is not present in the individual IMEI database.

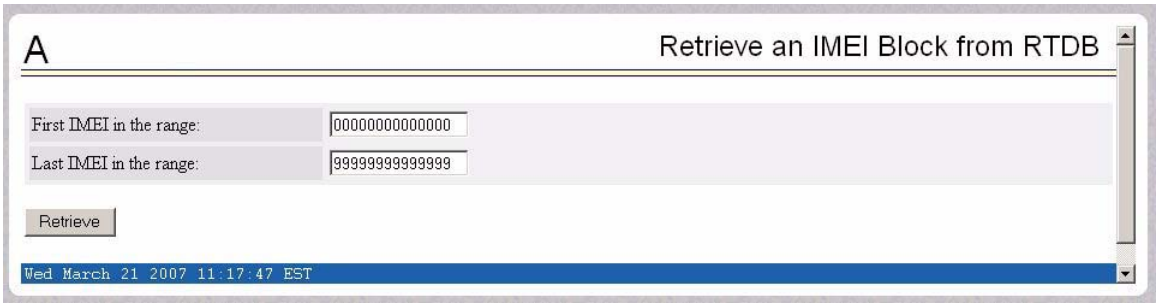
Figure FN-28. Output from Retrieve IMEI from RTDB



IMEI Blocks

Figure FN-29 shows the new EPAP screen for retrieving RTDB data about an IMEI (International Mobile Equipment Identity) block.

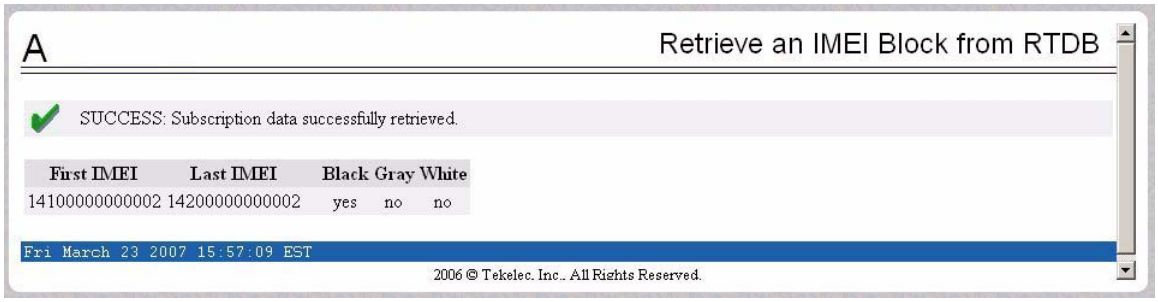
Figure FN-29. Retrieve an IMEI Block from RTDB



The output displays the following information about an IMEI block, as shown in Figure FN-30:

- First IMEI
- Last IMEI
- Black list indicator
- Gray list indicator
- White list indicator

Figure FN-30. Output for Retrieve an IMEI Block from RTDB



Hardware Requirements

There are no additional hardware requirements for this feature.

Limitations

There are no identified limitations for this feature.

Alarms

There are no alarms identified for this feature.

Support for 32 Prepaid SMS Intercepts—EPAP

Description

The Support for 32 Prepaid SMS Intercepts feature increases the number of supported Prepaid SMS Intercepts to 32 (from 8 in previous releases of EPAP). Supported GTT (Global Title Translation) destinations have been expanded to 32, and IN SCP (Intelligent Network Service Control Point) platforms and EPAP portability types have been expanded to 32 from 8.

The PPSMS (Pre-paid Short Message Service) Phase 1 feature uses a G-Port DN portability type (PT) field to identify the types of prepaid subscribers whose originated short messages (as part of SMS) need to be intercepted and forwarded to a corresponding intelligent network platform for verification.

In EPAP 9.0, the PPSMS Phase 2 feature expands the PT range to support 32 types of prepaid subscribers.

For PPSMS, the PT parameter on the **`ent_sub, upd_sub, and rtrv_sub`** commands identifies a DN as one of 32 types needing PPSMS intercept.

Original PT Parameter Values

none - no status (default = none)

0 - Not known to be ported

Migrated to IS41 or non-migrated IS41 sub (used for IS-41 GSM Migration)

1 - Own Number Ported Out (used for G-Port & A-Port)

2 - Foreign Number Ported to Foreign Network (used for G-Port & A-Port)

3 - Prepaid 1 (used for PPSMS)

4 - Prepaid 2 (used for PPSMS)

5 - Migrated to GSM (used for IS-41 GSM Migration)

New PT Parameter Values

6 - Prepaid 3 (used for PPSMS)

7 - Prepaid 4 (used for PPSMS)

8 - Prepaid 5 (used for PPSMS)

9 - Prepaid 6 (used for PPSMS)

10 - Prepaid 7 (used for PPSMS)

11 - Prepaid 8 (used for PPSMS)

12 - Prepaid 9 (used for PPSMS)

13 - Prepaid 10 (used for PPSMS)

14 - Prepaid 11 (used for PPSMS)

15 - Prepaid 12 (used for PPSMS)

16 - Prepaid 13 (used for PPSMS)

17 - Prepaid 14 (used for PPSMS)

18 - Prepaid 15 (used for PPSMS)

19 - Prepaid 16 (used for PPSMS)

20 - Prepaid 17 (used for PPSMS)

21 - Prepaid 18 (used for PPSMS)

22 - Prepaid 19 (used for PPSMS)

23 - Prepaid 20 (used for PPSMS)

24 - Prepaid 21 (used for PPSMS)

25 - Prepaid 22 (used for PPSMS)

26 - Prepaid 23 (used for PPSMS)

27 - Prepaid 24 (used for PPSMS)

28 - Prepaid 25 (used for PPSMS)

29 - Prepaid 26 (used for PPSMS)

30 - Prepaid 27 (used for PPSMS)

31 - Prepaid 28 (used for PPSMS)

32 - Prepaid 29 (used for PPSMS)

33 - Prepaid 30 (used for PPSMS)

34 - Prepaid 31 (used for PPSMS)

35 - Prepaid 32 (used for PPSMS)

Hardware Requirements

There are no additional hardware requirements for this feature.

Limitations

There are no identified limitations for this feature.

Alarms

There are no alarms identified for this feature.

Customer Documentation

Documentation Set

The ***EPAP 9.0 Feature Notice*** is part of the EAGLE 5 ISS documentation set and may refer to one or more of the following manuals:

- The *Commands Manual* contains procedures for logging into or out of the EAGLE 5 ISS, a general description of the terminals, printers, the disk drive used on the system, and a description of all the commands used in the system.
- The *Commands Pocket Guide* is an abridged version of the *Commands Manual*. It contains all commands and parameters, and it shows the command-parameter syntax.
- The *Commands Quick Reference Guide* contains an alphabetical listing of the commands and parameters. The guide is sized to fit a shirt-pocket.
- The *Commands Error Recovery Manual* contains the procedures to resolve error message conditions generated by the commands in the *Commands Manual*. These error messages are presented in numerical order.
- The *Database Administration Manual – Features* contains procedural information required to configure the EAGLE 5 ISS to implement these features:
  - X.25 Gateway
  - STP LAN
  - Database Transport Access
  - GSM MAP Screening
  - EAGLE 5 Integrated Monitoring Support.
- The *Database Administration Manual - Gateway Screening* contains a description of the Gateway Screening (GWS) feature and the procedures necessary to configure the EAGLE 5 ISS to implement this feature.
- The *Database Administration Manual – Global Title Translation* contains procedural information required to configure an EAGLE 5 ISS to implement these features:
  - Global Title Translation
  - Enhanced Global Title Translation
  - Variable Length Global Title Translation
  - Global Title Translation Modification
  - Intermediate GTT Load Sharing

  - — ANSI-ITU-China SCCP Conversion
  - — Flexible GTT Load Sharing
  - — Origin-Based SCCP Routing
  - — Hex Digit Support for GTT
  - — Weighted GTT Load Sharing
  - — Transaction-Based GTT Load Sharing.
- The *Database Administration Manual - IP^7 Secure Gateway* contains procedural information required to configure the EAGLE 5 ISS to implement the SS7-IP Gateway.
- The *Database Administration Manual – SEAS* contains the EAGLE 5 ISS configuration procedures that can be performed from the Signaling Engineering and Administration Center (SEAC) or a Signaling Network Control Center (SNCC). Each procedure includes a brief description of the procedure, a flowchart showing the steps required, a list of any EAGLE 5 ISS commands that may be required for the procedure but that are not supported by SEAS, and a reference to optional procedure-related information, which can be found in one of these manuals:
  - — *Database Administration Manual – Gateway Screening*
  - — *Database Administration Manual – Global Title Translation*
  - — *Database Administration Manual – SS7.*
- The *Database Administration Manual – SS7* contains procedural information required to configure an EAGLE 5 ISS to implement the SS7 protocol.
- The *Database Administration Manual – System Management* contains procedural information required to manage the EAGLE 5 ISS database and GPLs, and to configure basic system requirements such as user names and passwords, system-wide security requirements, and terminal configurations.
- The *Dimensioning Guide for EPAP Advanced DB Features* is used to provide EPAP planning and dimensioning information. This manual is used by Tekelec personnel and EAGLE 5 ISS customers to aid in the sale, planning, implementation, deployment, and upgrade of EAGLE 5 ISS systems equipped with one of the EAGLE 5 ISS EPAP Advanced Database (EADB) Features.
- The *ELAP Administration Manual* defines the user interface to the EAGLE 5 ISS LNP Application Processor on the MPS/ELAP platform. The manual defines the methods for accessing the user interface, menus, screens available to the user and describes their impact. It provides the syntax and semantics of user input and defines the output the user receives, including information and error messages, alarms, and status.

- The *EPAP Administration Manual* describes how to administer the EAGLE 5 ISS Provisioning Application Processor on the MPS/EPAP platform. The manual defines the methods for accessing the user interface, menus, and screens available to the user and describes their impact. It provides the syntax and semantics of user input and defines the output the user receives, including messages, alarms, and status.
- The *Feature Manual - A-Port* provides an overview of a feature providing the capability for IS41 mobile subscribers to change service provider while retaining their original Mobile Directory Number (MDN). This manual gives the instructions and information on how to install, use, and maintain the A-Port feature on the Multi-Purpose Server (MPS) platform of the EAGLE 5 ISS.
- The *Feature Manual - ECAP* provides instructions and information on how to install, use, and maintain the Integrated Accounting Feature Application feature on the Eagle Collector Application Processor (ECAP). This feature collects raw MSU data from the EAGLE 5 ISS, categorizes the data into groups, and feeds those groups to another system for accounting activities. Additional features will be added to this manual at a later date.
- The *Feature Manual - EIR* provides instructions and information on how to install, use, and maintain the EIR feature on the Multi-Purpose Server (MPS) platform of the EAGLE 5 ISS. The feature provides network operators with the capability to prevent stolen or disallowed GSM mobile handsets from accessing the network.
- The *Feature Manual - G-Flex C7 Relay* provides an overview of a feature supporting the efficient management of Home Location Registers in various networks. This manual gives the instructions and information on how to install, use, and maintain the G-Flex feature on the Multi-Purpose Server (MPS) platform of the EAGLE 5 ISS.
- The *Feature Manual - G-Port* provides an overview of a feature providing the capability for mobile subscribers to change the GSM subscription network within a portability cluster while retaining their original MSISDNs. This manual gives the instructions and information on how to install, use, and maintain the G-Port feature on the Multi-Purpose Server (MPS) platform of the EAGLE 5 ISS.
- The *Feature Manual - INP/AINPQ* provides the user with information and instructions on how to implement, utilize, and maintain either the INAP-based Number Portability (INP) feature or the ANSI-41 INP Query (AINPQ) feature or both features on the Multi-Purpose Server (MPS) platform of the EAGLE 5 ISS.

- The *Feature Manual - Migration* provides an overview of a feature providing the capability for IS41 subscribers to migrate to a GSM network and GSM mobile subscribers to migrate to an IS41 network. This manual gives the instructions and information on how to install, use, and maintain the Migration feature on the Multi-Purpose Server (MPS) platform of the EAGLE 5 ISS.
- The *FTP-Based Table Retrieve Application (FTRA) User Guide* describes how to set up and use a PC to serve as the offline application for the EAGLE 5 ISS FTP Retrieve and Replace feature.
- The *Hardware Manual* - EAGLE 5 ISS provides an overview of each system and its subsystems, details of standard and optional hardware components in each system, and basic site engineering. These include the EAGLE 5 ISS, OEM-based products such as the ASi 4000 Service Control Point (SCP), and the Netra-based Multi-Purpose Server (MPS).
- The *Hardware Manual - Tekelec 1000 Application Server* provides general specifications and a description of the Tekelec 1000 Application Server (T1000 AS). This manual also includes site preparation, environmental and other requirements, procedures to physically install the T1000 AS, and troubleshooting and repair of Field Replaceable Units (FRUs).
- The *Hardware Manual - Tekelec 1100 Application Server* provides general specifications and a description of the Tekelec 1100 Application Server (T1100 AS). This manual also includes site preparation, environmental and other requirements, procedures to physically install the T1100 AS, and troubleshooting and repair of Field Replaceable Units (FRUs).
- The *Installation Manual* - EAGLE 5 ISS contains cabling requirements, schematics, and procedures for installing the EAGLE 5 ISS along with LEDs, connectors, cables, and power cords to peripherals. Refer to this manual to install components or the complete systems.
- The *LNP Database Synchronization Manual - LSMS with* EAGLE 5 ISS describes how to keep the LNP databases at the LSMS and at the network element (the EAGLE 5 ISS is a network element) synchronized through the use of resynchronization, audits and reconciles, and bulk loads. This manual is contained in both the LSMS documentation set and in the EAGLE 5 ISS documentation set.
- The *LNP Feature Activation Guide* contains procedural information required to configure the EAGLE 5 ISS for the LNP feature and to implement these parts of the LNP feature on the EAGLE 5 ISS:
  - — LNP services
  - — LNP options
  - — LNP subsystem application
  - — Automatic call gapping

  - — Triggerless LNP feature
  - — Increasing the LRN and NPANXX Quantities on the EAGLE 5 ISS
  - — Activating and Deactivating the LNP Short Message Service (SMS) feature.

- The *Maintenance Manual* contains procedural information required for maintaining the EAGLE 5 ISS and the card removal and replacement procedures. The *Maintenance Manual* provides preventive and corrective maintenance procedures used in maintaining the different systems.
- The *Maintenance Pocket Guide* is an abridged version of the Maintenance Manual and contains all the corrective maintenance procedures used in maintaining the EAGLE 5 ISS.
- The *Maintenance Emergency Recovery Pocket Guide* is an abridged version of the Maintenance Manual and contains the corrective maintenance procedures for critical and major alarms generated on the EAGLE 5 ISS.
- EAGLE 5 ISSEAGLE 5 ISSThe *MPS Platform Software and Maintenance Manual* - EAGLE 5 ISS *with Tekelec 1000 Application Server* describes the platform software for the Multi-Purpose Server (MPS) based on the Tekelec 1000 Application Server (T1000 AS) and describes how to perform preventive and corrective maintenance for the T1000 AS-based MPS. This manual should be used with the EPAP-based applications (EIR, G-Port, G-Flex, A-Port, Migration, AINPQ, and INP).
- The *MPS Platform Software and Maintenance Manual* - EAGLE 5 ISS *with Tekelec 1100 Application Server* describes the platform software for the Multi-Purpose Server (MPS) based on the Tekelec 1100 Application Server (T1100 AS) and describes how to perform preventive and corrective maintenance for the T1100 AS-based MPS. This manual should be used with the ELAP-based application (LNP).
- The *Provisioning Database Interface Manual* defines the programming interface that populates the Provisioning Database (PDB) for the EAGLE 5 ISS features supported on the MPS/EPAP platform. The manual defines the provisioning messages, usage rules, and informational and error messages of the interface. The customer uses the PDBI interface information to write his own client application to communicate with the MPS/EPAP platform.
- The *Previously Released Features Manual* summarizes the features of previous EAGLE, EAGLE 5 ISS, and IP^7 Secure Gateway releases, and it identifies the release number of their introduction.

- The *Release Documentation* contains the following documents for a specific release of the system:
  - — *Feature Notice* - Describes the features contained in the specified release. The Feature Notice also provides the hardware baseline for the specified release, describes the customer documentation set, provides information about customer training, and explains how to access the Customer Support website.
  - — *Release Notice* - Describes the changes made to the system during the lifecycle of a release. The Release Notice includes Generic Program Loads (GPLs), a list of PRs resolved in a build, and all known PRs.

    NOTE: The *Release Notice* is maintained solely on Tekelec's Customer Support site to provide you with instant access to the most up-to-date release information.
  - — *Systems Overview* - Provides high-level information on SS7, the IP^7 Secure Gateway, system architecture, LNP, and EOAP.
  - — *Master Glossary* - Contains an alphabetical listing of terms, acronyms, and abbreviations relevant to the system.
  - — *Master Index* - Lists all index entries used throughout the documentation set.
- The *SEAS Commands Error Messages Manual* lists the error messages generated by the EAGLE 5 ISS that are specific to the Signaling Engineering and Administration System (SEAS). It includes the SEAS commands that trigger the error messages, the equivalent system error messages and commands, and the explanatory text.
- The *SS7-over-IP Networks Using SIGTRAN* manual examines the reasons for transitioning to an SS7-over-IP network, the considerations that go into planning and dimensioning, and helpful information for implementing the network using EAGLE 5 ISS.
- The *System Manual – EOAP* describes the Embedded Operations Support System Application Processor (EOAP) and provides the user with procedures on how to implement the EOAP, replace EOAP-related hardware, device testing, and basic troubleshooting information.

How to Locate Documentation on the Customer Support Site

Access to Tekelec's Customer Support area is restricted to current Tekelec customers. This section describes how to log into Tekelec's Customer Support site and how to locate customer documentation. Viewing these files requires Adobe Acrobat Reader.

1 Go to Tekelec's Customer Support login page at **https://support.tekelec.com/index.asp**

2 Enter your assigned username and chosen password, then click **Go.**

Or, if you do not have access to the Customer Support site, click **Need an Account?**

Follow the instructions on the screen.

NOTE: After 20 minutes of inactivity, you will be logged off, and you must repeat this step to regain access.

3 After successful login, select a product from the Product Support drop-down menu.

4 Select a release number from the Product Support Release drop-down menu.

5 Locate the appropriate documentation section (i.e., a Feature Notice would be under **Notices,** and user documentation would be under **Manuals**).

6 To open the documentation in the same window, double click the document name. To open the documentation in a new window, right-click the document name and select **Open in New Window**.

7 To download the document, right-click the document name and select **Save Target As**.

Customer Training

Tekelec offers a variety of technical training courses designed to provide the knowledge and experience required to properly provision, administer, operate and maintain the EAGLE 5 ISS. To enroll in any of the courses or for schedule information, contact the Tekelec Training Center at (919) 460-3064 or E-mail **eagletrain@tekelec.com**.

A complete list and schedule of open enrollment can be found at **www.tekelec.com**.

Customer Care Center

The Tekelec Customer Care Center offers a point of contact through which customers can receive support for problems that may be encountered during the use of Tekelec's products. The Tekelec Customer Care Center is staffed with highly trained engineers to provide solutions to your technical questions and issues seven days a week, twenty-four hours a day. A variety of service programs are available through the Tekelec Customer Care Center to maximize the performance of Tekelec products that meet and exceed customer needs.

Technical Assistance

To receive technical assistance, call the Tekelec Customer Care Center at one of the following locations:

- Tekelec, Europe and UK

  Phone: +44 1784 467 804

  Fax: +44 1784 477 120

  E-mail: ecsc@tekelec.com

- Tekelec, USA

  Phone (within the continental US) 1-888-FOR-TKLC (1-888-367-8552)
  (outside the continental US) +1 919-460-2150

  Fax: +1 919-460-2126

  E-mail: support@tekelec.com

When your call is received, the Customer Care Center issues a Customer Service Report (CSR). Each CSR includes an individual tracking number. When a CSR is issued, the Customer Care Center determines the classification of the trouble. The CSR contains the serial number of the system, problem symptoms, and messages. The Customer Care Center assigns the CSR to a primary engineer, who will work to solve the problem. The Customer Care Center closes the CSR when the problem is resolved.

If a critical problem exists, the Customer Care Center initiates emergency procedures (see the following topic, “Emergency Response”).

Emergency Response

If a critical service situation occurs, the Customer Care Center offers emergency response twenty-four hours a day, seven days a week. The emergency response provides immediate coverage, automatic escalation, and other features to ensure a rapid resolution to the problem.

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

- Failure in the system that prevents transaction processing
- Reduction in system capacity or in system traffic-handling capability
- Inability to restart the system
- Corruption of the database
- Inability to perform maintenance or recovery operations
- Inability to provide any required critical or major trouble notification

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

Appendix A. Acronyms, Abbreviations, and Terminology

A-Port—ANSI-41 Mobile Number Portability

AINPQ—ANSI-41 INP Query

CC—Country Code

DN—Directory Number or Dialed Number

DSM—Database Service Module

ECAP—EAGLE Collector Application Processor

EIR—Equipment Identity Register

ELAP—Eagle LNP Application Processor

Equipment Identity Register—EIR

EPAP—Eagle Provisioning Application Processor

FAK—Feature Access Key

Feature Access Key—FAK

FTRA—FTP-based Table Retrieve Application

G-Flex—GSM Flexible Numbering

G-Port—GSM Mobile Number Portability

Generic Program Load—GPL

Global Title Translation—GTT

GPL—Generic Program Load

GSM Flexible Numbering—G-Flex

GSM Mobile Number Portability—G-Port

GTA—Global Title Address

GTT—Global Title Translation

GUI—Graphical User Interface

GWS—Gateway Screening

High Speed IMT Packet Router (HIPR)—An IMT for EAGLE 5 ISS systems that provides increased system throughput and traffic capacity.

HIPR—High Speed IMT Packet Router

HTTP—Hypertext Transfer Protocol

HTTPS—Secure Hypertext Transfer Protocol

IDCA—ISUP Digit Collection Application

IMF—Integrated Message Feeder

IMT—Inter-processor Message Transport

IN—Intelligent Network

Inter-processor Message Transport—IMT

INP—INAP-based Number Portability

ISDN—Integrated Services Digital Network

ISUP—ISDN User Part

LSMS—Local Service Management System

MAP—Mobile Application Part

MNP—Mobile Number Portability

MPS—Multi-Purpose Server

PC—Point Code

PDB—Provisioning Database

PDBA—Provisioning Database Application

PDBI—Provisioning Database Interface

RN—Routing Number

RTDB—Real-Time Database

SCCP—Signaling Connection Control Part

SCP—Service Control Point

SEAS—Signaling Engineering and Administration System

SSH—Secure Shell

SSN—Subsystem Number

TPS—Transactions per Second