

Tekelec EAGLE[®] 5
Integrated Signaling System

Release 37.0

Feature Notice

909-0644-001 Rev C

June 2007



TEKELEC

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U.S. Patent Numbers:

5,008,929, 5,953,404, 6,167,129, 6,324,183, 6,327,350, 6,456,845, 6,606,379, 6,639,981, 6,647,113, 6,662,017, 6,735,441, 6,745,041, 6,765,990, 6,795,546, 6,819,932, 6,836,477, 6,839,423, 6,885,872, 6,901,262, 6,914,973, 6,940,866, 6,944,184, 6,954,526, 6,954,794, 6,959,076, 6,965,592, 6,967,956, 6,968,048, 6,970,542

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Table of Contents

Introduction	FN-1
New Features	FN-1
Features from Limited Availability Releases	FN-1
Other Changes	FN-2
Important Operational Changes	FN-2
Feature Overviews	FN-3
New Features	FN-3
Features from Limited Availability Releases	FN-4
150,000 GTT TPS and 75,000 EPAP TPS	FN-8
Description	FN-8
Feature Control Requirements	FN-8
Hardware Requirements	FN-9
Enhanced Commands	FN-9
Limitations	FN-10
Alarms	FN-10
Error Messages	FN-10
E5-SM4G Card	FN-11
Description	FN-11
Feature Control Requirements	FN-12
Hardware Requirements	FN-12
Enhanced Commands	FN-12
Limitations	FN-14
Alarms	FN-14
Error Messages	FN-14
ITUN-ANSI SMS Conversion	FN-15
Description	FN-15
Feature Control Requirements	FN-15
Hardware Requirements	FN-15
Enhanced Commands	FN-15
Limitations	FN-16
Alarms	FN-16
Error Messages	FN-16

Large BICC MSU Support for IP Signaling	FN-17
Description	FN-17
Feature Control Requirements	FN-17
Measurements	FN-17
Hardware Requirements	FN-18
Enhanced Commands	FN-18
Limitations	FN-21
Alarms	FN-21
Error Messages	FN-22
SLAN on E5-ENET Assembly	FN-23
Description	FN-23
Feature Control Requirements	FN-23
Hardware Requirements	FN-24
Enhanced Commands	FN-24
Limitations	FN-31
Alarms	FN-31
Error Messages	FN-32
STC on E5-ENET Assembly	FN-33
Description	FN-33
Feature Control Requirements	FN-33
Hardware Requirements	FN-34
Enhanced Commands	FN-34
Limitations	FN-38
Alarms	FN-38
Error Messages	FN-38
SUA DAUD with SSN Support	FN-39
Description	FN-39
Feature Control Requirements	FN-39
Hardware Requirements	FN-39
New or Enhanced Commands	FN-39
Limitations	FN-40
Alarms	FN-40
Error Messages	FN-40
Support for 32 Prepaid SMS Intercept Platforms	FN-41
Description	FN-41
Feature Control Requirements	FN-41
Hardware Requirements	FN-41

Added or Enhanced Commands	FN-41
Limitations	FN-43
Alarms	FN-43
Error Messages	FN-43
Features from Limited Availability Releases	FN-44
1100 TPS/DSM for ITU NP	FN-44
ANSI-41 INP Query (AINPQ)	FN-47
ANSI-41 Mobile Number Portability (A-Port™)	FN-50
G-Port SRI Query for Prepaid	FN-57
GTT Loadsharing to 32 Destinations	FN-61
Hex Digit Support for GTT	FN-62
Error Messages	FN-67
Increase ATM Capacity to 180 Links per Node	FN-67
IS41 GSM Migration	FN-67
MTP Messages for SCCP Applications	FN-76
Per-Linkset Random SLS	FN-78
Transaction-based GTT Loadsharing	FN-81
Weighted GTT Loadsharing	FN-85
Other Changes	FN-90
Flexible GTT Load Sharing is an On/Off Feature (PR 106618)	FN-90
IS41 GSM Migration Feature Support for SRI/SRI-SM Responses over ANSI MTP/SCCP (PR 115776)	FN-90
OAM Support for pktgen (PR 111808)	FN-90
RTRV-STP Command Output Column Change from GPL to APPL (PR 115255)	FN-90
Support for Third FTP Server for Measurements Platform (PR 111746)	FN-91
UAM for Inaccessible Daughterboard BIP Data (PR 112379)	FN-92
UIM 1185 Log Displays GTI Clock Status Register (PR 114974)	FN-92
UIM for Invalid SIO (PR 110305)	FN-92
Alarms	FN-93
New or Changed UAMs	FN-93
New or Changed UIMs	FN-94
UAM Format Changes	FN-98
UAM Format Change: A-Port	FN-98
UIM Format Changes	FN-99
UIM Format Change: PR 114974	FN-99
UIM Format Change: Large BICC MSU Support for IP Signaling	FN-99

UIM Format Change: SLAN on E5-ENET Assembly/STC on E5-ENET Assembly	FN-99
Hardware Verification Codes	FN-100
Error Messages	FN-102
EAGLE 5 ISS Card Overview Table	FN-111
Customer Documentation	FN-117
Documentation Set	FN-117
How to Locate Documentation on the Customer Support Site	FN-123
Customer Training	FN-123
Customer Care Center	FN-124
Technical Assistance	FN-124
Emergency Response	FN-125
Appendix A. Acronyms and Terminology	A-1
Appendix B. Hardware Baseline	B-1

Introduction

This Feature Notice has been revised to include the following:

- Update to the **rept-stat-iptps** command for the Large BICC MSU Support for IP Signalling feature
- A description of auto-negotiation and the TVG rate for the SLAN on E5-ENET Assembly feature
- A description of the TVG rate for the STC on E5-ENET Assembly feature
- A new UAM for inaccessible daughterboard BIP data
- A new UIM for an invalid SIO
- Updates to the EAGLE 5 ISS Overview Table
- Updates to the Hardware Baseline

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 Release 37.0 (see “How to Locate Documentation on the Customer Support Site” on page FN-123).

New Features

The following new features are included in the EAGLE 5 ISS Release 37.0:

- 150,000 GTT TPS and 75,000 EPAP TPS
- E5-SM4G Card
- ITUN-ANSI SMS Conversion
- Large BICC MSU Support for IP Signaling
- SLAN on E5-ENET Assembly
- STC on E5-ENET Assembly
- SUA DAUD with SSN Support
- Support for 32 Prepaid SMS Intercept Platforms

Features from Limited Availability Releases

The following features are included in the EAGLE 5 ISS Release 37.0 from releases that were available to a limited number of customers between Releases 35.1 and 37.0:

- 1100 TPS/DSM for ITU NP
- ANSI-41 INP Query (AINPQ)

- ANSI-41 Mobile Number Portability (A-Port)
- G-Port SRI Query for Prepaid
- GTT Loadsharing to 32 Destinations
- Hex Digit Support for GTT
- Increase ATM Capacity to 180 Links per Node
- IS41 GSM Migration
- MTP Messages for SCCP Applications
- Per-Linkset Random SLS
- Transaction-based GTT Loadsharing
- Weighted GTT Loadsharing

Other Changes

The following core enhancements to the EAGLE 5 ISS are included in Release 37.0:

- Flexible GTT Load Sharing is an On/Off Feature (PR 106618)
- IS41 GSM Migration Feature Support for SRI/SRI-SM Responses over ANSI MTP/SCCP (PR 115776)
- OAM Support for pktgen (PR 111808)
- RTRV-STP Command Output Column Change from GPL to APPL (PR 115255)
- Support for Third FTP Server for Measurements Platform (PR 111746)
- UAM for Inaccessible Daughterboard BIP Data (PR 112379) |
- UIM 1185 Log Displays GTI Clock Status Register (PR 114974)
- UIM for Invalid SIO (PR 110305) |

Important Operational Changes

The following operational changes included in the EAGLE 5 ISS Release 37.0:

- UAM Format Change - “UAM Format Changes” on page FN-98
- UIM Format Change - “UIM Format Changes” on page FN-99
- Error Messages - “Error Messages” on page FN-102

Feature Overviews

The following sections describe the new features that are included in EAGLE 5 ISS Release 37.0.

New Features

150,000 GTT TPS and 75,000 EPAP TPS

The 150,000 GTT TPS feature increases the message processing capacity of the EAGLE 5 ISS from 52,700 TPS to 150,000 TPS if the entire SCCP message throughput is processed by the GTT feature.

The 75,000 EPAP TPS feature increases the message processing capacity of the EAGLE 5 ISS from 20,400 to 75,000 TPS if part of the SCCP message throughput is processed by one or more of the EPAP-based features.

The 150,000 GTT TPS and 75,000 EPAP TPS features require the E5-SM4G Throughput Capacity feature to be enabled to achieve maximum processing. A feature access key (FAK) is required to enable the E5-SM4G Throughput Capacity feature.

See “150,000 GTT TPS and 75,000 EPAP TPS” on page FN-8 for more details.

E5-SM4G Card

The E5-SM4G card enhances the EAGLE 5 ISS support for the EPAP and ELAP-based features by providing performance improvement over the DSM cards that currently run the VSCCP application. DSM cards will continue to be supported, but are being replaced with E5-SM4G cards for new initial and extension shipments.

The E5-SM4G card requires the E5-SM4G Throughput Capacity feature to be enabled to achieve maximum processing. A FAK is required to enable the E5-SM4G Throughput Capacity feature.

See “E5-SM4G Card” on page FN-11 for more details.

ITUN-ANSI SMS Conversion

The ITUN-ANSI SMS Conversion feature performs SMS address conversion for Registration Notification, SMS Request Return Result, and SMS Notification messages crossing the ITUN-ANSI network boundary to determine the destination point code in the destination network.

A FAK is required to enable the ITUN-ANSI SMS Conversion feature.

See “ITUN-ANSI SMS Conversion” on page FN-15 for more details.

Large BICC MSU Support for IP Signaling

The Large BICC MSU Support for IP Signaling feature enhances the EAGLE 5 ISS by increasing the SIF size of the BICC MSUs that the system can send and receive from 272 bytes to 4095 bytes over the M2PA and M3UA protocols.

A FAK is required to enable the Large BICC MSU Support for IP Signaling feature.

See “Large BICC MSU Support for IP Signaling” on page FN-17 for more details.

SLAN on E5-ENET Assembly

The SLAN on E5-ENET Assembly feature supports running the **stplan** application on the E5-ENET card.

See “SLAN on E5-ENET Assembly” on page FN-23 for more details.

STC on E5-ENET Assembly

The STC on E5-ENET Assembly feature supports the use of the E5-ENET card as an STC card running the **eroute** application.

See “STC on E5-ENET Assembly” on page FN-33 for more details.

SUA DAUD with SSN Support

The SUA DAUD with SSN Support feature allows the EAGLE 5 ISS to update SCCP cards on the status of remote subsystems connected to the EAGLE 5 ISS and to use destination state audit (DAUD) messages that contain the **ssn** parameter to query the status of any subsystem.

See “SUA DAUD with SSN Support” on page FN-39 for more details.

Support for 32 Prepaid SMS Intercept Platforms

The Support for 32 Prepaid SMS Intercept Platforms feature enhances the capability of the EAGLE 5 ISS to support routing from 3 to a maximum of 32 Intercept Platforms and increases the number of Prepaid Portability Types by the EPAP to 32 to specifically identify a subscriber with an SCP.

See “Support for 32 Prepaid SMS Intercept Platforms” on page FN-41 for more details.

Features from Limited Availability Releases

The following sections describe the features that were available to a limited number of customers between Releases 35.1 and 37.0.

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 FAK is required to enable the 1100 TPS/DSM for ITU NP feature.

See “1100 TPS/DSM for ITU NP” on page FN-44 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 FAK is required to enable the AINPQ feature.

See “ANSI-41 INP Query (AINPQ)” on page FN-47 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 FAK is required to enable the A-Port feature.

See “ANSI-41 Mobile Number Portability (A-Port™)” on page FN-50 for more details.

G-Port SRI Query for Prepaid

The G-Port SRI Query for Prepaid feature enables the EAGLE 5 ISS to provide number portability information to a Prepaid Service Control Point (SCP) database. This information enables the database to determine the network used by a called subscriber. This feature is optional, runs on top of the G-Port feature, and requires a Feature Access Key.

A FAK is required to enable the G-Port SRI Query for Prepaid feature.

See “G-Port SRI Query for Prepaid” on page FN-57 for more information.

Hex Digit Support for GTT

The Hex Digit Support for GTT feature enables the EAGLE 5 ISS to process both ANSI and ITU Message Signaling Units (MSUs) that contain either decimal or hexadecimal Global Title digits (0-9, a-f, A-F) in the Called Party Address (CdPA) field.

A FAK is required to enable the Hex Digit Support for GTT feature.

See “Hex Digit Support for GTT” on page FN-62 for more information.

Increase ATM Capacity to 180 Links per Node

A maximum of 180 LIM-ATM high-speed signaling link cards can be provisioned and equipped in an EAGLE 5 ISS.

See “Increase ATM Capacity to 180 Links per Node” on page FN-67 for more information.

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 FAK is required to enable the IS41 GSM Migration feature.

See “IS41 GSM Migration” on page FN-67 for more details.

MTP Messages for SCCP Applications

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 FAK is required to enable the MTP Msgs for SCCP Apps feature.

See “MTP Messages for SCCP Applications” on page FN-76 for more details.

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.)

See “GTT Loadsharing to 32 Destinations” on page FN-61 for more details.

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.

See “Per-Linkset Random SLS” on page FN-78 for more details.

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 FAK is required to enable the Transaction-based GTT Load-sharing feature.

See “Transaction-based GTT Loadsharing” on page FN-81 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 load sharing group. Provisioning also controls loadsharing groups so that if insufficient capacity is available within a loadsharing group, the group is not used.

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

See “Weighted GTT Loadsharing” on page FN-85 for more details.

150,000 GTT TPS and 75,000 EPAP TPS

Description

The 150,000 GTT TPS feature increases the throughput capacity of the EAGLE 5 ISS from 52,700 to 150,000 TPS for a node in which the SCCP message throughput traffic is processed by the GTT feature.

The 75,000 EPAP TPS feature increases the throughput capacity of the EAGLE 5 ISS from 20,400 to 75,000 TPS for a node that processes part of the SCCP message throughput traffic by one or more of the EPAP-based features (e.g. G-Port, G-Flex, EIR, or INP) or for a node that processes a combination of GTT and EPAP traffic.

These features require the E5-SM4G card to be installed in the EAGLE 5 ISS. The E5-SM4G Throughput Capacity feature must be enabled and turned on in order to operate at 5000 TPS (if traffic is processed by GTT) or 3125 TPS (if traffic is processed by the EPAP-based features).

To achieve the maximum TPS rates, the following conditions must be met:

- All of the DSM cards must be replaced with E5-SM4G cards.
- The E5-SM4G Throughput Capacity feature must be enabled and turned on.

If all of the SCCP traffic is processed by GTT, then a maximum of 32 E5-SM4G cards can be provisioned in the EAGLE 5 ISS. If the E5-SM4G Throughput Capacity feature is enabled and turned on, then each E5-SM4G card can process traffic at a rate of 5000 TPS, and the 150,000 TPS rate can be reached.

If any of the SCCP traffic is processed by an EPAP-based feature, then a maximum of 25 E5-SM4G cards can be provisioned in the EAGLE 5 ISS. If all of the SCCP traffic is processed by EPAP-based features, and if the E5-SM4G Throughput Capacity feature is enabled and turned on, then the rate of 75,000 TPS can be reached.

E5-SM4G cards can co-exist with DSM cards in the EAGLE 5 ISS; however, if both kinds of cards are used, then the maximum TPS rates cannot be reached.

Feature Control Requirements

The E5-SM4G Throughput Capacity feature has the following feature control requirements:

- A FAK for part number 893-0191-01
- A temporary key cannot be used to enable the feature.
- After the feature has been turned on, it cannot be turned off.

- The feature cannot be enabled if any of the following features or options are turned on:
 - E5IS (EAGLE 5 Integrated Monitoring) feature
 - LNP feature
 - ANSIGFLEX STP option

Hardware Requirements

The E5-SM4G Throughput Capacity feature requires HIPR cards to be installed in all the shelves in an EAGLE 5 ISS node.

See “Appendix B. Hardware Baseline” for the hardware baseline of this release.

Enhanced Commands

The following commands are enhanced to support the 150,000 GTT TPS feature. See the *Commands Manual* of your Release 37.0 documentation set for a detailed description of all commands and their parameters and the *EPAP Administration Manual* for a description of the commands supporting the 75,000 EPAP TPS feature.

- **chg-feat**—Enhanced to prevent the LAN or E5IS feature bits from being turned on if the E5-SM4G Throughput Capacity feature is enabled.
- **chg-stpopts**—Enhanced to prevent the ANSIGFLEX option from being enabled if the E5-SM4G Throughput Capacity feature is enabled.
- **enable/rtrv-ctrl-feat**—Enhanced to prevent the E5-SM4G Throughput Capacity feature from being enabled if the following conditions exist:
 - The GTT feature is not turned on.
 - The LNP feature is turned on.
 - The ANSIGFLEX option is enabled (**chg-stpopts** command).
 - The E5IS feature bit is turned on.
 - HIPR cards are not installed on all shelves in the system.

The **rtrv-ctrl-feat** command is enhanced to display the status of the E5-SM4G Throughput Capacity feature if the feature is enabled.

The following example displays sample output for the **rtrv-ctrl-feat** command when the E5-SM4G Throughput Capacity feature is enabled.

rtrv-ctrl-feat

```
rlghncxa03w 07-04-06 16:40:40 EST EAGLE5 37.0.0
The following features have been permanently enabled:
Feature Name           Partnum    Status    Quantity
IPGWx Signaling TPS    893012805  on       2000
HC-MIM SLk Capacity    893012707  on        64
E5-SM4G Throughput Cap 893019101  on       ----
```

Limitations

The 150,000 GTT TPS and 75,000 EPAP TPS features have the following limitations:

- The real time database entry capacity of the E5-SM4G card for the EPAP-based features is smaller than the capacity supported by the current DSM 4G card.
- If the E5IS or LNP feature, or the ANSIGFLEX system option is enabled, then the TPS level is held to the level of a DSM card. The E5-SM4G Throughput Capacity feature cannot be enabled, and the 150,000 GTT TPS feature cannot be used.

Alarms

New or Changed UAMs

None.

New or Changed UIMs

None.

Hardware Verification Codes

None.

UAM Format Changes

None.

UIM Format Changes

None.

Error Messages

New or changed error messages supporting the 150,000 GTT TPS and 75,000 EPAP TPS features are listed in Table FN-14 on page FN-102.

E5-SM4G Card

Description

The new E5-SM4G card running the **sccphc** GPL and the **vsccp** application performs the same functions as the current DSM card for EPAP-based and ELAP-based features.

The E5-SM4G card is provisioned with card type **dsm** and the **vsccp** application, allowing the E5-SM4G card to replace a DSM card in the control or extension frame without re-provisioning.

The E5-SM4G Throughput Capacity feature performs the following functions:

- Allows each E5-SM4G card to operate at a rate of 5,000 TPS for SCCP traffic that is processed entirely by GTT.
- Allows each E5-SM4G card to operate at a rate of 3,125 TPS if part of the SCCP traffic is processed by EPAP-based features.
- Allows achievement of the maximum system TPS capacity provided by the 150,000 GTT TPS feature and the 75,000 EPAP TPS feature. See “150,000 GTT TPS and 75,000 EPAP TPS” on page FN-8.

If the E5-SM4G Throughput Capacity feature is not enabled, then the E5-SM4G card continues to operate at the DSM-equivalent capacities:

- GTT only mode=1700 TPS per E5-SM4G card
- EPAP-based feature node if the 1100 TPS/DSM feature is not enabled = 850 TPS per E5-SM4G card
- EPAP-based feature node if the 1100 TPS/DSM feature is enabled = 1100 TPS per E5-SM4G card

HIPR cards must be installed in any shelf that contains an E5-SM4G card. HIPR cards must be installed in all shelves in the system before the E5-SM4G Throughput Capacity feature can be enabled to increase the card and system TPS capacity.

The E5-SM4G card cannot be inserted into a node that is provisioned to process more than 192 million LNP numbers. If the E5-SM4G card is inserted into a node that can process more than 192 million LNP numbers, the card auto-inhibits.

The E5-SM4G card can co-exist with DSM cards and operate at a capacity of 5,000 TPS. The E5-SM4G card can co-exist with TSM cards that are used for GTT and GLS only, and can co-exist with two channel LIM cards per node.

The E5-SM4G card provides two physical 10/100 Mbps Ethernet ports.

The E5-SM4G card supports thermal management and alarming provisions.

Feature Control Requirements

If the E5-SM4G Throughput Capacity feature is used, then the following feature control requirements apply:

- A FAK for part number 893-0191-01
- A temporary key cannot be used to enable the feature.
- After the feature has been turned on, it cannot be turned off.
- The feature cannot be enabled if any of the following features or options is turned on:
 - E5IS (EAGLE 5 Integrated Monitoring Support) feature
 - LNP feature
 - ANSIGFLEX STP option

Hardware Requirements

The E5-SM4G card requires HIPR cards in card locations 9 and 10 in the shelf in which it is installed.

See “Appendix B. Hardware Baseline” for the hardware baseline of this release.

Enhanced Commands

The following commands are enhanced to support the E5-SM4G card. See the *Commands Manual* of your Release 37.0 documentation set for a detailed description of all commands and their parameters.

- **act/chg/rept-stat/rtrv-gpl**—Enhanced to support the **sccphc** GPL.

The following example displays output for the **rept-stat-gpl** command for the E5-SM4G card.

rept-stat-gpl:loc=6111

```
tklcl1110501 07-04-12 17:26:59 EST EAGLE5 37.0.0
GPL Auditing ON
```

GPL	CARD	RUNNING	APPROVED	TRIAL
SCCPHC	6111	128-015-000	128-015-000	128-015-000
	IMTPCI	128-006-000	128-006-000	128-006-000
	BLVXW6	128-015-000	128-015-000	128-015-000
	BLDIAG6	128-014-000	128-014-000	128-014-000
	BLBSMG	128-007-000	128-007-000	128-007-000
	BLCPLD	128-006-000	128-006-000	128-006-000

		ACTIVE	INACTIVE
IMTPCI	128-006-000	128-006-000 *	-----
BLVXW6	128-015-000	128-015-000 *	-----
BLDIAG6	128-014-000	128-014-000 *	-----
BLBSMG	128-007-000	128-007-000 *	-----
BLCPLD	128-006-000	128-006-000 *	-----

Command Completed.

;

The following example displays output for the **rtrv-gpl** command for the E5-SM4G card.

rtrv-gpl:gpl=sccphc

tekelecstp 07-02-06 11:41:14 EST EAGLE 37.0.0
 GPL Auditing ON

GPL	CARD	RELEASE	APPROVED	TRIAL	REMOVE TRIAL
SCCPHC	1114	128-002-000	128-002-000	128-002-000	-----
SCCPHC	1116	128-002-000	128-002-000	128-002-000	-----

;

- **act/init-flash**—Enhanced to support the **blbsmg** flash GPL.
- **enable-ctrl-feat**—Enhanced to prevent any LNP Ported TN quantity feature from being enabled if an E5-SM4G card is present in the system.
- **ent-card**—Enhanced to support the provisioning of the E5-SM4G card as card type **dsm** with application **vsccp**.
- **rept-stat-card**—Enhanced to support the **sccphc** GPL.

The following example displays output for the **rept-stat-card** command for the E5-SM4G card.

rept-stat-card:loc=6111

```
tklc1110501 07-04-12 17:26:29 EST EAGLE5 37.0.0
CARD  VERSION      TYPE      GPL      PST      SST      AST
6111  128-015-000    DSM      SCCPHC   IS-NR    Active   -----
ALARM STATUS      = No Alarms.
IMTPCI  GPL version = 128-006-000
BLVXW6  GPL version = 128-015-000
BLDIAG6 GPL version = 128-014-000
BLBSMG  GPL version = 128-007-000
BLCPLD  GPL version = 128-006-000
IMT BUS A      = Conn
IMT BUS B      = Conn
CURRENT TEMPERATURE = 31C ( 88F)
PEAK TEMPERATURE:  = 32C ( 90F)      [07-04-12 15:55]
SCCP % OCCUP    = 1%
```

Command Completed.

;

- **rtrv-stp**—Enhanced to support the **sccphc** GPL.

The following example displays abridged output for the **rtrv-stp** command for the E5-SM4G card.

rtrv-stp

Card	Part Number	Rev	Serial Number	Type	DB	APPL	GPL Version
----	-----	---	-----	----	--	----	-----
6109	MUX					HIPR	128-018-000
6110	MUX					HIPR	128-018-000
6111	870-2860-01	C	10207125502	DSM	4096M	VSCCP	128-018-000
6112	Empty						
6113	870-2860-01	C	10207125494	DSM	4096M	VSCCP	128-018-000
6114	Empty						
6115	870-2860-01	C	10207125498	DSM	4096M	VSCCP	128-018-000
6116	Empty						
6117	870-2860-01	C	10207125489	DSM	4096M	VSCCP	128-018-000
6118	Empty						

Limitations

The E5-SM4G card provides 3.1 GB of memory while the DSM card provides approximately 3.6 GB of memory. This reduction in memory limits the number of entries to a maximum of 84 million for EPAP applications and 192 million for LNP. Additional E5-SM4G cards may be required to match the processing capacity of DSM for these applications.

Alarms

New or Changed UAMs

None.

New or Changed UIMs

None.

Hardware Verification Codes

The new hardware verification code for the E5-SM4G Card is shown in Table FN-10 on page FN-100.

UAM Format Changes

None.

UIM Format Changes

None.

Error Messages

New or changed error messages supporting the E5-SM4G card are listed in Table FN-15 on page FN-102.

ITUN-ANSI SMS Conversion

Description

The ITUN-ANSI SMS Conversion feature modifies the SMS Address parameter in the TCAP/IS41 layer of the Registration Notification, SMS Request Return Result, and SMS Notification messages that cross the ITUN-ANSI network boundary. These messages are called identified messages and are modified per the destination network type. The SMS Address parameter in the identified messages must contain an ANSI or ITU-N point code value to enable the ITUN-ANSI SMS Conversion feature to process the messages.

Feature Control Requirements

The ITUN-ANSI SMS Conversion feature has the following feature control requirements:

- A FAK for part number 893-0153-01
- A temporary key cannot be used to enable the feature.
- After the feature has been turned on, it cannot be turned off.

Hardware Requirements

The ITUN-ANSI SMS Conversion feature requires DSM or TSM cards running the SCCP application.

See “Appendix B. Hardware Baseline” for the hardware baseline of this release.

Enhanced Commands

The following commands are enhanced to support the ITUN-ANSI SMS Conversion feature. For complete descriptions of these commands, refer to the *Commands Manual* of your EAGLE 5 1SS Release 37.0 documentation set.

- **enable/chg/rtrv-ctrl-feat**—Enhanced to enable and turn on the ITUN-ANSI SMS Conversion feature. The **rtrv-ctrl-feat** command is enhanced to display the status of the ITUN-ANSI SMS Conversion feature when the feature is enabled.

The following example displays sample output for the **rtrv-ctrl-feat** command when the ITUN-ANSI SMS Conversion feature is enabled and turned on:

rtrv-ctrl-feat

```
rlghncxa03w 07-03-29 16:40:40 EST EAGLE5 37.0.0
The following features have been permanently enabled:
Feature Name          Partnum    Status    Quantity
IPGWx Signaling TPS  893012805  on       2000
HC-MIM SLk Capacity  893012707  on        64
ITUN-ANSI SMS Conversion 893015301  on       ----
```

Limitations

The ITUN-ANSI SMS Conversion feature has the following limitations:

- ITU-I and ITUN-24 point codes are not supported.
- If DSM and TSM cards are down, the ITUN-ANSI SMS Conversion is not performed.

Alarms**New or Changed UAMs**

None.

New or Changed UIMs

None.

New or Changed Hardware Verification Codes

None.

UAM Format Changes

None.

UIM Format Changes

None.

Error Messages

None.

Large BICC MSU Support for IP Signaling

Description

The Large BICC MSU Support for IP Signaling feature increases the SIF size of the Bearer Independent Call Control (BICC) MSUs that the EAGLE 5 ISS can send and receive over the M2PA and M3UA protocols from 272 bytes to 4095 bytes.

The Large BICC MSU Support for IP Signaling feature allows large BICC MSU traffic on IP⁷ signaling-links/connections cards. The cards that support the feature include the SSEDCCM cards (SS7IPGW, IPGWI, IPLIM, and IPLIMI GPLs) and the E5-ENET cards (IPGHC and IPLHC GPLs).

The feature also prevents routing of large BICC MSU traffic on non-IP⁷ GPLs. The IPGWx software rejects a large BICC MSU if it arrives on a double-slot DCM card. If a large BICC MSU is rejected, then the MSU is discarded, a discard measurement is updated, and a UIM is issued.

The feature supports ANSI, ITU-N, ITU-I and ITU-N24 networks.

If the feature is enabled and turned on, then BICC MSUs with a SIF size greater 272 bytes can be routed. MSUs with a SIF size that is equal to or less than 272 bytes can be routed when the feature is not enabled.

NOTE: Data feed to the Sentinel and IMF systems is not supported for BICC MSU messages with a SIF size greater than 272 bytes.

NOTE: DTA and STP LAN do not support large BICC MSUs. If a large BICC MSU initiates DTA or STPLAN processing, then the MSU is routed without copying and the appropriate UIM will be issued. See Table FN-3 on page FN-94 for more information for the UIMs generated for the Large BICC MSU Support for IP Signaling feature.

Feature Control Requirements

The Large BICC MSU Support for IP Signaling feature has the following feature control requirements:

- A FAK for part number 893-0184-01
- A temporary key cannot be used to enable the feature.
- The feature can be turned off after it is turned on.

Measurements

The following LINK-COMP measurements are added for the Large BICC MSU Support for IP Signaling feature:

- LMSURCV: Number of large MSUs received
- LMSUTRN: Number of large MSUs transmitted

- LMSUOCTRCV: Number of octets received in large MSUs
- LMSUOCTTRN: Number of octets transmitted in large MSUs
- LMSURCVDSC: Number of large MSUs discarded in the receive path
- LMSUTRNDSC: Number of large MSUs discarded in the transmit path

Hardware Requirements

None.

Enhanced Commands

The following commands are enhanced to support the Large BICC MSU Support for IP Signaling feature. For complete descriptions of these commands, refer to the *Commands Manual* of your EAGLE 5 ISS Release 37.0 documentation set.

- **enable/chg/rtrv-ctrl-feat**—Enhanced to enable and turn on the Large BICC MSU Support for IP Signaling feature. The **rtrv-ctrl-feat** command is enhanced to display the status of the Large BICC MSU Support for IP Signaling feature if the feature is enabled.

The following example shows sample output for the **rtrv-ctrl-feat** command when the Large BICC MSU Support for IP Signaling feature is enabled and turned on.

rtrv-ctrl-feat

```
rlghncxa03w 07-01-31 16:40:40 EST EAGLE5 37.0.0
The following features have been permanently enabled:
Feature Name           Partnum    Status    Quantity
IPGWx Signaling TPS   893012805  on        2000
HC-MIM SLk Capacity   893012707  on         64
Lrg BICC MSU for IP Sig 893018401  on         ---
```

- **rept-stat-iptps**—Enhanced to report the number of grants used by a message if the message is larger than 272 SIF. If a message is smaller than 272 SIF, then the **rept-stat-iptps** command continues to report the number of MSUs.
- **msucount**—Enhanced to provide a signaling link bytes report for IPLIMx and IPGWx cards.

The signaling link bytes report for an IPLIMx card contains the following data:

- bytes/sec for the last second
- Average MSU size during the last second
- Maximum one-second average MSU size since card load time or reset
- Sum of bytes/sec for the last second for all signaling links

- Average MSU size for last second for all signaling links
- Maximum average MSU size since load time or reset for all signaling links
- Maximum MSU size since load time or reset for all signaling links

The following example displays a signaling link bytes report for an IPLIMx card.

```
pass:loc=1303:cmd="msucount -b"
      1      2      3      4      5      6      7      8
1234567890123456789012345678901234567890123456789012345678901234567890

tekelecstp 07-05-03 11:05:30 GMT EAGLE 37.0.0

MSUCOUNT: SLK Bytes Report

SLK Transmit
-----
                max
            avg  avg  max
slk  bytes/sec msu  msu  msu
-----
A      35000      140  273  273
B      35000      140  273  273
A1     35000      140  578  578
B1     35000      140  273  273
A2     35000      140  140  140
B2     35000      140  169  169
A3     35000     2048 2048 2048
B3     35000      140  166  166
-----
                280000      140  2048  2048

SLK Receive
-----
                max
            avg  avg  max
slk  bytes/sec msu  msu  msu
-----
A      35000      140  273  273
B      35000      140  273  273
A1     35000      140  578  578
B1     35000      140  273  273
A2     35000      140  140  140
B2     35000      140  169  169
A3     35000     2048 2048 2048
B3     35000      140  166  166
-----
total 280000      140  2048  2048

MSUCOUNT: command complete
```

The following example displays a signaling link bytes report for a specified signaling link on an IPLIMx card.

```
pass:loc=1303:cmd="msucount -b a"
      1      2      3      4      5      6      7      8
1234567890123456789012345678901234567890123456789012345678901234567890

tekelecstp 07-05-03 11:05:30 GMT EAGLE 37.0.0

MSUCOUNT: SLK Bytes Report

SLK Transmit
-----
                max
            avg  avg  max
slk  bytes/sec msu  msu  msu
-----
A      35000      140  273  273

SLK Receive
-----
                max
            avg  avg  max
slk  bytes/sec msu  msu  msu
-----
A      35000      140  273  273

MSUCOUNT: command complete
```

The signaling link bytes report for an IPGWx card contains the following data:

- bytes/sec for the last second
- Average MSU size during the last second
- Maximum one-second average MSU size since card load time or reset

The full report for IPGWx cards is enhanced to display new counts for MSUs discarded due to the Large BICC MSU Support for IP Signaling feature either being not enabled or being turned off.

NOTE: The msucount for the IPLIMx cards has no discard measurements; therefore the full report for this card is not updated to include new discard measurements.

The following example displays a signaling link bytes report for an IPGWx card.

pass:loc=1305:cmd="msucount -b"

or

pass:loc=1305:cmd="msucount -b a"

```
tekelecstp 07-05-03 11:05:30 GMT EAGLE 37.0.0

MSUCOUNT: MSU Count Report

-----
Link Byte Measurements (Link A)
-----
SLK Transmit counts          SLK Receive counts
-----
bytes/      avg      max      max  bytes/      avg      max      max
sec         msu     avg msu  msu  sec         msu     avg msu  msu
-----
444400      2020   2020   2020  444400      2020   2020   2020

MSUCOUNT: command complete
```

The following example displays a full report for an IPGWx card.

pass:loc=1305:cmd="msucount -f"

or

pass:loc=1305:cmd="msucount -l -f"

```
0          1          2          3          4          5          6          7
12345678901234567890123456789012345678901234567890123456789012345678

tekelecstp 07-05-03 11:05:30 GMT EAGLE 37.0.0

MSUCOUNT: MSU Count Report

-----
Link Measurements (Link A)
-----
```

```

Transmit Counts
-----
rate  msus      bytes
-----
2000  4294967295  4294967295
MTP Primitive (MTPP) Counts
-----
sent pdus  rcvd pdus  dscrd pdus
-----
4294967295 4294967295 4294967295
Dynamic Rtkey (RKRK) Counts
-----
rcvd pdus  dscrd pdus  updates
-----
4294967295 4294967295 4294967295

Receive Counts
-----
rate  msus      bytes
-----
2000  4294967295  4294967295
Reroute Counts
-----
sent msus  rcvd msus
-----
4294967295 4294967295

Transmit Discard Counts
-----
reason                      count
-----
no ss7 rtbl entry           4294967295
no ss7 rtkey                 4294967295
no conn avail to pc         4294967295
no conn avail to rtkey      4294967295
congested connection        4294967295
sccp msg type               4294967295
sccp class                   4294967295
circular rte                 4294967295
normalization error         4294967295
invalid traffic type        4294967295
M3UA conversion error       4294967295
SUA conversion error        4294967295
AS-Pending overflow         4294967295
AS timer Tr expiry          4294967295
reroute failure             4294967295
unexpected for APC          4294967295
lrg BICC not supported      4294967295

Receive Discard Counts
-----
reason                      count
-----
link state                   4294967295
sccp msg type               4294967295
sccp class                   4294967295
sccp called party           4294967295
sccp calling party          4294967295
isup sio                     4294967295
normalization error         4294967295
error in XSRV packet        4294967295
M3UA PDU error              4294967295
SUA PDU error               4294967295
invalid rcontext            4294967295
lrg BICC not supported      4294967295

Stored Transmit Discard Data
-----
83 01 05 05 0a 01 03 bf 09 80 03 08 0d 05 c3 07
01 05 05 05 c3 07 0a 01 03 08 e2 06 c7 04 13 10

Stored Receive Discard Data
-----
53 41 53 49 73 63 63 70 1a 00 09 01 03 08 0d 05
c3 05 0a 01 03 05 c3 05 01 05 05 08 e2 06 c7 04

END of Report

```

Limitations

None.

Alarms

New or Changed UAMs

None.

New or Changed UIMs

New or enhanced UIMs supporting the Large BICC MSU Support for IP Signaling feature are listed in Table FN-3 on page FN-94.

New or Changed Hardware Verification Codes

None.

UAM Format Changes

None.

UIM Format Changes

The format change for UIM format I69 is shown in “UIM Format Change: Large BICC MSU Support for IP Signaling” on page FN-99.

Error Messages

None.

SLAN on E5-ENET Assembly

Description

The SLAN on E5-ENET Assembly feature allows the E5-ENET card to support the features currently implemented on the DCM card (SSEDCM, or EDCM-A assembly).

The E5-ENET card running the **slanhc** GPL and the **stplan** application is referred to as the E5-SLAN card.

NOTE: The DCM, SSEDCM, EDCM-A, and E5-SLAN cards run the stplan application. The vwxslan application is no longer used.

Because the DCM card and the E5-SLAN card are both provisioned with card type **dcm** and the **stplan** application, the two cards can be “hot-swapped” without re-provisioning the card information in the system.

NOTE: Hot-swapping the DCM and E5-SLAN cards requires cable adaptors.

HIPR cards must be installed in each shelf where E5-SLAN cards are installed. At least two cards running the **stplan** application must be provisioned in the EAGLE 5 ISS to provide “n+1” redundancy. A maximum of 32 STPLAN/E5-SLAN cards can be provisioned.

If a shelf contains HMUX cards, then E5-SLAN cards must be provisioned in shelves adjacent to that shelf. The optimum configuration is to provision half of the E5-SLAN cards in the previous shelf and half in the next shelf.

The SLAN on E5-ENET Assembly feature allows the link speed and duplex configuration to be set either automatically or manually. The **auto** parameter in the **ent-dlk** command can be set to **yes** to enable auto-negotiation, which configures speed and duplex for the link automatically. The **duplex** and **speed** parameters in the **ent-dlk** command can be used to set duplex and speed manually.

If auto-negotiation is enabled, the E5-SLAN card operates at 12,000 TVG grants per second when the IP port operates at 100 Mbps full duplex, and at 1200 TVG grants per second when the IP port operates at 10 Mbps full or half duplex, or 100 Mbps half duplex.

Thermal management and alarming provisions are provided for the E5-SLAN card.

Feature Control Requirements

None.

Hardware Requirements

The SLAN on E5-ENET Assembly feature has the following hardware requirements:

- HIPR cards must be installed at card locations 9 and 10 in the shelf where the E5-SLAN card is installed.
- Backplane cable adaptors

See “Appendix B. Hardware Baseline” for the hardware baseline of this release.

Enhanced Commands

The following commands are enhanced to support the SLAN on E5-ENET Assembly feature. For complete descriptions of these commands, refer to the *Commands Manual* of your EAGLE 5 1SS Release 37.0 documentation set.

- **act/ent/dlt/canc/rept-stat/rtrv/tst-dlk**—Enhanced to support the E5-SLAN card by adding the **duplex** and **auto** optional parameters. The **rtrv-dlk** command is enhanced to display the value of the **duplex** and **speed** parameters when auto-negotiation is disabled.

The following example displays output for the **rtrv-dlk** command when auto-negotiation is disabled.

rtrv-dlk

```
tekelecstp 07-02-06 11:12:47 EST EAGLE 37.0.0
LOC  IPADDR          LINK SPEED  DUPLEX  AUTO
1101 192.168.63.34     100Mbit   FULL    NO
1103 192.168.63.11     10Mbit    HALF    NO
1107 192.168.63.12     -----   ----    YES
1201 192.168.63.13     10Mbit    HALF    NO
1203 192.168.63.14     10Mbit    HALF    NO
```

;

- **act/chg/copy/rept-stat/rtrv-gpl**—Enhanced to support the **slanhc** GPL

The following example displays output for the **rept-stat-gpl** command for an E5-SLAN card.

rept-stat-gpl:gpl=slanhc

```
tekelecstp 07-03-06 13:24:56 EST EAGLE 37.0.0
GPL Auditing ON

GPL      CARD      RUNNING          APPROVED          TRIAL
SLANHC   1103      128-002-000     128-002-000     128-002-000
SLANHC   1107      128-002-000     128-002-000     128-002-000
Command Completed.
```

;

The following example displays output for the **rept-stat-gpl** command when the **loc** parameter is specified for an E5-SLAN card.

rept-stat-gpl:loc=1103

07-03-06 09:30:12 EST EAGLE 37.0.0
 GPL Auditing ON

GPL	CARD	RUNNING	APPROVED	TRIAL
SLANHC	1103	-----	-----	-----
	IMTPCI	128-002-000	128-002-000	128-002-000
	BLVXW6	128-002-000	128-002-000	128-002-000
	BLDIAG6	128-002-000	128-002-000	128-002-000
	BLBEPM	128-002-000	128-002-000	128-002-000
	BLCPLD	128-002-000	128-002-000	128-002-000
			ACTIVE	INACTIVE
	IMTPCI	128-002-000	128-002-000 *	-----
	BLVXW6	128-002-000	128-002-000 *	-----
	BLDIAG6	128-002-000	128-002-000 *	-----
	BLBEPM	128-002-000	128-002-000 *	-----
	BLCPLD	128-002-000	128-002-000 *	-----

Command Completed.

;

The following example displays output for the **rtrv-gpl** command for the E5-SLAN card.

rtrv-gpl:gpl=slanhc

tekelecstp 07-02-06 11:41:14 EST EAGLE 37.0.0
 GPL Auditing ON

GPL	CARD	RELEASE	APPROVED	TRIAL	REMOVE TRIAL
SLANHC	1114	128-002-000	128-002-000	128-002-000	-----
SLANHC	1116	128-002-000	128-002-000	128-002-000	-----

;

- **alw/inh/flash/rept-stat/rmv/rst/init/rept-stat/rtrv-card**—Enhanced to support the E5-SLAN card.

The following example shows output for the **rept-stat-card** command on an E5-SLAN card.

rept-stat-card:loc=1103:mode=full

tekelecstp 07-04-04 15:02:21 EST EAGLE 37.0.0

CARD	VERSION	TYPE	GPL	PST	SST	AST
1103	128-002-000	DCM	SLANHC	IS-NR	Active	-----

ALARM STATUS = No Alarms.
 IMTPCI GPL version = 128-002-000
 BLVXW6 GPL version = 128-002-000
 BLDIAG6 GPL version = 128-002-000
 BLBEPM GPL version = 128-002-000
 BLCPLD GPL version = 128-002-000
 IMT BUS A = Conn
 IMT BUS B = Conn
 CLOCK A = Active
 CLOCK B = Idle
 CLOCK I = Idle
 MBD BIP STATUS = Valid
 MOTHER BOARD ID = EPM A
 DBD STATUS = Valid

```

DBD TYPE           = 1G ENET
DBD MEMORY SIZE    = 512M
HW VERIFICATION CODE = ----
CURRENT TEMPERATURE = 50C (122F)
PEAK TEMPERATURE:  = 50C (122F)      [02-09-14 14:49]
DLK A PST          = OOS-MT-DSBLD   SST = Manual   AST = -----
SLAN % EAGLE CAPACITY = 0%
SLAN % HOST CAPACITY  = 0%

```

Command Completed.

;

The following example shows all cards that are running the STPLAN application.

rept-stat-card:appl=stplan

```

tekelecstp 07-03-22 09:56:52 EST EAGLE 37.0.0
CARD  VERSION      TYPE      GPL      PST      SST      AST
1101  128-013-000  DCM      STPLAN   IS-NR    Active   -----
1107  128-013-000  DCM      STPLAN   IS-NR    Active   -----
1111  128-013-000  DCM      STPLAN   IS-NR    Active   -----
1206  128-013-000  DCM      STPLAN   IS-NR    Active   -----
1318  128-013-000  DCM      STPLAN   IS-NR    Active   -----
2212  128-013-000  DCM      STPLAN   IS-NR    Active   -----
3101  128-013-000  DCM      STPLAN   IS-NR    Active   -----
4312  128-013-000  DCM      STPLAN   IS-NR    Active   -----
5115  128-013-000  DCM      STPLAN   IS-NR    Active   -----
6101  128-013-000  DCM      STPLAN   IS-NR    Active   -----

```

Command Completed.

;

The following example shows output for the **rtrv-card** command. Location 1108 contains an E5-SLAN card.

rtrv-card

Command Accepted - Processing

```

slanhccstp 07-05-03 13:19:01 GMT EAGLE 37.0.0
CARD  TYPE      APPL      LSET NAME  LINK SLC LSET NAME  LINK SLC
1101  TSM          GLS
1103  DCM          IPLIM     1s392      A      1
1108  DCM          STPLAN
1111  STC          EROUTE
1112  STC          EROUTE
1113  GPSM         OAM
1114  TDM-A
1115  GPSM         OAM
1116  TDM-B
1117  MDAL
1208  DCM          STPLAN

```

;

- **chg/rept-meas**—Enhanced to support the **slanhc** GPL
- **chg/rtrv-measopts**—Enhanced to support the **slanhc** GPL
- **chg/rtrv-th-alm**—Enhanced to support the E5-SLAN card
- **disp/set-mem**—Enhanced to support the **slanhc** GPL

- **ent/dlt/disp-bp**—Enhanced to support the **slanhc** GPL
- **netstat**—Enhanced as follows:
 - The **-e** option is added to display DPL driver measurement data. For the E5-SLAN card, the **-e** option results are shown as 0.
 - The **-i** option is enhanced to display GEI driver interface information.
 - The **-m** option is enhanced to add the *minsize*, *maxsize*, and *avgsz* fields to the **-data** and **-sys** suboptions.
 - The **-d** option no longer supports the **-m**, **-p**, and **-h** suboptions.
 - The **-f** suboption is added to the **-d** option to display DPL driver measurement data in full format.

The following example displays output for the **netstat** command **-e** option.

pass:cmd="netstat -e":loc=1111

```

Command Accepted - Processing

tekelecstp 07-05-19 04:45:51 IST  EAGLE5 37.0.0
;

tekelecstp 07-05-19 04:45:51 IST  EAGLE5 37.0.0
PASS: Command sent to card
;

tekelecstp 07-05-19 04:45:51 IST  EAGLE5 37.0.0

Dual Port Link Statistics
In Ucast Octets = 0           In Ucast Pkts = 0
Out Ucast Octet = 0          Out Ucast Pkts = 0
Out Bcast Octets = 0         Out Bcast Pkts = 0
Out Ucast Octets Err = 0     Out Ucast Pkts Err = 0
Out Bcast Octet Err = 0     Out Bcast Pkts Err = 0
Invalied copy lenth = 0     IP Frame too big = 0
No Mbufs Avail = 0          No System bufs Avail = 0
TVG Func Err = 0            System buf Err = 0
Inbound too big = 0

;

```

The following example displays output for the **netstat** command **-f** suboption.

pass:cmd="netstat -d 0 -f":loc=1111

```

Command Accepted - Processing

tekelecstp 07-05-19 04:45:51 IST  EAGLE5 37.0.0
;

tekelecstp 07-05-19 04:45:51 IST  EAGLE5 37.0.0
PASS: Command sent to card
;

```

```

tekelecstp 07-05-19 04:45:51 IST EAGLE5 37.0.0

Report Time      = 00-00-00 00:01:01.335
Card Load Time   = 00-00-00 00:00:09.905
Last Reset Time  = 00-00-00 00:00:46.665

crc err = 0          align err = 0          symbol err = 0
rx err = 0          missed pkt = 0        sequence err = 0
cr ex er = 0       rx len err = 0          rx no buf = 0
rx total = 13562    rx undersz = 0        rx frag = 0
good pkt rx= 13562  rx bcast = 149       rx mcast = 0
rx oversz = 0       rx jabber = 0         collision = 0
tx total = 22019    late coln = 0         tx underun = 0
good pkt tx= 22019  tx bcast = 0          tx mcast = 0
single col = 0      excess coln = 0       multi colsn = 0
pkt rx 64 = 179     pkt rx 127 = 13383   pkt rx 255 = 0
pkt rx 511 = 0      pkt rx 1023 = 0      pkt rx 1522 = 0
pkt tx 64 = 30       pkt tx 127 = 0        pkt tx 255 = 0
pkt tx 511 = 21989  pkt tx 1023 = 0      pkt tx 1522 = 0
tcp cxt tx = 0      rx FIFO head = 0x00000caf rx FIFO tail = 0x00000caf
rx FIFO pc = 0      rx FIFO hs = 0x00000caf rx FIFO ts = 0x00000caf
tcp tx fc = 0       tx FIFO head = 0x00001f30 tx FIFO tail = 0x00001f30
tx FIFO pc = 0      tx FIFO hs = 0x00001f30 tx FIFO ts = 0x00001f30
XON rcv = 0         XON xmit = 0         XOFF rcv = 0
XOFF tx = 0         unsupport FC = 0
defer count = 0     tx no crs = 0
good octets rx = 948266 total octets rx = 948266
good octets tx = 7983927 total octets tx = 7983927

```

;

The following example displays output for the **netstat** command **-i** option.

pass:cmd="netstat -i":loc=1111

```

tekelecstp 07-05-19 04:45:51 IST EAGLE5 37.0.0

-> tklc_ifShow
lo (unit number 0):
  Flags: (0x48049) UP LOOPBACK MULTICAST TRAILERS ARP RUNNING INET_UP
  Type: SOFTWARE_LOOPBACK
  inet: 127.0.0.1
  Netmask 0xff000000 Subnetmask 0xff000000
  Metric is 0
  Maximum Transfer Unit size is 1536
  0 packets received; 1 packets sent
  0 multicast packets received
  0 multicast packets sent
  0 input errors; 0 output errors
  0 collisions; 0 dropped
  0 output queue drops
DPLend (unit number 0):
  Flags: (0x20043) UP BROADCAST ARP RUNNING
  Type: ETHERNET_CSMACD
  Ethernet address is 00:00:00:00:00:00
  Metric is 0
  Maximum Transfer Unit size is 485
  0 octets received
  0 octets sent
  0 unicast packets received
  0 unicast packets sent
  0 non-unicast packets received
  0 non-unicast packets sent
  0 incoming packets discarded

```

```

    0 outgoing packets discarded
    0 incoming errors
    0 outgoing errors
    0 unknown protos
    0 collisions; 0 dropped
    0 output queue drops
gei (unit number 2):
  Flags: (0x70043) UP BROADCAST ARP RUNNING INET_UP AUTONEG 100MB FDX DIX

  Type: ETHERNET_CSMACD
  inet: 192.168.55.203
  Broadcast address: 192.168.55.255
  Netmask 0xffffffff Subnetmask 0xffffffff0
  Ethernet address is 00:00:17:0c:dd:e0
  Metric is 0
  Maximum Transfer Unit size is 1500
  1708790504 octets received
  989333197 octets sent
  392089485 unicast packets received
  712715002 unicast packets sent
  0 multicast packets received
  0 multicast packets sent
  514480 broadcast packets received
  7 broadcast packets sent
  0 incoming packets discarded
  0 outgoing packets discarded
  0 incoming errors
  0 outgoing errors
  0 unknown protos
  0 collisions; 0 dropped
  0 output queue drops
value = 26 = 0x1a

```

;

NETSTAT command complete

;

The following example displays output for the **netstat** command **-m** option.

pass:cmd="netstat -m data":loc=1111

Command Accepted - Processing

```

tekelecstp 07-05-19 04:45:51 IST EAGLE5 37.0.0
pass:cmd="netstat -m data":loc=1111
Command entered at terminal #7.

```

;

```

-> netStackDataPoolShow
type          number
-----
FREE         :    37587
DATA         :     23
HEADER       :     22
SOCKET       :      0
PCB          :      0
RTABLE       :      0
HTABLE       :      0
ATABLE       :      0
SONAME       :      0
ZOMBIE       :      0
SOOPTS       :      0
FTABLE       :      0

```

```

RIGHTS :      0
IFADDR :      0
CONTROL :      0
OOBDATA :     0
IPMOPTS :     0
IPMADDR :     0
IFMADDR :     0
MRTABLE :     0
TAG :        0
TOTAL :      37632
number of mbufs: 37632
number of times failed to find space: 0
number of times waited for space: 0
number of times drained protocols for space: 0
    
```

CLUSTER POOL TABLE

size	clusters	free	usage	minsize	maxsize	avgsz
64	6336	6336	33	4	56	13
128	6336	6313	712952418	128	128	1
256	6336	6336	0	0	0	0
512	10240	10218	712654339	293	293	3
1024	1024	1024	0	0	0	0
2048	1024	1024	0	0	0	0

value = 80 = 0x50 = 'P'

```

;
NETSTAT command complete
    
```

- **rept-stat-db**—Enhanced to support the **slanhc** GPL
- **rept-stat-slan**—Enhanced to report the status of E5-SLAN cards
- **rept-stat-sys**—Enhanced to support the **slanhc** GPL
- **rtrv-meas-sched**—Enhanced to support the **slanhc** GPL
- **rtrv-stp**—Enhanced to support the **slanhc** GPL

The following example shows abridged output for the **rtrv-stp** command. Location 1108 contains an E5-SLAN card.

rtrv-stp

```

slanhcstp 07-05-03 13:19:14 GMT EAGLE 37.0.0

Card  Part Number  Rev Serial Number  Type    DB    APPL    GPL Version
----  -
1101  870-1289-04  K   10206035030    TSM    256M  GLS     128-018-000
1102  Empty
1103  870-2212-02  A   10206385320    DCM    512M  IPLIM   128-018-000
1104  Empty
1105  Empty
1106  Empty
1107  Empty
1108  870-2212-02  A   10206365046    DCM    512M  STPLAN  128-018-000
1109  MUX
1110  MUX
1111  870-2212-02  A   10206275736    STC    512M  EROUTE  028-018-000
    
```

1112	870-2372-08	D	10206125537	STC	-	EROUTE	028-018-000
1113	870-2360-06	C	10206255064	GPSM	1024M	EOAM	128-018-000
1114	TDM						
1115	870-2360-06	C	10206255165	GPSM	1024M	EOAM	128-018-000
1116	TDM						
1117	MDAL						
1118	Empty						
1201	Empty						
1202	Empty						
1203	Empty						
1204	Empty						
1205	Empty						
1206	Empty						
1207	Empty						
1208	Empty			DCM		STPLAN	
1209	MUX					HIPR	128-016-000
1210	MUX					HIPR	128-016-000
1211	Empty						
1212	Empty						

Limitations

The SLAN on E5-ENET Assembly feature has the following limitations:

- The **-m**, **-p**, and **-h** suboptions of the **-d** option for the **netstat** command are not supported for the E5-SLAN card.
- The E5-SLAN card does not preserve memory across boots. The application will not remain intact across card boots.
- The performance of the E5-SLAN card is limited by the data rate of the Ethernet port and the capability of the external LAN/WAN.

Alarms

New or Changed UAMs

None.

New or Changed UIMs

The new UIM supporting the SLAN on E5-ENET Assembly feature is shown in Table 4 on page FN-95.

Hardware Verification Codes

The new hardware verification code supporting the SLAN on E5-ENET Assembly feature is shown in Table FN-11 on page FN-100.

UAM Format Changes

None.

UIM Format Change

The format change for UIM format I72 is shown in “UIM Format Change: SLAN on E5-ENET Assembly/STC on E5-ENET Assembly” on page FN-99.

Error Messages

New or enhanced error messages supporting the SLAN on E5-ENET Assembly feature are listed in Table FN-16 on page FN-102.

STC on E5-ENET Assembly

Description

The STC on E5-ENET Assembly feature allows the E5-ENET card to support the functions currently implemented on the STC card (SSEDCM, DCM, or EDCM-A assembly) for the EAGLE 5 Integrated Monitoring Support feature.

The E5-ENET card running the **erthc** GPL and the **eroute** application is referred to as the E5-STC card.

Because the SSEDCM STC card and the E5-STC card are both provisioned with card type **stc** and the **eroute** application, the two cards can be “hot-swapped” without re-provisioning the card information in the system.

NOTE: Hot-swapping the SSEDCM and E5-STC cards requires cable adaptors.

A minimum of two cards running the **eroute** application must be provisioned in the EAGLE 5 ISS to support the EAGLE 5 Integrated Monitoring Support feature (“n+1” to provide redundancy). A maximum of 32 STC/E5-STC cards can be provisioned.

HIPR cards must be installed in each shelf where E5-STC cards are installed.

If a shelf contains HMUX cards, then E5-STC cards must be provisioned in shelves adjacent to the shelf that contains the cards being monitored. The optimum configuration is to provision half of the E5-STC cards in the previous shelf and half in the next shelf.

If IP signalling links are being monitored, then only single-slot STC cards can be provisioned. HIPR cards must be used in the shelves where the IP links are located.

The E5-STC card operates at 12,000 TVG grants per second when the IP port operates at 100 Mbps full duplex, and at 1200 TVG grants per second when the IP port operates at 10 Mbps full or half duplex, or 100 Mbps half duplex. The E5-STC card is preconfigured to use auto-negotiation to set duplex and speed automatically.

Thermal management and alarming provisions are provided for the E5-STC card.

Feature Control Requirements

None.

Hardware Requirements

The STC on E5-ENET Assembly feature has the following hardware requirements:

- Two HIPR cards must be installed in the shelf where the E5-STC card is installed.
- Backplane cable adaptors

See “Appendix B. Hardware Baseline” for the hardware baseline of this release.

Enhanced Commands

The following commands are enhanced to support the STC on E5-ENET Assembly feature. For complete descriptions of these commands, refer to the *Commands Manual* of your EAGLE 5 1SS Release 37.0 documentation set.

- **act/chg/copy/rept-stat/rtrv-gpl**—Enhanced to support the **erthc** GPL.

The following example displays output for the **rept-stat-gpl** command when the **loc** parameter is specified for an E5-STC card.

rept-stat-gpl:loc=1107

```
tekelecstp 07-01-06 16:14:22 EST EAGLE 37.0.0
GPL Auditing ON

GPL          CARD          RUNNING          APPROVED          TRIAL
ERTHC        1107          -----          -----          -----
              IMTPCI          128-002-000          128-002-000          128-002-000
              BLVXW6          128-002-000          128-002-000          128-002-000
              BLDIAG6          128-002-000          128-002-000          128-002-000
              BLBEPM          128-002-000          128-002-000          128-002-000
              BLCPLD          128-002-000          128-002-000          128-002-000

              IMTPCI          128-002-000          ACTIVE          INACTIVE
              BLVXW6          128-002-000          128-002-000 *          -----
              BLDIAG6          128-002-000          128-002-000 *          -----
              BLBEPM          128-002-000          128-002-000 *          -----
              BLCPLD          128-002-000          128-002-000 *          -----
```

Command Completed.

;

The following example displays output for the **rtrv-gpl** command on an E5-STC card.

rtrv-gpl:gpl=erthc

```
tekelecstp 07-02-06 11:41:14 EST EAGLE 37.0.0
GPL Auditing ON

GPL          CARD  RELEASE          APPROVED          TRIAL          REMOVE TRIAL
ERTHC        1114  128-002-000          128-002-000          128-002-000          -----
ERTHC        1116  128-002-000          128-002-000          128-002-000          -----
```

;

- **ent/dlt/inh/alw/rept-stat/rtrv-card**—Enhanced to support the E5-STC card.

The following example displays output for the **rept-stat-card** command for an E5-STC card.

rept-stat-card:loc=1103:mode=full

```
tekelecstp 07-03-06 15:40:32 EST EAGLE 37.0.0

CARD   VERSION      TYPE      GPL          PST          SST          AST
1103   128-002-000    STC       ERTHC        IS-NR        Active       -----
ALARM STATUS      = No Alarms.
IMTPCI  GPL version = 128-002-000
BLVXW6  GPL version = 128-002-000
BLDIAG6 GPL version = 128-002-000
BLBEPM  GPL version = 128-002-000
BLCPLD  GPL version = 128-002-000
IMT BUS A          = Conn
IMT BUS B          = Conn
CLOCK A           = Active
CLOCK B           = Idle
CLOCK I           = Idle
MBD BIP STATUS    = Valid
MOTHER BOARD ID   = EPM A
DBD STATUS        = Valid
DBD TYPE          = 1G ENET
DBD MEMORY SIZE   = 512M
HW VERIFICATION CODE = ----
CURRENT TEMPERATURE = 51C (124F)
PEAK TEMPERATURE:  = 51C (124F)      [02-09-20 10:48]
EROUTE % OCCUP    = 0%
NTP broadcast = VALID
STC IP PORT A:           IS-NR          Active       -----
ALARM STATUS = No Alarms.
STC IP PORT B:           OOS-MT          Unavail     -----
ALARM STATUS = ** 0084 IP Connection Unavailable
ERROR STATUS = DHCP Lease. Physical Link.
```

Command Completed.

;

The following example shows output for the **rtrv-card** command. Location 1111 contains an E5-STC card.

rtrv-card

Command Accepted - Processing

```
tekelecstp 07-05-03 13:19:01 GMT EAGLE 37.0.0
CARD  TYPE      APPL      LSET NAME   LINK SLC LSET NAME   LINK SLC
1101  TSM          GLS
1103  DCM          IPLIM      1s392      A      1
1108  DCM          STPLAN
1111  STC          EROUTE
1112  STC          EROUTE
1113  GPSM         OAM
1114  TDM-A
1115  GPSM         OAM
1116  TDM-B
1117  MDAL
1208  DCM          STPLAN
```

;

- **chg/rtrv-th-alm**—Enhanced to support the E5-STC card
- **disp/set-mem**—Enhanced to support the **erthc** GPL
- **ent/dlt/disp-bp**—Enhanced to support the **erthc** GPL
- **rept-stat-eroute**—Enhanced to display the status of an E5-STC card.

The following example displays output for the **rept-stat-eroute** command for an E5-STC card.

rept-stat-eroute

```
rlghncxa03w 07-01-11 16:35:57 IST EAGLE 37.0.0
EROUTE SUBSYSTEM REPORT IS-NR Active -----
STC Cards Configured= 5 Cards IS-NR= 2
EISCOPY BIT = ON
System Threshold = 80% Total Capacity
System Peak EROUTE Load: 12991 Buffers/Sec
System Total EROUTE Capacity: 21000 Buffers/Sec
SYSTEM ALARM STATUS = No Alarms.
```

CARD	VERSION	PST	SST	AST	TVG USAGE	CPU USAGE
1211	-----	OOS-MT-DSBLD	Manual	-----	0%	0%
1104	052-008-000	IS-NR	Active	-----	63%	28%
1112	052-008-001	IS-NR	Active	-----	55%	28%
1303	255-255-255	OOS-MT	Isolated	-----	0%	0%
1311	255-255-255	OOS-MT	Isolated	-----	0%	0%

```
-----
EROUTE Service Average TVG Capacity = 59% Average CPU Capacity = 28%

Command Completed.
```

- **netstat**—Enhanced as follows:
 - The **-e** option is added to display DPL driver measurement data.
 - The **-i** option is enhanced to display GEI driver interface information.
 - The **-m** option is enhanced to add the *minsize*, *maxsize*, and *avgsz* fields to the **-data** and **-sys** suboptions.
 - The **-d** option no longer supports the **-m**, **-p**, and **-h** suboptions.
 - The **-f** suboption is added to the **-d** option to display DPL driver measurement data in full format.

Except for the DPL driver measurement data, the output for the **netstat** command for the STC on E5-ENET Assembly feature is the same as the output for the SLAN on E5-ENET Assembly feature. An example of the DPL driver measurement data is shown below. See “SLAN on E5-ENET Assembly” on page FN-23 for examples of the remaining output.

pass:loc=1111:cmd="netstat -e"

```
Command Accepted - Processing
```

```
tekelecstp 07-05-03 11:05:30 GMT EAGLE 37.0.0
pass:loc=1111:cmd="netstat -e"
Command entered at terminal #4.
```

```
;
```

```
tekelecstp 07-05-03 11:05:30 GMT EAGLE 37.0.0
PASS: Command sent to card
```

```
;
```

```
tekelecstp 07-05-03 11:05:30 GMT EAGLE 37.0.0
```

Dual Port Link Statistics

```
In Ucast Octets = 1541958120          In Ucast Pkts = 3345004
Out Ucast Octet = 29098390           Out Ucast Pkts = 440784
Out Bcast Octets = 84                Out Bcast Pkts = 2
Out Ucast Octets Err = 0              Out Ucast Pkts Err = 0
Out Bcast Octet Err = 0               Out Bcast Pkts Err = 0
Invald copy lenth = 0                 IP Frame too big = 0
No Mbufs Avail = 0                   No System bufs Avail = 0
TVG Func Err = 0                      System buf Err = 0
Inbound too big = 0
```

- **rept-stat-db**—Enhanced to support the **erthc GPL**
- **rept-stat-sys**—Enhanced to support the **erthc GPL**
- **rtrv-stp**—Enhanced to support the **erthc GPL**

The following example shows abridged output for the **rtrv-stp** command. Location 1111 contains an E5-STC card.

rtrv-stp

```
slanhccstp 07-05-03 13:19:14 GMT EAGLE 37.0.0
```

Card	Part Number	Rev	Serial Number	Type	DB	APPL	GPL Version
1101	870-1289-04	K	10206035030	TSM	256M	GLS	128-018-000
1102	Empty						
1103	870-2212-02	A	10206385320	DCM	512M	IPLIM	128-018-000
1104	Empty						
1105	Empty						
1106	Empty						
1107	Empty						
1108	870-2212-02	A	10206365046	DCM	512M	STPLAN	128-018-000
1109	MUX					HIPR	128-016-000
1110	MUX					HIPR	128-016-000
1111	870-2212-02	A	10206275736	STC	512M	EROUTE	028-018-000
1112	870-2372-08	D	10206125537	STC	-	EROUTE	028-018-000
1113	870-2360-06	C	10206255064	GPSM	1024M	EOAM	128-018-000
1114	TDM						
1115	870-2360-06	C	10206255165	GPSM	1024M	EOAM	128-018-000
1116	TDM						
1117	MDAL						
1118	Empty						
1201	Empty						
1202	Empty						
1203	Empty						
1204	Empty						
1205	Empty						

1206	Empty			
1207	Empty			
1208	Empty	DCM	STPLAN	
1209	MUX		HIPR	128-016-000
1210	MUX		HIPR	128-016-000
1211	Empty			
1212	Empty			

Limitations

The STC on E5-ENET Assembly feature has the following limitations:

- The suboptions **{-m, -p, -h}** of the **-d** option for the **netstat** command are not supported for E5-STC card.
- The E5-STC card does not preserve memory across card boots: therefore, the application does not remain intact across card boots.
- The performance of the E5-STC card is limited by the data rate of the Ethernet port and the capability of the external LAN/WAN.

Alarms

New or Changed UAMs

None.

New or Changed UIMs

The new UIM supporting the STC on E5-ENET Assembly feature is shown in Table 4 on page FN-95.

Hardware Verification Codes

The new hardware verification code for the STC on E5-ENET Assembly feature is shown in Table FN-12 on page FN-100.

UAM Format Changes

None.

UIM Format Changes

The change for UIM format I72 is shown in “UIM Format Change: SLAN on E5-ENET Assembly/STC on E5-ENET Assembly” on page FN-99.

Error Messages

None.

SUA DAUD with SSN Support

Description

The SUA DAUD with SSN Support feature enables to the EAGLE 5 ISS to perform the following functions:

- Update the SCCP cards with the status of remote subsystems to indicate whether the subsystems are allowed or prohibited
- Determine the status of any subsystem using destination audit (DAUD) messages that contain the **ssn** parameter.

When a node for a remote subsystem becomes available or unavailable, then the SUA DAUD with SSN Support feature allows the MAP table, maintained on the EAGLE 5 ISS SCCP cards, to be updated with the new status.

When a DAUD message containing an **ssn** parameter is sent over an SUA association to the EAGLE 5 ISS, Gateway Screening is performed by a card that contains the SS7IPGW, IPGWI, or IPGHC GPLs. The message is then sent to the SCCP card to query the availability status of the subsystem. The EAGLE 5 ISS sends one of the following responses based on the subsystem status:

- Status is available—Destination Available (DAVA) message
- Status is unavailable—Destination Unavailable (DUNA) message
- Status cannot be determined—Subsystem Status Unknown error message

Feature Control Requirements

None.

Hardware Requirements

None.

New or Enhanced Commands

The **msucount** command is enhanced to deliver the existing 'management blocking' message if the number of DAUD messages arriving at the EAGLE 5 ISS in one second is greater than 5 percent of the TPS rate, and that number is greater than the allowed minimum of 100 DAUD messages.

Limitations

The SUA DAUD with SSN Support feature has the following limitations:

- DAUD messages that contain the SSN parameter are not subjected to the Gateway Screening service.
- Subsystem status updates are implemented only when the route key is full SCCP (DPC-SI[3]-SSN). If a subsystem is present on a remote ASP connected by an AS that has only DPC or DPC-SI route key, then the IPGWx code does not send updates on the status for the remote subsystem to the SCCP management module.

Alarms**New or Changed UAMs**

None.

New or Changed UIMs

None.

Hardware Verification Codes

None.

UAM Format Changes

None.

UIM Format Changes

None.

Error Messages

None.

Support for 32 Prepaid SMS Intercept Platforms

Description

The Support for 32 Prepaid SMS Intercept Platforms feature increases the number of Prepaid Portability Type (PPT) subscribers and Intelligent Network (IN) SCP Point Code + Routing Indicator (PC + RI) translations that can be supported by the Prepaid SMS Intercept Phase 1 (PPSMS) feature to 32. Each translation corresponds to an IN platform and can be either ITU-N, ITU-I or a combination of the two.

Any subscriber that is not one of the 32 PPTs is considered to be a postpaid/contract subscriber.

The Support for 32 Prepaid SMS Intercept Platforms feature allows any Mobile Station Integrated Services Digital Number (MSISDN) in the RTDB to be associated with any of the 32 PPTs. Each PPT can then be associated with any of the IN platforms.

Loadsharing can be performed across 8 of the IN platforms, using the MAP and MRN tables. If the Transaction-Based Weighted GTT feature is turned on, then loadsharing can be performed across all 32 platforms.

If the Flexible GTT Loadsharing (FGTTLS) feature is turned on, then lookup in the MAP or MRN table is performed using the set ID (SETID) obtained from the PPSOPTS table. If the FGTTLS feature is turned off, then lookup is performed on only the default MAP or MRN set.

NOTE: The Support for 32 Prepaid SMS Intercept Platforms feature removes the dependency of the PPSMS feature on the G-Port feature. PPSMS can now be enabled without enabling G-Port.

Feature Control Requirements

The Support for 32 Prepaid SMS Intercept Platforms feature is enabled when the PPSMS feature is enabled. The G-Port feature does not have to be enabled before enabling the PPSMS feature.

Hardware Requirements

None.

Added or Enhanced Commands

The following commands are added or enhanced to support the Support for 32 Prepaid SMS Intercept Platforms feature. See the *Commands Manual* of your Release 37.0 documentation set for a detailed description of all commands and their parameters.

- **chg/rtrv-gsmopts**—Enhanced to remove IN platform administration functionality. The **rtrv-gsmopts** command no longer displays information related to the PPSMS feature.
- **chg/rtrv-ppsopts**—Added to provision and administer IN platform information, including global title address (GTA) digits, point code (PC), routing indicator (RI), and MAP/MRN set ID. The **rtrv-ppsopts** command is added to display the PPSMS configurations when the PPSMS feature is enabled and turned on.

The following example displays abridged output for the **rtrv-ppsopts** command when the PPSMS feature is enabled and turned on.

rtrv-ppsopts

```
rlghncxa03w 07-03-29 16:40:40 EST EAGLE5 37.0.0
Prepaid SMS Options
```

```
-----
```

PPT	PCI/PCN	RI
---	-----	---
1	PCI: 1-001-1	GT
2	PCI: 1-001-2	SSN
3	-----	GT
4	-----	GT
5	-----	GT
6	-----	GT
7	-----	GT
8	-----	GT
9	-----	GT
10	-----	GT
11	-----	GT
12	-----	GT
13	-----	GT
14	-----	GT
15	-----	GT
16	-----	GT
17	-----	GT
18	-----	GT
19	-----	GT
20	-----	GT
21	-----	GT
22	-----	GT
23	-----	GT
24	-----	GT
25	-----	GT
26	-----	GT
27	-----	GT
28	-----	GT
29	-----	GT
30	-----	GT
31	-----	GT
32	-----	GT

```
GTA
---
1110
1111
```

1112
NONE
NONE
NONE
NONE
NONE
NONE

;

- **dlt-map**—Enhanced to prevent deleting or changing a PC/Set ID in the MAP table if it is the last such entry and is being referenced by an entry in the PPSOPTS table.
- **dlt-mrn**—Enhanced to prevent deleting or changing in the MRN table if it is the last such entry and is being referenced by the PPSOPTS table.
- **dlt-rte**—Enhanced to prevent deletion of the last route to a point code if it is being referenced by the PPSOPTS table.
- **enable/chg/rtrv-ctrl-feat**—Enhanced to enable and turn on the PPSMS feature without requiring that G-Port be enabled.

Limitations

None.

Alarms

New or Changed UAMs

None.

New or Changed UIMs

None.

UAM Format Changes

None.

UIM Format Changes

None.

Error Messages

New or changed error messages supporting the Support for 32 Prepaid SMS Intercept Platforms feature are listed in Table FN-17 on page FN-103.

Features from Limited Availability Releases

The following features are included in Release 37.0 from Limited Availability releases that were available following the General Availability Release of EAGLE 5 ISS 35.1.

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.

Feature Control Requirements

The 1100 TPS/DSM for ITU NP feature has the following feature control requirements:

- A FAK for part number 893-0180-01
- A temporary FAK cannot be used to enable the feature.
- The 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 the 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

See “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 37.0 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
IPGWx Signaling TPS	893012805	on	2000
HC-MIM SLk Capacity	893012707	on	64
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 37.2.0EAGLE 37.2.0
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-DSELD Manual        -----    0%    0%
-----
SCCP Service Average MSU Capacity = 50%   Average CPU Capacity = 23%

AVERAGE CPU USAGE PER SERVICE:
GTT   =   50%

TOTAL SERVICE STATISTICS:

SERVICE   SUCCESS   ERRORS   FAIL   REROUTE\   FORWARD   TOTAL
GTT:       1200     600     RATIO   WARNINGS   TO GTT
          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

None.

New or Changed UIMs

None.

New or Changed Hardware Verification Codes

None.

UAM Format Changes

None.

UIM Format Changes

None.

Error Messages

New or changed error messages supporting the 1100 TPS/DSM for ITU NP feature are listed in Table FN-18 on page FN-105.

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.

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 ROUFDGTS 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 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.

Feature Control Requirements

The AINPQ feature has the following feature control requirements:

- A FAK for part number 893-0178-01
- 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.
- A temporary FAK cannot be used to enable 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.

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.

See “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 37.0 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 37.2.0
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
IPGWx Signaling TPS	893012805	on	2000
HC-MIM SLk Capacity	893012707	on	64
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

None.

New or Changed UIMs

For information on the UIM supporting the ANSI-41 INP Query feature, see Table FN-6 on page FN-96.

New or Changed Hardware Verification Codes

The new hardware verification code for the ANSI-41 INP Query feature is shown in Table FN-13 on page FN-101.

UAM Format Changes

None.

UIM Format Changes

None.

Error Messages

New or enhanced error messages supporting the ANSI-41 INP Query feature are listed in Table FN-19 on page FN-105.

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 DN 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-67 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 Control Requirements

The A-Port feature has the following feature control requirements:

- A FAK for part number 893-0155-01
- 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.
- A temporary FAK cannot be used to enable the feature.
- An LNP quantity feature and the A-Port feature cannot be enabled in the system at the same time.

Measurements

New registers are added to the NP SSP reports for the A-Port feature: Hourly Maintenance Measurements on NP SSP (MTCH-SSP) and Daily Maintenance Measurements on NP SSP (MTCD-SSP). These new measurement registers are supported with and without the Measurements Platform feature enabled.

- 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.

See “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 37.0 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
IPGWx Signaling TPS	893012805	on	2000
HC-MIM SLk Capacity	893012707	on	64
A-PORT	893016601	off	----

- **chg/rtrv-is41opts**—New commands to provision IS41 options.

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 37.2.0
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:cptype=mnnp

```
tklc1081301 06-10-05 11:43:02 EST EAGLE5 37.2.0

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=mnps

```
rlghncxa03w 06-08-29 16:40:40 EST EAGLE 37.2.0
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 37.2.0
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:
      SERVICE      SUCCESS      ERRORS      FAIL      REROUTE\      FORWARD
      GTT:          1995          5          0%          WARNINGS      TO GTT      TOTAL
      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 37.2.0
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-93.

New or Changed UIMs

The new UIM supporting the A-Port feature is listed in Table FN-5 on page FN-96.

New or Changed Hardware Verification Codes

None.

UAM Format Changes

The UAM format change for the MNP format is shown in “UAM Format Change: A-Port” on page FN-98.

UIM Format Changes

None.

Error Messages

New or changed error messages supporting the A-Port feature are defined in Table FN-20 on page FN-106.

G-Port SRI Query for Prepaid

Description

The G-Port SRI Query for Prepaid feature enables the EAGLE 5 ISS to provide portability information to a Service Control Point (SCP) database. This information enables the database to determine the network used by a called subscriber.

The G-Port SRI Query for Prepaid feature enables a user to provision the following Message Signal Unit (MSU) values in the EAGLE 5 ISS GSERV table:

- translation type (TT)—The TT of the called party (CdPA)
- originating point code (OPC)—The OPC from the message transfer part (MTP) layer
- global title address (GTA)—The GTA of the calling party (CgPA)

These values are used to determine whether an SRI should receive G-Port SRI Query for Prepaid service or normal G-Port SRI service.

If the G-Port SRI Query for Prepaid feature is enabled and turned on, an incoming SRI's TT, OPC, and GTA values are compared against the values in the GSERV table. If no match is found, or if no values are provisioned in the GSERV table, normal G-Port SRI processing is performed on the message. If a match is found for one or more of the values, the message is treated as a Prepaid Query.

The G-Port SRI Query for Prepaid feature affects only SRI messages. All other messages, including SRI-SM and SRI-GPRS messages, are processed by normal G-Port service, even if the values in those messages match values in the GSERV table.

After an SRI message is identified as requiring G-Port SRI Query for Prepaid service, the EAGLE 5 ISS performs a Mobile Number Portability (MNP) database lookup on the Mobile Station Integrated Services Digital Number (MSISDN). The results of the lookup are returned to the SCP that originated the query.

A TCAP/MAP error specifically related to a decoding error in the SRI MSISDN parameter causes an "Unsupported/Unexpected Data Value" MAP error. All other TCAP/MAP errors cause the message to be relayed to a Home Location Register (HLR), which then returns the appropriate MAP error based on the status of the subscriber (e.g. Unknown, Barred, etc.)

The message relay is based on information in the G-Port MNP database. SCCP level errors cause the return on a UDTS message to the Prepaid SCP.

Feature Control Requirements

The G-Port SRI Query for Prepaid feature has the following feature control requirements:

- A FAK for part number 893-0177-01
- After the feature is enabled and turned on, it cannot be turned off.
- The G-Port feature must be enabled and turned on before the G-Port SRI Query for Prepaid feature can be turned on.
- A temporary FAK cannot be used to enable the feature.

Hardware Requirements

The G-Port SRI Query for Prepaid feature has the same requirements as those required for the G-Port feature.

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

New and Enhanced Commands

The following commands are added or enhanced to support the G-Port SRI Query for Prepaid feature. See the *Commands Manual* of your Release 37.0 documentation set for a detailed description of all commands and their parameters.

- **enable/chg/rtrv-ctrl-feat**—Enhanced to enable and turn on the G-Port SRI Query for Prepaid feature and to display its status after enabling.

The following example shows sample output for the **rtrv-ctrl-feat** command when the G-Port SRI Query for Prepaid feature is enabled and turned on.

rtrv-ctrl-feat

```
rlghncxa03w 07-01-31 16:40:40 EST EAGLE5 37.0.0
The following features have been permanently enabled:
Feature Name          Partnum    Status    Quantity
IPGWx Signaling TPS   893012805 on         2000
HC-MIM SLk Capacity   893012707 on          64
G-Port SRI Query for PP 893014301 on         ----
```

- **ent/dlt/rtrv-gserv-data**—Added to provision TT, OPC, or GTA values in the GSERV table. A maximum of 256 TT values, 50 GTA values, and 50 OPC values can be provisioned in the table.

The following examples display **rtrv-gserv-data** output when the G-Port SRI Query for Prepaid feature is enabled and turned on.

Example 1 displays all entries in the GSERV table.

rtrv-gserv-data:display=all

```
mystp 06-07-27 20:32:46 EST EAGLE 35.2.0
TT      OPC      GTA
=====
0
25
26

TT      OPC      GTA
=====
02057   (ITUN)
002-002-002 (ANSI)
5-005-5   (ITUI)
001-001-001 (ANSI)
006-000-001 (ANSI)

TT      OPC      GTA
=====
9194605500

num of tt entries is (3 of 256)
num of opc entries is (5 of 50)
num of gta entries is (1 of 50)

GSERV table is (9 of 356) 3% full
```

;

Example 2 displays the GSERV table entry for a specified TT.

rtrv-gserv-data:tt=26

```
mystp 06-07-27 20:35:57 EST EAGLE 35.2.0
TT      OPC                      GTA
=====
26
```

;

Example 3 displays all originating point code entries in the GSERV table.

rtrv-gserv-data:display=opc

```
mystp 06-07-27 20:32:46 EST EAGLE 35.2.0
TT      OPC                      GTA
=====
          02057                (ITUN)
          002-002-002          (ANSI)
          5-005-5              (ITUI)
          001-001-001          (ANSI)
          006-000-001          (ANSI)
```

GSERV table is (5 of 50) 10% full

;

Measurements

The following new registers are pegged when the G-Port SRI Query for Prepaid feature is enabled:

- **GPSRRCVPP**—Measures the number of SRI messages received for the G-Port SRI Query for Prepaid feature. This peg is added to the hourly and daily System Total Number Portability Report.
- **GPSRREPPP**—Measures the number of SRI messages that received a reply due to the G-Port SRI Query for Prepaid feature. This peg is added to the hourly and daily System Total Number Portability Report.
- **GPSRERRPP**—Measures the number of SRI messages that cause an error message (SRI-Send Routing Information NEGATIVE_ACK) to be generated due to the G-Port SRI Query for Prepaid feature. This peg is added to the hourly and daily System Total Number Portability Report.
- **GPSRGTPPP**—Measures the number of SRI messages that fell through to GTT due to the G-Port SRI Query for Prepaid feature. This peg is added to the hourly and daily System Total Number Portability Report.
- **GPSRACKPP**—Measures the number of SRI-ack messages sent by G-Port SRI Query for Prepaid feature. This peg is added to the hourly and daily Number Portability Switching Service Point Report.

NOTE: The above measurements do not include peg counts to existing registers.

Limitations

The G-Port SRI Query for Prepaid feature cannot be enabled without first turning on the GTT and G-Port features.

Alarms***New or Changed UAMs***

None.

New or Changed UIMs

None.

New or Changed Hardware Verification Codes

None.

UAM Format Changes

None.

UIM Format Changes

None.

Error Messages

New error messages supporting the G-Port SRI Query for Prepaid feature are listed in Table FN-21 on page FN-107.

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.

See “Appendix B. Hardware Baseline” for the hardware baseline of this release.

New and Enhanced Commands

None.

Limitations

None.

Alarms***New or Changed UAMs***

None.

New or Changed UIMs

None.

New or Changed Hardware Verification Codes

None.

UAM Format Changes

None.

UIM Format Changes

None.

Error Messages

None.

Hex Digit Support for GTT**Description**

The Hex Digit Support for GTT feature enables the EAGLE 5 ISS to process both ANSI and ITU Message Signaling Units (MSUs) that contain either decimal or hexadecimal Global Title digits (**0-9, a-f, A-F**) in the Called Party Address (CdPA) field.

When the Hex Digit Support for GTT feature is enabled and turned on, any of the following three scenarios are possible:

- Incoming MSUs whose digits equal 10 are matched to a global title translation that contains a single GTT table entry of GTA=10.
- Incoming MSUs whose digits equal 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30 are matched to GTT table entries with a range of GTA=20 and EGTA=30.
- Incoming MSUs whose **hexadecimal** digits equal **2A, 2B, 2C, 2D, 2E, 2F** are matched to GTT table entries with a hexadecimal range of GTA=20 and EGTA=30.

If desired, the user can then split the hexadecimal range into three separate GTT table entries and specify translation data for hexadecimal digits as follows:

GTA=20 EGTA=29 with existing translation data

GTA=2A EGTA=2F with user specified translation data

GTA=30 with existing translation data

Before the Hex Digit Support for GTT can be enabled and turned on, the GTT feature must be turned on, and all Translation Services Module (TSM) cards in the system, if installed, must be replaced with Database Services Module (DSM) cards.

When enabled and turned on, the Hex Digit Support for GTT feature enhances the functionality of the following features:

- ANSI-ITU-China SCCP Conversion—When the Hex Digit Support for GTT and the ANSI-ITU-China SCCP Conversion features are enabled and turned ON, the values specified for the **npds** and **nsds** parameters can be either decimal digits (0-9) or hexadecimal digits (0-9, a-f, A-F).
- Enhanced Global Title Translation (EGTT)—When the Hex Digit Support for GTT and the EGTT features are enabled and turned ON, the values specified for the **gta**, **egta** parameters in the **gta** command, can be either decimal digits (0-9) or hexadecimal digits (0-9, a-f, A-F).
- Global Title Translation (GTT) —When the Hex Digit Support for GTT and the GTT features are enabled and turned ON, the values specified for the **gta** and **egta** parameters in the **gta** commands, can be either decimal digits (0-9) or hexadecimal digits (0-9, a-f, A-F).
- Modified Global Title Translation (MGTT)—When the Hex Digit Support for GTT and the MGTT features are enabled and turned ON, the values specified for the **npds**, and **nsds** parameters in the **gta/gta** commands, can be either decimal digits (0-9) or hexadecimal digits (0-9, a-f, A-F).
- Origin-based SCCP Routing (OBSR) —When the Hex Digit Support for GTT feature and the OBSR features are enabled and turned ON, the values specified for the **cdpa gta/egta** and **cgpa gta/egta** parameters can be either decimal digits (0-9) or hexadecimal digits (0-9, a-f, A-F).

For more information about how to configure the EAGLE 5 ISS and its database to implement the above listed features, refer to the *Database Administration Manual – Global Title Translation* for this release.

Feature Control Requirements

The Hex Digit Support for GTT feature has the following feature control requirements:

- A FAK for part number 893-0185-01
- A temporary FAK cannot be used to enable the feature.
- This feature is automatically turned on after entering the **enable-ctrl-feat** command. The **chg-ctrl-feat** command is not required.

- This feature cannot be turned off after it is turned on.
- The GTT feature must be enabled and turned on before the Hex Digit Support for GTT feature can be enabled.

Hardware Requirements

No new hardware is required to support this feature. However, before the Hex Digit Support for GTT feature can be enabled and turned on, all Translation Services Module (TSM) cards in the system, if installed, must be replaced with Database Services Module (DSM) or later revision card running the VSCCP GPL.

NOTE: This feature is supported on both 1 GB and 4 GB DSM/VSCCP cards.

See “Appendix B. Hardware Baseline” for the hardware baseline of this release.

Limitations

The Hex Digit Support for GTT feature has the following limitations:

- The EAGLE 5 ISS has a command length of 150 characters per entry. In some cases, a single **ent/chg-gta/gtt** command may not fit on a single line, especially for range entries with MGTT parameters. If an **ent-gta/gtt** command does not fit on one line, try running the command specifying less parameters, and then run **chg-gta/gtt** command(s) to modify the translation with the desired parameters. If the **chg-gta/gtt** command does not fit on one line, break the command into multiple commands.
- Hexadecimal digits cannot be specified for the global title address (**gta**) parameter for the **chg-gws-redirect** and **ent-gws-redirect** commands.
- When the Hex Digit Support for GTT and GMS features are enabled and turned ON, the GMS feature **cannot** process incoming MSUs that contain hexadecimal digits. The GMS feature currently supports **only decimal digits** for CgPA.

NOTE: The Enhanced GSM Map Screening (EGMS) feature can process incoming MSUs that contain either decimal or hexadecimal digits whether the Hex Digit Support for GTT feature is enabled and on or not.

- Hexadecimal digits are **not supported** by SEAS as values for the global title address (**gta**) parameter.

Enhanced Commands

The following commands are enhanced to support the Hex Digit Support for GTT feature. For a complete description of these commands, refer to the *Commands Manual* of your release.

- **enable/rtrv-ctrl-feat**—Enhanced to enable and turn on the Hex Digit Support for GTT feature. The **rtrv-ctrl-feat** command is enhanced to display the status of the Hex Digit Support for GTT feature.

The following example displays sample output for the **rtrv-ctrl-feat** command when the Hex Digit Support for GTT feature is enabled.

rtrv-ctrl-feat

```
rlghncxa03w 06-05-29 16:40:40 EST EAGLE5 35.3.0
The following features have been permanently enabled:
Feature Name          Partnum    Status    Quantity
IPGWx Signaling TPS   893012805 on         2000
HC-MIM SLk Capacity  893012707 on          64
Hex Digit Support for GTT 893018501 on         ----
```

;

- **chg/ent/dlt/rtrv-gta**—Enhanced to allow hex digits to be specified for the **gta** and **egta** parameters when the Hex Digit Support for GTT feature is enabled and on and for the **npds** and **nsds** parameters when the MGTT and the Hex Digit Support for GTT features are enabled and on.

The following example displays output for the **rtrv-gta** command when the Hex Digit Support for GTT feature is enabled and on.

rtrv-gta:gttsn=setnat201

```
tekelecstp 06-10-11 13:39:28 EST EAGLE 35.3.0

GTTSN      NETDOM  NDGT
setnat201  itu      6,21
GTT TABLE IS 1 % FULL (5 of 269999)

START GTA          END GTA          XLAT  RI  PC
100000            10000d          DPC   GT  00101
      SSN=--- CCGT=no NTT=---
10000e            10000f          DPC   GT  00101
      SSN=--- CCGT=no NTT=---
100010            200000          DPC   GT  00101
      SSN=--- CCGT=no NTT=---
abcdef0123456789abcdef fabcde01234567890afff DPCSSN SSN  00103
      SSN=10 CCGT=no NTT=---
fbcdef0123456789abcdef ffbfde01234567890aaff DPCSSN SSN  00103
      SSN=10 CCGT=no NTT=---
      NNP=      NNAI=      NSDD=4 NSDS=abcdef0123456789
      NGTI=
```

;

- **chg/ent/dlt/rtrv-gtt**—Enhanced to allow hex digits to be specified for the **gta** and **egta** parameters when the Hex Digit Support for GTT feature is enabled and on and for the **npds** and **nsds** parameters when the MGTT and the Hex Digit Support for GTT features are enabled and on.

The following example displays output for the **rtrv-gtt** command when the Hex Digit Support for GTT feature is enabled and on.

rtrv-gtt:typen=201

```
tekelecstp 06-10-11 13:36:23 EST EAGLE 35.3.0

TYPEIN      TTN          NDGT
201         -----      6,21
GTT TABLE IS 1 % FULL (5 of 269999)

START GTA          END GTA          XLAT  RI  PC
100000            10000d          DPC   GT  00101
      SSN=--- NGT=---
10000e            10000f          DPC   GT  00101
      SSN=--- NGT=---
100010            200000          DPC   GT  00101
      SSN=--- NGT=---
abcdef0123456789abcdef fabcde01234567890afff DPCSSN SSN  00103
      SSN=10  NGT=---
fbcdef0123456789abcdef ffbfde01234567890aaff DPCSSN SSN  00103
      SSN=10  NGT=---
      NNP=   NNAI=   NSDD=4  NSDS=abcdef0123456789
      NGTI=
```

;

- **chg/dlt/ent/rtrv-gtcnv**—Enhanced to allow hex digits to be specified for the **npds** and **nsds** parameters when the Hex Digit Support for GTT feature is enabled and on.

The following example displays output containing hexadecimal global title digits for the **rtrv-gtcnv** command.

rtrv-gtcnv

```
tekelecstp 06-11-07 11:52:58 EST EAGLE 35.3.0

DIR  GTIXLAT  TTA  TTI  NP  NAI  DEL  POS  ADD
atoi  22      1    3    --- --- --- pfx  abcdef0123456789abcdef
itoa   24      5    6    2   1   --- sfx  abcdef0123456789abcef

GTCNV   table is (2 of 1000) 1% full.
```

;

- **ent-card**—Enhanced to prevent a TSM/SCCP card from being provisioned in the system if the Hex Digit Support for GTT feature is enabled and on.

For information about the cards supported in release 35.3 of the EAGLE 5 ISS, refer to Table FN-26 on page FN-111.

Alarms

New or Changed UAMs

None.

New or Changed UIMs

None.

New or Changed Hardware Verification Codes

None.

UAM Format Changes

None.

UIM Format Changes

None.

Error Messages

New or changed error messages supporting the Hex Digit Support for GTT feature are listed in Table FN-22 on page FN-108.

Increase ATM Capacity to 180 Links per Node

A maximum of 180 LIM-ATM high-speed signaling link cards can be provisioned and equipped in an EAGLE 5 ISS.

HIPR cards must be installed on all provisioned shelves in the system before the system can contain more than 115 LIM-ATM cards.

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.

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 **rtv-gsmopts** command output is shown as MULTIPLE (for ON) or SINGLE (for OFF or disabled). If MIGRPFX = MULTIPLE, 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 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 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.
- 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 Control Requirements

The IS41 GSM Migration feature has the following feature control requirements:

- A FAK for part number 893-0173-01
- 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.
- A temporary FAK cannot be used to enable 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.

See “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
IPGWx Signaling TPS	893012805	on	2000
HC-MIM SLk Capacity	893012707	on	64
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 37.2.0
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
MIGRPFIX = SINGLE
GSM2IS41 = NONE
```

;

- **chg/rtrv-is41opts**—Added to provision the settings 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 37.2.0
```

```
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 37.2.0
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

```
tklcl1081301 06-10-05 11:43:02 EST EAGLE5 37.2.0

      PCA              PCI              PCN              CLLI              PCTYPE
      006-010-006      5-010-5      5-010-5-aa      tklcl1081301      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 37.2.0
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:

SERVICE  SUCCESS  ERRORS  FAIL  REROUTE\  FORWARD  TOTAL
          1995    5      RATIO  WARNINGS  TO GTT
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 37.2.0
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

None.

New or Changed UIMs

None.

New or Changed Hardware Verification Codes

None.

UAM Format Changes

None.

UIM Format Changes

None.

Error Messages

New or changed error messages supporting the IS41 GSM Migration feature are listed in Table FN-20 on page FN-106.

MTP Messages for SCCP Applications**Description**

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 Control Requirements

The MTP Msgs for SCCP Apps feature has the following feature control requirements:

- A FAK for part number 893-0174-01
- The A-Port feature, IS41 GSM Migration feature, or 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.
- A temporary FAK cannot be used to enable the feature.

Hardware Requirements

The MTP Msgs for SCCP Apps feature requires DSM cards.

See “Appendix B. Hardware Baseline” for the hardware baseline of this release.

Enhanced Commands

- **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

None.

New or Changed UIMs

None.

New or Changed Hardware Verification Codes

None.

UAM Format Changes

None.

UIM Format Changes

None.

Error Messages

New or changed error messages supporting the MTP Msgs for SCCP Apps feature are listed in Table FN-20 on page FN-106.

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.

Feature Control Requirements

None.

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 37.2.0
                                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 37.2.0

                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

None.

New or Changed UIMs

None.

New or Changed Hardware Verification Codes

None.

UAM Format Changes

None.

UIM Format Changes

None.

Error Messages

New or changed error messages supporting the Per-Linkset Random SLS feature are listed in Table FN-23 on page FN-108.

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 TBGTTLS 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 TBGTTLS feature uses the transaction parameter to control loadsharing for Class 0 and Class 1 SCCP messages. The TBGTTLS 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.

Feature Control Requirements

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

- A FAK for part number 893-0171-01
- The GTT feature must be on before the feature can be enabled.
- After the feature is enabled and turned on, it cannot be turned off.
- A temporary FAK cannot be used to enable 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.

See “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 TBGTTLS 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 TBGTTLS functions can be entered and displayed only when the feature is enabled. The **rtrv-sccpopts** command is enhanced to display TBGTTLS parameters.

The following example displays **rtrv-sccpopts** output when the TBGTTLS feature is enabled.

rtrv-sccpopts

```
tekelecstp 07-06-11 15:18:41 EST  EAGLE 37.2.0
```

```
SCCP OPTIONS
```

```
-----
classsel                on
tgtt0                   UDT, XUDT
tgtt1                   UDT
tgttudtkey              MTP
tgtxudtkey              SCCP
```

```
;
```

Limitations

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

- If the Transaction-based GTT Loadsharing and the 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

None.

New or Changed UIMs

None.

New or Changed Hardware Verification Codes

None.

UAM Format Changes

None.

UIM Format Changes

None.

Error Messages

New error messages supporting the Transaction-based GTT Loadsharing feature are listed in Table FN-24 on page FN-108.

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.

The WGTTLS 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 WGTTLS 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.

The WGTTLS feature adds 2 new modes for loadsharing:

- Weighted Load-Share
- Weighted Combined Load-Share.

The WGTTLS feature 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.

Feature Control Requirements

The WGTTLS feature has the following feature control requirements:

- A FAK for part number 893-0170-01
- The GTT feature must be on before the feature can be enabled.
- After the feature is enabled, it can be turned on and turned off.
- A temporary FAK cannot be used to enable the feature.

Hardware Requirements

The Weighted 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.

See “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 subsystem 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 WGTTLS feature is enabled.

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

rtrv-map

```
tekelecstp 06-07-27 11:50:22 EST EAGLE 37.2.0
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 37.2.0
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 WGTTLS 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 37.2.0
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
    
```

Example 2 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 37.2.0
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

None.

New or Changed UIMs

A new UIM supporting the Weighted GTT Loadsharing feature is listed in Table FN-7 on page FN-97.

New or Changed Hardware Verification Codes

None.

UAM Format Changes

None.

UIM Format Changes

None.

Error Messages

New or changed error messages supporting the Weighted GTT Loadsharing feature are listed in Table FN-25 on page FN-109.

Other Changes

The following sections describe other changes that are implemented for the EAGLE 5 ISS in Release 37.0.

Flexible GTT Load Sharing is an On/Off Feature (PR 106618)

The Flexible GTT Load Sharing feature is now an On/Off feature.

Refer to the *EAGLE 5 ISS Release 35.0 Feature Notice* for more information on the Flexible Final GTT Load Sharing feature.

IS41 GSM Migration Feature Support for SRI/SRI-SM Responses over ANSI MTP/SCCP (PR 115776)

The IS41 GSM Migration feature is enhanced to provide ANSI MTP and SCCP support for SRI and SRI_SM GSM messages.

See “IS41 GSM Migration” on page FN-67 for more information on the IS41 GSM Migration feature.

OAM Support for pktgen (PR 111808)



CAUTION: The **pktgen** value is used only by engineering for testing purposes. Customers do not use this value.

The EAGLE 5 ISS is enhanced to use the **alw-card** command to download the **pktgen** GPL on EPM and HCBLADE cards that run VXWorks 5.5 or later. The **alw-card** command supports the **pktgen** value for the **code** parameter to implement this enhancement.

The **code=pktgen** parameter must be specified with the **alw-card** command to download the **pktgen** GPL on the target card.

RTRV-STP Command Output Column Change from GPL to APPL (PR 115255)

The **rtrv-stp** command is enhanced to display the application type in the output when the command requests information for provisioned card locations. The **rtrv-stp** command is also enhanced to always display the application GPL in the output, although the application, flash, or communication GPLs can be specified by the **rtrv-stp:gpl=** command.

The following example displays output for the **rtrv-stp** command. The output displays the new APPL column.

rtrv-stp:shelf=1100

```
Tekelecstp 07-03-30 11:07:17 EST EAGLE 37.0.0
Command entered at terminal #4.
```

Card	Part Number	Rev	Serial Number	Type	DB	APPL	GPL Version
1101	870-1275-01	W	10245689323	DSM	4GB	VSCCP	027-010-000
1102	Empty						
1103	870-1788-03	A	10234658345	TSM	128MB	GLS	027-010-000
1104	Empty						
1105	870-1339-06	A	10274568974	LIMATM	-	ATMANSI	027-010-000
1106	Empty			DSM		VSCCP	
1107	Empty						
1108	870-1456-05	A	10204764378	DCM	-	SS7IPGW	027-010-000
1109	MUX					BPHMUX	027-345-000
1110	MUX					BPHMUX	027-345-000
1111	870-1788-05	A	10205734657	MCPM	2GB	MCP	027-010-000
1112	870-1789-04	A	10302135627	LIMDS0	-	SS7ANSI	027-010-000
1113	870-2360-01	A	10346357678	MCAP	1GB	EOAM	025-340-000
1114	TDM						
1115	Unavailable			MCAP		EOAM	
1116	Unavailable						
1117	MDAL						
1118	Empty						

```
Command Completed.
```

;

The following example displays output for the **rtrv-stp** command when a flash GPL is specified.

rtrv-stp:gpl=bpdcn

```
Tekelecstp 07-03-30 11:07:17 EST EAGLE 37.0.0
```

Card	Part Number	Rev	Serial Number	Type	DB	APPL	GPL Version
1101	870-1275-01	W	10245689323	DSM	4GB	VSCCP	027-010-000
1113	870-2360-01	A	10346357678	MCAP	1GB	EOAM	025-340-000
1205	870-1275-01	W	10246789323	DSM	4GB	VSCCP	027-010-000

```
Command Completed.
```

;

Support for Third FTP Server for Measurements Platform (PR 111746)

The number of FTP Server IP addresses that can be supported by the Measurements Platform for MCPM data transfer is increased from 2 to 3. The FTRA server attempts to reach this address if the first two IP addresses are unavailable.

UAM for Inaccessible Daughterboard BIP Data (PR 112379)

UAM 547 is displayed if the daughterboard BIP data is inaccessible. This UAM is cleared by clearing UAM 548. See Table FN-2 on page FN-94 for additional information.

UIM 1185 Log Displays GTI Clock Status Register (PR 114974)

UIM 1185 is displayed in the I56 format. This format is enhanced to display “GTI Clock Status Register” instead of “GTI Status Register”. The enhanced format is shown in “UIM Format Change: PR 114974” on page FN-99.

UIM for Invalid SIO (PR 110305)

UIM 1372 is displayed if the **tst-slk** command is used to send a signaling link test message during a high-speed signaling link test that specifies an ITU point code and a service indicator octet (SIO) of 2. See Table FN-8 on page FN-97 for additional information.

Alarms

New or changed alarms necessary to support the new and previously available features for EAGLE 5 ISS 37.0 are defined in the tables below.

New or Changed UAMs

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

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

Table FN-1. New or Changed UAMs - A-Port (Cont'd)

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

UAMs that are issued if daughterboard BIP data is inaccessible (PR 112379) are listed in Table FN-2.

Table FN-2. New or Changed UAMs - PR 112379

UAM	547	Format	Output Group
Action	Added for Release 37.0		
Old data			
New data	Daughterboard BIP inaccessible	CARD	CARD
UAM	548	Format	Output Group
Action	Added for Release 37.0		
Old data			
New data	Daughterboard BIP inaccessible	CARD	CARD

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.

UIMs supporting the Large BICC MSU Support for IP Signaling feature are listed in Table FN-3.

Table FN-3. New or Changed UIMs - Large BICC MSU Support for IP Signaling

UIM	1350	Format	Output Group
Action	Added for Large BICC MSU Support for IP Signaling		
Old data			
New data	Discrd Rcvd Lrg BICC MSU CTRL-FEAT Off	I37	LINK MAINT

Table FN-3. New or Changed UIMs - Large BICC MSU Support for IP Signaling (Cont'd)

UIM	1351	Format	Output Group
Action	Added for Large BICC MSU Support for IP Signaling		
Old data			
New data	Discrd Tx Lrg BICC MSU Unsupported SLK	I37	LINK MAINT
UIM	1352	Format	Output Group
Action	Added for Large BICC MSU Support for IP Signaling		
Old data			
New data	Discrd Rcvd Lrg BICC MSU Unsptd Out SLK	I69	LINK MAINT
UIM	1353	Format	Output Group
Action	Added for Large BICC MSU Support for IP Signaling		
Old data			
New data	DTA Bypassed for Rcvd Lrg BICC MSU	I37	LINK MAINT
UIM	1354	Format	Output Group
Action	Added for Large BICC MSU Support for IP Signaling		
Old data			
New data	STPLAN Copy Bypassed for Lrg BICC MSU	I37	LINK MAINT

The UIM supporting the SLAN on E5-ENET Assembly and STC on E5-ENET Assembly features is listed in Table FN-4.

Table FN-4. New or Changed UIMs - SLAN on E5-ENET Assembly/STC on E5-ENET Assembly

UIM	1357	Format	Output Group
Action	Added for SLAN on E5-ENET Assembly		
Old data			
New data	Negotiation at 100 Mbps/Full Duplex failed	I72	LINK

The UIM supporting the A-Port feature is listed in Table FN-5. 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-5. 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-6.

Table FN-6. 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			
New data	IS-41 Digits - Bad Encoding Scheme	I13	Application Subsystem

Table FN-6. New or Changed UIMs - ANSI-41 INP Query (Cont'd)

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-7. 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-7. 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 UIM supporting PR 110305 is listed in Table FN-8. This UIM is generated if the **tst-slk** command is used to send a signaling link test message during a high-speed signaling link test that specifies an ITU point code and a service indicator octet (SIO) of 2.

Table FN-8. New or Changed UIMs - PR 110305

UIM	1372	Format	Output Group
Action	Added for Release 37.0		
Old data			
New data	SLTC Failure - SLTM not sent, Invalid SIO	I22	LINK MAINT

The UIM listed in Table FN-9 was changed to correct the Output Group.

Table FN-9. 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 37.0.

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
1234567890123456789012345678901234567890123456789012345678901234567890
      xxxx.yyyy zz MNP SERVICE                'text'
```

Example UAM output is as follows:

```
      1           2           3           4           5           6           7           8
1234567890123456789012345678901234567890123456789012345678901234567890
*C 0056.0528 *C MNP SERVICE                Service is not available
```

UIM Format Changes

UIM Format Change: PR 114974

The format for UIM I56 is as follows:

```

      1           2           3           4           5           6           7           8
1234567890123456789012345678901234567890123456789012345678901234567890
xxxx.xxxx   HS CLOCK      INFO      'text'
              Reporting TDM Location      : NNNN
              GTI Clock Status Register    : h'NNNN
              Primary LIU Violation Count  : NNN
              Secondary LIU Violation Count : NNN
              GTI Status Register          : h'NNNN
    
```

UIM Format Change: Large BICC MSU Support for IP Signaling

The format for UIM I69 is as follows:

```

      1           2           3           4           5           6           7           8
1234567890123456789012345678901234567890123456789012345678901234567890
xxxx.xxxx   CARD cccc,ppp INFO      'text'
              LEN=xxx   SIO=xx   OPC=&&-###-###-###   DPC=&&-###-###-###
              OUTBND CARD cccc,ppp
    
```

UIM Format Change: SLAN on E5-ENET Assembly/STC on E5-ENET Assembly

The format for UIM I72 is as follows:

```

      1           2           3           4           5           6           7           8
1234567890123456789012345678901234567890123456789012345678901234567890
xxxx.xxxx   CARD xxxx      INFO      'text'
              DLK configuration: SPEED = xxx Mbps, DUPLEX = xxxx
    
```

Hardware Verification Codes

The new hardware verification code supporting the E5-SM4G card is defined in Table FN-10.

Table FN-10. Hardware Verification Code - E5-SM4G Card

H/W Code	165	Associated UAM	Card or Application
Action	Added for E5-SM4G Card		
Old data			
New data	Hardware configuration does not support configured feature set	99	VSCCP

The new hardware verification code supporting the SLAN on E5-ENET Assembly feature is defined in Table FN-11.

Table FN-11. Hardware Verification Code - SLAN on E5-ENET Assembly

H/W Code	171	Associated UAM	Card or Application
Action	Added for SLAN on E5-ENET Assembly		
Old data			
New data	Non-DCM/Non-E5-ENET card detected in slot provisioned for STPLAN with card type DCM	99	STPLAN

The new hardware verification code supporting the STC on E5-ENET Assembly feature is defined in Table FN-12.

Table FN-12. Hardware Verification Code - STC on E5-ENET Assembly

H/W Code	170	Associated UAM	Card or Application
Action	Added for STC on E5-ENET Assembly		
Old data			
New data	Non-DCM/Non-E5-ENET card detected in slot provisioned for EROUTE with card type STC	99	EROUTE

The new hardware verification code supporting the ANSI-41 INP Query (AINPQ) feature is defined in Table FN-13.

Table FN-13. 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 Messages

Incorrect use of the new and enhanced commands for the 150,000 GTT TPS and the 75,000 EPAP TPS features will generate the error message shown in Table FN-14.

Table FN-14. Error Messages - 150,000 GTT and 75,000 EPAP TPS

Response ID Code	Error Message	New?	Used by Command:
E4031	E5IS and E5-SM4G Throughput Cap are mutually exclusive	Y	chg-feat enable-ctrl-feat
E4070	LAN and E5-SM4G Throughput Cap are mutually exclusive	Y	chg-feat enable-ctrl-feat
E4072	HIPR must be equipped for all provisioned shelves	Y	enable-ctrl-feat
E4082	LNP and E5-SM4G are mutually exclusive	Y	enable-ctrl-feat

Incorrect use of the new and enhanced commands for the E5-SM4G card will generate the error message shown in Table FN-15.

Table FN-15. Error Messages - E5-SM4G Card

Response ID Code	Error Message	New?	Used by Command:
E4451	SCCP appl provisioned with E5-SM4G card	Y	enable-ctrl-feat

Incorrect use of the new and enhanced commands for the SLAN on E5-ENET feature will generate the error messages shown in Table FN-16.

Table FN-16. Error Messages - SLAN on E5-ENET

Response ID Code	Error Message	New?	Used by Command:
E2131	Parameters not valid for card type	N	ent-dlk
E3343	Speed and Duplex must be specified together	Y	ent-dlk
E3740	If AUTO=yes, Then Duplex and SPEED are not allowed	Y	ent-dlk
E4490	Card type must be VXWSLAN for a 100Mbit link	Y	ent-dlk

Incorrect use of the new or enhanced commands for the Support for 32 Prepaid SMS Intercept Platforms feature will generate the error messages shown in Table FN-17.

Table FN-17. Error Messages - Support for 32 Prepaid SMS Intercept Platforms

Response ID Code	Error Message	New?	Used by Command
E2136	At least one optional parameter is required	N	chg-ppsopts
E2167	Point code matches a STP capability point code	N	chg-ppsopts
E2168	Point code matches a STP point code	N	chg-ppsopts
E2417	Point code does not exist in the routing table	N	chg-ppsopts
E2452	Remote point code does not exist in MAP table	N	chg-ppsopts
E2874	Failed reading site identification table	N	chg-ppsopts
E2965	Point code does not exist in the routing table	N	chg-ppsopts
E3098	GTA must not be NONE	N	chg-ppsopts
E3099	GTA must be specified when NGTA is specified	N	chg-ppsopts
E3100	GTA doesn't exist in PPSOPTS Table	Y	chg-ppsopts
E3101	Maximum number of GTAs already provisioned	N	chg-ppsopts
E3102	NGTA already exists in PPSOPTS Table	Y	chg-ppsopts
E3338	PC/SETID does not exist in MAP table	Y	chg-ppsopts
E3339	PC/SETID does not exist in MRN table	Y	chg-ppsopts
E3341	GFLEX/INP/AINPQ must be ON or GPORT/IDPR/PPSMS enabled	N	chg-stpopts
E3349	INP/AINPQ feature must be ON or GPORT/PPSMS feature enabled	N	chg-measopts

Table FN-17. Error Messages - Support for 32 Prepaid SMS Intercept Platforms (Cont'd)

Response ID Code	Error Message	New?	Used by Command
E3350	Value of SETID must not exceed 3000 if RI = GT	Y	chg-ppsopts
E3351	Failed reading Prepaid SMS Options Table	Y	chg-ppsopts
E3358	PC Reference exists in PPSOPTS table	Y	dlt-map dlt-mrn
E3359	SETID should be specified only if FGTTLS feature is enabled	Y	chg-ppsopts
E3360	GTA already exists in PPSOPTS Table	Y	chg-ppsopts
E3361	Multiple GTA parameters cannot have the same GTA value	Y	chg-ppsopts
E3362	PCI/PCN (not equal to none) and RI must be entered as a pair	Y	chg-ppsopts
E3365	SETID must not be NONE if RI=SSN	Y	chg-ppsopts
E3368	PPT must not be specified without PCI/PCN/RI/SETID	Y	chg-ppsopts
E3396	LNP and PPSMS Intercept Ph1 features are mutually exclusive	Y	enable-ctrl-feat
E3480	PPT must be specified with PCI/PCN/RI/SETID	Y	chg-ppsopts
E3505	Prepaid SMS Intercept Ph1 feature must be ON	N	chg-ppsopts rtrv-ppsopts
E4102	GFLEX/INP/AINPQ/GPORT/EIR/LNP ELAP Config/PPSMS must be ON	N	chg-stpopts rept-stat-db rept-stat-mps
E4186	GFLEX/INP/AINPQ must be ON or GPORT/EIR/PPSMS/IDPR/S enabled	N	rtrv-srvsel
E4194	Cannot delete last route to DPC referenced in PPSOPTS table	Y	dlt-rte
E4261	Point code is not configured for the specified Prepaid type	Y	chg-ppsopts
E4629	RI/SETID must not be specified when PCI/PCN=none	Y	chg-ppsopts

Incorrect use of the enhanced commands for the 1100 TPS/DSM for ITU NP feature will generate the error message shown in Table FN-18.

Table FN-18. 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 messages shown in Table FN-19.

Table FN-19. 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-20.

Table FN-20. 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 chg-sid ent-srvsel
E3330	APORT or IGM must be enabled	Y	chg-is41opts chg-sccp-serv 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-20. 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 new commands for the G-Port SRI Query for Prepaid feature will generate the error messages listed in Table FN-21.

Table FN-21. Error Messages - G-Port SRI Query for Prepaid

Response ID Code	Error Message	New?	Used by Command:
E3167	GSERV Entry already exists	Y	ent-gserv-data
E3215	Cannot access GSERV table	Y	ent/dlt/rtrv-gserv-data
E3216	G-Port SRI Query for Prepaid feature is not enabled	Y	ent/dlt/rtrv-gserv-data

Table FN-21. Error Messages - G-Port SRI Query for Prepaid (Cont'd)

Response ID Code	Error Message	New?	Used by Command:
E3260	GSERV Table is full	Y	ent-gserv-data
E3328	GSERV Entry does not exist	Y	dlt-gserv-data

Incorrect use of the enhanced commands for the Hex Digit Support for GTT feature will generate the error messages listed in Table FN-22.

Table FN-22. Error Messages - Hex Digit Support for GTT

Response ID Code	Error Message	New?	Used by Commands:
E3006	Hex Digit Support for GTT feature must be ON	Y	chg-gta, dlt-gta, ent-gta, rtrv-gta, chg-gtcnv, dlt-gtcnv, ent-gtcnv, chg-gtt, dlt-gtt, ent-gtt, rtrv-gtt

Incorrect use of the enhanced commands for the Per-Linkset Random SLS feature will generate the error messages shown in Table FN-23.

Table FN-23. 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-24.

Table FN-24. 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-sccopts

Incorrect use of the enhanced commands for the Weighted GTT Loadsharing feature will generate the error messages listed in Table FN-25.

Table FN-25. 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	Y	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
E3376	THR can't be specified with ESWT=none	Y	chg-map 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

Table FN-25. Error Messages - Weighted GTT Loadsharing (Cont'd)

Response ID Code	Error Message	New?	Used by Command:
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 ent/chg-mrn
E3382	Can't specify weight for non-weighted groups	Y	chg-map ent/chg-mrn
E3383	Can't specify ESWT=none for non-weighted groups	Y	chg-map chg-mrn
E3384	GRPWT/THR mustn't be specified for non-weighted groups	Y	chg-map chg-mrn
E3385	Weight can't be specified to create SOL or DOM groups	Y	ent-map 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 chg-mrn
E3393	MPC must be specified since MWT is specified.	Y	ent/chg-map
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-26 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 37.0, 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-26. 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	1 IP Service	bpdcm ebdadcm vwxslan	ebdadcm stplan
				2	1 IP Service	bpdcm iplim iplimi	iplim iplimi
				2	2	bpdcm ss7ipgw ipgwi	ss7ipgw ipgwi
		2		2 IP Service	bpdcm eroute	eroute	
		stc	2	2	2 IP Service	bpdcm eroute	eroute

Table FN-26. 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	bpdc vwxsan	stplan
					8	bpdc iplim iplimi	iplim iplimi
					1	bpdc ss7ipgw ipgwi	ss7ipgw ipgwi
	870-2372-01 870-2372-13^	stc	1	2	2 IP Service	bpdc eroute	eroute
EDCM-A (SSEDCM)	870-2508-01 870-2508-02^	dcm	1	2	1 IP Service	bpdc vwxsan	stplan
		stc	1	2	2 IP Service	bpdc eroute	eroute
DSM†	1 GB MEM 870-1984-02 870-1984-08 870-1984-09 870-1984-15^	dsm	2	2	2 IP service	bpdc vsccp gls	vsccp gls
	2 GB MEM 870-1984-03						
	4 GB MEM 870-1984-05 870-1984-06 870-1984-07 870-1984-13^						
DSM-1G	870-2371-02 870-2371-06 870-2371-08 870-2371-13^	ipsm	1	2 (use only A)	1 IP service	bpdc 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	bpdc 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 bpmlt	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-26. 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	ss7ansi ccs7itu
		lime1 (for SE-HSL)	1	8	1	bldiag6 blvxw6	ccs7itu
E5-ENET	870-2212-02 870-2212-03^	dcm	1	2	16	bpdc bldiag6 blbepm iplhc	iplim iplimi
			1	2	1	bpdc bldiag6 blbepm ipghc	ss7ipgw ipgwi
			1	2	1	slanhc bldiag6 blbepm blvxw6 imtpci blcpld	stplan
		stc	1	2	2 IP Service	erthc bldiag6 blbepm blvxw6 imtpci blcpld	eroute
E5-SM4G	870-2860-01	dsm	2	2	2 IP Service	sccphc	vsccp
EILA	870-2049-01 870-2049-02	limds0 limocu limv35	1	2 2 2	1 1 1	ss7ansi ss7gx25 ccs7itu imt	ss7ansi ss7gx25 ccs7itu
EILA-T	870-2049-03	limds0 limocu limv35	1	2 2 2	1 1 1	ss7ansi ss7gx25 ccs7itu imt	ss7ansi ss7gx25 ccs7itu
GPSPM-II	870-2360-01 870-2360-05 870-2360-06 870-2360-08^	N/A	1	N/A	N/A	eoam bpdc	oam

Table FN-26. 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
HC-MIM††	870-2671-01 870-2671-03^ 870-2671-02	lime1 limt1	2	8	64	ss7hc blbios blepld blvxw bldiag blepld 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
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

Table FN-26. 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-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
MPL MPL-T	870-2061-01 870-2061-03 870-2061-04 870-2061-06^ 870-2061-02	limds0	1	2	8	bpmpl bpmplt ss7ml	ss7ansi
TDM	870-0774-10 870-0774-11	N/A	1	N/A	N/A	N/A	N/A
TSM-256	870-1289-02 870-1289-03 870-1289-04 870-1289-06^	tsm	1	N/A	N/A	sccp gls ebdablm	sccp gls ebdablm
TSM-512	870-1290-02 870-1290-03 870-1290-04	tsm	1	N/A	N/A	sccp gls ebdablm	sccp gls ebdablm
TSM-768	870-1291-02 870-1291-03 870-1291-04	tsm	1	N/A	N/A	sccp gls ebdablm	sccp gls ebdablm

Table FN-26. 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
TSM-1024	870-1292-02 870-1293-03 870-1294-04	tsm	1	N/A	N/A	sccp gls ebdablm	sccp gls 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 37.0 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.

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

- Global Title Translation Modification
- Intermediate GTT Load Sharing
- ANSI-ITU-China SCCP Conversion
- Flexible GTT Load Sharing
- Origin-Based SCCP Routing
- Hex Digit Support for GTT
- Weighted GTT Load Sharing
- Transaction-Based GTT Load Sharing.
- The *Database Administration Manual - IP⁷ Secure Gateway* contains procedural information required to configure the EAGLE 5 ISS to implement the SS7-IP Gateway.
- The *Database Administration Manual – SEAS* contains the EAGLE 5 ISS configuration procedures that can be performed from the Signaling Engineering and Administration Center (SEAC) or a Signaling Network Control Center (SNCC). Each procedure includes a brief description of the procedure, a flowchart showing the steps required, a list of any EAGLE 5 ISS commands that may be required for the procedure but that are not supported by SEAS, and a reference to optional procedure-related information, which can be found in one of these manuals:
 - *Database Administration Manual – Gateway Screening*
 - *Database Administration Manual – Global Title Translation*
 - *Database Administration Manual – SS7*.
- The *Database Administration Manual – SS7* contains procedural information required to configure an EAGLE 5 ISS to implement the SS7 protocol.
- The *Database Administration Manual – System Management* contains procedural information required to manage the EAGLE 5 ISS database and GPLs, and to configure basic system requirements such as user names and passwords, system-wide security requirements, and terminal configurations.
- The *Dimensioning Guide for EPAP Advanced DB Features* is used to provide EPAP planning and dimensioning information. This manual is used by Tekelec personnel and EAGLE 5 ISS customers to aid in the sale, planning, implementation, deployment, and upgrade of EAGLE 5 ISS systems equipped with one of the EAGLE 5 ISS EPAP Advanced Database (EADB) Features.

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

- The *Feature Manual - INP/AINPQ* provides the user with information and instructions on how to implement, utilize, and maintain either the INAP-based Number Portability (INP) feature or the ANSI-41 INP Query (AINPQ) feature or both features on the Multi-Purpose Server (MPS) platform of the EAGLE 5 ISS.
- The *Feature Manual - Migration* provides an overview of a feature providing the capability for IS41 subscribers to migrate to a GSM network and GSM mobile subscribers to migrate to an IS41 network. This manual gives the instructions and information on how to install, use, and maintain the Migration feature on the Multi-Purpose Server (MPS) platform of the EAGLE 5 ISS.
- The *FTP-Based Table Retrieve Application (FTRA) User Guide* describes how to set up and use a PC to serve as the offline application for the EAGLE 5 ISS FTP Retrieve and Replace feature.
- The *Hardware Manual - EAGLE 5 ISS* provides an overview of each system and its subsystems, details of standard and optional hardware components in each system, and basic site engineering. These include the EAGLE 5 ISS, OEM-based products such as the ASi 4000 Service Control Point (SCP), and the Netra-based Multi-Purpose Server (MPS).
- The *Hardware Manual - Tekelec 1000 Application Server* provides general specifications and a description of the Tekelec 1000 Application Server (T1000 AS). This manual also includes site preparation, environmental and other requirements, procedures to physically install the T1000 AS, and troubleshooting and repair of Field Replaceable Units (FRUs).
- The *Hardware Manual - Tekelec 1100 Application Server* provides general specifications and a description of the Tekelec 1100 Application Server (T1100 AS). This manual also includes site preparation, environmental and other requirements, procedures to physically install the T1100 AS, and troubleshooting and repair of Field Replaceable Units (FRUs).
- The *Installation Manual - EAGLE 5 ISS* contains cabling requirements, schematics, and procedures for installing the EAGLE 5 ISS along with LEDs, connectors, cables, and power cords to peripherals. Refer to this manual to install components or the complete systems.
- The *LNP Database Synchronization Manual - LSMS with EAGLE 5 ISS* describes how to keep the LNP databases at the LSMS and at the network element (the EAGLE 5 ISS is a network element) synchronized through the use of resynchronization, audits and reconciles, and bulk loads. This manual is contained in both the LSMS documentation set and in the EAGLE 5 ISS documentation set.

- The *LNP Feature Activation Guide* contains procedural information required to configure the EAGLE 5 ISS for the LNP feature and to implement these parts of the LNP feature on the EAGLE 5 ISS:
 - LNP services
 - LNP options
 - LNP subsystem application
 - Automatic call gapping
 - Triggerless LNP feature
 - Increasing the LRN and NPANXX Quantities on the EAGLE 5 ISS
 - Activating and Deactivating the LNP Short Message Service (SMS) feature.
- The *Maintenance Manual* contains procedural information required for maintaining the EAGLE 5 ISS and the card removal and replacement procedures. The *Maintenance Manual* provides preventive and corrective maintenance procedures used in maintaining the different systems.
- The *Maintenance Pocket Guide* is an abridged version of the Maintenance Manual and contains all the corrective maintenance procedures used in maintaining the EAGLE 5 ISS.
- The *Maintenance Emergency Recovery Pocket Guide* is an abridged version of the Maintenance Manual and contains the corrective maintenance procedures for critical and major alarms generated on the EAGLE 5 ISS.
- The *MPS Platform Software and Maintenance Manual - EAGLE 5 ISS with Tekelec 1000 Application Server* describes the platform software for the Multi-Purpose Server (MPS) based on the Tekelec 1000 Application Server (T1000 AS) and describes how to perform preventive and corrective maintenance for the T1000 AS-based MPS. This manual should be used with the EPAP-based applications (EIR, G-Port, G-Flex, A-Port, Migration, AINPQ, and INP).
- The *MPS Platform Software and Maintenance Manual - EAGLE 5 ISS with Tekelec 1100 Application Server* describes the platform software for the Multi-Purpose Server (MPS) based on the Tekelec 1100 Application Server (T1100 AS) and describes how to perform preventive and corrective maintenance for the T1100 AS-based MPS. This manual should be used with the ELAP-based application (LNP).

- The *Provisioning Database Interface Manual* defines the programming interface that populates the Provisioning Database (PDB) for the EAGLE 5 ISS features supported on the MPS/EPAP platform. The manual defines the provisioning messages, usage rules, and informational and error messages of the interface. The customer uses the PDBI interface information to write his own client application to communicate with the MPS/EPAP platform.
- The *Previously Released Features Manual* summarizes the features of previous EAGLE, EAGLE 5 ISS, and IP⁷ Secure Gateway releases, and it identifies the release number of their introduction.
- The *Release Documentation* contains the following documents for a specific release of the system:
 - *Feature Notice* - Describes the features contained in the specified release. The Feature Notice also provides the hardware baseline for the specified release, describes the customer documentation set, provides information about customer training, and explains how to access the Customer Support website.
 - *Release Notice* - Describes the changes made to the system during the lifecycle of a release. The Release Notice includes Generic Program Loads (GPLs), a list of PRs resolved in a build, and all known PRs.
NOTE: The *Release Notice* is maintained solely on Tekelec's Customer Support site to provide you with instant access to the most up-to-date release information.
 - *Systems Overview* - Provides high-level information on SS7, the IP⁷ Secure Gateway, system architecture, LNP, and EOAP.
 - *Master Glossary* - Contains an alphabetical listing of terms, acronyms, and abbreviations relevant to the system.
 - *Master Index* - Lists all index entries used throughout the documentation set.
- The *SEAS Commands Error Messages Manual* lists the error messages generated by the EAGLE 5 ISS that are specific to the Signaling Engineering and Administration System (SEAS). It includes the SEAS commands that trigger the error messages, the equivalent system error messages and commands, and the explanatory text.
- The *SS7-over-IP Networks Using SIGTRAN* manual examines the reasons for transitioning to an SS7-over-IP network, the considerations that go into planning and dimensioning, and helpful information for implementing the network using EAGLE 5 ISS.

- The *System Manual – EOAP* describes the Embedded Operations Support System Application Processor (EOAP) and provides the user with procedures on how to implement the EOAP, replace EOAP-related hardware, device testing, and basic troubleshooting information.

How to Locate Documentation on the Customer Support Site

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

- 1 Go to Tekelec's Customer Support login page at <https://support.tekelec.com/index.asp>
- 2 Enter your assigned username and chosen password, then click **Go**.
Or, if you do not have access to the Customer Support site, click **Need an Account?**
Follow the instructions on the screen.
NOTE: After 20 minutes of inactivity, you will be logged off, and you must repeat this step to regain access.
- 3 After successful login, select a product from the Product Support drop-down menu.
- 4 Select a release number from the Product Support Release drop-down menu.
- 5 Locate the appropriate documentation section (i.e., a Feature Notice would be under **Notices**, and user documentation would be under **Manuals**).
- 6 To open the documentation in the same window, double click the document name. To open the documentation in a new window, right-click the document name and select **Open in New Window**.
- 7 To download the document, right-click the document name and select **Save Target As**.

Customer Training

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

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

Customer Care Center

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

Technical Assistance

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

- Tekelec, Europe and UK

Phone: +44 1784 467 804

Fax: +44 1784 477 120

E-mail: ecsc@tekelec.com

- Tekelec, USA

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

Fax: +1 919 460 0877

E-mail: support@tekelec.com

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

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

Emergency Response

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

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

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

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

Appendix A. Acronyms 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

Called Party Number—CDPN

Calling Party Number—CGPN

CC—Country Code

Common Screening List—CSL

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

EAGLE 5 ISS Router GPL—EROUTE

EDCM—Enhanced Data Communication Module

EGMS—Enhanced GSM MAP Screening

EIR—Equipment Identity Register

ELAP—Eagle LNP Application Processor

Enhanced Data Communication Module—EDCM

Enhanced GSM MAP Screening—EGMS

Enhanced OAM—EOAM

EOAM—Enhanced OAM

Equipment Identity Register—EIR

EPAP—Eagle Provisioning Application Processor

EPM—Embedded Processor Module

EROUTE—EAGLE 5 ISS Router GPL

ERTHC—GPL for the E5-STC card

FAK—Feature Access Key

Feature Access Key—FAK

Frame Power Budget Alarm—FBPA

Frame Power Threshold—FPT

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

IMEI—International Mobile Equipment Identity

IN—Intelligent Network

INAP-based Number Portability—INAP

Integrated Message Feeder—IMF

IMT—Inter-processor Message Transport

Initial Detection Point—IDP

Inter-processor Message Transport—IMT

International Mobile Equipment Identity—IMEA

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) IP⁷ Application.

IPLIM—Internet Protocol Link Interface Module. Point to Point IP⁷ Application.

IPLIMI—An ITU version of IPLIM

IPS—Internet Protocol Services

IPSM—IP Services Module

ITU version of IPLIM—IPLIMI

ITU version of SS7IPGW—IPLGWI

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

Multi Port LIM—MPL

Multi-Channel Interface Module—MIM

NEC—National Escape Code

NP—Number Portability

OAM—Operations, Administration, & Maintenance Application

Operation Code—OPCODE

Operation Name—OPNAME

Operations, Administration, & Maintenance Application—OAM

PC—Point Code

RAM—Random Access Memory

Random Access Memory—RAM

RC—Relative Cost

RCT—Route Congestion Test

RN—Routing Number

SCCP—Signaling Connection Control Part

SCCP User Adaptation Layer—SUA

SCCPHC—GPL for the E5-SM4G card.

SDRAM—Synchronous E1 High Speed Link

SDS—System Debug Services

SE-HSL—Synchronous E1 High Speed Link

Secondary Adjacent Point Code—SAPC

Service Selector—SRVSEL

SIFB—Switched IMT Fabric Board

Signaling Connection Control Part—SCCP

Signaling System 7/Internet Protocol Gateway—SS7IPGW

Signaling Transfer Card—STC

SLANHC—GPL for the E5-SLAN card

SLS—Signaling Link Selection

SMPP—Short Message Peer-to-Peer protocol

SMSC—Short Message Service Center

SRAM—Static Random Access Memory

SRVSEL—Service Selector

SS7IPGW—Signaling System 7/Internet Protocol Gateway. Point to Multipoint IP⁷ Application.

SSN—Subsystem Number

STC—Signaling Transfer Card

SUA—SCCP User Adaptation Layer

Switched IMT Fabric Board—SIFB

Synchronous Dynamic Random Access Memory—SDRAM

System Configuration Manager—SCM

TBGTTLS—Transaction-based GTT Loadsharing

TCAP—Transaction Capabilities Application Part

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

Terminals, Disk, & Maintenance card, or Time Division Multiplex—TDM

TFC—Transfer Controlled (traffic)

TFR—Transfer Restricted

TLNP—Triggerless LNP
TPS—Transactions per Second
Translation Services Module—TSM
Transfer Controlled (traffic)—TFC
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
Unsolicited Alarm Message—UAM
Unsolicited Information Message—UIM
VSCCP—VxWorks Signaling Connection Control Part
VxWorks Signaling Connection Control Part—VSCCP
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**
- DSM, 1GB MEM **870-1984-02 Rev A** or

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
DSM, 1GB MEM

DSM, 2GB MEM
DSM, 4GB MEM
DSM, 4GB MEM
DSM, 4GB MEM
 - DSM-1G
DSM-1G
DSM-1G
 - EDSM-2G (MCPM)
EDSM-2G (MCPM)
EDSM-2G (MCPM)
 - E1/T1 MIM
E1/T1 MIM
E1/T1 MIM
E1/T1 MIM
 - E1-ATM
E1-ATM
E1-ATM
 - E5-E1T1
 - E5-ENET
 - E5-SM4G
 - EILA
EILA w/ DIMM
 - EILA-T
 - FAP
FAP

FAP
FAP
 - FAP-CF/EF
FAP-MISC
FAP Fuse and Alarm Panel
FAP Jumper Board
FAP Diode Board
- 870-1984-08 Rev A or
870-1984-09 Rev A or
870-1984-15 Rev A (R)¹ or
870-1984-03 Rev A or
870-1984-05 Rev A² or
870-1984-06 Rev A or
870-1984-07 Rev A or
870-1984-13 Rev A (R)¹
- 870-2371-02 Rev A
870-2371-06 Rev A
870-2371-08 Rev A or
870-2371-13 Rev A (R)¹
- 870-2372-03 Rev A
870-2372-07 Rev A
870-2372-09 Rev A or
870-2372-14 Rev A (R)¹
- 870-2198-01 Rev G or
870-2198-02 Rev A
870-2198-03 Rev A
870-2198-04 Rev A or
870-2198-07 Rev A (R)¹
- 870-2455-01 Rev B
870-2455-02 Rev B
870-2455-03 Rev A or
870-2455-05 Rev A (R)¹
- 870-1873-02 Rev A or
870-1873-03 Rev A (R)^{1 2}
- 870-2212-02 Rev A or
870-2212-03 Rev A (R)¹
- 870-2860-01 Rev A
- 870-2049-01 Rev A or
870-2049-02 Rev A
- 870-2049-03 Rev A
- 870-1606-01 Rev A or
870-1606-02 Rev A^{3 4}
870-2320-01 Rev A or
870-2320-03 Rev A (R)^{1 5 6}
870-1823-01 Rev A
- 870-0243-08 Rev C
870-0243-09 Rev C
870-2804-01 Rev A
870-2805-01 Rev A
870-2806-01 Rev A

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

• GPSM-II GPSM-II	870-2360-01 Rev E 870-2360-05 Rev A 870-2360-06 Rev A or 870-2360-08 Rev A (R) ¹
• GPSM-II	
• HC-MIM HC-MIM	870-2671-01 Rev P or 870-2671-02 Rev B or 870-2671-03 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 LIM-AINF LIM-AINF LIM-AINF LIM-AINF LIM-AINF LIM-AINF w/ DIMM LIM-AINF w/ DIMM LIM-AINF w/ DIMM LIM-AINF w/ DIMM LIM-AINF w/ DIMM LIM-AINF w/ DIMM	870-1014-01 Rev D or 870-1014-02 Rev A or 870-1014-03 Rev B or 870-1014-04 Rev A or 870-1014-05 Rev A or 870-1014-06 Rev A or 870-1488-01 Rev A or 870-1488-02 Rev A or 870-1488-03 Rev A or 870-1488-04 Rev A or 870-1488-05 Rev A or 870-1488-06 Rev A
• LIM-ATM LIM-ATM LIM ATM LIM ATM LIM-ATM LIM-ATM	870-1293-02 Rev A or 870-1293-03 Rev A 870-1293-06 Rev A 870-1293-07 Rev A 870-1293-08 Rev B 870-1293-10 Rev A or 870-1293-13 Rev A (R) ¹
• LIM-DS0 LIM-DS0 LIM-DS0 LIM-DS0 w/ DIMM LIM-DS0 w/ DIMM LIM-DS0 w/ DIMM	870-1009-02 Rev D or 870-1009-03 Rev A or 870-1009-04 Rev A or 870-1485-01 Rev A or 870-1485-02 Rev A or 870-1485-03 Rev A
• LIM-E1	870-1379-01 Rev A
• LIM-ILA LIM-ILA w/ DIMM	870-1484-01 Rev E or 870-1484-02 Rev C
• LIM-OCU LIM-OCU LIM-OCU LIM-OCU w/ DIMM LIM-OCU w/ DIMM LIM-OCU w/ DIMM	870-1010-03 Rev D or 870-1010-04 Rev A or 870-1010-05 Rev A or 870-1486-02 Rev A or 870-1486-03 Rev A or 870-1486-04 Rev A

¹ ROHS equivalent of immediately preceding part number

• 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
• 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	890-1801-01 Rev E
	890-1801-02 Rev A (R)
• 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 B
• 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

¹ ROHS equivalent of immediately preceding part number

- T1000 Application Server
 - Dual Port G-Bit E-Net Card
 - Modem Card
 - Quad Serial Exp. Card
 - 120 GB Hard Drive Assy
 - T1100 (Application Server - DC)
 - PCI Card - Dual Port Ethernet
 - Hard Disc Drive - 250 GB SATA
- | |
|--|
| 870-2640-01 Rev F |
| 870-2640-03 Rev A (R) |
| 870-2706-02 Rev A or |
| 870-2706-04 Rev A (R)¹ |
| 870-2707-01 Rev B |
| 870-2707-02 Rev A (R) |
| 870-2708-01 Rev B |
| 870-2708-02 Rev A (R) |
| 870-2721-02 Rev B |
| 870-2721-04 Rev A (R) |
| 870-2754-01 Rev P |
| 870-2807-01 Rev A |
| 870-1893-03 Rev A (R) |
| 870-2706-04 Rev A |
| 870-2787-02 Rev A |

