# Tekelec EAGLE® 5 Integrated Signaling System

**Release 36.0**

**Feature Notice**

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TEKELEC

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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 and detailed feature descriptions, lists any new hardware required, 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 EAGLE 5 ISS Release 36.0 (see "How to Locate Documentation on the Customer Support Site" on page FN-73).

### New Features

The following new features are included in the EAGLE 5 ISS Release 36.0:

- 1100 TPS/DSM for ITU NP

- ANSI-41 INP Query (AINPQ)

- ANSI-41 Mobile Number Portability (A-Port™)
  IS41 GSM Migration
  MTP Messages for SCCP Applications (MTP Msgs for SCCP Apps)

- GTT Loadsharing to 32 Destinations

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- Transaction-based GTT Loadsharing

- Weighted GTT Loadsharing

### Other Changes

- G-Port Feature Access Key

- INP Feature Access Key

- G-Port Circular Route Prevention feature name changed to MNP Circular Route Prevention feature.

## Important Operational Changes

# Feature Overviews

The following sections describe the new features that are included in EAGLE 5 ISS Release 36.0.

## 1100 TPS/DSM for ITU NP

The 1100 TPS/DSM for ITU NP feature allows a DSM card to support up to 1100 transactions per second (TPS) for the EAGLE 5 ISS G-Port, A-Port, INP, IS41 GSM Migration, EIR, and ANSI-41 INP Query features.

A feature access key is required to enable the 1100 TPS/DSM for ITU NP feature.

See "1100 TPS/DSM for ITU NP" on page FN-6 for more details.

## ANSI-41 INP Query (AINPQ)

The ANSI-41 INP Query (AINPQ) feature adds support for using an ITU-N ANSI-41 NPREQ query for querying the INP database, in addition to the existing INP feature number portability query using the ITU-N and ITU-N24 INAP IDP message.

The ANSI-41 INP Query feature supports networks with a mix of ITU and ANSI protocols.

INP message relay functions operate when either the INP feature, the AINPQ feature, or both features, are turned on. Measurements, service selectors, and INP options are common to both features.

A feature access key is required to enable the AINPQ feature.

See "ANSI-41 INP Query (AINPQ)" on page FN-9 for more details.

## ANSI-41 Mobile Number Portability (A-Port)

The ANSI-41 Mobile Number Portability (A-Port) feature enables an IS41 subscriber to change to a different service provider while retaining the same Mobile Dialed Number (MDN).

A-Port uses the EPAP provisioning database to derive the portability status of a subscriber. This database maintains information related to subscriber portability and migration in the international E.164 format.

A feature access key is required to enable the A-Port feature.

See "ANSI-41 Mobile Number Portability (A-Port™)" on page FN-13 for more details.

## IS41 GSM Migration

The IS41 GSM Migration (IGM) feature is an enhancement to the existing IS-41 to GSM Migration feature, to add GSM to IS41 migration functions to the existing IS41 to GSM migration functions. This enhancement provides flexibility in decoding and encoding parameters of LOCREQ messages and responses for number migration from one mobile protocol to another.

A feature access key is required to enable the IS41 GSM Migration feature.

**MTP Msgs for SCCP Apps**

The MTP Messages for SCCP Applications (MTP Msgs for SCCP Apps) feature supports MTP-routed SCCP messages for the A-Port feature and the IS41 GSM Migration feature; LOCREQ messages and SMSREQ messages are supported. (The GSM messages are still not supported by the IS41 GSM Migration feature.)

The MTP Msgs for SCCP Apps feature can be used only when the A-Port feature, the IS41 GSM Migration feature, or the G-Flex feature is on.

A feature access key is required to enable the MTP Msgs for SCCP Apps feature.

**GTT Loadsharing to 32 Destinations**

The GTT Loadsharing to 32 Destinations feature allows each Mated Application Table (MAP) set or Mated Relay Node (MRN) set that is used for loadsharing to be associated with up to 32 destination point codes in the EAGLE 5 ISS Destination table. (This is an increase from a maximum of 8 destination point codes.)

**Per-Linkset Random SLS**

The Per-Linkset Random SLS (Signaling Link Selection) feature is an enhancement of the existing Random SLS Generation feature, to allow the user to apply Random SLS generation on selected linksets instead of system-wide to all linksets. The Per Linkset Random SLS feature provides an STP option that can help to resolve load balancing problems on specific linksets without affecting the entire routing scheme of the EAGLE 5 ISS.

Linkset provisioning is enhanced to allow configuring of specific linksets for Random SLS generation. The Per Linkset Random SLS feature can operate on both ITU SCCP Class 0 and ITU SCCP Class 1 traffic for a specific linkset.

**Transaction-based GTT Loadsharing**

The Transaction-based GTT Loadsharing feature enables GT-routed messages that are part of the same transaction to be loadshared to the same destination in a MAP group or MRN group.

The Transaction-based GTT Loadsharing feature controls loadsharing for Class 0 and Class 1 SCCP messages, based on the transaction parameter (MTP, SCCP, or TCAP). The Transaction-based GTT Loadsharing feature also controls loadsharing for unit data (UDT) and extended unit data (XUDT) messages.

A feature access key is required to enable the Transaction-based GTT Load-sharing feature.

See "Transaction-based GTT Loadsharing" on page FN-37 for more details.

**Weighted GTT Loadsharing**

The Weighted GTT Load-sharing (WGTTLS) feature is an enhancement to intermediate and final Global Title Translation load-sharing. Provisioning provides control over MAP and MRN entities so that unequal traffic loads can be defined within a loadsharing group. Provisioning also controls loadsharing groups so that if insufficient capacity is available within a loadsharing group, the group is not used.

A feature access key is required to enable the Weighted GTT Load-sharing feature.

See "Weighted GTT Loadsharing" on page FN-41 for more details.

# Overviews for Other Changes

### G-Port Feature Access Key

The G-Port feature is now a Permanently On controlled feature, with a part number and a feature access key. The feature is enabled using part number 893017201 and a feature access key. The "GPORT" entry appears in the **rtrv-ctrl-feat** command output when the feature is enabled.

The parameter for the feature bit that was used to turn the feature on has been removed from the **chg-feat** command.

See "G-Port Feature Access Key" on page FN-46 for more details.

### INP Feature Access Key

The INP feature is now a Permanently On controlled feature, with a part number and a feature access key. The feature is enabled using part number 893017901 and a feature access key. The "INP" entry appears in the **rtrv-ctrl-feat** command output when the feature is enabled.

The parameter for the feature bit that was used to turn the feature on has been removed from the **chg-feat** command.

See "INP Feature Access Key" on page FN-47 for more details.

### MNP Circular Route Prevention Feature Name

The name of the G-Port Circular Route Prevention feature has been changed to MNP Circular Route Prevention, to more accurately reflect its function. The "MNP Circ Route Prevent" entry appears in the **rtrv-ctrl-feat** command output when the feature is enabled.

See "MNP Circular Route Prevention Feature Name" on page FN-48 for more details.

# 1100 TPS/DSM for ITU NP

## Description

The 1100 TPS/DSM for ITU NP feature increases the TPS capacity of each DSM card from the current 850 TPS to 1100 TPS per card when an EPAP-based ITU feature (G-Port, G-Flex, INP, EIR, Prepaid IDP Query Relay, A-Port, IS41 GSM Migration, or AINPQ) has been turned on. Increasing the TPS of each card increases the maximum capacity of an EAGLE 5 ISS, with 25 DSM cards in a 24 + 1 configuration, from 20,400 to 26,400 TPS. (The capacity of a DSM card is rated at 1700 TPS when features requiring EPAP-based database lookup have not been enabled or turned on.)

In most systems, only 50% or less of the traffic needs an EPAP-based database lookup while the rest of the traffic requires GTT-related database lookup. The 1100 TPS/DSM for ITU NP feature assumes that at most 70% of the traffic shall require EPAP-based database lookup.

A feature access key (FAK) for part number 893018001 is required to enable this feature.

- A temporary FAK is not allowed for this feature.

- This feature is an ON/OFF feature, it can be turned on and off after it has been enabled.

- At least one EPAP-based ITU feature (G-Port, G-Flex, INP, EIR, Prepaid IDP Query Relay, A-Port, IS41 GSM Migration, or AINPQ) must be on before this feature can be enabled.

- The **ansigflex** STP option cannot be used when this feature is enabled; this feature cannot be enabled when the **ansigflex** STP option is used.

## Hardware Requirements

The 1100 TPS/DSM for ITU NP feature requires DSM cards running the VSCCP application

Refer to "Appendix B. Hardware Baseline" for the hardware baseline of this release.

## Enhanced Commands

The following commands are enhanced to support the 1100 TPS/DSM for ITU NP feature. See the *Commands Manual* of your Release 36.0 documentation set for a detailed description of all commands and their parameters.

- **enable/chg/rtrv-ctrl-feat**—Enhanced to enable, turn on, and turn off the 1100 TPS/DSM for ITU NP 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
1100 TPS/DSM for ITU NP   893018001 off     ----
```

- The **chg-ctrl-feat** command must be entered twice within 30 seconds to turn the feature on or off.

  When the status of the 1100 TPS/DSM for ITU NP feature is changed from off to on using the **chg-ctrl-feat** command, the following caution note is displayed, stating that no more than 70% EPAP-based traffic will be supported:

  ```
  CAUTION: Rated TPS for this feature supports an engineered
  GTT traffic mix of no more than 70 percent EPAP-based
  traffic. Re-enter the command within 30 seconds to confirm
  change.
  ```

  When the status of the 1100 TPS/DSM for ITU NP feature is changed from on to off using the **chg-ctrl-feat** command, the following caution note is displayed, stating that the DSM card capacity decreases to the original capacity when this feature is not on:

  ```
  CAUTION: This command decreases the total TPS of the
  SCCP system from 1100 to 850 TPS for each DSM.
  Re-enter the command within 30 seconds to confirm.
  ```

- **rept-stat-sccp**—Enhanced to display the increased SCCP capacity values in the System Total SCCP Capacity field when the 1100 TPS/DSM for ITU NP feature is on. If the feature is not on, the **rept-stat-sccp** command displays values reflecting the original capacity.

The following example displays **rept-stat-sccp** output when the 1100 TPS/DSM for ITU NP feature is enabled and on.

**rept-stat-sccp**

```
    rlghncxa03w 06-09-17 15:35:05 EST  EAGLE 36.0.0
    SCCP SUBSYSTEM REPORT IS-ANR        Active      -----
        SCCP ALARM STATUS = No Alarms

    SCCP Cards Configured= 2      Cards IS-NR= 1
    System Daily Peak SCCP Load     550    TPS 06-07-21 08:50:06
    System Overall Peak SCCP Load   550    TPS 00-00-00 00:00:00
    System Total SCCP Capacity      1100   TPS (1100   max SCCP Capacity)
    System SCCP Capacity Calc. Method (N)
    System TPS Alarm Threshold      880    TPS ( 80% System   N SCCP Capacity)

    CARD    VERSION      PST           SST        AST       MSU  CPU
                                                            USAGE USAGE
    -------------------------------------------------------------------
    1101    255-255-255  IS-NR         Active     -----      50%   23%
    1103    -----------  OOS-MT-DSBLD  Manual     -----       0%    0%
    -------------------------------------------------------------------
    SCCP Service Average MSU Capacity =  50%   Average CPU Capacity =  23%

    AVERAGE CPU USAGE PER SERVICE:
      GTT  =   50%

    TOTAL SERVICE STATISTICS:
```

```
                                   FAIL      REROUTE\      FORWARD
          SERVICE     SUCCESS    ERRORS   RATIO    WARNINGS     TO GTT      TOTAL
          GTT:           1200       600     50%           -          -          0


       Command Completed.
    ;
```

## Limitations

When the 1100 TPS/DSM for ITU NP feature is on and more than 70% of the traffic requires EPAP-based database lookup, the DSM cards provisioned in the system for SCCP might not be able to support 1100 TPS.

## Alarms

### New or Changed UAMs

No new or changed UAMs are required to support the 1100 TPS/DSM for ITU NP feature.

### New or Changed UIMs

No new or changed UIMs are required to support the 1100 TPS/DSM for ITU NP feature.

### New or Changed Hardware Verification Codes

No new or changed hardware verification codes are required to support the 1100 TPS/DSM for ITU NP feature.

### UAM Format Changes

No new or changed UAM formats are required to support the 1100 TPS/DSM for ITU NP feature.

### UIM Format Changes

No new or changed UIM formats are required to support the 1100 TPS/DSM for ITU NP feature.

## Error Messages

New or changed error messages supporting the 1100 TPS/DSM for ITU NP feature are listed in Table FN-7 on page FN-54.

# ANSI-41 INP Query (AINPQ)

**Description**

The ANSI-41 INP Query (AINPQ) feature adds support for using an ITU-N ANSI-41 NPREQ message for querying the INP database, in addition to the existing INP feature number portability query using the ITU-N and ITU-N24 INAP IDP message.

A feature access key (FAK) for part number 893017801 is required to enable the AINPQ feature.

- The GTT feature must be on before the AINPQ 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.

- If any LNP quantity feature is enabled, the INP and AINPQ features cannot be enabled. If either the INP feature or the AINPQ feature is enabled, no LNP quantity feature can be enabled.

- The AINPQ feature and the EIR feature cannot be enabled in the system at the same time.

The AINPQ feature supports a mix of ITU and ANSI protocols in querying the INP database using the ANSI-41 NPREQ query.

Service selectors, INP options, and measurements are common to the INP and AINPQ features.

INP message relay functions operate when the INP feature, the AINPQ feature, or both features are turned on. The parameter values defined for INP query processing (through the INPQ service or PC/SSN) can apply to both the INP and AINPQ feature if both features are turned on.

INP query processing can be invoked by the following mechanisms (MTP routed NPREQ is not supported):

- For GTT-routed NPREQ query, INP query processing can be invoked using the **inpq** service selector that is defined using the SCCP Service Selector commands.

- For NPREQ-routed-based PC/SSN query, INP query processing can be invoked using the EAGLE 5 ISS point code and local subsystem number (PC/SSN) defined for the INP feature.

When the AINPQ feature is turned on, the INP query processing operates as follows:

- Handling of an ITU-N Point Code ANSI-41 NPREQ query encoded in ANSI-41 TCAP, ITU SCCP, and ITU MTP protocol stack is supported.

- ITU MTP/SCCP protocol validation and ANSI TCAP protocol validation for a received ANSI-41 NPREQ query are supported.

- For a received ANSI-41 NPREQ query subject to the INP query processing, the EAGLE 5 ISS uses the digits encoded in the DGTSDIAL parameter for database lookup.

- The EAGLE 5 ISS performs number conditioning on the DGTSDIAL value in preparation for database lookup. The Called Party Prefix, National Escape Code, Service Nature of Address, Nature of Number, and Country Codes are used to condition the number as a National or International number.

- Enhanced AINPQ and INP options for the Global Option for Connect on INP Query feature can be used to format information in the response that results from the database lookup.

- The AINPQ feature and the INP feature share the INP local subsystem, including SCCP subsystem management and service selection.

- The AINPQ feature and the INP feature share the CPCTYPE (Capability Point Code Type) state.

When the INP feature is turned on, the INP query processing operates as follows:

- Handling of the ITU-N and ITU-N24 INAP IDP message is supported.

- CDPN number conditioning is performed in preparation for database lookup.

- Enhanced AINPQ and INP options for the Global Option for Connect on INP Query feature can be used to format information in the response that results from the database lookup.

The INP options in the EAGLE 5 ISS have been enhanced to support the AINPQ feature.

- A new INP option is provided to define the National Escape Code (NEC) value, up to 5 digits, for each EAGLE 5 ISS node.

- The maximum number of Called Party Prefix entries allowed in the INPOPTS table has been increased from 5 to 40.

- AINPQ supports the Global Option for Connect on INP Query Response feature that was previously implemented for INP. The destination routing address (DRA) options have been enhanced for INP and AINPQ for formatting the ROUTDGTS parameter in the INP "Connect" message or AINPQ NPREQ "Return Result" response message, as follows:

  – Support RN + [CDPNPFX] + DN in INP "Connect" or AINPQ "Return Result" response messages

  – Support Routing Number in in INP "Connect" or AINPQ "Return Result" response messages

    – Support [CDPNPFX] + CC + RN + DN in INP "Connect" or AINPQ "Return Result" response messages

    – Support RN + [CDPNPFX] + NEC + DN in INP "Connect" or AINPQ "Return Result" response messages (the National Escape Code must be provisioned)

There are no new measurements pegs for NPREQ queries. The existing INP registers are pegged for the NPREQ query, the IDP query, or both; the peg for "IDP received" is a total count of the number of the IDP and NPREQ queries received if both the AINPQ and INP features are turned on.

## Hardware Requirements

The ANSI-41 INP Query feature has the following hardware requirements:

- DSM card with at least 4G of memory running the VSCCP application

- After AINPQ is enabled, no DSM cards with less than 4G of memory can be provisioned. DSM cards installed with less than 4G of memory will be auto-inhibited if AINPQ is enabled.

Refer to "Appendix B. Hardware Baseline" for the hardware baseline of this release.

## Enhanced Commands

The following commands are enhanced to support the ANSI-41 INP Query feature. See the *Commands Manual* of your Release 36.0 documentation set for a detailed description of all commands and their parameters.

- **chg/rtrv-inpopts**—Enhanced to provision and display the enhanced **dra** parameter option values and the **nec** parameter value.

    The following example shows output with some INP or AINPQ options provisioned.

    **rtrv-inpopts**
    ```
    rlghncxa03w 06-09-17 15:35:05 EST  EAGLE 36.0.0
    INP OPTIONS
    -----------------------
    NEC        = abc1d
    DRANAIV    = 126
    DRANP      = E164
    DRA        = CCRNDN
    SPRESTYPE  = CONTINUE


    CDPNPFX            DLTPFX
    ---------------    ---


    CDPNNAI           SNAI
    ---               ----
    127               unknown
    ;
    ```

- **enable/chg/rtrv-ctrl-feat**—Enhanced to enable and turn on the AINPQ 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
ANSI-41 INP QUERY            893017801 off    ----
```

## Assumptions

The ANSI-41 INP Query feature assumes that an MSC will not initiate an NPREQ query for a call prefixed with International Escape Code (commonly defined as "00") + CC+DN, as the call is intended for terminating to an international subscriber.

## Limitations

None

## Alarms

### New or Changed UAMs

No UAMs are required to support the ANSI-41 INP Query feature.

### New or Changed UIMs

New UIMs are required to support the ANSI-41 INP Query feature. See Table FN-3 on page FN-50.

### New or Changed Hardware Verification Codes

A new hardware verification codes is required to support the ANSI-41 INP Query feature. See"Hardware Verification Code - ANSI-41 INP Query" on page FN-53

### UAM Format Changes

No new UAM formats are required to support the ANSI-41 INP Query feature.

### UIM Format Changes

No new UIM formats are required to support the ANSI-41 INP Query feature.

## Error Messages

New or changed error messages supporting the ANSI-41 INP Query feature are defined in Table FN-8 on page FN-54.

## ANSI-41 Mobile Number Portability (A-Port™)

### Description

The ANSI-41 Mobile Number Portability (A-Port) feature enables an IS41 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) RTDB provisioning database to retrieve the subscriber portability status and provision directory numbers for exported and imported IS41 subscribers. This database maintains information related to subscriber portability 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.

**Service Selector Lookup**

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

To manage number portability, A-Port uses the MNP SCCP Service Selector to process LOCREQ and SMSREQ SCCP messages. The EAGLE ISS intercepts LOCREQ messages for the RTDB database lookup. 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.

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

- GT-routed messages support UDT and non-segmented XUDT message types and perform service selector lookup after SCCP verification.

- A-Port processes MTP-routed messages if the MTP Messages for SCCP Applications (MTP Msgs for SCCP Apps) feature is turned on (see "IS41 GSM Migration" on page FN-20 for details of MTP-routed message processing).

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.

**Database Lookup and Routing**

The DN is used for database lookup.

- For LOCREQ messages, the DN is derived based on the setting of the LOCREQDN option (see the new **chg-is41opts** command).

- 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 message 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 falls through to GTT if number conditioning fails or does not find the DN in the RTDB database, or the DN is found with non-A-Port data.

- If a HomeRN is detected in the Called Party and a matching DN with RN is found in the database, the EAGLE 5 ISS generates UIM 1256, indicating detection of circular routing, and routes the message using normal routing if both the MNP Circular Route Prevention feature and the IS41 GSM Migration feature are turned on.

- 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.

Alarms and the **rept-stat-sccp** command output show MNP Service information if the A-Port feature is enabled.

**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. These new measurement registers are supported with and without the Measurements Platform feature enabled.

- 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.

Refer to "Appendix B. Hardware Baseline" for the hardware baseline of this release.

## New and Enhanced Commands

The following commands are new or enhanced to support the A-Port feature. See the *Commands Manual* of your Release 36.0 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-is41opts**—New commands to provision IS41options.

The following example shows **rtrv-is41opts** output when the A-Port feature is enabled and on.

**rtrv-is41opts**
```
tekelecstp 06-06-15 10:33:44 EST  EAGLE 36.0.0
IS41 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 IS41 subscriber will not overlap with an MSISDN assigned to a GSM subscriber (one dialed DN can either be an IS41 or a GSM subscriber). Therefore, IS41 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**

### New or Changed UAMs

New or changed UAMs supporting the A-Port feature are listed in Table FN-1 on page FN-49.

### New or Changed UIMs

New or changed UIMs supporting the A-Port feature are listed in Table FN-2 on page FN-50.

### New or Changed Hardware Verification Codes

No new or changed hardware verification codes are required to support the A-Port feature.

### UAM Format Changes

New or enhanced UAM formats supporting the A-Port feature are listed in "UAM Format Change: A-Port" on page FN-52.

### UIM Format Changes

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

**Error Messages**

New or changed error messages supporting the A-Port feature are defined in Table FN-9 on page FN-55.

## IS41 GSM Migration

**Description**

The IS41 GSM Migration (IGM) feature is an enhancement to the original IS-41 to GSM Migration feature, to add GSM to IS-41 migration functions to the existing IS-41 to GSM migration support of call termination for customers in migration from IS-41 to GSM wireless technology.  This enhancement adds flexibility in LOCREQ message decoding and encoding for number migration from one mobile protocol to another to the existing support of Loc_Req, MSRCV GSM SRI, and SRI_SM operation code processing.

The original IS-41 to GSM Migration feature functions support call termination for customers in migration from IS-41 to GSM wireless technology. The feature gives the wireless service provider a way to begin the migration of mobile subscribers from IS-41 to GSM, while allowing each subscriber to retain his or her existing phone number. The feature allows termination of calls to either an IS-41 handset or a GSM handset, based on the provisioned migration status of the subscriber.

The enhancement separates the IS41 GSM Migration feature from the G-Port feature. The IS41 GSM Migration feature can exist as a standalone feature without depending on the G-Port feature. When the IS41 GSM Migration feature is on, the MNP service selector is used instead of the GPORT service selector.

The IS41 GSM Migration feature uses the EPAP (EAGLE Provisioning Application Processor) RTDB 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 in the international E.164 format.

The IS41 GSM Migration feature supports both GT- and MTP-routed messages.

- GT-routed messages support UDT and non-segmented XUDT message types and perform service selector lookup after SCCP verification.

- A-Port processes MTP-routed messages if the MTP Messages for SCCP Applications (MTP Msgs for SCCP Apps) feature is turned on (see "IS41 GSM Migration" on page FN-20 for details of MTP-routed message processing).

The IS41 GSM Migration feature adds processing of LOCREQ and SMSREQ messages to the SRI and SRI_SM message processing provided by the original IS-41 to GSM Migration feature.

- 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.

If a data entry matching the conditioned Called Party is found and an NE (either RN or SP) is assigned to the entry, the EAGLE 5 ISS processes the SRI, SRI_SM, LOCREQ, and SMSREQ message based on the NE/PT value assigned.

If a HomeRN is detected in the Called Party and a matching DN with RN is found in the database, the EAGLE 5 ISS generates UIM 1256, indicating detection of circular routing, and routes the message using normal routing if both the MNP Circular Route Prevention feature and the IS41 GSM Migration feature are turned on.

If an undefined TCAP portion (not ITU or ANSI) is received by the IS41 GSM Migration feature, the message falls through to GTT.

### New GSM2IS41 Prefix

The EAGLE 5 ISS populates a new GSM2IS41 prefix following the same mechanism that is used for the existing IS412GSM prefix. The EAGLE 5 ISS returns a GSM2IS41 prefix in the SRI_ACK message if a received SRI message is destined for a non-migrated IS41 or GSM migrated IS41 subscriber (a data entry is found with RN and PT=0).

### The MIGRPFX Option

The MIGRPFX field in the **rtrv-gsmopts** command output is shown as MULTIPLE (for ON) or SINGLE (for OFF or disabled). If MIGRPFX = MULTPLE, the RN from the RTDB is used as the prefix in the SRI_ ACK message. If MIGRPFX=SINGLE (disabled) and the GSM2IS41 prefix is NONE, the SRI message issues UIM 1341 "SRI rcvd GSM2is41 prefix not provisioned" and the message falls through to GTT.

For systems that are upgraded to the IS41 GSM Migration feature, the upgrade process sets the MIGRPFX option to ON if the G-Port feature is turned on and the IS412GSM prefix is defined. If the G-Port feature is turned on and the IS412GSM prefix is not defined, the upgrade process sets the the MIGRPFX option to OFF. The default setting for new systems is OFF (disabled).

### Service State and Re-Route

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

Alarms and the **rept-stat-sccp** command output show MNP Service information if the the IS41 GSM Migration feature is enabled.

**Database Lookup and Routing**

The MSISDN is used for RTDB database lookup.

- The IS41 GSM Migration feature performs RTDB lookup on the conditioned number, and routes or relays the message based on the lookup result.

- The individual number database is searched first.

- If the number is not found, the number range database is searched.

- If a match is not found in the individual and range based databases, GTT is performed on the message.

- When MSISDN numbers in the RTDB database are odd, the CDPA GTI of the incoming message is 2, and the last digit of the number is 'zero', database lookup is performed once using the even number. If no match is found, database lookup is performed using the odd number (without the last digit).

- For LOCREQ messages, the DN is derived based on the setting of the LOCREQDN option (see the new **chg-is41opts** command).

- For non-LOCREQ messages, the DN is derived from the SCCP portion of the message.

- Upon successful decode and verification of the message, number conditioning is performed. The DN or SCCP CDPA digits might need to be conditioned to international number format based on the service nature of address (SNAI or TCAPSNAI or MTPLOCREQNAI). HomeRN and IEC or NEC prefixes are removed. The IS41 GSM Migration feature performs RTDB lookup on the conditioned number, and routes or relays the message based on the lookup result.

- An SMSREQ message is relayed like any other non-LOCREQ message. No changes are performed to the TCAP/MAP portion of the message. If the general TCAP/MAP verification is successful, the TCAP opcode is SMSREQ, and the IS412GSM option SMSREQBYPASS is YES (see the **-is412gsm** commands), the message is processed as an SMSREQ message. Otherwise, message relay is performed using SCCP CDPA information.

- The IS41 GSM Migration feature 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.

- The IS41 GSM Migration feature falls through to GTT if number conditioning fails or does not find the DN in the RTDB database, or the DN is found with non-A-Port data.

- If a HomeRN is detected in the Called Party and a matching DN with RN is found in the database, the EAGLE 5 ISS generates UIM 1256, indicating detection of circular routing, and routes the message using normal routing if both the MNP Circular Route Prevention feature and the IS41 GSM Migration feature are turned on.

NOTE: 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).

- If the IS-41 message is LOC_REQ and the MIN parameter has unsupported values (MIN digits < 5 or >15), a LOC_REQ Return Error response message with error code information element as 'unexpected data value' is returned.

- If the IS-41 message is SMS_Request and the CDPA digits in the RTDB are associated with a portability type of 5 (Migrated), an SMS_Request Response with SMS Access Denied Reason = 5 is returned.

- If the GSM message is SRI-SM, the CDPA digits in the RTDB are associated with "RN" Entity type, and the portability type is "not known to be ported", an SRI-SM RETURN ERROR message with Error Code "Unknown Subscriber" is returned.

**Measurements**

The following enhancements support the collection and retrieval of measurements related to 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 Access Key**

A feature access key (FAK) for part number 893017301 is required to enable the IS41 GSM Migration feature.

- The GTT feature must be on before the IS41 GSM Migration 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 IS41 GSM Migration feature cannot be enabled in the system at the same time.

**Hardware Requirements**

The IS41 GSM Migration feature has the following hardware requirements:

- DSM cards with at least 4G of memory

- The IS41 GSM Migration feature 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 IS41 GSM Migration is enabled, no DSM cards with less than 4G of memory and no TSM cards for SCCP can be provisioned.

Refer to "Appendix B. Hardware Baseline" for the hardware baseline of this release.

**Enhanced Commands**

The following commands are enhanced for the IS41 GSM Migration feature:

- **enable/chg/rtrv-ctrl-feat**—Enhanced to enable and turn on the IS41 GSM Migration 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
IS41 GSM Migration          893017301 off    ----
```

- **chg/rtrv-gsmopts**—Enhanced to add parameters to provision the IS41 to GSM migration prefix and the GSM to IS41 migration prefix. The **rtrv-gsmopts** command displays the current parameter settings.

The following example shows the **rtrv-gsmopts** output if the IS41 GSM Migration feature is turned on.

**rtrv-gsmopts**
```
    tekelecstp 06-08-08 14:53:59 EST  EAGLE 36.0.0
    GSM OPTIONS
    ----------------------
    DEFMCC = NONE
    DEFMNC = NONE
```

```
                          SRFADDR = NONE
                          MSRNDIG = RN
                          DEFMAPVR = 1
                          SRIDN = TCAP
                          IS412GSM = NONE
                          MULTCC = 2
                          MULTCC = 4
                          MULTCC = 5
                          MULTCC = 20
                          MULTCC = 119
                          MULTCC = 121
                          MULTCC = 123
                          MULTCC = 124
                          MSISDNTRUNC = 0
                          MIGRPFX = SINGLE
                          GSM2IS41 = NONE
              ;
```

- **chg/rtrv-is41opts**—New commands to provision the setttings of options for the IS41 GSM Migration feature. The **rtrv-is41opts** command displays the current parameter settings.

**rtrv-is41opts**

```
          tekelecstp 06-08-15 10:33:44 EST  EAGLE 36.0.0

          IS41 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

      ;
```

- **ent/chg/rtrv-srvsel**—Enhanced to support MNP services when the IS41 GSM Migration feature is enabled and on.

The following example displays **rtrv-srvsel** output when the IS41 GSM Migration 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
;
```

- **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 CPCs 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-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 IS41 GSM Migration feature is enabled and on.

Example 1 displays output when the G-Flex, G-Port, INP, and IS41 GSM Migration features are on. The EIR feature is not enabled, and the **ansigflex** system option is disabled:

When IS41 GSM Migration is on or both IS41 GSM Migration and G-Port are on, MNP SERVICE entries appear. If G-Port is on and IS41 GSM Migration 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 IS41 GSM Migration 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.
;
```

## Limitations

None

## Alarms

### New or Changed UAMs

No new or changed UAMs are required to support the IS41 GSM Migration feature.

### New or Changed UIMs

No new or changed UAMs are required to support the IS41 GSM Migration feature.

### New or Changed Hardware Verification Codes

No new or changed hardware verification codes are required to support the IS41 GSM Migration feature.

### UAM Format Changes

No new or changed UAM formats are required to support the IS41 GSM Migration feature.

### UIM Format Changes

No new or changed UIM formats are required to support the IS41 GSM Migration feature.

## Error Messages

New or changed error messages supporting the IS41 GSM Migration feature are listed in Table FN-9 on page FN-55.

# MTP Messages for SCCP Applications

The MTP Messages for SCCP Applications (MTP Msgs for SCCP Apps) feature allows MTP-routed ANSI-41 LOCREQ messages to be subject to the A-Port, IS41 GSM Migration, and G-flex processing. (The GSM messages are still not supported by the IS41 GSM Migration feature.)

The MTP Msgs for SCCP Apps feature can be used only when the A-Port feature or the IS41 GSM Migration feature or the G-Flex feature is on.

**NOTE:** Use of the MTP Msgs for SCCP Apps feature adversely affects the SCCP capacity, because all of the messages are counted under SCCP capacity.

**Service Selection and Routing**

All service selector options are not supported by the MTP Msgs for SCCP Apps feature. Only MNP services for the A-Port and IS41 GSM Migration features and GFLEX services for the G-Flex feature are supported by this feature.

Service re-route is not performed on MTP-routed messages.

If the MTP Msgs for SCCP Apps feature is turned on, all SCCP messages are routed to SCCP cards. SCCP cards perform SCCP decode and verification as they do for GTT today.

If the MTP-routed messages have CDPA GTI =0 and the IGM feature is turned on, a message is sent for MNP processing. If MNP service is OFFLINE, MTP routing is performed on messages.

If the MTP-routed messages have CDPA GTI not zero, service selector lookup is performed using the SCCP CDPA information.

- If the result of the lookup is for MNP service, a message shall be sent to MNP handling. MNP shall check if the TCAP portion of the message is ITU or ANSI. If the message has ITU TCAP, the message is forwarded to G-Flex processing. If the message has ANSI TCAP, A-Port general TCAP/MAP verification is performed if A-Port or IGM feature is turned ON.

- If a service selector is not defined or does not match, or if the service is OFFLINE, MTP routing is performed on the messages. Service re-route is not performed on MTP-routed messages.

- Only LOCREQ messages are supported . See the A-Port and IGM feature descriptions for LOCREQ message handling.

**G-Flex Feature Processing**

If the result of service selector lookup is for G-Flex service, G-Flex message processing is performed. This feature supports GFLEX service for MTP-routed TCAP/MAP messages. If the MTP Map Screening feature is on, MTP Map Screening is performed on post G-Flex messages and fall-through MTP-routed messages.

### SMS Address Conversion

SMS Address conversion is not affected by the MTP Msgs for SCCP Apps feature; SMS conversion handles only Registration Notification and SMS Notification messages.

### Feature Access Key

A feature access key (FAK) for part number 893017401 is required to enable the MTP Msgs for SCCP Apps feature.

- The A-Port feature or the IS41 GSM Migration feature or the G-Flex feature must be on before the MTP Msgs for SCCP Apps 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.

## Hardware Requirements

The MTP Msgs for SCCP Apps feature requires DSM cards.

## Enhanced Commands

The following commands are enhanced for the MTP Msgs for SCCP Apps feature:

- **enable/chg/rtrv-ctrl-feat**—Enhanced to enable and turn on the MTP Msgs for SCCP Apps 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
MTP Msgs for SCCP Apps    893017401 off    ----
```

## Limitations

None

## Alarms

### New or Changed UAMs

No new or changed UAMs are required to support the MTP Msgs for SCCP Apps feature.

### New or Changed UIMs

No new or changed UIMs are required to support the MTP Msgs for SCCP Apps feature.

### New or Changed Hardware Verification Codes

No new or changed hardware verification codes are required to support the MTP Msgs for SCCP Apps feature.

### UAM Format Changes

No new or changed UAM formats are required to support the MTP Msgs for SCCP Apps feature.

### UIM Format Changes

No new or changed UIM formats are required to support the MTP Msgs for SCCP Apps feature.

## Error Messages

New or changed error messages supporting the MTP Msgs for SCCP Apps feature are listed in Table FN-9 on page FN-55.

# GTT Loadsharing to 32 Destinations

## Description

The GTT Loadsharing to 32 Destinations feature increases loadsharing destinations for intermediate and final GTT from 8 to 32 destinations.

The feature allows each Mated Application Table (MAP) set or Mated Relay Node (MRN) set that is used for loadsharing to be associated with up to 32 destination point codes in the EAGLE 5 ISS Destination table.

The support of 32 destination point codes does not increase the maximum number of supported entries in the MAP table or MRN table.

## Hardware Requirements

The GTT Loadsharing to 32 Destinations feature requires DSM cards.

## New and Enhanced Commands

No commands are added or enhanced for the GTT Loadsharing to 32 Destinations feature.

## Limitations

None

## Alarms

### New or Changed UAMs

No new or changed UAMs are required to support the GTT Loadsharing to 32 Destinations feature.

### New or Changed UIMs

No new or changed UIMs are required to support the GTT Loadsharing to 32 Destinations feature.

### New or Changed Hardware Verification Codes

No new or changed hardware verification codes are required to support the GTT Loadsharing to 32 Destinations feature.

### UAM Format Changes

No new or changed UAM formats are required to support the GTT Loadsharing to 32 Destinations feature.

### UIM Format Changes

No new or changed UIM formats are required to support the GTT Loadsharing to 32 Destinations feature.

### Error Messages

No new or changed error messages are required to support the GTT Loadsharing to 32 Destinations feature.

# Per-Linkset Random SLS

## Description

The Per-Linkset Random SLS (Signaling Link Selection) feature is an enhancement of the existing Random SLS Generation feature, to allow the user to apply Random SLS generation on selected linksets instead of system-wide to all linksets. The Per-Linkset Random SLS feature provides an STP option that can help to resolve load balancing problems on specific linksets without affecting the entire routing scheme of the EAGLE 5 ISS.

The EAGLE 5 ISS uses the Random SLS option to decide if it has to generate a new SLS value. This randomly generated SLS value is used to select an outgoing linkset and a link to achieve load balancing. Linkset provisioning is enhanced to allow configuring of specific linksets for Random SLS generation.

To use the feature in an upgraded system that has the Random SLS option set to CLASS0 or ALL, the operator must provision the individual linksets and per-linkset options appropriately before changing the STP option to function per linkset.

The Per-Linkset Random SLS feature can operate on both ITU SCCP Class 0 and ITU SCCP Class 1 traffic. The Per-Linkset Random SLS feature allows each linkset to inherit all the options related to SCCP Class 0 and Class 1 traffic that are currently available for the Random SLS Generation feature.

## Hardware Requirements

None

## Enhanced Commands

The following commands are enhanced for the Per-Linkset Random SLS feature:

- **chg/rtrv-stpopts**—Enhanced to add a value to the **randsls** option to indicate whether Random SLS generation is to be applied system-wide or per linkset. The **rtrv-stpopts** command displays the current setting of the **randsls** option.

- **ent/chg/rtrv-ls**—Enhanced to allow each linkset to be configured independently to allow or not allow Random SLS generation. The **rtrv-ls** command is enhanced to display linkset entries that are configured for Random SLS generation.

The following examples display **rtrv-ls** output when the Per-Linkset Random SLS option is enabled.

Example 1 retrieves the linksets that have the **randsls** parameter set to **all**:

**rtrv-ls:randsls=all**

```
    tekelecstp 06-07-05 15:11:49 EST   EAGLE 36.0.0
                                 L3T SLT              GWS GWS GWS
```

```
    LSN           APCI   (SS7) SCRN SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
    s1            1-001-2      none 1   2   no  A   0    off off off ---   off

    Link set table is (114 of 1024) 12% full
```

Example 2 retrieves detailed linkset configuration for linkset **lsi111**. The **randsls** parameter is not displayed for ANSI linksets.

**rtrv-ls:lsn=lsi111**

```
    tekelecstp 06-07-26 12:49:06 EST  EAGLE 36.0.0

                                    L3T SLT         GWS GWS GWS
    LSN           APCI   (SS7) SCRN SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
    lsi111        1-001-1      none 1   2   no  A   0    off off off ---   off

            CLLI        TFATCABMLQ MTPRSE ASL8 SLSRSB ITUTFR RANDSLS
            ----------- 1          ---    ---  1      off    all


            IPGWAPC MATELSN    IPTPS LSUSEALM SLKUSEALM GTTMODE
            no      ---------- ----  ---      ---       CdPA

                               L2T         L1              PCR  PCR
            LOC  LINK SLC TYPE SET BPS      MODE TSET ECM  N1   N2

                               LP          ATM
            LOC  LINK SLC TYPE SET BPS      TSEL      VCI  VPI  LL

                               LP          ATM             E1ATM
            LOC  LINK SLC TYPE SET BPS      TSEL      VCI  VPI  CRC4 SI SN

            LOC  PORT SLC TYPE IPLIML2

            LOC  PORT SLC TYPE

                               L2T              PCR  PCR  E1   E1
            LOC  LINK SLC TYPE SET BPS      ECM  N1   N2   LOC  PORT TS

                               L2T              PCR  PCR  T1   T1
            LOC  LINK SLC TYPE SET BPS      ECM  N1   N2   LOC  PORT TS


    Link set table is (5 of 1024) 1% full.

    ;
```

## Limitations

Different Per-Linkset Random SLS configurations on two linksets that are part of a combined linkset for the routes defined for a destination node might result in undesired SLS distribution. The EAGLE 5 ISS does not prompt or reject the linkset provisioning command if provisioning will result in an undesired SLS distribution.

**Alarms**

### New or Changed UAMs

No new or changed UAMs are required to support the Per-Linkset Random SLS feature.

### New or Changed UIMs

No new or changed UAMs are required to support the Per-Linkset Random SLS feature.

### New or Changed Hardware Verification Codes

No new or changed hardware verification codes are required to support the Per-Linkset Random SLS feature.

### UAM Format Changes

No new or changed UAM formats are required to support the Per-Linkset Random SLS feature.

### UIM Format Changes

No new or changed UIM formats are required to support the Per-Linkset Random SLS feature.

**Error Messages**

New or changed error messages supporting the Per-Linkset Random SLS feature are listed in Table FN-10 on page FN-56.

# Transaction-based GTT Loadsharing

## Description

The Transaction-based GTT Loadsharing feature (TBGTTLS) is an enhancement to intermediate and final Global Title Translation load-sharing. The Transaction-based GTT Loadsharing feature enables GT-routed messages that are part of the same transaction to be loadshared to the same destination in a MAP group or MRN group.

The Transaction-based GTT Loadsharing feature uses the transaction parameter to control loadsharing for Class 0 and Class 1 SCCP messages. The Transaction-based GTT Loadsharing feature also controls loadsharing for unit data (UDT) and extended unit data (XUDT) messages.

EAGLE 5 ISS generates a unique key for each MSU when transaction-based-GTT loadsharing is performed. This key, called the MSUKey, is a unique 4-byte number. The value of the MSUKey depends on the selected transaction parameter. The transaction-based GTT loadsharing algorithm ensures that message signal units (MSUs) that have the same MSUKey value are routed to the same destination within the Entity Set.

- For UDT messages, the key is based on MTP, SCCP or TCAP transaction parameters

- For XUDT messages, the key is based on MTP parameters or SCCP parameters

- For TCAP, the TCAP ID is the MSUKey value.

- For SCCP in XUDT/XUDTS and UDT/UDTS messages, the last 4 bytes of the GTA field of CdPA in the inbound MSU are the MSUKey.

- For MTP in XUDT/XUDTS and UDT/UDTS messages, the last 3 bytes of incoming OPC and 1 byte of SLS are combined to create a unique MSUKey. This structure applies to both ANSI and ITU point codes. This is the default parameter for performing TBGTTLS.

The EAGLE 5 ISS provides multiple forms of Intermediate and Final GTT. loadsharing. These loadsharing modes are determined by the relative cost of each entity in the Entity Set. Of the possible configurations (Solitary, Dominant, Load-Shared, and Combined Load-Shared/Dominant), TBGTTLS affects only entities that work in the Load-Shared and Combined Load-Shared/Dominant loadsharing modes.

- In Load-Shared mode, the entire Entity Set is a part of one RC group and MSUs are load-shared based on the transaction parameter within the entities in the Entity Set. If none of the entities in the Entity Set are available for routing,  the message is dropped and a UDTS/XUDTS message is generated if  "return on error" is set in the SCCP message. A UIM is generated to notify the user that the MSU has been dropped.

- In Combined Load-Shared/Dominant mode, TBGTTLS is initially applied to the RC group, where the PC/PC+SSN belongs that is obtained as a result of GTT.

    – If none of the entities are available for routing within that particular RC group, the next higher cost RC group shall be chosen and TBGTTLS is applied to the new RC group. This process is repeated until there is no available entity in the Entity Set for routing.

    – If none of the entities are available for routing, the message shall be dropped and a UDTS/XUDTS message is generated if "return on error" is set in the SCCP message. A UIM is generated to notify the user that the MSU has been dropped.

A feature access key (FAK) for part number 893017101 is required to enable the Transaction-based GTT Loadsharing feature.

- The GTT feature must be on before TBGTTLS can be enabled.

- After the feature is enabled and turned on, it cannot be turned off.

- No temporary FAK is allowed for the feature.

**Hardware Requirements**

The Transaction-based GTT Loadsharing feature has the following hardware requirements:

- DSM cards

- TSM cards that run the SCCP application cannot be provisioned if the feature is enabled. The feature cannot be enabled if TSM cards that run the SCCP application are configured in the system.

Refer to "Appendix B. Hardware Baseline" for the hardware baseline of this release.

**Enhanced Commands**

The following commands are enhanced for the Transaction-based GTT Loadsharing feature.

- **enable/chg/rtrv-ctrl-feat**—Enhanced to enable and turn on the Transaction-based GTT Loadsharing 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
Transaction Based GTT LS  893017101  off    ----
```

- **chg/rtrv-sccpopts**—Enhanced to allow transaction-based loadsharing to be enabled or disabled independently for SCCP Class 0 and Class 1 UDT/UDTS/XUDT/XUDTS messages. Parameter values for the

Transaction-based GTT Loadsharing functions can be entered and displayed only when the feature is enabled. The **rtrv-sccpopts** command is enhanced to display Transaction-based GTT Loadsharing parameters.

The following example displays **rtrv-sccpopts** output when the Transaction-based GTT Loadsharing feature is enabled.

**rtrv-sccpopts**
```
tekelecstp 07-06-11 15:18:41 EST  EAGLE 36.0.0

    SCCP OPTIONS
    ---------------------------
    class1se1               on
    tgtt0              UDT,XUDT
    tgtt1                   UDT
    tgttudtkey              MTP
    tgttxudtkey            SCCP

;
```

## Limitations

The Transaction-based GTT Loadsharing feature has the following limitations:

- If the Transaction-based Loadsharing and Weighted GTT Loadsharing features are both enabled, then transaction-based loadsharing has higher priority. This guarantees that messages of a single transaction are loadshared to the same entity within the MAP group or MRN group.

- For transaction-based routing, loadsharing can be guaranteed only when incoming messages are well distributed over MTP/SCCP/TCAP parameters.When the incoming traffic is well distributed using the MTP/SCCP/TCAP parameters, then EAGLE 5 ISS will distribute traffic (at least 1,000 messages) in accordance with load sharing applicable to the MAPSET/MRNSET with an allowed deviation of +/-5%". If a new entry is added or an existing entry is deleted from an RC group within a Entity Set while MSUs are getting routed to one of the entities in that particular RC group, the EAGLE 5 ISS might not be able to maintain the load share distribution and allowed deviation for the loadshared traffic.

- When the Transaction-based GTT Loadsharing feature and the Weighted GTT Loadsharing feature are both on, the following scenario can occur:

  - An RC group (for example, RC1) becomes prohibited and all of its traffic is rerouted to an alternate RC group (for example, RC2).

  - A node comes up in RC1 (which was the initial destination for an MSU routed base on TBGTTLS), but the weight percentage of RC1 is still below the in-service weight threshold.

  RC1 is still considered prohibited and traffic is not sent to the node in RC1.

- If the number of available entities within the RC group differs between successive MSU transmissions, all the MSUs that are getting routed to

alternate destination (because the primary destination was not available) get rerouted, even if the entity that has become unavailable is not the destination entity for those MSUs.

- When the Primary Destination is inhibited and the traffic is failed over, the node state might not be maintained if other nodes also fail.

- When an entity is added to a group or deleted from a group, so that the number of entities in the group changes, the assignments within the group could all change.

**Alarms**

### New or Changed UAMs

No new or changed UAMs are required to support the Transaction-based GTT Loadsharing feature.

### New or Changed UIMs

No new or changed UIMs are required to support the Transaction-based GTT Loadsharing feature.

### New or Changed Hardware Verification Codes

No new or changed hardware verification codes are required to support the Transaction-based GTT Loadsharing feature.

### UAM Format Changes

No new or changed UAM formats are required to support the Transaction-based GTT Loadsharing feature.

### UIM Format Changes

No new or changed UIM formats are required to support the Transaction-based GTT Loadsharing feature.

**Error Messages**

New error messages supporting the Transaction-based GTT Loadsharing feature are listed in Table FN-11 on page FN-57.

## Weighted GTT Loadsharing

**Description**

The Weighted GTT Loadsharing (WGTTLS) feature is an enhancement to intermediate and final Global Title Translation loadsharing. Provisioning provides control over MAP and MRN entities so that unequal route costs can be defined within a loadsharing group. Provisioning also controls loadsharing groups so that if insufficient capacity is available within a loadsharing group, the group is not used.

A feature access key (FAK) for part number 893017001 is required to enable the Weighted GTT Loadsharing feature.

- The GTT feature must be on before the WGTTLS feature can be enabled.

- After the feature is enabled, it can be turned on and turned off.

- No temporary FAK is allowed for the feature.

The Weighted GTT Loadsharing feature controls loadsharing through the MAP and MRN entities within a MAP group or MRN group. MAP entities distribute MTP-routed GTT traffic to the final destination. MRN entities relay MTP-routed GTT traffic to other nodes for further GTT processing.

The Weighted GTT Loadsharing feature provides the following two methods to control the distribution of GTT traffic through MAP or MRN groups:

- Individual weighting for each RC group entity
  Individual weighting assigns different load capacities, in the range of 1 to 99, to the entities of an RC group. Each entity receives a percentage of the network traffic proportionate with its weight relative to the total weight of the RC group.

- In-service threshold of each RC group
  The in-service threshold is the minimum percentage of the total of the provisioned weights of an RC group that must be available for the RC group to receive network traffic. An in-service threshold of 1% means that the group will be used if any member is available. The entire RC group is considered unavailable for network traffic if the percentage of the available weights is less than the in-service threshold. The RC group is considered available if the percentage of the available weights is greater than or equal to the in-service threshold. If an RC group is available, network traffic can be sent to any available entity in the RC group.

WGTTLS adds 2 new modes for loadsharing:

- Weighted Load-Share

- Weighted Combined Load-Share.

WGTTLS can be turned on and off after it is enabled. The feature operates as follows:

- If weights are not assigned to a group, the original mode (Solitary, Dominant, Load-Shared, or Combined Load-Shared/Dominant) is used.

- If WGTTLS is enabled and turned on, and weights are assigned to entities within an MRN group or a MAP group in Load-Shared mode, Weighted Load-Share mode is used.

- If WGTTLS is enabled and turned on, and weights are assigned to entities within an MRN group or a MAP group in Combined Load-Shared/Dominant mode, Weighted Combined Load-Share mode is used

### Hardware Requirements

The Weighted GTT Loadsharing feature has the following hardware requirement:

- DSM cards

- TSM cards that run the SCCP application cannot be provisioned if the feature is enabled. The feature cannot be enabled if TSM cards that run the SCCP application are configured in the system.

Refer to "Appendix B. Hardware Baseline" for the hardware baseline of this release.

### Enhanced Commands

The following commands are enhanced for the Weighted GTT Loadsharing feature.

- **enable/chg/rtrv-ctrl-feat**—Enhanced to enable and turn on the Weighted GTT Loadsharing 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
  Weighted GTT Load Sharing 893017001 off      ----
  ```

- **ent/chg/rtrv-map**—Enhanced to allow provisioning and display of weight and threshold values. A new **force** parameter is added to the **chg-map** command to allow changing the relative cost when a subsytem number, weight, or threshold is also specified. Changing these parameters at the same time could result in a change of the mode of loadsharing.

The following examples show **rtrv-map** output when the Weighted GTT Loadsharing feature is enabled.

Example 1 shows **rtrv-map** output when the Weighted GTT Loadsharing feature is enabled and the Flexible GTT Loadsharing feature is not enabled.

**rtrv-map**

```
    tekelecstp 06-07-27 11:50:22 EST  EAGLE 36.0.0
       PCA              MATE PCA     SSN RC MUL SRM MRC GRP NAME SSO WT %WT THR

       003-003-003                   10 10 SHR NO  NO  -------- ON  20  50  50
                        003-003-005  20 10 SHR YES YES -------- OFF 20  50  50

       003-003-003                   10 10 DOM NO  NO  -------- ON  --  --  --
                        003-003-006  20 20 DOM NO  NO  -------- OFF --  --  --
                        003-003-005  30 30 DOM NO  NO  -------- OFF --  --  --

       003-003-003                   10 10 COM NO  NO  -------- ON  10  50  50
                        003-003-004  20 10 COM NO  NO  -------- ON  10  50  50
                        003-003-005  20 40 COM YES YES -------- OFF 15  20 100
                        003-003-006  30 50 COM YES YES -------- OFF 20  33  60
                        003-003-007  30 50 COM YES YES -------- OFF 40  66  60

       003-003-003                   10 10 SOL --- --- -------- ON  --  --  --

       003-003-003                   10 10 SHR NO  NO  -------- ON  10  50  50
                        003-003-004  20 10 SHR NO  NO  -------- ON  10  50  50
```

Example 2 shows **rtrv-map** output when the Weighted GTT Loadsharing feature and the Flexible GTT Loadsharing feature for final GTT loadsharing are both enabled.

**rtrv-map**

```
    tekelecstp 06-07-27 11:50:22 EST  EAGLE 36.0.0
       PCA              MATE PCA     SSN RC MUL SRM MRC GRP NAME SSO WT %WT THR

       MAPSET ID=1
       003-003-003                   10 10 SHR NO  NO  -------- ON  20  50  50
                        003-003-005  20 10 SHR YES YES -------- OFF 20  50  50

       MAPSET ID=2
       003-003-003                   10 10 DOM NO  NO  -------- ON  --  --  --
                        003-003-006  20 20 DOM NO  NO  -------- OFF --  --  --
                        003-003-005  30 30 DOM NO  NO  -------- OFF --  --  --

       MAPSET ID=3
       003-003-003                   10 10 COM NO  NO  -------- ON  10  50  50
                        003-003-004  20 10 COM NO  NO  -------- ON  10  50  50
                        003-003-005  20 40 COM YES YES -------- OFF 15  20 100
                        003-003-006  30 50 COM YES YES -------- OFF 20  33  60
                        003-003-007  30 50 COM YES YES -------- OFF 40  66  60

       MAPSET ID=4
       003-003-003                   10 10 SOL --- --- -------- ON  --  --  --

       MAPSET ID=5
       003-003-003                   10 10 SHR NO  NO  -------- ON  10  50  50
                        003-003-004  20 10 SHR NO  NO  -------- ON  10  50  50
```

- **ent/chg/rtrv-mrn**—Enhanced to allow provisioning and display of weight and threshold values.

The following examples show **rtrv-mrn** output when the Weighted GTT Loadsharing feature is enabled.

Example 1 shows **rtrv-mrn** output when the Weighted GTT Loadsharing feature is enabled and the Flexible GTT Loadsharing feature is not enabled.

**rtrv-mrn**

```
tekelecstp 06-07-27 11:50:22 EST  EAGLE 36.0.0
    PC              RC WT %WT THR
    060-040-008   10 20  12  50
    060-040-001   10 20  12  50
    060-040-002   10 20  12  50
    060-040-003   10 20  12  50
    060-040-004   10 20  12  50
    060-040-005   10 20  12  50
    060-040-006   10 20  12  50
    060-040-007   10 20  12  50
```

The following example shows **rtrv-mrn** output when the Weighted GTT Loadsharing feature and the Flexible GTT Loadsharing feature are both enabled.

**rtrv-mrn**

```
tekelecstp 06-07-27 11:50:22 EST  EAGLE 36.0.0
MRNSET  PC              RC WT %WT THR
DFLT    001-001-001   10 --  --  --
        001-001-002   20 --  --  --
        001-001-003   30 --  --  --

MRNSET  PC              RC WT %WT THR
 110    001-001-001   10 --  --  --
        001-001-005   20 --  --  --
        001-001-006   30 --  --  --
        001-001-003   40 --  --  --
        001-001-008   50 --  --  --

MRNSET  PC              RC WT %WT THR
 111    001-001-001   30 20  13  80
        001-001-005   30 20  13  80
        001-001-006   30 40  27  80
        001-001-003   30 60  40  80
        001-001-008   30 10   7  80

MRNSET  PC              RC WT %WT THR
 112    001-003-001   10 10  50  70
        001-003-002   10 10  50  70
        001-003-003   30 15  50  25
        001-003-004   30 15  50  25
        001-003-006   60 20  33 100
        001-003-007   60 40  66 100
        001-003-008   80 10 100   1
```

## Limitations

The Weighted GTT Loadsharing feature has the following limitations:

- Outbound traffic distribution is affected by incoming traffic distribution. If the OPC, SLS, and incoming Link ID do not span a diverse range, then weighted distribution may not be able to be maintained. Maintaining the same DPC for the transaction is given priority. This affects SCCP Class 1 Sequenced traffic only.  It does not affect Class 0, or Class 1 with

> **sccpopts:class1seq=off**, which are balanced regardless of OPC, SLS, and incoming Link ID.

- When weights are assigned or changed in an MRN or MAP group that is handling transaction-based traffic, the destination assignment of some transactions will change. This may cause some MSUs of the transaction to be directed to one destination and some to another destination.

- If all RC groups in a MAP or MRN Group are Threshold-Prohibited, traffic loss will occur, even though some entities within the group are available. The decision to avoid congestion takes precedence over the routing all traffic.

## Alarms

### New or Changed UAMs

No new or changed UAMs are required to support the Weighted GTT Loadsharing feature.

### New or Changed UIMs

A new UIM supporting the Weighted GTT Loadsharing feature is listed in Table FN-4 on page FN-51.

### New or Changed Hardware Verification Codes

No new or changed hardware verification codes are required to support the Weighted GTT Loadsharing feature.

### UAM Format Changes

No new or changed UAM formats are required to support the Weighted GTT Loadsharing feature.

### UIM Format Changes

No new or changed UIM formats are required to support the Weighted GTT Loadsharing feature.

## Error Messages

New or changed error messages supporting the Weighted GTT Loadsharing feature are listed in Table FN-12 on page FN-57.

## Other Changes

### G-Port Feature Access Key

The G-Port feature is now a Permanently On controlled feature.

A feature access key for part number 893018201 is required to enable the feature. The feature bit that was used to turn the feature on has been removed.

When systems that are already running G-Port are upgraded to EAGLE 5 ISS release 36.0, the feature bit is converted to the enabled and turned on controlled feature during upgrade.

- The GTT feature must be on before the G-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 G-Port feature cannot be enabled in the system at the same time.

### Enhanced Commands

The following commands are changed.

- **enable/chg/rtrv-ctrl-feat**—Enhanced to enable and turn on the G-Port controlled feature. The following entry in the **rtrv-ctrl-feat** command displays the status of the feature after it is enabled and turned on.

```
Feature Name                Partnum   Status Quantity
GPort                       893017201 on     ----
```

- **chg/rtrv-feat**—Enhanced to remove the **:gport=on** parameter from the **chg-feat** command and remove the GPORT field from the **rtrv-feat** output.

The following example show **rtrv-feat** output.

**rtrv-feat**

```
    tekelecstp 06-09-22 10:16:27 EST  EAGLE 36.0.0
    EAGLE FEATURE LIST

    GTT      = off   GWS       = off   NRT      = off
    X25G     = off   LAN       = off   CRMD     = off
    SEAS     = off   LFS       = off   MTPRS    = off
    FAN      = off   DSTN5000  = off   WNP      = off
    CNCF     = off   TLNP      = off   SCCPCNV  = off
    TCAPCNV  = off   IPISUP    = off   DYNRTK   = off
    X252000  = off   PLNP      = off   NCR      = off
    ITUMTPRS = off   SLSOCB    = off   EGTT     = off
    VGTT     = off   MGTT      = off   MPC      = off
    ITUDUPPC = off   GFLEX     = off   MEASPLAT = off
    TSCSYNC  = off   E5IS      = off
;
```

**INP Feature Access Key**

The INP feature is now a Permanently On controlled feature.

A feature access key (FAK) for part number 893017901 is required to enable the feature.

- The GTT feature must be on before the G-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.

- The INP feature and the AINPQ feature cannot be enabled in the system at the same time with the LNP feature.

When systems that are already running INP are upgraded to EAGLE 5 ISS release 36.0, the feature bit is converted to the enabled and turned on controlled feature during upgrade.

**Enhanced Commands**

The following commands are enhanced for INP feature access key support.

- **enable/chg/rtrv-ctrl-feat**—Enhanced to enable and turn on the INP feature. The **rtrv-ctrl-feat** command is enhanced to display the status of the feature after it is enabled. The following entry in the **rtrv-ctrl-feat** command displays the status of the feature after it is enabled and turned on.

  ```
  Feature Name              Partnum   Status Quantity
  INP                       893017901 on     ----
  ```

- **chg/rtrv-feat**—The feature bit that was used to turn the feature on has been removed. The **inp=on** parameter has been removed from the **chg-feat** command parameters, and the INP entry has been removed from the **rtrv-feat** command output.

The following example show **rtrv-feat** output.

**rtrv-feat**

```
    tekelecstp 06-09-22 10:16:27 EST  EAGLE 36.0.0
    EAGLE FEATURE LIST

    GTT      = off    GWS      = off    NRT      = off
    X25G     = off    LAN      = off    CRMD     = off
    SEAS     = off    LFS      = off    MTPRS    = off
    FAN      = off    DSTN5000 = off    WNP      = off
    CNCF     = off    TLNP     = off    SCCPCNV  = off
    TCAPCNV  = off    IPISUP   = off    DYNRTK   = off
    X252000  = off    PLNP     = off    NCR      = off
    ITUMTPRS = off    SLSOCB   = off    EGTT     = off
    VGTT     = off    MGTT     = off    MPC      = off
    ITUDUPPC = off    GFLEX    = off    MEASPLAT = off
    TSCSYNC  = off    E5IS     = off
;
```

### MNP Circular Route Prevention Feature Name

The name of the G-Port Circular Route Prevention feature has been changed to MNP Circular Route Prevention, to more accurately reflect its function.

The G-Port feature, the A-Port feature, or the IS41 GSM Migration feature must be turned on  before the MNP Circular Route Prevention feature can be turned on.

- **rtrv-ctrl-feat**—The **rtrv-ctrl-feat** command displays the status of the MNP Circular Route Prevention feature after it is enabled. The following entry in the **rtrv-ctrl-feat** command displays the status of the feature after it is enabled and turned on.

```
Feature Name            Partnum   Status Quantity
MNP Circ Route Prevent  893007001 on     ----
```

# Alarms

**New or Changed UAMs**

UAMs supporting the A-Port feature are listed in Table FN-1.

**Table FN-1.**  New or Changed UAMs - A-Port

| UAM | 526 | Format | Output Group |
|---|---|---|---|
| Action | Added the MNP Service format | | |
| Old data | Service is available | | |
| New data | Service is available | GFLEX GPORT MNP | Application Subsystem |
| UAM | 527 | Format | Output Group |
| Action | Added the MNP Service format | | |
| Old data | Service abnormal | | |
| New data | Service abnormal | GFLEX GPORT MNP | Application Subsystem |
| UAM | 528 | Format | Output Group |
| Action | Added the MNP Service format | | |
| Old data | Service is not available | | |
| New data | Service is not available | GFLEX GPORT MNP | Application Subsystem |
| UAM | 529 | Format | Output Group |
| Action | Added the MNP Service format | | |
| Old data | Service is disabled | | |
| New data | Service is disabled | GFLEX GPORT MNP | Application Subsystem |
| UAM | 530 | Format | Output Group |
| Action | Added the MNP Service format | | |
| Old data | Service is removed | | |
| New data | Service is removed | GFLEX GPORT MNP | Application Subsystem |

**New or Changed UIMs**

New or changed Unsolicited Information Messages (UIMs) necessary to support the EAGLE 5 ISS features are defined in the following tables.

The UIM supporting the A-Port feature is listed in Table FN-2 on page FN-50. This UIM is generated when the MRN or MAP group has no RC groups are available, and at least 1 RC group is Threshold Prohibited.

**Table FN-2.**    New or Changed UIMs - A-Port

| UIM | 1341 | Format | Output Group |
|---|---|---|---|
| Action | Added for A-Port | | |
| Old data | | | |
| New data | SRI rcvd - GSM2IS41 not provisioned | I43 | GTT |

The UIMs supporting the ANSI-41 INP Query feature are listed in Table FN-3 on page FN-50.

**Table FN-3.**    New or Changed UIMs - ANSI-41 INP Query

| UIM | 1342 | Format | Output Group |
|---|---|---|---|
| Action | Added for ANSI-41 INP Query | | |
| Old data | | | |
| New data | ANSI IS-41 INP Qry rejected: AINPQ is OFF | I13 | Application Subsystem |
| UIM | 1343 | Format | Output Group |
| Action | Added for ANSI-41 INP Query | | |
| Old data | | | |
| New data | INAP INP Qry rejected: INPQ is OFF | I13 | Application Subsystem |
| UIM | 1346 | Format | Output Group |
| Action | Added for ANSI-41 INP Query | | |
| Old data | | | |
| New data | IS-41 Missing Mandatory Parameters | I13 | Application Subsystem |
| UIM | 1347 | Format | Output Group |
| Action | Added for ANSI-41 INP Query | | |
| Old data | | | |

**Table FN-3.**    New or Changed UIMs - ANSI-41 INP Query (Cont'd)

| New data | IS-41 Digits - Bad Encoding Scheme | I13 | Application Subsystem |
|---|---|---|---|
| UIM | 1348 | Format | Output Group |
| Action | Added for ANSI-41 INP Query | | |
| Old data | | | |
| New data | IS-41 Number of dgts exceeds the maximum | I13 | Application Subsystem |

The UIM supporting the Weighted GTT Loadsharing feature is listed in Table FN-4 on page FN-51. This UIM is generated when the MRN group or MAP group has no RC groups are available, and at least 1 RC group is Threshold-Prohibited.

**Table FN-4.**    New or Changed UIMs - Weighted GTT Loadsharing

| UIM | 1344 | Format | Output Group |
|---|---|---|---|
| Action | Added for Weighted GTT Loadsharing | | |
| Old data | | | |
| New data | MSU discarded: In-Service Thresholding | I44 | GTT |

The following UIM was changed to correct the Output Group

**Table FN-5.**    Changed UIM 1340

| UIM | 1340 | Format | Output Group |
|---|---|---|---|
| Action | Updated to correct the Output Group | | |
| Old data | REPT COND: TRBL resynch required | I1 | PRGU |
| New data | REPT COND: TRBL resynch required | I1 | SYSM |

## UAM Format Changes

The following UAM format changes support EAGLE 5 ISS Release 36.0.

**UAM Format Change: A-Port**

The MNP Service UAM format for the A-Port feature is as follows:

```
         1         2         3         4         5         6         7         8
12345678901234567890123456789012345678901234567890123456789012345678901234567890
    xxxx.yyyy zz MNP SERVICE          'text'
```

Example UAM output is as follows:

```
         1         2         3         4         5         6         7         8
12345678901234567890123456789012345678901234567890123456789012345678901234567890
*C  0056.0528 *C MNP SERVICE          Service is not available
```

## Hardware Verification Codes

The new hardware verification code supporting the ANSI-41 INP Query (AINPQ) feature is defined in Table FN-6.

**Table FN-6.**   Hardware Verification Code - ANSI-41 INP Query

| H/W Code | 60 | Associated UAM | Card or Application |
|----------|-----|----------------|---------------------|
| Action | Added for ANSI-41 INP Query | | |
| Old data | | | |
| New data | VSCCP card equipped w/ < 4GB when the ANSI-41 INP Query feature key is ON | 422 | VSCCP |

# Error Codes

Incorrect use of the enhanced commands for the 1100 TPS/DSM for ITU NP feature will generate the error message shown in Table FN-7.

**Table FN-7.** Error Messages - 1100 TPS/DSM for ITU NP

| Response ID Code | Error Message | New? | Used by Command: |
|---|---|---|---|
| E4950 | At least one ITU NP feature must be ON | Y | **enable-ctrl-feat** |

Incorrect use of the enhanced commands for the ANSI-41 INP Query (AINPQ) feature will generate the error message shown in Table FN-8.

**Table FN-8.** Error Messages - AINPQ

| Response ID Code | Error Message | New? | Used by Command: |
|---|---|---|---|
| E3355 | INP/AINPQ cannot enable if MTPR is turned ON | Y | **enable-ctrl-feat** |
| E3367 | DRA=RNNECDN and NEC=NONE combination not allowed | Y | **chg-inpopts** |
| E3524 | INP/AINPQ feature must be ON | N | **chg-inpopts** **rtrv-inpopts** |
| E4005 | Either INP/AINPQ or GPORT Feature must be on | N | **chg-measopts** **rept-ftp-meas** **rept-meas** |
| E4183 | INP/AINPQ or EIR feature must be ON | Y | **chg-map** **ent-map** **enable-ctrl-feat** |
| E4177 | EIR and INP/AINPQ are mutually exclusive | Y | **enable-ctrl-feat** |
| E41188 | LNP or EIR must be enabled or INP/AINPQ must be ON | N | **rtrv-ss-appl** |

Incorrect use of the enhanced commands for the A-Port feature. the G-Port feature, the IS41 GSM Migration feature, or the MTP Msgs for SCCP Apps feature will generate the error messages shown in Table FN-9.

**Table FN-9.** Error Messages - A-Port, G-Port, IS41 GSM Migration, MTP Msgs for SCCP Apps (MTPR)

| Response ID Code | Error Message | New? | Used by Command: |
|---|---|---|---|
| E2084 | A-Port or IGM must be turned on | Y | **ent-srvsel** |
| E2086 | GTT must be turned on for A-Port | Y | **enable-ctrl-feat** |
| E2087 | GTT must be turned on for G-Port | Y | **enable-ctrl-feat** |
| E2088 | GTT must be turned on for IGM | Y | **enable-ctrl-feat** |
| E2089 | A-Port cannot be enabled if ASM/TSM is present | Y | **enable-ctrl-feat** |
| E2090 | IGM cannot be enabled if ASM/TSM is present | Y | **enable-ctrl-feat** |
| E2091 | LNP cannot be enabled if A-Port is turned on | Y | **enable-ctrl-feat** |
| E2092 | LNP cannot be enabled if G-Port is turned on | Y | **enable-ctrl-feat** |
| E2093 | LNP cannot be enabled if IGM is turned on | Y | **enable-ctrl-feat** |
| E2094 | LNP cannot be enabled if MTP Msgs for SCCP apps enabled | Y | **enable-ctrl-feat** |
| E2096 | ASM/TSM cards cannot be prov when A-Port enabled | Y | **ent-card** |
| E2097 | ASM/TSM cards cannot be prov when IGM enabled | Y | **ent-card** |
| E2814 | GPORT invalid if APORT or IGM is enabled | Y | **chg-sccp-serv**<br>**chg-sid**<br>**ent-srvsel** |
| E3330 | APORT or IGM must be enabled | Y | **chg-is41opts**<br>**chg-sccp-serv**<br>**chg-sid** |
| E3334 | LNP and APORT features are mutually exclusive | Y | **chg-ctrl-feat** |
| E3335 | LNP and IGM features are mutually exclusive | Y | **chg-ctrl-feat** |

**Table FN-9.** Error Messages - A-Port, G-Port, IS41 GSM Migration, MTP Msgs for SCCP Apps (MTPR) (Cont'd)

| Response ID Code | Error Message | New? | Used by Command: |
|---|---|---|---|
| E3336 | IGM must be enabled | Y | **chg-gsmopts** |
| E3337 | MNP invalid if GPORT enabled and APORT/IGM not enabled | Y | **chg-sccp-serv** |
| E3353 | GFLEX APort or IGM must be turned on | Y | **enable-ctrl-feat** |
| E3354 | EIR cannot enable if MTPR is turned ON | Y | **enable-ctrl-feat** |
| E3363 | APORT cannot be enabled if DMS with less than 4G is present | Y | **enable-ctrl-feat** |
| E3987 | The GTT feature must be turned on before the G-Port feature can be turned on. | Y | **chg-ctrl-feat** |
| E3988 | GPORT feature requires DSM Cards | Y | **chg-ctrl-feat** |
| E3991 | GPORT feature must be on | Y | **chg-sid** |
| E3997 | GFLEX/GPORT must be ON or EIR/IGM must be enabled | N | **rtrv-gsmopts** |
| E4005 | Either INP/AINPQ or GPORT Feature must be on | N | **chg-measopts** **rept-meas** |
| E4191 | GFLEX/GPORT/EIR/IGM feature must be ON/ENABLED | N | **chg-gsmopts** **chg-measopts** **rept-ftp-meas** |
| E4295 | The FEATURE/ANSIGFLEX option combination is invalid | Y | **enable-ctrl-feat** |

Incorrect use of the enhanced commands for the Per-Linkset Random SLS feature will generate the error message shown in Table FN-10.

**Table FN-10.** Error Messages - Per Random Linkset SLS

| Response ID Code | Error Message | New? | Used by Command: |
|---|---|---|---|
| E3352 | RANDSLS parameter is only valid for ITU Link Sets | Y | **ent/chg-ls** |
| E2125 | Links on specified linkset are in-service | N | **chg-ls** |

Incorrect use of the enhanced commands for the Transaction-based GTT Loadsharing feature will generate the error message shown in Table FN-11.

**Table FN-11.** Error Messages - Transaction-based GTT Loadsharing

| Response ID Code | Error Message | New? | Used by Command: |
|---|---|---|---|
| E3364 | Transaction Based GTT Load Sharing Feature must be Enabled | Y | **chg-sccpopts** |

Incorrect use of the enhanced commands for the Weighted GTT Loadsharing feature may generate the error messages listed in Table FN-12.

**Table FN-12.** Error Messages - Weighted GTT Loadsharing

| Response ID Code | Error Message | New? | Used by Command: |
|---|---|---|---|
| E2992 | MSSN and MateRC must be specified since MPC is specified | N | **ent/chg-map** |
| E2993 | True Point Code must remain primary entity | N | **chg-map** |
| E3290 | True PC already exists in MAP table | N | **ent/chg-map** |
| E3345 | SRM, MRC or WT specified with RC (use FORCE=YES) | Y | **chg-map** |
| E3346 | WTx specified while modifying RCx (use FORCE=YES) | Y | **chg-mrn** |
| E3347 | FORCE only with RC and SRM, MRC or WT specified | Y | **chg-map** |
| E3348 | FORCE only with RCx and WTx specified | | **chg-mrn** |
| E3370 | Weighted GTT Load-Sharing feature must be ON | Y | **ent/chg-map** **ent/chg-mrn** |
| E3371 | WTx must have a matching PCx specified | Y | **ent/chg-mrn** |
| E3372 | All specified RC values must be equal | Y | **ent-map** **ent-mrn** |
| E3373 | WTx or DFLTWT must be specified with THR | Y | **ent-mrn** |
| E3374 | WT parameter can't be specified | Y | **ent/chg-mrn** |
| E3375 | ESWT and GRPWT can't be specified together | Y | **chg-map** **chg-mrn** |

**Table FN-12.**  Error Messages - Weighted GTT Loadsharing (Cont'd)

| Response ID Code | Error Message | New? | Used by Command: |
|---|---|---|---|
| E3376 | THR can't be specified with ESWT=none | Y | **chg-map**<br>**chg-mrn** |
| E3377 | WTx and RCx can't be specified with ESWT, GRPWT and THR | Y | **chg-mrn** |
| E3378 | RCx or WTx must be specified | Y | **chg-mrn** |
| E3379 | Only PC must be specified | Y | **chg-mrn** |
| E3380 | WTx required for all specified PCx values | Y | **ent-mrn** |
| E3381 | Must specify weight for new point codes for weighted groups | Y | **chg-map**<br>**ent/chg-mrn** |
| E3382 | Can't specify weight for non-weighted groups | Y | **chg-map**<br>**ent/chg-mrn** |
| E3383 | Can't specify ESWT=none for non-weighted groups | Y | **chg-map**<br>**chg-mrn** |
| E3384 | GRPWT/THR mustn't be specified for non-weighted groups | Y | **chg-map**<br>**chg-mrn** |
| E3385 | Weight can't be specified to create SOL or DOM groups | Y | **ent-map**<br>**ent-mrn** |
| E3386 | WT and MWT must be specified with THR | Y | **ent-map** |
| E3387 | WT and MWT must be specified together | Y | **ent-map** |
| E3388 | ESWT, GRPWT, and THR can't be specified with MPC | Y | **chg-map** |
| E3389 | Specify ESWT, GRPWT, and THR with only PC/SSN | Y | **chg-map** |
| E3390 | RCx must be specified | Y | **chg-mrn** |
| E3391 | DFLTWT can't be specified when WTx for each PCx is specified | Y | **ent-mrn** |
| E3392 | ESWT, GRPWT and THR can't be specified for SOL or DOM groups | Y | **chg-map**<br>**chg-mrn** |
| E3393 | MPC must be specified since MWT is specified. | Y | **ent/chg-map** |

**Table FN-12.** Error Messages - Weighted GTT Loadsharing (Cont'd)

| Response ID Code | Error Message | New? | Used by Command: |
|---|---|---|---|
| E3699 | EIR feature must be ON | N | **chg-map** |
| E4183 | INP/AINPQ or EIR feature must be ON | Y | **chg-map** |
| E4526 | MAP table is full | N | **chg-map** |

## EAGLE 5 ISS Card Overview Table

Table FN-13 is a resource table that provides an overview of information for cards that can be provisioned in the EAGLE 5 ISS. For a detailed description of all hardware supported by Release 36.0, see Appendix B. Hardware Baseline.

This table lists the following card information:

- The name of the card on the card label

- The card part number

- The provisioned card type

- The number of shelf slots that the card occupies (1 or 2)

- The number of physical ports on the card

- The maximum number of links that can be assigned to the card

- The GPLs and applications that can run on the card

**Table FN-13.**   EAGLE 5 ISS Card Overview Table

| Card Name as shown on card label | Part Number | Provisioned Card Type | Per Card Slots/Ports | | Links per Card | Card GPLs | Card Applications |
|---|---|---|---|---|---|---|---|
| ACM | 870-1008-02 870-1008-03 870-1008-04 870-1008-05 | **acmenet** | 2 | 1 | 1 IP Service | **stplan imt** | stplan |
| DCM | 870-1945-01 870-1945-02 870-1945-03 870-1984-01 | **dcm** | 2 | 2 2 | 1 IP Service 1 IP Service | **bpdcm ebdadcm vwxslan** | ebdadcm vwxslan |
| | | | | 2 | 2 | **bpdcm iplim iplimi** | iplim iplimi |
| | | | | 2 | 1 | **bpdcm ss7ipgw ipgwi** | ss7ipgw ipgwi |
| | | **stc** | 2 | 2 | 2 IP Service | **bpdcm eroute** | eroute |

**Table FN-13.** EAGLE 5 ISS Card Overview Table (Cont'd)

| Card Name as shown on card label | Part Number | Provisioned Card Type | Per Card Slots/Ports | | Links per Card | Card GPLs | Card Applications |
|---|---|---|---|---|---|---|---|
| EDCM (SSEDCM) | 870-2372-01 870-2372-08 870-2372-13^ | **dcm** | 1 | 2 | 1 IP Service | **bpdcm vwxslan** | vwxslan |
| | | | | | 8 | **bpdcm iplim iplimi** | iplim iplimi |
| | | | | | 1 | **bpdcm ss7ipgw ipgwi** | ss7ipgw ipgwi |
| | 870-2372-01 | **stc** | 1 | 2 | 2 IP Service | **bpdcm eroute** | eroute |
| EDCM-A (SSEDCM) | 870-2508-01 870-2508-02^ | **dcm** | 1 | 2 | 1 IP Service | **bpdcm vwxslan** | vwxslan |
| | | **stc** | 1 | 2 | 2 IP Service | **bpdcm eroute** | eroute |
| DSM† | 1 GB MEM 870-1984-02 870-1984-08 870-1984-09 870-1984-15^  2 GB MEM 870-1984-03  4 GB MEM 870-1984-05 870-1984-06 870-1984-07 870-1984-13^ | **dsm** | 2 | 2 | 2 IP service | **bpdcm vsccp gls** | vsccp gls |
| DSM-1G | 870-2371-02 870-2371-06 870-2371-08 870-2371-13^ | **ipsm** | 1 | 2 (use only A) | 1 IP service | **bpdcm ips** | ips |
| EDSM-2G* | 870-2372-03 870-2372-07 870-2372-09 870-2372-14^ | **mcpm** | 1 | 2 (use only A) | 1 IP service | **bpdcm mcp** | mcp |
| E1/T1 MIM†† | 870-2198-01 870-2198-02 870-2198-03 870-2198-04 870-2198-07^ | **lime1 limt1 limch** | 1 | 2 | 8 | **ss7ml bpmplt** | ss7ansi ccs7itu |
| E1-ATM | 870-2455-01 870-2455-02 870-2455-03 870-2455-05^ | **lime1atm** | 1 | 2 | 1 | **atmitu bphcap bphcapt** | atmitu |

**Table FN-13.**  EAGLE 5 ISS Card Overview Table (Cont'd)

| Card Name as shown on card label | Part Number | Provisioned Card Type | Per Card Slots/Ports | | Links per Card | Card GPLs | Card Applications |
|---|---|---|---|---|---|---|---|
| E5-E1T1 | 870-1873-02 870-1873-03^ | lime1 limt1 | 1 | 8 | 32 | ss7epm blbepm bldiag6 blvxw6 | ss7ansi ccs7itu |
| | | lime1 (for SE-HSL) | 1 | 8 | 1 | | ccs7itu |
| E5-ENET | 870-2212-02 870-2212-03^ | dcm | 1 | 2 | 16 | bpdcm bldiag6 blbepm iplhc | iplim iplimi |
| | | | 1 | 2 | 1 | bpdcm bldiag6 blbepm ipghc | ss7ipgw ipgwi |
| EILA | 870-2049-01 870-2049-02 | limds0 limocu limv35 | 1 | 2 2 2 | 1 1 1 | ss7ansi ss7gx25 ccs7itu imt | ss7ansi ss7gx25 ccs7itu |
| GPSM-II | 870-2360-01 870-2360-05 870-2360-06 870-2360-08^ | N/A | 1 | N/A | N/A | eoam bpdcm | oam |
| HC-MIM†† | 870-2671-01 870-2671-03^ 870-2671-02 870-2671-04^ | lime1 limt1 | 2 | 8 | 64 | ss7hc blbios blcpld blvxw bldiag blcpld plde1t1 pldpmc1 imtpci | ss7ansi ccs7itu |
| | | lime1 (for SE-HSL) | | 8 | 2 | | ccs7itu |
| HIPR | 870-2574-01 870-2574-02^ | N/A | 1 | N/A | N/A | hipr | hipr |
| HMUX | 870-1965-01 870-1965-03^ | N/A | 1 | N/A | N/A | bphmux | bphmux |
| ILA | 870-1484-01 870-1484-02 | limds0 limocu limv35 | 1 | 2 2 2 | 1 1 1 | ss7ansi ss7gx25 ccs7itu imt | ss7ansi ss7gx25 ccs7itu |

**Table FN-13.** EAGLE 5 ISS Card Overview Table (Cont'd)

| Card Name as shown on card label | Part Number | Provisioned Card Type | Per Card Slots/Ports | | Links per Card | Card GPLs | Card Applications |
|---|---|---|---|---|---|---|---|
| LIM-AINF** | 870-1014-01 870-1014-02 870-1014-03 870-1014-04 870-1014-05 870-1014-06 870-1488-01 870-1488-02 870-1488-03 870-1488-04 870-1488-05 870-1488-06 | limds0 limocu limv35 | 1 | 2 2 2 | 1 1 1 | ss7ansi ss7gx25 ccs7itu imt | ss7ansi ss7gx25 ccs7itu |
| LIM-ATM | 870-1293-02 870-1293-03 870-1293-06 870-1293-07 870-1293-08 870-1293-10 870-1293-13^ | limatm | 1 | 2 | 1 | atmansi bphcap bphcapt | atmansi |
| LIM-DS0 | 870-1009-02 870-1009-03 870-1009-04 870-1485-01 870-1485-02 870-1485-03 | limds0 | 1 | 2 2 2 | 2 1 2 | ss7ansi ss7gx25 ccs7itu imt | ss7ansi ss7gx25 ccs7itu |
| LIM-E1†† | 870-1379-01 | lime1 limch | 1 | 2 2 | 1 1 | ss7ansi ccs7itu imt | ss7ansi, ccs7itu |
| LIM-OCU | 870-1010-03 870-1010-04 870-1010-05 870-1486-02 870-1486-03 870-1486-04 | limocu | 1 | 2 2 2 | 1 1 1 | ss7ansi ss7gx25 ccs7itu imt | ss7ansi ss7gx25 ccs7itu |
| LIM-V.35 | 870-1012-02 870-1012-03 870-1012-04 870-1487-01 870-1487-02 870-1487-03 | limv35 | 1 | 2 2 2 | 1 1 1 | ss7ansi ss7gx25 ccs7itu imt | ss7ansi ss7gx25 ccs7itu |
| MDAL | 870-0773-04 870-0773-05 870-0773-06 870-0773-08 870-0773-09^ | N/A | 2 | N/A | N/A | N/A | N/A |

**Table FN-13.**   EAGLE 5 ISS Card Overview Table (Cont'd)

| Card Name as shown on card label | Part Number | Provisioned Card Type | Per Card Slots/Ports | | Links per Card | Card GPLs | Card Applications |
|---|---|---|---|---|---|---|---|
| MPL<br><br><br><br>MPL-T | 870-2061-01<br>870-2061-03<br>870-2061-04<br>870-2061-06^<br>870-2061-02 | limds0 | 1 | 2 | 8 | bpmpl<br>bpmplt<br>ss7ml | ss7ansi |
| TDM | 870-0774-10<br>870-0774-11 | N/A | 1 | N/A | N/A | N/A | N/A |
| TSM-256 | 870-1289-02<br>870-1289-03<br>870-1289-04<br>870-1289-06^ | tsm | 1 | N/A | N/A | sccp<br>gls<br>ebdablm | sccp<br>gls<br>ebdablm |
| TSM-512 | 870-1290-02<br>870-1290-03<br>870-1290-04 | tsm | 1 | N/A | N/A | sccp<br>gls<br>ebdablm | sccp<br>gls<br>ebdablm |
| TSM-768 | 870-1291-02<br>870-1291-03<br>870-1291-04 | tsm | 1 | N/A | N/A | sccp<br>gls<br>ebdablm | sccp<br>gls<br>ebdablm |
| TSM-1024 | 870-1292-02<br>870-1293-03<br>870-1294-04 | tsm | 1 | N/A | N/A | sccp<br>gls<br>ebdablm | sccp<br>gls<br>ebdablm |

*Though the system allows 250 MCPM cards, practical usage is 2.

**A LIM, EILA, or ILA is a link interface module using the AINF interface and can be installed in place of the LIM-DS0A, LIM-OCU, or LIM-V.35. It is configured in the database as either a LIM-DS0A, LIM-OCU, or LIM-V.35 card.

†DSMs are required for the LNP, 50,000 GTT, G-Port, G-Flex, EIR, or INP feature. For more information about turning these features on, refer to the appropriate manual.

††For the E1 or T1 interface, SS7 application (SS7ANSI or CCS7ITU) can be assigned to these cards. For more information on the E1 or T1 interface go to Chapter 3 "System Administration Procedures" in the Database Administration Manual - SS7.

^This part number is the ROHS equivalent of the immediately preceding part number.

# Customer Documentation

## Documentation Set

The documentation set for EAGLE 5 ISS Release 36.0 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*

- *Commands Pocket Guide*

- *Commands Quick Reference Guide*

- *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 ISS*

- *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 ISS)*

- *LNP Feature Activation Guide*

- *Maintenance Manual*

- *Maintenance Pocket Guide*

- *Maintenance Emergency Recovery Pocket Guide*

- *MPS Platform Software and Maintenance Manual (EAGLE 5 ISS with Tekelec T1000 Application Server)*

- *MPS Platform Software and Maintenance Manual (EAGLE 5 ISS with Tekelec T1100 Application Server)*

- *Previously Released Features Manual*

- *Provisioning Database Interface Manual*

- *Release Documentation*

    - *Feature Notice*

    - *Master Glossary*

    - *Master Index*

    - *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 ISS 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.

### Commands Pocket Guide

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.

### Commands Quick Reference Guide

The *Commands Quick Reference Guide* contains an alphabetical listing of the commands and parameters. The guide is sized to fit a shirt-pocket.

### Database Administration Manual – Features

The *Database Administration Manual – Features* contains procedural information required to configure an EAGLE 5 ISS 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 ISS 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 ISS 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 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

### Database Administration Manual – SS7

The *Database Administration Manual – SS7* contains procedural information required to configure an EAGLE 5 ISS 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 ISS'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 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.

### 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 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.

### 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 ISS. 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 ISS.

### 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 ISS.

### 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 ISS.

### Feature Manual – Migration

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 IS41 GSM Migration (IGM) feature on the Multi-Purpose Server (MPS) platform of the EAGLE 5 ISS.

### 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 ISS FTP Retrieve and Replace feature.

### Hardware Manual – EAGLE 5 ISS

The *Hardware Manual - EAGLE 5 ISS* contains hardware descriptions and specifications of Tekelec's signaling products. These include the EAGLE 5 ISS, 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 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.

### 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 ISS)

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 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.

### 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 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.

### 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.

### Maintenance Pocket Guide

The *Maintenance Pocket Guide* is an abridged version of the *Maintenance Manual* and contains all the corrective maintenance procedures used to maintain the EAGLE 5 ISS.

### Maintenance Emergency Recovery Pocket Guide

The *Maintenance Emergency Recovery Pocket Guide* is an abridged version of the Maintenance Manual and contains the corrective maintenance procedures used for critical and major alarms generated on the EAGLE 5 ISS.

### MPS Platform Software and Maintenance Manual (EAGLE 5 ISS 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 ISS with Tekelec T1100 Application Server)**

The EAGLE 5 ISS *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 ISS, 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.

- *Master Index* - Lists all index entries used throughout the documentation set.

- *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 ISS 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

  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 Processor 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**—Mated Application Table

**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

**MSISDN**—Mobile Station (international) ISDN Number

**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

## Appendix B. Hardware Baseline

The following hardware baseline supports this release. This list shows top-level part numbers (in bold) and assembly part numbers (if applicable).

- Control Shelf                      **870-2321-02 Rev A** or
                                     **870-2321-08 Rev A (R)**[1] [2]
  Control Shelf                      **870-2321-04 Rev A**[3] or
  Control Shelf                      **870-2377-01 Rev A** or
                                     **870-2377-02 Rev A (R)**[2] [4]

- Control Shelf Backplane            **870-0775-03 Rev E**

- Extension Shelf                    **870-2378-01 Rev A** or
                                     **870-2378-02 Rev A (R)**[2] [5]
  Extension Shelf                    **870-0776-02 Rev C**[6]
  Extension Shelf                    **870-0776-03 Rev D**
  Extension Shelf                    **870-0776-06 Rev A**
  Extension Shelf                    **870-0776-07 Rev A**

- Extension Shelf Backplane          **870-0776-08 Rev A** or
  Extension Shelf Backplane          **870-0776-11 Rev A**

- ACM                                **870-1008-02 Rev D** or
  ACM                                **870-1008-03 Rev A** or
  ACM                                **870-1008-04 Rev A** or
  ACM                                **870-1008-05 Rev A**

- Air Management Card                 **870-1824-01 Rev A** or
                                     **870-1824-02 Rev A (R)**[2] [7]

- DCM                                **870-1945-01 Rev A**
  DCM                                **870-1945-02 Rev A**
  DCM                                **870-1945-03 Rev A**

- EDCM (single-slot)                 **870-2372-01 Rev E**
  EDCM                               **870-2372-08 Rev A** or
                                     **870-2372-13 Rev A (R)**[2]

- EDCM-A (single-slot)               **870-2508-01 Rev A** or
                                     **870-2508-02 Rev A (R)**[2]

- DCMX                               **870-1984-01 Rev A**

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[1]  Required for HMUX.
[2]  ROHS equivalent of immediately preceding part number
[3]  Required for HMUX, Standard Frame
[4]  Required for HMUX, Heavy Duty Frame
[5]  Required for Heavy Duty Frame
[6]  Required for Standard Frame
[7]  Required for Shelves with HC-MIM Cards

- DSM, 1GB MEM                       **870-1984-02 Rev A** or
  DSM, 1GB MEM                       **870-1984-09 Rev A** or

                                     **870-1984-15 Rev A (R)**[1] or
  DSM, 1GB MEM                       **870-1984-15 Rev A** or
  DSM, 2GB MEM                       **870-1984-03 Rev A** or
  DSM, 4GB MEM                       **870-1984-05 Rev A**[2] or
  DSM, 4GB MEM                       **870-1984-06 Rev A** or
  DSM, 4GB MEM                       **870-1984-07 Rev A** or

                                     **870-1984-13 Rev A (R)**[1]

- DSM-1G                             **870-2371-02 Rev A**
  DSM-1G                             **870-2371-06 Rev A**
  DSM-1G                             **870-2371-08 Rev A** or

                                     **870-2371-13 Rev A (R)**[1]

- EDSM-2G (MCPM)                     **870-2372-03 Rev A**
  EDSM-2G (MCPM)                     **870-2372-07 Rev A**
  EDSM-2G (MCPM)                     **870-2372-09 Rev A** or

                                     **870-2372-14 Rev A (R)**[1]

- E1/T1 MIM                          **870-2198-01 Rev G** or
  E1/T1 MIM                          **870-2198-02 Rev A**
  E1/T1 MIM                          **870-2198-03 Rev A**
  E1/T1 MIM                          **870-2198-04 Rev A** or

                                     **870-2198-07 Rev A (R)**[1]

- E1-ATM                             **870-2455-01 Rev B**
  E1-ATM                             **870-2455-02 Rev B**
  E1-ATM                             **870-2455-03 Rev A** or

                                     **870-2455-05 Rev A (R)**[1]

- E5-E1T1                            **870-1873-02 Rev A** or

                                     **870-1873-03 Rev A (R)**[1,2]

- E5-ENET                            **870-2212-02 Rev A** or

                                     **870-2212-03 Rev A (R)**[1]

- EILA                              **870-2049-01 Rev A** or
  EILA w/ DIMM                       **870-2049-02 Rev A**

- FAP                               **870-1606-01 Rev A** or
  FAP                               **870-1606-02 Rev A**[3,4]
                                     **870-2320-01 Rev A** or
  FAP                               **870-2320-03 Rev A (R)**[1,5,6]
  FAP                               **870-1823-01 Rev A**

- FAP-CF/EF                         **870-0243-08 Rev C**
  FAP-MISC                          **870-0243-09 Rev C**

- GPSM-II                           **870-2360-01 Rev E**
  GPSM-II                           **870-2360-05 Rev A**
                                     **870-2360-06 Rev A** or
  GPSM-II                           **870-2360-08 Rev A (R)**[1]

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[1] ROHS equivalent of immediately preceding part number
[2] Required for 192 Million LNP Numbers
[3] Required for Standard Frame
[4] Required for Frames with HC-MIMs
[5] Required for Heavy Duty Frame
[6] Required for Frames with HC-MIMs

- HC-MIM                                 **870-2671-01 Rev P** or

                                            **870-2671-03 Rev A (R)**[1]

   HC-MIM                             **870-2671-02 Rev B** or

                                              **870-2671-04 Rev A (R)**[1]

- HIPR                                       **870-2574-01 Rev D** or

                                              **870-2574-02 Rev A (R)**[1]

- HMUX                                   **870-1965-01 Rev A** or

                                              **870-1965-03 Rev A (R)**[1]

- LIM-AINF                         **870-1014-01 Rev D** or
     LIM-AINF                   **870-1014-02 Rev A** or
     LIM-AINF                   **870-1014-03 Rev B** or
     LIM-AINF                   **870-1014-04 Rev A** or
     LIM-AINF                   **870-1014-05 Rev A** or
     LIM-AINF                   **870-1014-06 Rev A** or
     LIM-AINF w/ DIMM       **870-1488-01 Rev A** or
     LIM-AINF w/ DIMM       **870-1488-02 Rev A** or
     LIM-AINF w/ DIMM       **870-1488-03 Rev A** or
     LIM-AINF w/ DIMM       **870-1488-04 Rev A** or
     LIM-AINF w/ DIMM       **870-1488-05 Rev A** or
     LIM-AINF w/ DIMM       **870-1488-06 Rev A**

- LIM-ATM                        **870-1293-02 Rev A** or
     LIM-ATM                    **870-1293-03 Rev A**
     LIM ATM                    **870-1293-06 Rev A**
     LIM ATM                    **870-1293-07 Rev A**
     LIM-ATM                    **870-1293-08 Rev A**
     LIM-ATM                    **870-1293-10 Rev A** or

                                            **870-1293-13 Rev A (R)**[1]

- LIM-DS0                        **870-1009-02 Rev D** or
     LIM-DS0                    **870-1009-03 Rev A** or
     LIM-DS0                    **870-1009-04 Rev A** or
     LIM-DS0 w/ DIMM         **870-1485-01 Rev A** or
     LIM-DS0 w/ DIMM         **870-1485-02 Rev A** or
     LIM-DS0 w/ DIMM         **870-1485-03 Rev A**

- LIM-E1                          **870-1379-01 Rev A**

- LIM-ILA                         **870-1484-01 Rev E** or
     LIM-ILA w/ DIMM         **870-1484-02 Rev C**

- LIM-OCU                       **870-1010-03 Rev D** or
     LIM-OCU                   **870-1010-04 Rev A** or
     LIM-OCU                   **870-1010-05 Rev A** or
     LIM-OCU w/ DIMM        **870-1486-02 Rev A** or
     LIM-OCU w/ DIMM        **870-1486-03 Rev A** or
     LIM-OCU w/ DIMM        **870-1486-04 Rev A**

- LIM-V.35                       **870-1012-02 Rev D**
     LIM-V.35                   **870-1012-03 Rev A**
     LIM-V.35                   **870-1012-04 Rev A**
     LIM-V.35 w/ DIMM       **870-1487-01 Rev A** or
     LIM-V.35 w/ DIMM       **870-1487-02 Rev A** or
     LIM-V.35 w/ DIMM       **870-1487-03 Rev A**

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[1] ROHS equivalent of immediately preceding part number

- MDAL                                   **870-0773-04 Rev B** or
  MDAL                                   **870-0773-05 Rev A** or
  MDAL                                   **870-0773-06 Rev A** or
  MDAL                                   **870-0773-08 Rev A** or
  
  **870-0773-09 Rev A (R)**[1]

- MPL                                    **870-2061-01 Rev A**
  MPL                                    **870-2061-03 Rev A**
  MPL                                    **870-2061-04 Rev A** or
  
  **870-2061-06 Rev A (R)**[1]
  
  MPL-T                                  **870-2061-02 Rev C**

- MPS DC Frame Assembly                  **890-1843-01 Rev C** or
  
  **890-1843-02 Rev A (R)**[1]

- MPS EPAP                               **890-1801-02 Rev A**

- TDM                                    **870-0774-10 Rev A** or
  TDM                                    **870-0774-11 Rev A**

- TDM GTI                                **870-0774-15 Rev B** or
  
  **870-0774-18 Rev A (R)**[1]

- TSM-256                                **870-1289-02 Rev A**
  TSM-256                                **870-1289-03 Rev A** or
  TSM-256                                **870-1289-04 Rev A** or
  
  **870-1289-06 Rev A (R)**[1]

- TSM-512                                **870-1290-02 Rev A**
  TSM-512                                **870-1290-03 Rev A** or
  TSM-512                                **870-1290-04 Rev A**

- TSM-768                                **870-1291-02 Rev A**
  TSM-768                                **870-1291-03 Rev A** or
  TSM-768                                **870-1291-04 Rev A**

- TSM-1024                               **870-1292-02 Rev A**
  TSM-1024                               **870-1292-03 Rev A** or
  TSM-1024                               **870-1292-04 Rev A**

- Single EOAP                            **890-1050-03 Rev H**

- Dual EOAP                              **890-1050-01 Rev K**

- Kit, E1                                **890-1037-01 Rev A** or
  
  **890-1037-06 Rev A (R)**[1]

- Kit, Holdover Clock Assy               **890-1013-01 Rev A**

- Fan Assy (Standard Frame)              **890-1038-01 Rev D**

- Fan Assy (Shelves with HC-MIM cards)   **890-0001-01 Rev A**
  Fan Assy (Shelves with HC-MIM cards)   **890-0001-02 Rev A** or
  
  **890-0001-04 Rev A (R)**[1]

- T1000 Application Server               **870-2640-03 Rev A**
  - Dual Port G-Bit E-Net Card          **870-2706-02 Rev A** or
  
    **870-2706-04 Rev A (R)**[1]
  
  - Quad Serial Exp. Card               **870-2708-02 Rev A**
  
  - 120 GB Hard Drive Assy              **870-2721-04 Rev A**

- T1100 (Application Server - DC)        **870-1893-03 Rev A**

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[1] ROHS equivalent of immediately preceding part number

- PCI Card - Dual Port Ethernet          **870-2706-04 Rev A**
- Hard Disc Drive - 250 GB SATA          **870-2787-02 Rev A**

- Upgrade kit, MPS Netra-to-
  T1000 Application Server               **870-2735-02 Rev A**