EAGLE® Provisioning Application Processor (EPAP)

Release 8.0

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

Ordering Information

To order additional copies of this document, contact your Tekelec Sales Representative.

Table of Contents

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 on the Customer Support Site for the EAGLE Provisioning Application Processor (EPAP) Release 8.0 (see "How to Locate Documentation on the Customer Support Site" on page FN-20).

New Features

EPAP 8.0 introduces the following features.

- "Allow Write Commands on EPAP During Retrieve/Export"
- "EPAP 30-day Storage of Export of Provisioning Logs"
- "EPAP Support for A-Port"

Important Operational Changes

There are no major operational changes in this release.

Compatibility

EPAP 8.0 is fully compatible with EAGLE 5 ISS Release 36.0. Table FN-1 identifies the compatibility of EPAP 8.0 with other products.

Table FN-1. Compatibility Matrix - EPAP 8.0

Product	Release	Compatibility
Eagle	34.0	PC
	35.0	PC
	35.1	PC
	35.2	PC
	36.0	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
TKLC 500 EDGE	N/A	N/A
IDCA	N/A	N/A
ECAP	N/A	N/A

Allow Write Commands on EPAP During Retrieve/Export

The Allow Write Commands on EPAP During Retrieve/Export feature supports simultaneous data provisioning and data export/retrieve operations on an EPAP provisioning database (PDB).

See "Allow Write Commands on EPAP During Retrieve/Export" on page FN-2 for more details.

EPAP 30 Day Storage of Provisioning Logs

The EPAP 30 Day Storage of Provisioning Logs feature enables an EPAP to store provisioning, error, and debug EPAP PDB logs for a configurable period of time.

The EPAP 30 Day Storage of Provisioning Logs feature does not require a FAK to enable the feature.

See "EPAP 30-day Storage of Export of Provisioning Logs" on page FN-4 for more details.

EPAP Support for A-Port

The EPAP Support for A-Port feature allows the ANSI-41 Mobile Number Portability (A-Port) feature to reuse the EPAP provisioning functionality to support the provisioning of A-Port subscriber data.

The EPAP Support for A-Port feature does require a FAK to enable the feature.

See "EPAP Support for A-Port" on page FN-5 for more details.

Allow Write Commands on EPAP During Retrieve/Export

Description

The Allow Write Commands on EPAP During Retrieve/Export feature allows the EPAP user to provision new data through the EPAP PDBI without interfering with a data export operation on the PDB.

The Allow Write Commands on EPAP During Retrieve/Export feature supports the following modes for data export:

- Blocking mode
- Snapshot mode
- Real Time mode

The Blocking mode blocks write requests to the EPAP database during a database export.

The Snapshot mode allows write operations on the database during a database export. This mode provides the exported database as a complete snapshot of the database at the time the export started. The changes to the database after the export started are not reflected in the exported database.

The Real Time mode also allows write operations during a database export. This mode replicates database changes that correspond to the unprocessed portion of the database after the export started.

The Allow Write Commands on EPAP During Retrieve/Export feature also allows simultaneous data retrieve operations in Snapshot and Real Time modes during data provisioning.

Hardware Requirements

The Allow Write Commands on EPAP During Retrieve/Export feature does not require any additional hardware.

Alarms

There are no new or changed alarms for this feature.

EPAP 30-day Storage of Export of Provisioning Logs

Description

An EPAP user can configure the storage period for provisioning logs to a maximum of 30 days, subject to the availability of disk partition space in the EPAP hard drive.

Hardware Requirements

The EPAP 30 Day Storage of Provisioning Logs feature does not require any additional hardware.

Limitations

- The EPAP must follow Tekelec guidelines on provisioning rate and logging levels to enable EPAP to store provisioning logs for 30 days. According to these guidelines, the recommended maximum provisioning rate is 25 writes per second.
- The Savelogs operation collects logs and saves them in the free partition on the EPAP hard disk. Saving logs for 30 days may result in the accumulation of a huge amount of data in the EPAP hard disk. The savelogs operation fails if the size of the collected logs exceeds the available space in the free partition of the EPAP disk.

Alarms

There are no new or changed alarms for this feature.

EPAP Support for A-Port

Description

The ANSI-41 Mobile Number Portability (A-Port) feature enables an IS-41 subscriber to change to a different service provider while retaining the same Mobile Dialed Number (MDN).

A-Port uses the EPAP (EAGLE Provisioning Application Processor) provisioning database to retrieve the subscriber portability status and provision directory numbers for exported and imported IS-41 subscribers. This database maintains information related to subscriber portability and migration in the international E.164 format. A-Port uses RN and PT values to provision directory numbers (DNs) for exported subscribers. In addition, A-Port uses SP to provision DNs for imported subscribers. It is optional to provision the PT values for imported subscribers.

A-Port supports both GT- and MTP-routed messages.

Service Selector Lookup

Service selector lookup is performed using the MTP/SCCP data. If the selectors match and MNP service is assigned to it, A-Port handling is performed.

To manage number portability, A-Port uses the MNP SCCP Service Selector to process GT-routed LOCREQ and SMSREQ SCCP messages. The EAGLE ISS intercepts ANSI-41 LOCREQ and SMSREQ messages for the EPAP database lookup. GT-routed messages support UDT and non-segmented XUDT message types and perform service selector lookup after SCCP verification.

- An ANSI-41 LOCREQ message is initiated by a TDMA/CDMA MSC that queries the HLR for information regarding user subscription/location before terminating a voice call.
- An ANSI-41 SMSREQ message is initiated by a TDMA/CDMA SMSC that queries the HLR for information regarding user subscription/current location before delivering a short message.

A-Port processes MTP-routed messages if the MTP Messages for SCCP Applications (MTP Msgs for SCCP Apps) feature is turned on.

- A-Port routes the MTP-routed UDT/non-segmented XUDT SCCP messages to the SCCP cards. The SCCP cards perform SCCP decode and verification on MTP- routed messages as they do for GTT. A-Port support both ANSI and ITU MTP/SCCP message portions.
- If the MTP-routed messages have CDPA GTI =0 and the A-Port feature is turned on, the message is sent for A-Port processing
- If the MTP-routed messages have CDPA GTI is non-zero, service selector lookup is performed using the SCCP CDPA information. If the result of the lookup is MNP service, the MTP-routed messagesare sent to MNP handling.

MNP begins A-Port general TCAP/MAP verification if the message is ANSI TCAP and A-Port is turned on. TCAP/MAP verification is performed on all messages; A-Port supports only the ANSI TCAP format.

If the G-Port feature is turned on, the EAGLE 5 ISS applies the G-Port message processing function to received SCCP messages that pass the MNP or G-Port service selector lookup.

Database Lookup and Routing

The DN is used for database lookup.

- For non-LOCREQ messages, the DN is derived from the SCCP portion of the message.
- A-Port performs number conditioning upon successful decode and verification of the message. HomeRN and IEC or NEC prefixes are removed. The DN is conditioned to international number format based on the service nature of address (SNAI or TCAPSNAI or MTPLOCREQNAI).

A-Port performs RTDB lookup on the conditioned number, and routes or relays the message based on the lookup result.

- An SMSREQ is relayed like any other non-LOCREQ message. No changes are performed to the TCAP/MAP portion of the message.
- A-Port modifies the TCAP information for LOCREQ messages only when a HomeRN was deleted from the TCAP DN and LOCREQRMHRN = YES. Any gaps in the data caused by a change in field length will be resolved by shifting the remaining information up. Any IEC or NEC code is left.
- A-Port performs normal routing if number conditioning fails or does not find the DN in the RTDB database, or the DN is found with non-A-Port data. Normal routing is performing GTT if the incoming message is sent to the EAGLE 5 ISS Self Point Code. Normal routing is routing the message to the MTP DPC if the incoming message is MTP-routed (the MTP DPC of the message is not the EAGLE 5 ISS Self Point Code).

A-Port shares the service state and re-route with the IS41 GSM Migration feature and the G-Port feature, under one service called the MNP service state. (The G-Port service state is used if only the G-Port feature is on.) A-Port supports re-route functions as part of MNP service re-route. Alternate PCs are shared by all three features.

The text "GPORT" is displayed for alarms and **rept-stat-sccp** command output section headings if the G-Port feature is on and the A-Port and IS41 GSM Migration features are not enabled. If the A-Port feature or the IS41 GSM Migration feature is enabled, the text “GPORT” is replaced with the text “MNP”.

Feature Access Key

A feature access key (FAK) for part number 893015501 is required to enable the A-Port feature.

- The GTT feature must be on before the A-Port feature can be enabled.
- After the feature is enabled and turned on, it cannot be turned off.
- No temporary FAK is allowed for the feature.
- An LNP quantity feature and the A-Port feature cannot be enabled in the system at the same time.

Measurements

The following enhancements support the collection and retrieval of measurements related to the A-Port feature and the IS41 GSM Migration feature. These new measurement registers are supported with and without the Measurements Platform feature enabled.

- New registers are added to the NP SYS reports: Hourly Maintenance Measurements on NP System (MTCH-NP) and Daily Maintenance Measurements on NP System (MTCD-NP).
  - APSMSRCV—Number of SMS Request messages received
  - APSMSREL—Number of SMS Request messages relayed
- New registers are added to the NP SSP reports: Hourly Maintenance Measurements on NP SSP (MTCH-SSP) and Daily Maintenance Measurements on NP SSP (MTCD-SSP).
  - APLRACK—Number of call related LOCREQ messages acknowledged.
  - APLRRLY—Number of call related LOCREQ messages relayed.
  - APNOCL—Number of non-call non-LOCREQ related messages relayed.
  - APNOCLGT—Number of non-call Non-LOCREQ related messages that fell through to GTT.

Feature Interactions

G-Port, A-Port, and IS41 GSM Migration solve the problem of number portability from one network to another or number migration from one mobile protocol to another. One, two, or all three features could be active on a single EAGLE 5 ISS node at a given point. Because all of these features could have same type of MTP and SCCP layers (ITU or ANSI), it may look like same kind of message at service selection, which looks at the network domain and SCCP parameters. Therefore, all three features share one service. Because of this, existing functions like SRVSEL, Service, Re-route, CPC and **rept-stat-sccp** command service snapshot counts are affected.

Hardware Requirements

The A-Port feature has the following hardware requirements:

- DSM cards with at least 4G of memory

A-Port cannot be enabled if any DSM cards with less than 4G of memory or any TSM cards for SCCP are present in the system. When A-Port is enabled, no DSM cards with less than 4G of memory and no TSM cards for SCCP can be provisioned for SCCP.

New and Enhanced Commands

The following commands are new or enhanced to support the A-Port feature. See the *Commands Manual* of your 7.0 documentation set for a detailed description of all commands and their parameters.

- **enable/chg/rtrv-ctrl-feat**—Enhanced to enable and turn on the A-Port feature. The feature appears in the **rtrv-ctrl-feat** command output after the feature is enabled; the status changes to ON when the feature is turned on.

```
Feature Name              Partnum   Status Quantity
APORT                     893016601 off    ----
```

- **chg/rtrv-IS-41opts**—New commands to provision IS-41options.

The following example shows **rtrv-IS-41opts** output when the A-Port feature is enabled and on.

rtrv-IS-41opts

```
tekelecstp 06-06-15 10:33:44 EST  EAGLE 36.0.0
IS-41 OPTIONS
-----------------------
SMSREQBYPASS    = NO
LOCREQDN        = TCAP
IEC             = 0
NEC             = 00
RSPCGPARI       = FRMSG
RSPCGPAPCP      = FRMSG
RSPCDPARI       = FRMSG
RSPCDPAPCP      = FRMSG
RSPCGPANAI      = 0
RSPCGPANP       = 0
RSPCGPATT       = 0
MTPLOCREQNAI    = SUB
RSPPARM         = DDIGIT
RSPDIG          = RN
RSPNON          = 0
RSPNP           = 0
RSPMIN          = NOTHOMERN
MSCMKTID        = 32300
MSCSWITCH       = 20
ESNMFG          = 0
ESNSN           = 0
RSPDIGTYPE      = 0
LOCREQRMHRN     = NO
TCAPSNAI        = SUB

;
```

- **chg-sccp-serv**—Enhanced to use the MNP service and prevent the G-Port service from being used if the A-Port and IGM features are enabled.

- **chg/rtrv-sid**—Enhanced to add the MNP service to the CPC types; MNP can be specified when the A-Port feature or IS41 GSM Migration feature is on.

The following example displays **rtrv-sid** output with a CPC of type MNP.

rtrv-sid:cpctype=mnp

```
    tklc1081301 06-10-05 11:43:02 EST  EAGLE5 36.0.0

       PCA             PCI          PCN               CLLI              PCTYPE
       006-010-006     5-010-5      5-010-5-aa        tklc1081301       ANSI

       CPCA (MNP)
       006-012-000

       CPCI (MNP)
       5-012-0

       CPCN (MNP)
       5-012-0-aa        5-012-0-ms

       CPCN24 (MNP)
       006-012-000
;
```

- **ent/chg/rtrv-srvsel**—Enhanced to support the MNP service when the A-Port feature or IS41 GSM Migration feature is on.

The following example displays **rtrv-srvsel** output when the A-Port feature is enabled and on.

rtrv-srvsel:serv=mnp

```
    rlghncxa03w 06-08-29 16:40:40 EST  EAGLE 36.0.0
    GTIN  TT   NP       NAI   NPV  NAIV  SNP   SNAI   SERV
    4     0    e164     128   ---  ---   e164  ccrndn mnp
;
```

- **ent-card**—Enhanced to prevent TSM cards for SCCP from being provisioned if the A-Port feature is enabled.
- **rept-stat-sccp**—Enhanced to display MNP SERVICE status when the A-Port feature is on. (When the G-Port feature is on and the A-Port feature is not on, GPORT SERVICE status is displayed.)

The following examples display **rept-stat-sccp** output when the A-Port feature is enabled and on.

Example 1 displays output when the G-Flex, G-Port, INP, and A-Port features are on. The EIR feature is not enabled, and the **ansigflex** system option is disabled:

When A-Port is on or both A-Port and G-Port are on, MNP SERVICE entries appear. If G-Port is on and A-Port is not on, GPORT SERVICE entries appear.

rept-stat-sccp

```
    rlghncxa03w 06-08-29 16:40:40 EST  EAGLE 36.0.0
    SCCP SUBSYSTEM REPORT IS-NR          Active
         SCCP ALARM STATUS = No Alarms
    INPQ SUBSYSTEM REPORT IS-ANR         Restricted  -----
         ASSUMING MATE'S LOAD
```

```
     INPQ: SSN STATUS = Allowed     MATE SSN STATUS  = Prohibited
     INPQ ALARM STATUS = No Alarms
GFLEX SERVICE REPORT IS-ANR         Active
     GFLEX ALARM STATUS = No Alarms
MNP SERVICE REPORT   IS-ANR         Active
     MNP ALARM STATUS   = No Alarms

SCCP Cards Configured=4  Cards IS-NR=2
System TPS Alarm Threshold = 100% Total Capacity
System Peak SCCP Load = 3000 TPS
System Total SCCP Capacity = 5000 TPS

CARD   VERSION      PST          SST         AST       MSU USAGE  CPU USAGE
--------------------------
1212   101-001-000  IS-NR        Active      ALMINH       45%         30%
1301 P 101-001-000  IS-NR        Active      ------       35%         40%
1305   -----------  OOS-MT       Isolated    ------        0%          0%
2112   -----------  OOS-MT-DSBLD Manual      ------        0%          0%
---------------------------
SCCP Service Average MSU Capacity = 40%       Average CPU Capacity = 35%

AVERAGE CPU USAGE PER SERVICE:
  GTT   = 15%  GFLEX =  5%  MNP = 10%
  INPMR =  2%  INPQ  =  3%

TOTAL SERVICE STATISTICS:
                                    FAIL     REROUTE\      FORWARD
  SERVICE    SUCCESS    ERRORS    RATIO     WARNINGS        TO GTT     TOTAL
  GTT:          1995         5       0%            -             -      2000
  GFLEX:         500         1       0%            4            10       515
  MNP:           800         0       0%            2             3       805
  INPMR:          50         5       0%            0            15        70
  INPQ:          499         1       0%            -             -       500

Command Completed.
;
```

Example 2 provides status on services for the specified card. The G-Flex, G-Port, INP, and A-Port features are on, and the EIR feature is off.

rept-stat-sccp:loc=1106

```
rlghncxa03w 06-08-29 16:40:40 EST  EAGLE 36.0.0
CARD  VERSION      TYPE    PST           SST       AST
1106  101-010-000  DSM     IS-NR         Active    -----
CARD ALARM STATUS       = No Alarms.
GTT:   STAT = ACT       CPU USAGE = 10%
GFLEX: STAT = ACT       CPU USAGE = 10%
MNP:   STAT = ACT       CPU USAGE = 10%
INPMR: STAT = ACT       CPU USAGE = 13%
INPQ:  STAT = ACT       CPU USAGE = 20%
                    TOTAL     = 63%

CARD SERVICE STATISTICS:
SERVICE    SUCCESS    ERRORS    WARNINGS    FORWARD TO GTT    TOTAL
  GTT:          1995         5           -                 -     2000
  GFLEX:         500         1           4                10      515
  MNP:           500         1           4                10      515
  INPMR:          50         2           3                15       70
  INPQ:          499         1           -                 -      500
Command Completed.
;
```

Assumptions

Within a portability domain (ordinarily a country) a Mobile Directory Number (MDN) assigned to an IS-41 subscriber will not overlap with an MSISDN assigned to a GSM subscriber (one dialed DN can either be an IS-41 or a GSM subscriber). Therefore, IS-41 and GSM subscriber data can co-exist in the same EPAP provisioning database.

Limitations

The A-Port feature has the following limitations:

- Communication between the SMSCs in the originating network (a calling party's home network or the network where the call was originated) and the SMSC in the terminating network is through SS7 and not SMPP.
- Number Portability across multiple countries is not supported.

Alarms

No new alarms are required to support the A-Port feature.

Error Messages

No new error messages are required to support the A-Port feature.

Customer Documentation

Documentation Set

EPAP documentation is part of the EAGLE 5 ISS documenation set. EPAP manuals include:

- *Dimensioning Guide for EPAP Advanced DB Features*
- *EPAP Administration Manual*
- *EPAP DSM Dimensioning Tool (on Documentation CD only)*
- *Feature Manual – A-Port*
- *Feature Manual - ECAP*
- *Feature Manual – EIR*
- *Feature Manual – G-Flex C7 Relay*
- *Feature Manual – G-Port*
- *Feature Manual – INP*
- *Feature Manual – Migration*
- *Feature Notice*
- *Hardware Manual – Tekelec 1000 Application Server*
- *MPS Platform Software and Maintenance Manual (EAGLE 5 SAS with Tekelec T1000 Application Server)*
- *Provisioning Database Interface Manual*

The EAGLE 5 ISS documenation set comprises the following manuals and documents. The list is sorted by manual name and is followed by a brief description of each manual.

NOTE: The most current update of each manual can be found on Tekelec's Customer Support website.

- *Commands Error Recovery Manual*
- *Commands Manual*
- *Database Administration Manual – Features*
- *Database Administration Manual – Gateway Screening*
- *Database Administration Manual – Global Title Translation*
- *Database Administration Manual – IP7 Secure Gateway*
- *Database Administration Manual – SEAS*

- *Database Administration Manual – SS7*
- *Database Administration Manual – System Management*
- *Dimensioning Guide for EPAP Advanced DB Features*
- *ELAP Administration Manual*
- *EPAP Administration Manual*
- *EPAP DSM Dimensioning Tool*
- *ELAP Administration Manual*
- *Feature Manual – A-Port*
- *Feature Manual - ECAP*
- *Feature Manual – EIR*
- *Feature Manual – G-Flex C7 Relay*
- *Feature Manual – G-Port*
- *Feature Manual – INP*
- *Feature Manual – Migration*
- *Hardware Manual – EAGLE 5 SAS*
- *Hardware Manual – Tekelec 1000 Application Server*
- *Hardware Manual – Tekelec 1100 Application Server*
- *Installation Manual – EAGLE 5 ISS*
- *Installation Manual - Integrated Applications*
- *LNP Database Synchronization (LSMS with EAGLE 5 SAS)*
- *LNP Feature Activation Guide*
- *Maintenance Manual*
- *MPS Platform Software and Maintenance Manual (EAGLE 5 SAS with Tekelec T1000 Application Server)*
- *MPS Platform Software and Maintenance Manual (EAGLE 5 SAS with Tekelec T1100 Application Server)*
- *Previously Released Features Manual*
- *Provisioning Database Interface Manual*
- *Release Documentation*
  - *Feature Notice*
  - *Master Glossary*

  - *Release Notice* (online only)
  - *System Overview*
- *System Manual – EOAP*

Commands Error Recovery Manual

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.

Commands Manual

The *Commands Manual* contains procedures for logging into an EAGLE 5 SAS system, logging out of the system, 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.

Database Administration Manual – Features

The *Database Administration Manual – Features* contains procedural information required to configure an EAGLE 5 SAS to implement these features: X.25 Gateway, STP LAN, Database Transport Access, GSM MAP Screening, and EAGLE 5 Integrated Monitoring Support.

Database Administration Manual – Gateway Screening

The *Database Administration Manual - Gateway Screening* contains a description of the Gateway Screening (GWS) feature and the procedures necessary to configure the EAGLE 5 SAS system to support this feature.

Database Administration Manual – Global Title Translation

The *Database Administration Manual – Global Title Translation* contains procedural information required to configure an EAGLE 5 SAS to implement these features: Global Title Translation, Enhanced Global Title Translation, Variable Length Global Title Translation, Interim Global Title Modification, ANSI-ITU-China SCCP Conversion, Intermediate GTT Load Sharing, Flexible GTT Load Sharing, and Origin-based SCCP Routing.

Database Administration Manual – IP^7 Secure Gateway

This manual contains procedural information required to configure the system to implement the SS7-IP Gateway.

Database Administration Manual – SEAS

The *Database Administration Manual – SEAS* contains the EAGLE 5 SAS 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 SAS 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

Database Administration Manual – SS7

The *Database Administration Manual – SS7* contains procedural information required to configure an EAGLE 5 SAS system to implement the SS7 protocol.

Database Administration Manual – System Management

The *Database Administration Manual – System Management* contains procedural information required to manage the EAGLE 5 SAS's database and GPLs, and to configure basic system requirements such as user names and passwords, system-wide security requirements, and terminal configurations.

Dimensioning Guide for EPAP Advanced DB Features

The *Dimensioning Guide for EPAP Advanced DB Features* is used to provide EAGLE Provisioning Application Processor (EPAP) planning and dimensioning information. This manual is used by Tekelec personnel and EAGLE 5 SAS customers to aid in the sale, planning, implementation, deployment, and upgrade of EAGLE 5 SAS systems equipped with one of the EAGLE 5 SAS EPAP Advanced Database (EADB) Features.

ELAP Administration Manual

The *ELAP Administration Manual* defines the user interface to the EAGLE LNP Application Processor (ELAP) on the Multi-Purpose Server (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.

EPAP Administration Manual

The *EPAP Administration Manual* describes how to administer the EAGLE Provisioning Application Processor (EPAP) 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.

Feature Manual – A-Port

The *Feature Manual - A-Port* provides an overview of a feature providing the capability for IS-41 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 SAS.

Feature Manual - ECAP

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.

Feature Manual – EIR

The *Feature Manual - EIR* provides instructions and information on how to install, use, and maintain the Equipment Identity Register (EIR) feature on the MPS/EPAP platform of the EAGLE 5 SAS. The feature provides network operators with the capability to prevent stolen or disallowed GSM mobile handsets from accessing the network.

Feature Manual – G-Flex C7 Relay

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 MPS/EPAP platform of the EAGLE 5 SAS.

Feature Manual – G-Port

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 MPS/EPAP platform of the EAGLE 5 SAS.

Feature Manual – INP

The *Feature Manual - INP* provides the user with information and instructions on how to implement, utilize, and maintain the INAP-based Number Portability (INP) feature on the MPS/EPAP platform of the EAGLE 5 SAS.

Feature Manual – Migration

The *Feature Manual - Migration* provides an overview of a feature providing the capability for IS-41 subscribers to migrate to a GSM network and GSM mobile subscribers to migrate to an IS-41 network. This manual gives the instructions and information on how to install, use, and maintain the IS41 GSM Migration (IGM) feature on the Multi-Purpose Server (MPS) platform of the EAGLE 5 SAS.

FTP-Based Table Retrieve Application (FTRA) User Guide

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 SAS FTP Retrieve and Replace feature.

Hardware Manual – EAGLE 5 SAS

The *Hardware Manual* - EAGLE 5 SAS contains hardware descriptions and specifications of Tekelec's signaling products. These include the EAGLE 5 SAS, Multi-Purpose Server (MPS), and the Integrated Sentinel with Extended Services Platform (ESP) subassembly.

The Hardware Manual provides an overview of each system and its subsystems, details of standard and optional hardware components in each system, and basic site engineering. Refer to this manual to obtain a basic understanding of each type of system and its related hardware, to locate detailed information about hardware components used in a particular release, and to help configure a site for use with the system hardware.

Hardware Manual – Tekelec 1000 Application Server

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).

Hardware Manual – Tekelec 1100 Application Server

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).

Installation Manual – EAGLE 5 ISS

The *Installation Manual* - EAGLE 5 SAS contains cabling requirements, schematics, and procedures for installing the EAGLE 5 SAS along with LEDs, connectors, cables, and power cords to peripherals. Refer to this manual to install components or the complete systems.

Installation Manual - Integrated Applications

The *Installation Manual - Integrated Applications* provides the installation information for integrated applications such as EPAP or earlier (Netra-based Multi-Purpose Server (MPS) platform) and Sentinel. The manual includes information about frame floors and shelves, LEDs, connectors, cables, and power cords to peripherals. Refer to this manual to install components or the complete systems.

LNP Database Synchronization (LSMS with EAGLE 5 SAS)

The *LNP Database Synchronization Manual - LSMS/EAGLE 5 ISS* describes how to keep the LNP databases at the LSMS and at the network element (the EAGLE 5 SAS 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 SAS documentation set.

LNP Feature Activation Guide

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 SAS:

- LNP services
- LNP options
- LNP subsystem application
- Automatic call gapping
- Triggerless LNP feature
- Increasing the LRN and NPANXX Quantities on the EAGLE 5 SAS
- Activating and Deactivating the LNP Short Message Service (SMS) feature.

Maintenance Manual

The *Maintenance Manual* contains procedural information required for maintaining the EAGLE 5 ISS system. The *Maintenance Manual* provides preventive and corrective maintenance procedures used to maintain the different systems.

MPS Platform Software and Maintenance Manual (EAGLE 5 SAS with Tekelec T1000 Application Server)

The *Tekelec T1000 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, A-Port, G-Port, G-Flex, IS41 GSM Migration, AINPQ, and INP).

MPS Platform Software and Maintenance Manual (EAGLE 5 SAS with Tekelec T1100 Application Server)

The EAGLE 5 SAS *STP with Tekelec T1100 Application Server* describes the platform software for the Multi-Purpose Server (MPS) based on the Tekelec 1100 Application Server (T1100 AS). This manual 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).

Previously Released Features Manual

The *Previously Released Features Manual* summarizes the features of previous EAGLE, EAGLE 5 SAS, and IP^7 Secure Gateway releases, and it identifies the release number of their introduction.

Provisioning Database Interface Manual

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.

Release Documentation

The *Release Documentation* is a release-specific compilation of the following documents:

- *Feature Notice* - Describes the features contained in the specified release; also provides the hardware baseline, describes the customer documentation set, provides information about customer training, and explains how to access the Customer Support website.
- *Master Glossary* - Contains an alphabetical listing of terms, acronyms, and abbreviations relevant to the system.
- *Release Notice* - Describes the changes made to the system during the lifecycle of a release. The final Release Notice provides a list of Generic Program Loads (GPLs), PRs resolved in a build, and all known PRs.

  NOTE: The *Release Notice* is maintained solely on Tekelec's Customer Support Website to provide you with instant access to the most up-to-date release information.

- *System Overview* - Provides high-level information on SS7, EAGLE 5 SAS system architecture, LNP, and EOAP. The document provides a basic understanding of Tekelec Signaling systems and how those systems work together in a network. The document also provides a high-level overview of each system and its subsystems.

System Manual – EOAP

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
  (outside the continental US) +1 919-460-2150

  Fax: +1 919 460 0877

  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

Adjacent Point Code—APC

AINPQ—ANSI-41 INP Query

ASM—Application Services Module

Basic Input Output System—BIOS

Called Party Address—CDPA

Calling Party Address—CGPA

CC—Country Code

DN—Directory Number or Dialed Number

DRA—Destination Routing Address

DSM—Database Service Module

E5-E1T1—EPM-based E1/T1 Multi-Channel Interface Module

E5-ENET—EPM-based Ethernet card

EDCM—Enhanced Data Communication Module

EGMS—Enhanced GSM MAP Screening

EIR—Equipment Identity Register

ELAP—Eagle LNP Application Processor

Enhanced GSM MAP Screening—EGMS

EOAM—Enhanced OAM

Equipment Identity Register—EIR

EPAP—Eagle Provisioning Application Processor

EPM—Embedded Platform Module

EROUTE—EAGLE 5 ISS Router GPL

FAK—Feature Access Key

Feature Access Key—FAK

G-Flex—GSM Flexible Numbering

G-Port—GSM Mobile Number Portability

General Purpose Service Module—GPSM

Generic Program Load—GPL

Global Title Address—GTA

Global Title Translation—GTT

GMS—GSM Map Screening

GPL—Generic Program Load

GPSM—General Purpose Service Module

GSM—Global System for Mobile Communications

GSM Flexible Numbering—G-Flex

GSM Mobile Number Portability—G-Port

GTA—Global Title Address

GTT—Global Title Translation

HC-MIM—High Capacity Multi-channel Interface Module

High Capacity Multi-channel Interface Module (HC-MIM)—Provides access to eight E1/T1 ports residing on backplane connectors A and B

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

High Speed Link—HSL

High Speed Multiplexer—HMUX

HIPR—High Speed IMT Packet Router

HMUX—High-speed Multiplexer

HSL—High Speed Link

IDP—Initial Detection Point

IGM—IS41 GSM Migration

Integrated Message Feeder—IMF

IMT—Inter-processor Message Transport

Inter-processor Message Transport—IMT

Internet Protocol Link Interface Module—IPLIM

Internet Protocol Services—IPS

INP—INAP-based Number Portability

INPQ—INP Query service

IP Services Module—IPSM

IPGWI—An ITU version of SS7IPGW

IPGWx—Generic reference to both ANSI (SS7IPGW) and ITU (IPGWI) IP^7 Application.

IPLIM—Internet Protocol Link Interface Module. Point to Point IP^7 Application.

IPLIMI—An ITU version of IPLIM

IPS—Internet Protocol Services

IPSM—IP Services Module

LIM—Link Interface Module

LFS—Link Fault Sectionalization

Link Fault Sectionalization—LFS

Link Interface Module—LIM

Link Set Name—LSN

Link Status Out of Service—LSO

Link Status Proving Emergency—LSPE

Link Status Proving Normal—LSPN

Link Status Ready—LSR

LNP—Local Number Portability

M2PA—SS7 MTP2-User Peer-to-Peer Adaptation Layer

M3UA—SS7 MTP3-User Adaptation Layer

MAP—Mobile Application Part

MCPM—Measurement Collection and Polling Module

MIM—Multi-Channel Interface Module

MNP—Mobile Number Portability

MPL—Multi Port LIM

MRN—Mated Relay Node

MSU—Message Signal Unit

MTP—Message Transfer Part

NEC—National Escape Code

NP—Number Portability

OAM—Operations, Administration, & Maintenance Application

Operation Code—OPCODE

Operation Name—OPNAME

PC—Point Code

RAM—Random Access Memory

RC—Relative Cost

RN—Routing Number

SCCP—Signaling Connection Control Part

SCCP User Adaptation Layer—SUA

SE-HSL—Synchronous E1 High Speed Link

Secondary Adjacent Point Code—SAPC

Sentinel Transport Card—STC

Service Selector—SRVSEL

Signaling Connection Control Part—SCCP

Signaling System 7/Internet Protocol Gateway—SS7IPGW

SLS—Signaling Link Selection

SMPP—Short Message Peer-to-Peer protocol

SMSC—Short Message Service Center

SRVSEL—Service Selector

SS7IPGW—Signaling System 7/Internet Protocol Gateway. Point to Multipoint IP^7 Application.

SSN—Subsystem Number

STC—Sentinel Transport Card

SUA—SCCP User Adaptation Layer

System Configuration Manager—SCM

TBGTTLS—Transaction-based GTT Loadsharing

TCAP—Transaction Capabilities Application Part

TDM—Terminals, Disk, & Maintenance card, or time division multiplex

TFR—Transfer Restricted

TLNP—Triggerless LNP

TPS—Transactions per Second

Transfer Restricted—TFR

Triggerless LNP—TLNP

TSM—Translation Services Module

UAM—Unsolicited Alarm Message

UDT—Unit Data Transfer

UDTS—Unit Data Transfer Service

UIM—Unsolicited Information Message

VSCCP—VxWorks Signaling Connection Control Part

WGTTLS—Weighted GTT Loadsharing

XUDT—Extended Unit Data Transfer

XUDTS—Extended Unit Data Transfer Service