

Tekelec EAGLE[®] 5 Integrated Signaling System

Feature Manual - A-Port[™]

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U.S. Patent Numbers:

5,732,213; 5,953,404; 6,115,746; 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; 6,987,781; 6,987,849; 6,990,089; 6,990,347; 6,993,038; 7,002,988; 7,020,707; 7,031,340; 7,035,239; 7,035,387; 7,043,000; 7,043,001; 7,043,002; 7,046,667; 7,050,456; 7,050,562; 7,054,422; 7,068,773; 7,072,678; 7,075,331; 7,079,524; 7,088,728; 7,092,505; 7,108,468; 7,110,780; 7,113,581; 7,113,781; 7,117,411; 7,123,710; 7,127,057; 7,133,420; 7,136,477; 7,139,388; 7,145,875; 7,146,181; 7,155,206; 7,155,243; 7,155,505; 7,155,512; 7,181,194; 7,190,702; 7,190,772; 7,190,959; 7,197,036; 7,206,394; 7,215,748; 7,219,264; 7,222,192; 7,227,927; 7,231,024; 7,242,695; 7,254,391

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Overview

This manual provides a description, along with commands, maintenance, measurements, and configuration details associated with the ANSI-41 Mobile Number Portability (A-Port) feature of the EAGLE 5 ISS (Integrated Signaling System) and other features for which the A-Port feature is a prerequisite. A-Port provides IS41 number portability functionality using a triggerless solution. In response to governmental mandates for telecommunication networks, this feature focuses on service provider number portability on IS41 networks.

A-Port minimizes the challenges for IS41 network operators while enabling them to meet their regulatory obligations. A-Port supports the Signaling Relay Function (SRF) for direct and indirect routing. SRF-based MNP processing examines MAP messages for ported numbers. For call-related messages, A-Port acts as an “NPHLR” for exported number by responding with a MAPSRI message; A-Port performs a message relay function for calls to imported numbers and non-call related messages.

A-Port is an optional feature on the EAGLE 5 ISS, and can be enabled and turned on, but not off, via a feature access key. Note that A-Port requires the Global Title Translation (GTT) feature and that A-Port and North American LNP (Local Number Portability) are mutually exclusive on an EAGLE 5 ISS node.

Scope and Audience

This manual is intended for anyone responsible for installing, maintaining, and using the A-Port feature in the EAGLE 5 ISS. Users of this manual and the others in the EAGLE 5 ISS family of documents must have a working knowledge of telecommunications and network installations.

Manual Organization

This document is organized into the following chapters:

- [Chapter 1, “Introduction”](#), contains general information about the A-Port documentation, the organization of this manual, and how to get technical assistance.
- [Chapter 2, “Feature Description”](#), provides a functional description of the A-Port feature, including network perspectives, assumptions and limitations, a database overview, DSM provisioning and reloading, A-Port user interface, and an audit overview.
- [Chapter 3, “EAGLE 5 ISSA-Port Commands”](#), describes the new or updated commands that support the A-Port feature. It provides some sample reports and explanations of appropriate command usage.
- [Chapter 4, “A-Port Feature Activation”](#), describes how to activate the A-Port feature.
- [Chapter 5, “Maintenance and Measurements”](#), describes maintenance and measurements in detail, including EPAP status and alarms, hardware verification messages, TSM emulation mode, A-Port system status reports and commands, code and application data loading, and alarms.

Related Publications

For information about additional publications that are related to this document, refer to the *Related Publications* document. The *Related Publications* document is published as a part of the *Release Documentation* and is also published as a separate document on the Tekelec Customer Support Site.

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The Tekelec EAGLE 5 ISS documentation set is released on a CD-ROM. This format allows for easy searches through all parts of the documentation set.

The electronic file of each manual is also available from the Tekelec Customer Support site. This site allows for 24-hour access to the most up-to-date documentation.

Printed documentation is available for GA releases on request only and with a lead time of 4 weeks. The printed documentation set includes pocket guides for commands and alarms. Pocket guides may also be ordered as a set or individually. Exceptions to printed documentation are:

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- The Release Notice is available only on the Customer Support site.

NOTE: Customers may print a reasonable number of each manual for their own use.

Documentation is updated when significant changes are made that affect system operation. Updates resulting from Severity 1 and 2 PRs are made to existing manuals. Other changes are included in the documentation for the next scheduled release. Updates are made by re-issuing an electronic file to the customer support site. Customers with

printed documentation should contact their Sales Representative for an addendum. Occasionally, changes are communicated first with a Documentation Bulletin to provide customers with an advanced notice of the issue until officially released in the documentation. Documentation bulletins are posted on the Customer Support site and can be viewed per product and release.

Content changes are indicated with change bars, the revision of the manual part number is incremented, and the month of publication is updated.

Documentation Admonishments

Admonishments are icons and text throughout this manual that alert the reader to assure personal safety, to minimize possible service interruptions, and to warn of the potential for equipment damage.

	<p>DANGER: (This icon and text indicate the possibility of <i>personal injury</i>.)</p>
	<p>WARNING: (This icon and text indicate the possibility of <i>equipment damage</i>.)</p>
	<p>CAUTION: (This icon and text indicate the possibility of <i>service interruption</i>.)</p>

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- Tekelec, USA
 Phone:
 +1 888 367 8552 (US and Canada only)
 +1 919 460 2150 (international)
 Email: support@tekelec.com
- Tekelec, Europe
 Phone: +44 1784 467804
 Email: ecsc@tekelec.com

When a call is received, a Customer Service Report (CSR) is issued to record the request for service. Each CSR includes an individual tracking number.

Once a CSR is issued, the Customer Care Center determines the classification of the trouble. If a critical problem exists, emergency procedures are initiated. If the problem is not critical, information regarding the serial number of the system, COMMON Language Location Identifier (CLLI), initial problem symptoms (includes outputs and

messages) is recorded. A primary Customer Care Center engineer is also assigned to work on the CSR and provide a solution to the problem. The CSR is closed when the problem is resolved.

Emergency Response

In the event of a critical service situation, emergency response is offered by Tekelec Technical Services twenty-four hours a day, seven days a week. The emergency response provides immediate coverage, automatic escalation, and other features to ensure that the critical situation is resolved as rapidly as possible.

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

- A total system failure that results in loss of all transaction processing capability
- Significant reduction in system capacity or traffic handling capability
- Loss of the system's ability to perform automatic system reconfiguration
- Inability to restart a processor or the system
- Corruption of system databases that requires service affecting corrective actions
- Loss of access for maintenance or recovery operations
- Loss of the system ability to provide any required critical or major trouble notification

Any other problem severely affecting service, capacity/traffic, billing, and maintenance capabilities may be defined as critical by prior discussion and agreement with Tekelec Technical Services.

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Introduction

Throughout the world, an increasing number of governments are mandating that telecommunications network operators support service provider number portability. It is primarily intended to promote competition among service providers. It applies to both wireline and mobile phone networks. In particular, the A-Port (IS41 Mobile Number Portability) feature provides the ability for IS41 subscribers to change service providers while retaining their current Mobile Directory Number (MDN).

A-Port provides the ability for IS41 subscribers to change service providers while retaining their Mobile Directory Number (MDN).

A-Port utilizes the EPAP database to derive the portability status of a subscriber. This feature supports LOCREQ messages as well as SMSREQ messages (if the option is selected) for number portability handling.

LOCREQ messages generate a LOCREQ response if the MDN is ported and also relays the LOCREQ if the MDN is not ported (non-ported or ported in are handled the same way).

If the MTPMsgs for SCCP Apps feature is turned ON, all MTP routed UDT/non-segmented XUDTSCCP messages are routed to SCCP cards. SCCP card then perform SCCP decode/verification on MTP routed messages. If the MTP routed messages have CDPAGTI = 0, and the A-Port feature is turned ON, then the message is sent for A-Port processing. If the MTP routed messages have CDPAGTI ≠ 0, then SRVSEL lookup is performed using the SCCPCDPA information. If the result of the lookup is MNP service, the MTP routed messages are sent to MNP handling. MNP begins A-Port general TCAP/MAP verification if the message is ANSITCAP and A-Port feature is turned ON.

The MNPCircular Route Prevention (MNPCRCP) feature is an extension of the A-Port feature which helps in cases of circular routing caused by incorrect information in one or more of the network number portability databases. For example, a subscriber may have ported from network A to network B. Network A has the correct routing information, indicating the subscriber now belongs to network B. However, network B may have incorrect routing information, indicating that the subscriber still belongs to network A. In this case, network A routes the call to network B, based on its portability data, but network B routes the call back to network A, based on its incorrect data. This results in a circular route. The MNPCRCP feature provides the logic to prevent this scenario. This feature is enabled and turned-on using Feature Access Key (FAK) commands.

The DigitAction Expansion feature provides more flexibility to formulate the SCCPCalled Party Address (SCCP) Global Title Address (GTA) field of the MAP messages relayed by A-Port.

DigitAction Expansion is provisioned via the PDBI Enter Network Entity or Update Network Entity commands. DigitAction Expansion can also be modified via the Add an NE and Update an NE GUI screens.

The MNPSCCP Service Re-Route feature is used when the A-Port subscriber database is incoherent with MPS data and the GTT data is valid. The A-PortSCCP Service Re-Route feature provides the capability to re-route the traffic from the EAGLE 5 ISS to other A-Port subscriber database nodes and inform the originating nodes to re-route the A-Port service related traffic to other A-Port service nodes.

The MNPSCCP Service Re-Route feature is designed to handle and control re-routing of A-Port traffic from an affected node to alternate nodes within an operators network. This feature is an optional feature and doesn't affect the normal A-Port functionality. This feature also provides the option to mark A-Port *OFFLINE* to perform a controlled re-routing during this state.

The MO-Based IS41 SMS NP feature allows wireless operators to route SMS (Short Message Service) messages within a Number Portability environment.

The MO-Based IS41 SMS NP feature:

- Intercepts SMS messages before they reach the home SMSC (short message service center)
- Decodes the TCAP/MAP message destination address and performs lookup in NPDB (number portability database)
- Modifies the destination address in the TCAP message with DN (dialed number) porting information
- Relays the SMS message to its original destination

The home SMSC then uses the DN porting information to determine whether to forward the message to other operators or to process the message for an in-network subscriber.

The MO-Based IS-41 SMS NP feature applies to ANSI TCAP/MAP and ANSI transport (MTP and SCCP) messages.

Standards are defined so that carriers can choose to implement either Signaling Relay Function (SRF)-based (using MAP protocol) MNP or IN-based (using INAP protocol) MNP. A-Port supports only the SRF-based solution for MNP. (INAP-based MNP processing is similar to wireline networks; this function is supported by the INP feature.)

SRF-based MNP processing involves the “intercepting” of existing MAP messages to check for ported numbers. For call-related messages, A-Port acts as a “NPHLR,” in the case where the number has been exported, by responding to the switch with a Loc_req ack message. For calls to imported numbers and non-call related messages, A-Port performs message relay.

The ETSI standards for SRF-based MNP define two routing options, direct routing and indirect routing. A-Port supports both options:

- With direct routing, the network where the call is originated is responsible for determining whether the called party has ported and routing the call to the new subscription network.
- With indirect routing, this is the responsibility of the network that originally owned the number.

A-PortMNP is based on the EAGLE 5 ISS platform. It is deployed in a node that is also performing the STP function.

Number lengths vary between countries and may even vary within a country. As a result, the A-Port subscriber database structure supports numbers of varying length in a flexible way without necessitating software modifications. A maximum number length of 15 digits for ported numbers is supported.

A-Port Considerations

1. GTT must be ON before the A-Port feature can be enabled.
2. The A-Port feature cannot be enabled if any TSMs are in the system.
3. The A-Port feature requires 4 GBDSMs.
4. A-Port is activated or turned on, but not off, via a feature access key (FAK).
5. The A-Port, IGM, G-PortMNP, G-Flex C7 Relay, AINPQ, and INP features can run concurrently on an EAGLE 5 ISS node.
6. When A-Port and G-Flex are run on the same node, interactions between the two features must be addressed.
7. A-Port and North American LNP are mutually exclusive on an EAGLE 5 ISS node.

MPS/EPAP Platform

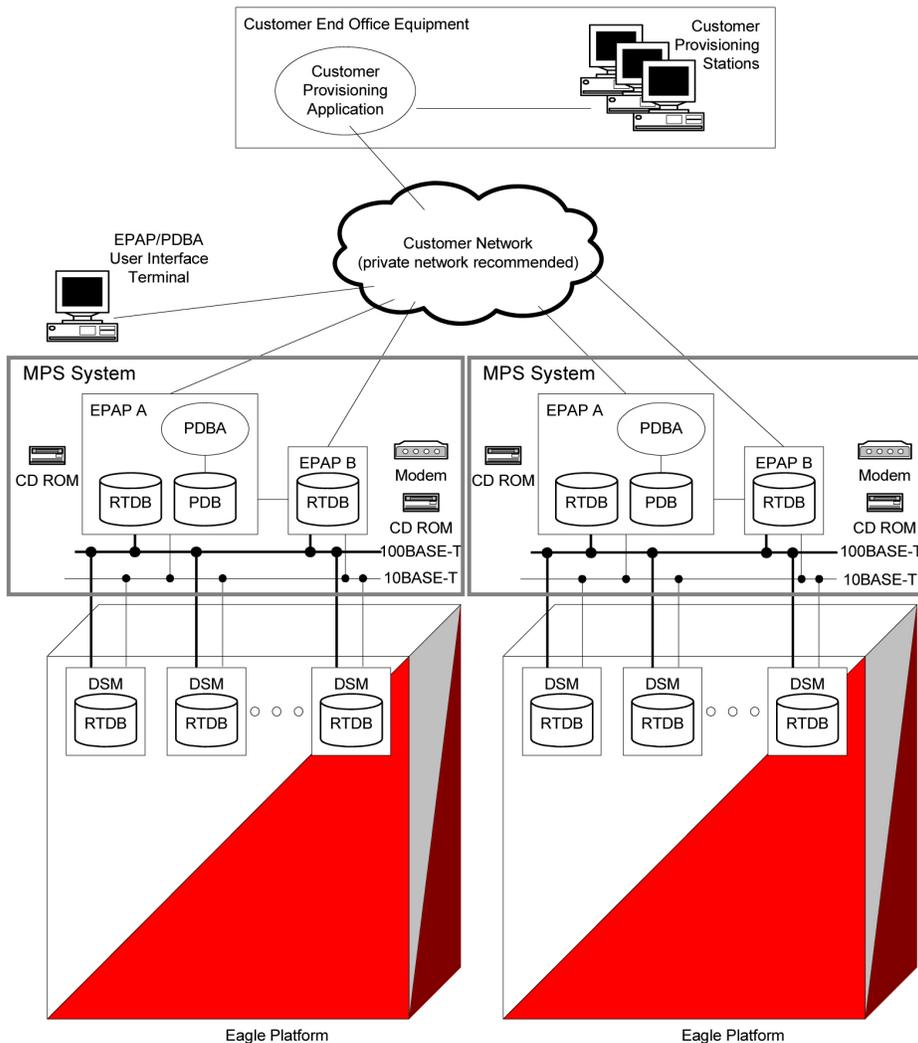
Tekelec provides the MPS (Multi-Purpose Server) platform as a subsystem of the EAGLE 5 ISS. The MPS provides support for the AINPQ, A-Port, EIR, G-Flex, G-Port, IGM, and INP features.

The MPS is composed of hardware and software components that interact to create a secure and reliable platform. (For details about the MPS hardware, refer to the *Tekelec 1000 Application Server Hardware Manual*.) The MPS provides the means of interfacing the customer provisioning application with the EAGLE 5 ISS. It connects the customer with the EAGLE 5 ISS and accepts the customer number portability data, while accommodating numbers of varying lengths.

The EAGLE Provisioning Application Processor (EPAP) is software that runs on the MPS hardware platform. It collects and organizes customer provisioning data, and forwards it to the EAGLE 5 ISSDSM cards. [Figure 2-1](#) shows the overall system architecture, providing a graphic overview of MPS/EPAP platform from customer provisioning through the MPS subsystem to the EAGLE 5 ISSDSM databases.

NOTE: The EAGLE 5 ISS supports more than one type of hardware card that provides the DSM function. The cards differ in the size of database and the transactions/second rate that they support. In this manual, the term DSM is used to mean any hardware card that supports the DSM function, unless a specific card (such as E5-SM4G) is mentioned. For more information about the hardware cards that support the DSM function, refer to the *Hardware Manual - EAGLE 5 ISS*.

Figure 2-1. MPS/EPAP Platforms for Provisioning A-Port



Design Overview and System Layout

[Figure 2-1](#) illustrates the overall system architecture of A-Port and identifies the different tasks, databases and interfaces involved. The system consists of two mated MPS servers. Each MPS contains two EPAP platforms, EPAP A and EPAP B, a RealTime Database, a Provisioning Database, servers, CDROMS, modems, and network hubs. Each MPS and its EPAPs may be thought of as an ‘EPAP system’; the EPAP system at the mated EAGLE 5 ISS is referred to as the ‘mated EPAP system’. Each EPAP system is a T1000 AS system with a total of four Ethernet interfaces.

On the EAGLE 5 ISS platform side, a set of DSMs, which hold the EIR database, is part of the STP. Two high-speed Ethernet links connect the DSMs and the EPAPs. One of the links is a 100BASE-T Ethernet bus, and the other is a 10BASE-T Ethernet bus.

The A-Port subscriber database is provisioned and maintained through the EPAPs. EPAP A and EPAP B act as the active EPAP and the standby EPAP. One link serves as the active link, and the other as the standby link. At any given time, there is only one active EPAP and one active link. The database is provisioned through the active link by the active EPAP; the other EPAP provides redundancy.

In case of failure of the active EPAP, the standby EPAP takes over the role of active EPAP and continues to provision the A-Port subscriber database. In the case where the active link fails, the active EPAP switches to the standby link to continue provisioning the DSMs. The two Ethernet links are part of the DSM network.

Another 100BASE-T Ethernet link exists between the EPAPs; that link is called the EPAP sync network.

Major modules on the EPAP are the

- DSM provisioning module
- Maintenance module
- RTDB module
- PDB module

The DSM provisioning module is responsible for updating A-Port subscriber databases on the EAGLE 5 ISS DSM cards using the RMTTP multicast. The maintenance module is responsible for the proper functioning of the EPAP platform. The PDB module is responsible for preparing and maintaining the Real Time Database, which is the “golden copy” of the A-Port subscriber database. The PDB module can run on one of the EPAPs of either of the mated EAGLE 5 ISSs.

Functional Overview

The main function of the MPS/EPAP platform is to provision the A-Port data from the customer network to the DSM cards on the EAGLE 5 ISS. A-Port subscriber database records are continuously updated from the customer network to the PDB. The PDB module communicates with the maintenance module and the RTDB task over a TCP/IP socket to provision the DSM cards on the EAGLE 5 ISS. The maintenance module is responsible for the overall stability and performance of the system.

It is possible for the DSM database to get out-of-sync due to missed provisioning or card rebooting. Therefore, the RTDB contains a coherent, current copy of the DSM database. The EPAP-DSM provisioning task sends database information out on the provisioning link. The DSM cards act as the receivers and are reprovisioned.

EPAP/PDBA Overview

The EAGLE Provisioning Application Processor (EPAP) platform and the Provisioning Database Application (PDBA) coupled with the Provisioning Database Interface (PDBI) facilitate the user database required for the A-Port feature. It performs the following two basic functions in support of the A-Port feature:

- Accept and store A-Port data provisioned by the customer
- Update and reload A-Port subscriber databases on the DSM cards

The PDBA operates on the master A-Port provisioning database (PDB). The EPAP and PDBA are both installed on the MPS hardware platform.

The EPAP platform maintains an exact copy of the real-time database (RTDB) required by the EAGLE 5 ISSDSM cards, provisions the EAGLE 5 ISSDSM cards, and maintains redundant copies of both databases on mated EPAP hardware. The EPAP platform is a mated pair of processors (the upper processor, called EPAP A, and the lower processor, EPAP B) contained in one frame.

During normal operation, information flows through the EPAP/PDBA software with no intervention. A-Port data is generated at one or more operations centers and is delivered to the PDBA through a TCP socket interface (PDBI). The PDBA software stores and replicates data on EPAP A on the mated EPAP system. The data is then transmitted across a private network to the DSM cards located in the EAGLE 5 ISS frame by the EPAPs.

The primary interface to the PDBA consists of machine-to-machine messages. The interface is defined by Tekelec and is available in the Provisioning Database Interface Manual. Use that manual to update or create provisioning software compatible with the EPAP socket interface.

A direct user interface is provided on each EPAP to allow configuration, maintenance, debugging, and platform operations. A direct user interface is also provided by the PDBA for configuration and database maintenance.

The MPS/EPAP is an open systems platform and easily accommodates the high provisioning rates that A-Port requires. Implementing the persistent database and provisioning as an open systems platform, compared to the traditional OAM platform, provides these benefits:

- Variety of hardware components and vendors
- Availability of third party communication and database tools
- Standard communication protocols
- Availability of personnel with related experience

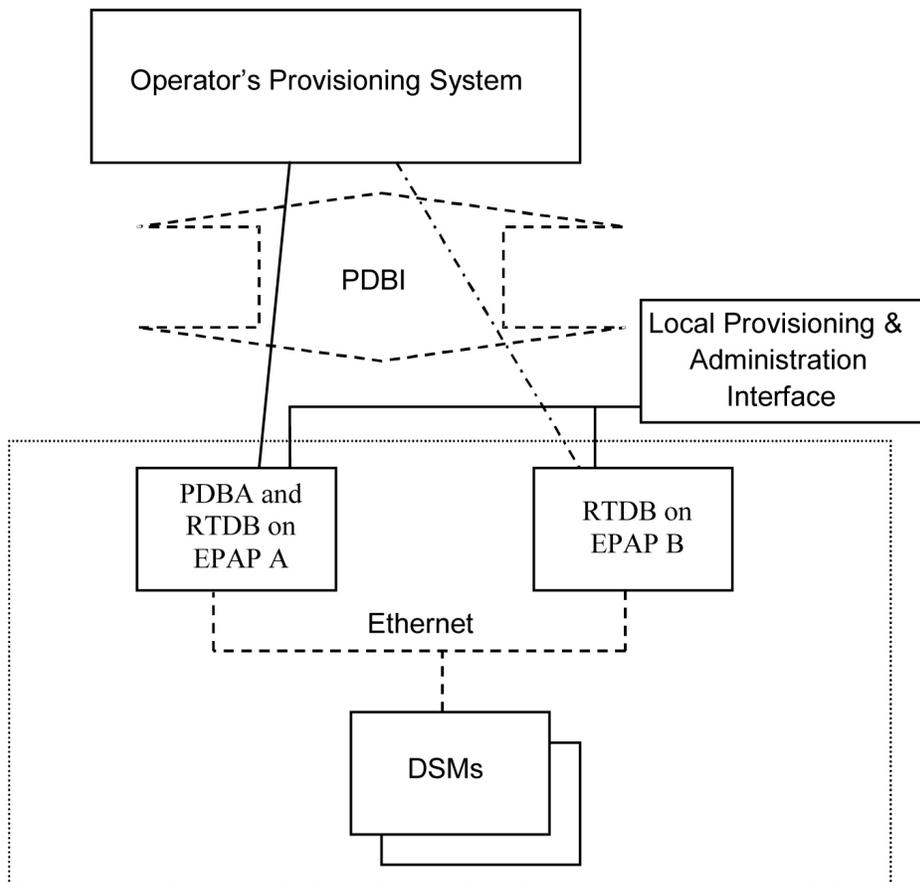
Each EPAP server maintains a copy of the real-time database in order to provision the EAGLE 5 ISSDSM cards. The EPAP server must comply with the hardware requirements in the *MPS Hardware Manual*. [Figure 2-1](#) illustrates the EPAP architecture contained in the MPS subsystem.

Each EPAP has a dedicated CDROM drive. One EPAP per EAGLE 5 ISS platform has a modem capable of supporting remote diagnostics, remote configuration, and remote maintenance; these remote operations are performed through EPAP login sessions. These sessions are accessible across the customer network (that is, the ssh) as well as through direct terminal connection to the EPAP via an RS232 connection. Refer to the *Tekelec 1000 Application Server Hardware Manual* for details about the hardware devices and network connections.

Subscriber Data Provisioning

[Figure 2-2](#) shows the current high-level view of the subscriber data provisioning architecture that will be used for G-Flex. Only those parts of the EAGLE 5 ISS platform that are relevant to subscriber data provisioning are shown. This section defines requirements for the PDBI (Provisioning Database Interface) between the G-Flex C7 Relay and the operator's provisioning system (OPS). The PDBI is used only for real-time provisioning of subscriber and network entity data. Refer to the *PDBI Manual* for more details about the G-FlexPDBI.

Provisioning clients connect to the EPAPs via the Provisioning Database Interface (PDBI). This interface contains commands that allow all of the provisioning and retrieving of IGM data. The PDBI is used only for real-time provisioning of subscriber and network entity data. Refer to the Provisioning Database Interface Manual for more details about the IGM PDBI.

Figure 2-2. Subscriber Data Provisioning Architecture (High Level)

A pair of active/standby EPAP (EAGLE Provisioning Application Processors) servers provides the interface between the Realtime Database (RTDB) of the EAGLE 5 ISSDSMs (Database Service Modules) and the OPS. EPAP A is equipped with both the PDB (Provisioning Database) and the RTDB database, and EPAP B has just the RTDB. An EPAP with just the RTDB must be updated by the EPAP that has the PDB. The EPAP uses the Multi-Purpose Server (MPS) hardware.

For more information about the EPAP, refer to the *EPAP Administration Manual*. For more information about the MPS hardware, refer to the *Tekelec 1000 Application Server Hardware Manual*.

Database Overview

This section describes, at a high level, the distributed administrative architecture for the EAGLE 5 ISS, which includes the G-Flex administrative solution.

In general, EAGLE 5 ISS database updates are sent via an EAGLE 5 ISS terminal across an RS232 serial port to the active OAM (Operation Administration and Maintenance). The active OAM commits the update to TDM fixed disk and then sends the update control information to the standby OAM and to the rest of the network cards. When all databases are updated, the active OAM responds with a *Command Completed* indication to the user terminal. EAGLE 5 ISS database updates are generally considered to be EAGLE 5 ISS link, linkset, route, destination, mated application, gateway screening, and global title types of information.

Typically, large databases requiring much faster update and retrieval rates (compared to the rates provided by the OAM) are not administered via EAGLE 5 ISS terminals. These databases, such as A-Port, are populated using redundant Ethernet connections to DSM cards from an EPAPMPS platform.

An EPAP consists of a combined Provisioning (MySQL) and RTDB database. The Provisioning Database (PDB) responds to requests for updates by the active and standby RTDB databases on both mated EAGLE 5 ISSs. The active EPAPRTDB database is responsible for initiating multicast updates of changed database records to the DSM cards after the data has been committed to the EPAP disks. Furthermore, the PDB may accept and commit more database updates while the RTDB databases are completing their previous updates.

It is this overlapping of database updates, coupled with an RTDB transactional database engine and fast download time, that allows larger amounts of data at a time from the PDB. Committing larger amounts of data at a time to be committed in the RTDB (versus a single update at a time) allows faster overall transaction rates to be achieved. The boundaries of the transaction rates become more closely related to cache size and disk cache flush time than the disk access time of a single update. Thus, successful completion of EPAP database updates only guarantees that the PDB has been updated, but it does *not* mean the RTDB has completed the update and sent it to the DSM card.

The EPAP architecture contains a local provisioning terminal and a modem for remote access, as well as other functions. A backup device can be used to backup or restore the Provisioning database. The local provisioning terminal is used to manually repair the standby EPAPRTDB database or to turn the A-Port subscriber database audit on or off. For additional information, refer to the *Tekelec 1000 Application Server Hardware Manual* and *EPAP Administration Manual*.

EPAP (EAGLE Provisioning Application Processor)

As shown in [Figure 2-1](#), a single A-Port system contains two EPAP (EAGLE Provisioning Application Processors) servers. At any given time, only one actively communicates with the DSM (Database Service Module) boards. The other EPAP server is in standby mode. In addition, two A-Port systems can be deployed in a mated pair configuration.

The primary purpose of the EPAP systems is to maintain the RTDB and PDB and to download copies of the RTDB to the DSM cards on the EAGLE 5 ISS.

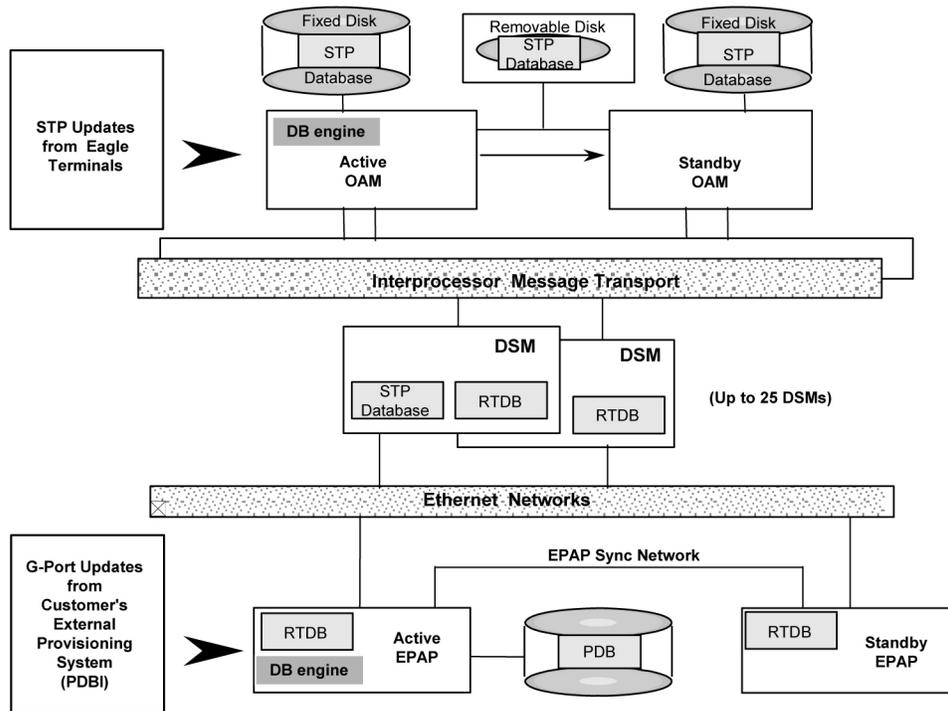
The PDB on the active EPAP receives A-Port data from the customer network through the PDBI, the external source of A-Port provisioning information. The PDBA continually updates the active EPAP's PDB. (The PDB uses MySQL database software.) Once an update is applied to the active PDB, it is sent to the RTDBs on the active and standby EPAPs.

Both the active and standby EPAPs maintain copies of the RTDB. Periodically, the DSM card polls the active EPAPRTDB for any new updates. The active EPAP downloads the updates to the DSM for its own resident copy of the RTDB database.

In a mated pair configuration, there are mated EPAP servers that provide two A-Port platforms, as shown in [Figure 2-1](#). The PDB on the active EPAP automatically updates the PDB on the mate platform. The PDB on the mate platform then updates its EPAPRTDBs, which in turn update the RTDBs on the DSM cards.

Provisioning of the EAGLE 5 ISS's DSM cards is performed through two interfaces, using two different sets of commands. Provisioning is accomplished by the STP updates from EAGLE 5 ISS terminals and by the A-Port updates from the customer's external provisioning system. This system of dual provisioning is illustrated in [Figure 2-3](#).

Figure 2-3. Administrative Architecture



DSM (Database Service Module) Cards

From 1 to 25 DSM cards can be provisioned with the A-Port feature enabled. The A-Port feature requires that all DSMs cards contain 4 GB of memory. Figure 2-3 illustrates each DSM card having two Ethernet links, the main DSM network on the 100BASE-T link and the backup DSM network on the 10BASE-T link.

The extra memory holds a copy of the RTDB. The DSM Ethernet ports are linked to the EPAP systems to receive the downloaded RTDBs. The DSMs run a version of the SCCP software application that has been ported to the VxWorks OS. To differentiate the DSM-VxWorks-SCCP application from the SCCP that runs on TSM cards, the DSM version is named 'VSCCP'.

Multiple DSMs provide a means of load balancing in high-traffic situations. The DSM database is in a format that facilitates rapid lookups. Each DSM contains an identical database. Furthermore, all DSMA-Port subscriber databases are identical to the RTDB maintained by the EPAPs.

However, the various databases may not be identical at all times for several reasons. First of all, when a DSM card is initialized, it downloads the current copy of the database from the EPAP. While that card is being loaded, it cannot receive new updates that have arrived at the EPAP since reload began. Another condition that can result in databases being out-of-sync occurs when the EPAP receives updates from its provisioning source, but it has not yet sent them down to the DSM cards. Updates are applied to the provisioning database as they are received.

Two possible scenarios contribute to a condition where a DSM may not have enough memory to hold the entire database. In the first case, the database is downloaded successfully to the DSM, but subsequent updates eventually increase the size of the database beyond the capacity of the DSM memory. In this situation, it is desirable to continue processing A-Port transactions, even though the database may not be as up-to-date as it could be.

The other case occurs when a DSM card is booted. If it is determined then that the card does not have enough memory for the entire database, the database is not loaded on that card. Each DSM is responsible for recognizing and reporting its out-of-memory conditions by means of alarms.

Overview of EPAP to DSM Communications

Before discussing DSM status reporting or EPAP status reporting, it is helpful to understand the communications between the DSMs and the EPAP in broad terms.

- UDP - sending DSM status messages

The DSMs and EPAPs create a UDP (User Datagram Protocol) socket, which is used for status messages. One of the last things a DSM does when it is initialized is to send a status message to the EPAP, containing the DSMID, database level, and memory size. The EPAP maintains tables containing the last known status of each DSM. EPAP uses these to determine whether or not the DSM needs to download the database.

- IP - reporting EPAP maintenance data

The DSMs create an TCP/IP socket when they are initialized, and listen for connection requests. During initialization or after a loss of connectivity, the active EPAP chooses one of the DSMs and issues a *Connect* to establish the TCP/IP connection with that DSM (referred to as the primary DSM). The purpose of this link is to provide a path for reporting EPAP alarms and to forward maintenance blocks to the DSM.

- IP Multicast - downloading GSM database

Because of the large size of the database and the need to download it quickly on up to 25 DSM cards, A-Port uses a technique known as IP multicasting. This technique is based on Reliable Multicast Transport Protocol-II (RMTP-II), a product of Globalcast Communications. IP multicasting downloads the RTDB and database updates to the DSMs.

The administration of IP multicasting is based on the concept of a “tree”, or stream of data, which is constantly being broadcast by the EPAP. DSMs that need to download the real time database or to receive database updates “join the tree”. DSMs can also “leave the tree”, typically when the database fills their available memory.

DSM Provisioning and Reload

One of the core functions of the EPAP is to provision the DSM cards with the A-Port database updates. In order to provide redundancy for this feature, separate RMTP channels are created on each interface from each EPAP:

- EPAP A, Link A (on the main DSM network, 100BASE-T)
- EPAP A, Link B (on the backup DSM network, 10BASE-T)
- EPAP B, Link A (on the main DSM network, 100BASE-T)
- EPAP B, Link B (on the backup DSM network, 10BASE-T)

Provisioning and other data is broadcast on one of these channels to all of the DSM cards. Provisioning is done by database level in order to leave DSM tables coherent between updates.

The DSM cards do the following:

- Detect the need for incremental updates and send a status message to the EPAP.
- Discriminate between the various streams by the database level contained in each message and accept updates according to the DSMs current database level.

DSM Reloading Model

DSM cards may require a complete database reload in the event of reboot or loss of connectivity for a significant amount of time. The EPAP provides a mechanism to quickly load a number of DSM cards with the current database. The database on the EPAP is large and may be updated constantly. The database sent to the DSM card or cards will likely be missing some of these updates making it corrupt as well as back level.

EPAP Continuous Reload

It is important to understand how the EPAP handles reloading of multiple DSMs from different starting points. Reload begins when the first DSM requires it. Records are read sequentially from the real-time database from an arbitrary starting point, wrapping back to the beginning. If another DSM requires reloading at this time, it uses the existing record stream and notifies the DSM provisioning task of the first record it read. This continues until all DSMs are satisfied.

DSM Database Levels and Reloading

The current database level when the reload started is of special importance during reload. When a DSM detects that the last record has been received, it sends a status message back to the EPAP indicating the database level at the start of reload. This action starts incremental loading. The DSM continues to reload until it is completely caught up with the current level of the RTDB. As database records are sent to the DSMs during reload, normal provisioning can *change* those records. All records changed between the start and end of reloading must be incrementally loaded before the database is coherent and usable by the DSM.

The following terminology is used here for the stages of database reload for a given DSM.

- **Stage 1 loading:** The database is being copied record for record from the golden RTDB to the DSMRTDB. The database is incoherent during stage 1 loading.
- **Incremental update:** The database is receiving all of the updates missed during stage 1 loading or some other reason (e.g., network outage, processor limitation, lost communication, etc.). The database is coherent but back level during incremental update.
- **Current:** The database is receiving current updates from the DSM provisioning task.
- **Coherent:** The database is at a whole database level, that is, not currently updating records belonging to a database level.

DSM Reload Requirements

DSM cards may require a complete database reload if there is a reboot or loss of connectivity for a significant amount of time. The EPAP provides a mechanism to quickly load a number of DSM cards with the current database. The RTDB on the EPAP is large and can be updated constantly from the customer's provisioning network.

The upload process is divided into two stages, one to sequentially send the initial database records and another to send any updates missed since the beginning of the first stage. The DSM reload stream uses a separate RMTP channel from the provisioning and incremental update streams. This allows DSM multicast hardware to filter out the high volume of reload traffic from DSM cards that do not require it.

DSM cards do the following:

- Detect the need for stage 1 loading and send a status message to the EPAP.
- Identify the first record DSM was able to read in the above status message if a record stream is already in progress.

- Handle the record stream regardless of the starting point (that is, records starting with the middle record of the middle table).
- Expect tables to be sent in a particular order and therefore detect any gap in the record stream.
- Send a status message if a gap is detected. Stage 1 loading is essentially reset to the last update received.
- Handle wrapping from the last record from the last table to the first record of the first table.o the last update received.
- Know when they have received all the required records to proceed to stage 2 loading.`
- Send a status message when stage 1 loading is complete, indicating the database level at the beginning of stage 1.
- Detect when the master RTDB crosses a memory boundary during stage 1 loading; the card automatically reboots and then auto-inhibits.

EPAP Status and Error Reporting via Maintenance Blocks

The EPAPs forward all status and error messages to the DSMs in maintenance blocks. Maintenance blocks are asynchronously sent whenever the EPAP has something to report. The maintenance blocks eventually update EPAPdevice control blocks (DCBs) located on the EAGLE 5 ISS. The DCBs provide the status information you receive when you issue a **rept-stat-mps** command.

Network Connections

Several customer- and Tekelec-installed private networks are required to support the A-Port feature. These networks are:

- Customer provisioning network
- EPAP sync network
- DSM networks
- Dial-up network

The following discussion is an overview of these private networks. It expands on the networks in the A-Port architecture diagram shown in [Figure 2-4](#). (For details about configuring these networks, refer to the *EPAP Administration Manual*.)

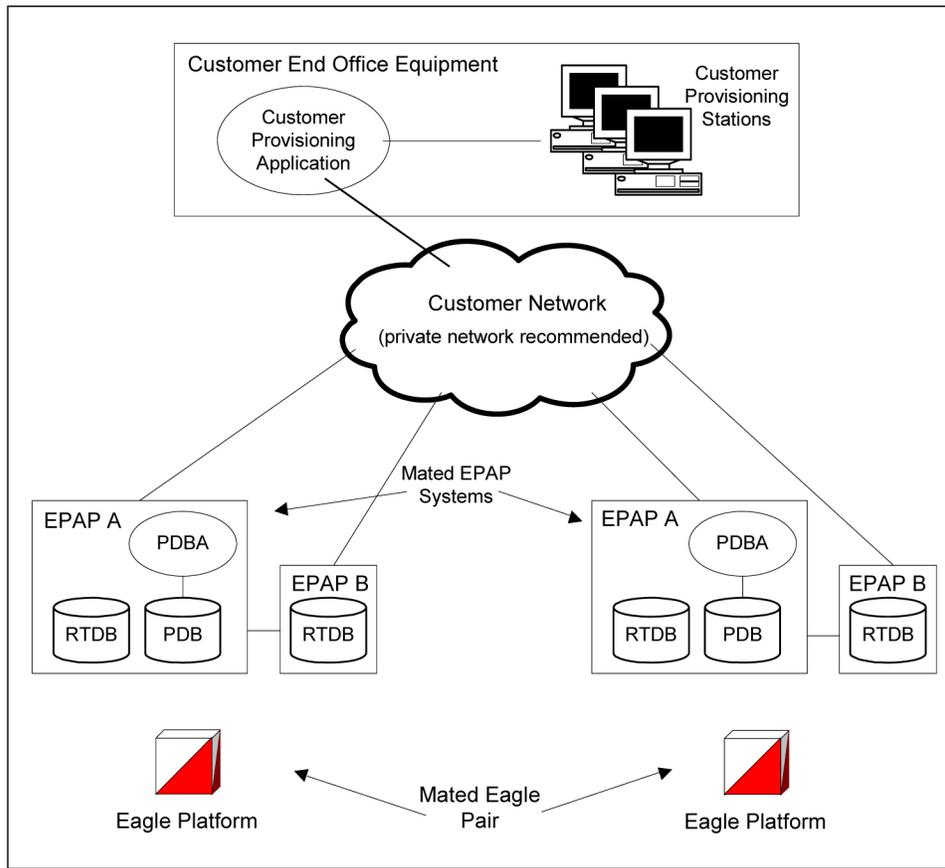
Customer Provisioning Network

The customer network carries the following traffic:

- Customer queries and responses to the PDB via the PDBI from the customer provisioning network
- Updates between PDBs if a mated EAGLE 5 ISS pair
- Updates between a PDB on one EAGLE 5 ISS and RTDBs on a mated EAGLE 5 ISS
- PDBAimport/export (file transfer) traffic
- Traffic from a PDBA reloading from its mate
- EPAP and PDBAuser interface traffic.

A typical customer network is shown in [Figure 2-4](#).

Figure 2-4. Customer Provisioning Network

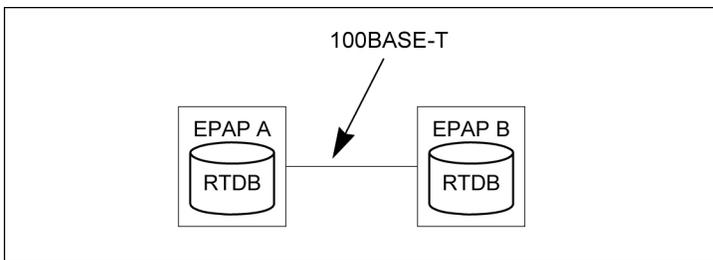


Although a dedicated network is recommended, it is possible that unrelated customer traffic can use the network as well. The determination, either to have a dedicated network or to allow other customer traffic, should be based on available external Ethernet bandwidth and network performance considerations.

EPAP Sync Network

The EPAP sync network carries RTDB and maintenance application traffic between active and standby EPAP servers on an EPAP system. It synchronizes the contents of the RTDBs of both EPAP A and B. The EPAP network is a single Ethernet cable between EPAP A and EPAP B running at 100BASE-T, as shown in [Figure 2-5](#).

Figure 2-5. EPAP Sync Network

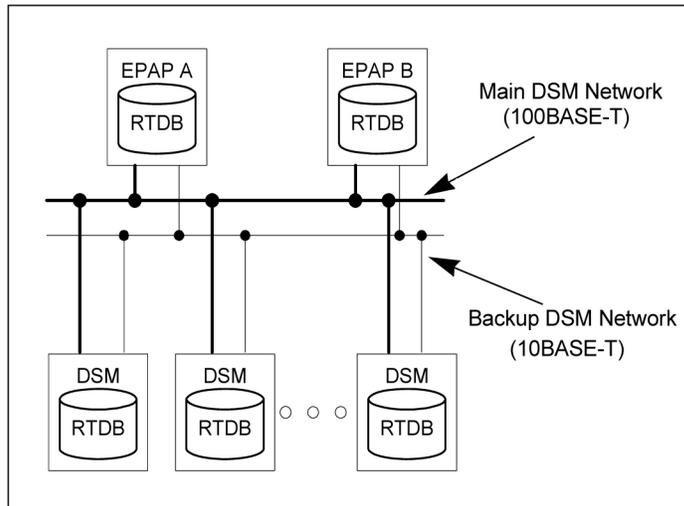


DSM Networks

The DSM networks are shown in [Figure 2-6](#). They carry provisioning data from the Real Time Data Bases (RTDBs) from the active EPAP to the DSM cards. They also carry reload and maintenance traffic to the DSMs.

The DSM networks consist of two Ethernet networks, which are the main DSM network running at 100BASE-T and the backup DSM network running at 10BASE-T. Both Ethernet networks connect EPAP A and EPAP B with every DSM card on a single EAGLE 5 ISS platform.

Figure 2-6. Customer Provisioning Network



Maintenance information is sent from the active EPAP to an arbitrarily selected DSM card. The selected DSM is known as the primary DSM. Static information is exchanged across this interface at initialization, and dynamic information is exchanged on occasion.

While much of the traditional OAM provisioning and database functionality is implemented on the EPAP, the maintenance reporting mechanism is still the OAM.

The first and second octets of the EPAP network addresses for this network are 192.168. (The first two octets for private class C networks are defined in RFC 1597.)

The third octet is a customer specifiable for each DSM network. Be sure to select values that do not interfere with the customer's network addressing scheme.

The fourth octet of the address is specified as follows:

- If the EPAP is configured as "EPAP A", the fourth octet has a value of 100.
- If the EPAP is configured as "EPAP B", the fourth octet has a value of 200.

[Table 2-1](#) summarizes the contents of each octet.

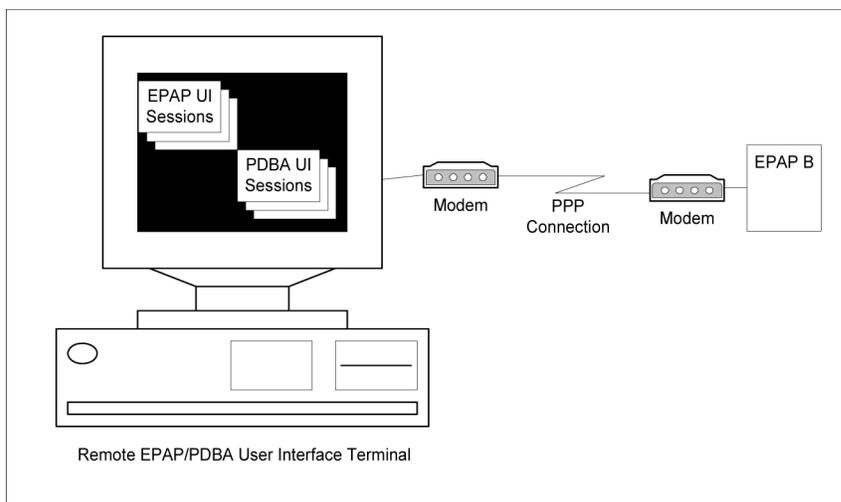
Table 2-1. EPAP IP Addresses in the DSM Network

Octet	Value
1	'192'
2	'168'
3	One customer-provisioned value for DSM network A, and another for DSM network B
4	'100' for EPAP A '200' for EPAP B

Dial-Up PPP Network

The dial-up PPP network allows multiple user interface sessions to be established with the EPAP. The network connects a remote EPAP/PDBA user interface terminal with the EPAP in the EAGLE 5 ISS’s MPS subsystem. The dial-up PPP network is illustrated in [Figure 2-7](#).

Figure 2-7. Dial-Up PPP Network



Serviceability Hints

Mated Application Considerations

An EPAP-administered entity data can possibly become out-of-sync with the EAGLE 5 ISS mated application table because the creation of entity point codes (and/or subsystem numbers) in the mated application table is not performed at database administration time.

If this mismatch is discovered at real time, a UIM message (such as “SCCP did not route - DPC not in MAP tbl” or “SCCP did not route - SS not in MAP tbl”) is sent to the EAGLE 5 ISS maintenance terminal. This message means the MSU was discarded.

For this reason, it is recommended that the entity (SP or RN) not be administered until the entity PC (and/or SSN) has been entered into the EAGLE 5 ISS mated application (MAP) table.

Entity Point Codes and Routes

Verification that an entity point code exists in the route table and has a route is not performed at database administration time. Therefore, it is possible for the EPAP entity data to be out-of-sync with the EAGLE 5 ISS route table.

If an out-of-sync condition is discovered at real time, a UIM is sent to the EAGLE 5 ISS maintenance terminal, indicating one of these conditions:

- Destination point code is not in the route table.
- Destination point code exists in the route table but is not assigned a route.
- Destination point code exists in the route table and has been assigned a route, but it is out of service.

Mated Application Considerations

An EPAP-administered entity data can possibly become out-of-sync with the EAGLE 5 ISS mated application table because the creation of entity point codes (and/or subsystem numbers) in the mated application table is not performed at database administration time.

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A-Port Considerations

The following list contains considerations you should think over before installing and operating the A-Port feature.

1. SRI responses are routed by both MTP and Global Title Translation.
2. The maximum length of the Application Context Name Object Identifier is 32 digits.
3. For A-Port Message Relay messages with E.164 numbers in the SCCPCDPA, it is assumed that no truncation occurred if and when the routing number was prepended and that SCCPCDPA has the full DN of the subscriber.
4. A-Port Message Relay to the EAGLE 5 ISS local subsystem is not supported.
5. Only the first 21 digits of the CDPA are decoded for A-Port Message Relay. For example, if the CDPA contains an RN prefixed to a DN, the RN is seven digits, and the DN is 15 digits, then the total is 22 digits, and the DN used for processing will be only 14 digits (21 total digits less 7 RN digits).
6. GTT currently handles decimal digits only. Thus, if an operator/country is using hexadecimal digits ‘A’ through ‘F’ in RNs and the operator is providing GTT to messages that have RN prefixes other than its own prefixes, the operator must enter the RN + DN number ranges as DN ranges in the A-Port subscriber database. The only problem with this is that the beginning and ending DNs can only be 15 digits, which may not be enough for an RN + DN.
7. As discussed in this document, MNP applies within a single portability cluster. This is defined as a set of networks in a country or multi-country region having a common numbering plan and across which a

subscriber, who is already inside the cluster, can port. Any individual A-Port node is required to support only an MNP within such a portability cluster.

8. The routing number found in the NP database is either prefixed to the dialed number to form a new concatenated roaming number that is returned to the switch, or is sent on its own as the roaming number.
9. All non-call related messages impacted by MNP contain the MSISDN number in the SCCPCdPA. In the case of the SRI message, A-Port may get the number from the MAP leve.
10. TCAP operation codes uniquely distinguish Loc_req messages and do not change from one phase (or version) of MAP to another.
11. PCs and/or PC + SSNs that are in the entity table of the database and referenced by subscriber entries do not necessarily have the required data present on the EAGLE 5 ISS to route messages to them. For example, the point code may not have a route or the PC + SSN may not be in the MAP table for a final GTT. In this event, a UIM is output only when a message is discarded because of the lack of data.
12. The parameters of the SRIACK message generated by A-Port are solely based on the provisioned data/options; they are not based on the MAP phase of the SRI message. For example, if the message received is phase 1 or 2, “MSRNDIG=RN”, and the portability status is “NotKnowntobePorted”, A-Port generates an SRIACK contains IMSI, MSRN, MDN, and NPS parameters, despite the MDN and NPS parameters not being defined for phase 1 or 2.
13. If SRFIMSI is not provisioned with an RN entity and an incoming message is an SRI message, A-Port sets IMSI parameter as zero digits when the MAP phase is 1 or 2.
14. A-Port uses the MTP route for the SRIACK response, even when the final GTT is performed on the response.
15. When the concatenated number (RN + MDN) option is selected for encoding the Routing Info (MSRN) in SRIACK, A-Port encodes the complete concatenated number, because the concatenated number length may otherwise exceed 16 digits, which is the maximum allowed in MSRN.

General Requirements

Numbering

- Incoming called party numbers (from the SCCP portion) destined for A-Port processing are conditioned to fit the GDB requirements where possible:
 - (Based on provisioning) If the GTT selectors available in the incoming message match an entry in the A-Port selector table, then the service numbering plan from the selector table entry uses that number's numbering plan. Further conditioning is applied based on this new numbering plan.
 - (Based on IS41opts) If the GTT selectors available in the incoming message match an entry in the A-Port selector table, then the service nature of address from the selector table entry uses that number's nature of address. Further conditioning is applied based on this new nature of address.
 - If the nature of address is Subscriber, the default CC + default NC (network code for E.164) are prepended to the number. The default codes to be used by the EAGLE 5 ISS must be previously provisioned by the EAGLE 5 ISS operator. If not, a UIM is issued, and the message falls through to GTT.

- Numbers with fewer than five digits after the above conditioning are not used for A-Port. In this case, a UIM is issued, and the message falls through to GTT.
- Numbers with more than 15 digits after the above conditioning are not used for A-Port. In this case, a UIM is issued, and the message falls through to GTT.

Maintenance

Validation of A-Port Hardware Configuration

DSM card loading has been modified to verify the validity of the hardware configuration for the DSM cards. Hardware verification includes the following.

- **DSM Main Board Verification**

An AMD-K6 (or better) main board is required to support the A-PortVSCCP application on the DSM card. EAGLE 5 ISS maintenance stores the validity status of the VSCCP card's main board configuration.

NOTE: The system does not allow the A-Port feature to be turned ON if the hardware configuration is invalid.

When the VSCCP application is initializing, it determines the main board type. The SCCP maintenance block is the mechanism used to relay the main board information to OAM. This requires that the application software be loaded to the VSCCP card and then the main board information received in the SCCP maintenance block must be verified. If the main board is determined to be invalid for the A-Port application, loading of the VSCCP card is automatically inhibited.

- **DSM Applique Memory Verification**

The VSCCP application performs two types of memory validation to determine whether or not a DSM has sufficient memory to run A-Port:



CAUTION: A-Port cannot be enabled if any of the DSMs have less than 4 GB of memory installed. Refer to the *Dimensioning Guide for EPAP Advanced DB Features Technical Reference* for important information on the dimensioning rules and the DSM database capacity requirements.

- *Local Memory Validation.* When the A-Port feature is first enabled, or any time the A-Port feature is enabled and the DSM is initializing, VSCCP checks to see if the DSM has at least 4GB of memory installed.
- *Real-Time Memory Validation (during card initialization).* Once communications between the DSM and EPAP have been established, and the DSM has joined the RMTP Tree, the EPAP starts downloading the RTDB to the DSM card. After the DSM card has downloaded the RTDB, it continues to receive database updates as necessary. The EPAP includes the size of the current RTDB in all records sent to the DSM. The DSM card compares the size required to the amount of memory installed, and issues a minor alarm once the database exceeds 80% of the DSM memory. If the database completely fills the DSM memory, a major alarm is issued, the DSM leaves the RMTP tree, and the DSM's status changes to IS-ANR/Restricted. The DSM continues to carry traffic.

- **Actions Taken When Hardware Determined to be Invalid**

When the hardware configuration for a DSM card is determined to be invalid for the A-Port application, SCM automatically inhibits loading for that specific DSM card. A major alarm is generated indicating that card loading for that DSM card has failed and has been automatically inhibited (that is, prevented from reloading again). Refer to [Chapter 5 Maintenance and Measurements](#), for the specific alarm that is generated.

When card loading has been inhibited, the primary state of the card is set to oos-mt-dsbl, and the secondary state of the card is set to MEA (Mismatch of Equipment and Attributes).

The following actions apply to a DSM card determined to be invalid:

- The DSM will not download the EAGLE 5 ISS databases.
- The DSM will not download the real-time RTDB from the EPAP.
- The DSM will not accept RTDB updates (that is, add, change, delete) from the EPAP, nor will it accept STP database updates.

To activate loading of a DSM card that has been automatically inhibited, the craftsperson must enter the **alw-card** command (**alw-card:loc=xxxx**).

- **Unstable Loading Mode**

At some point, having a number of invalid DSM cards results in some of the LIMs (Link Interface Module) being denied SCCP services. There is a threshold that needs to be monitored: if the number of valid DSMs is insufficient to provide service to at least 80% of the IS-NRLIMs, the system is said to be in an unstable loading mode. For other reasons why an EAGLE 5 ISS might be in an unstable loading mode, refer to [Loading Mode Support Status Reporting](#).

Maintenance Commands

The following commands are used for A-Port maintenance.

- The debug command **ent-trace** traps A-PortMSUs (Message Signaling Unit) based on the point code of the switch that generated the MSU (SSP), a particular DN and entity ID. For MDN and entity ID, the comparison is based on the search key built from the CdPAGTAI (Global Title Address Information) after any conditioning. The existing GTSCCP trigger also applies to A-Port messages.
- The command **rept-stat-sccp** reports current A-Port statistics. A MSU is considered to be a A-PortMSU after SRVSEL. This command reports A-Port statistics on a single SCCP card basis or on a A-Port system basis.

For more information, refer to [Chapter 5 Maintenance and Measurements](#).

A-Port Loading Mode Support

Loading mode support is not applicable for RTDB updates, since DSM cards use incremental loading from the EPAP. STP Administrative updates are allowed while a DSM card is loading and the system is above the 80% card stability threshold. If it is below the 80% threshold, loading mode support allows STP administrative updates to be rejected while cards finish loading and cross the 80% or better threshold.

For A-Port, loading mode support is applicable for database updates originating from the EAGLE 5 ISSGSPM-II's (General Purpose Service Module II cards) destined for the DSM cards.

Audit Requirements

The A-Port audit does not change EAGLE 5 ISS's compliance to STP audit requirements, to which it currently adheres. A-Port subscriber database tables residing on the EAGLE 5 ISSTDM fixed disks are audited by the existing STP audit, which only verifies tables on the EAGLE 5 ISS active and standby TDMs. There are audit mechanisms for A-Port tables residing on the EPAP platform that are downloaded to the DSM cards. The audit mechanisms consist of the following.

- On each DSM card and on the standby EPAP, a background audit calculates checksums for each A-PortRTDB table record and compares the calculated checksum against the checksum value stored in each record. If they are not the same, then a *database corrupt* alarm is issued.
- A process that runs periodically on the active EPAP (approximately every five seconds or less) sends the latest RTDB database level to all the DSM cards and the standby EPAP. If the database levels do not match, the standby EPAP or DSM card issues a *diff level* alarm.

For more information on the audit mechanisms, refer to the *EPAP Administration Manual*.

A-Port Protocol

A-Port supports both Message Transfer Part (MTP) routed, if enabled, and Global Title (GT) routed messages. GT routed messages perform SRVSEL lookup after Signaling Connection Control Part (SCCP) verification. GT routed messages support Unit Data Transfer (UDT) and non-segmented Extended Unit data (XUDT) message types.

Main Functions

A-Port and MNPCRCP provide the following main functions:

Message Discrimination

Because A-Port provides translation of ported numbers, it provides a method to identify which messages should receive A-Port vs. GTT. This task of identification is provided via a service selector table where the user can define A-Port service for a combination of selectors. If a selector match is not found then, the message falls through to GTT or MTP routing (in case of MTP routing).

RN Prefix Deletion - SCCP

The decoded SCCPCDPA digits can have a RN concatenated with the MDN number in two forms:

- RN + DN
- CC+RN+DN

Consequently when the SNAI is either RNIDN, RNNDN, or RNSDN, A-Port compares the decoded MDN number with the list of provisioned home RN prefixes defined in the RTDB. If a match is found, A-Port strips off the RN digits from the number.

Number conditioning, if required, is performed after deleting the RN.

When the SNAI is CCRNDN, A-Port first compares the CC to the DEFCC list:

- If CC is not equal to the DEFCC, the message falls through to GTT.
- If CC=DEFCC then, A-Port compares the digits after CC with the list of provisioned Home RN prefixes that are defined in the RTDB. If a match is found, then A-Port strips off the RN digits from the number. If no match is found, the no-prefix deletion is performed and A-Port processing continues.

RN Prefix Deletion - TCAP

The decoded MAPMDN digits can have a RN concatenated with the MDN number in two forms:

- RN + DN
- CC+RN+DN

The MAPNAI is used to determine the type: International, National or Subscriber. If MNPCR is OFF, RN prefix deletion is not attempted. If MNPCR is ON, then RN prefix deletion is attempted on all MDNs. If the MAPNAI indicates International, then a check is performed for the DEFCC prefix on the MDN. If DEFCC is detected, then HomeRN deletion is attempted using the CC+RN+DN format. All other MDNs will use the RN +DN format. A-Port compares the decoded MDN number with the list of provisioned home RN prefixes defined in the RTDB. If a match is found, the A-Port strips off the RN digits from the number. If no match is found, then no prefix deletion is performed and A-Port processing continues with number conditioning.

Number conditioning (if required) is performed after deleting the RN.

Number Conditioning

The RTDB stores international MDNs only. The received MDN number or SCCPCDPA digits may need to be converted to an international number to do a database lookup.

A-Port performs number conditioning upon successful decode and verification of the message. HomeRN and IEC or NEC prefixes are removed. The MDN is conditioned to international number format based on the service nature of address (SNAI for SCCP, TCAPSNAI for TCAP, or MTPLOCREQNAI for MTP.)

Database Lookup

A-Port performs database lookup using the conditioned DN digits encoded in Called Party. The database lookup yields one of the following four possible outcomes:

- Match is Found with Network Entity Assigned

For subscriber entries with a RN and PT≠ 0, LOCREQ and any IS41 messages are relayed. GTT is applied to any GSM or non-TCAP message .

For subscriber entries with a SP, or a RN and PT= 0, LOCREQ and any IS41 messages are relayed. GTT is applied to any GSM or non-TCAP message.
- Match is Found Without NE.

A data entry in the database is found if a subscriber entry in database (either an individual DN entry or a DN block) matches the conditioned Called Party.

If an entry is found without a NE assigned and PT= 1, 2, or **No PT**, the LOCREQ is returned without a NE.

The LOCREQ is routed via GTT if an entry is found without a NE assigned and PT= 0 or 5. GTT is applied to any IS41 if an entry is found without a NE assigned. The EAGLE only modifies the MTP and SCCP information as required by standard GTT and keeps the TCAP portion of the message intact.
- Number conditioning fails, or if the DN is not found in the RTDB database, or the DN is found with non-A-Port data.

Either the number has never been ported or it is an unknown number. The EAGLE 5 ISS routes the message via normal GTT/MTP routing. The EAGLE 5 ISS only modifies the MTP and SCCP information as required by normal GTT/MTP routing, if required, and keeps the TCAP portion of the message intact.

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 MTPDPC if the incoming message is MTP-routed (the MTPDPC of the message is not the EAGLE 5 ISS Self Point Code).

- A-Port modifies the TCAP information for LOCREQ messages only when a HomeRN was deleted from the TCAPDN and **LOCREQMHRN = 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.

Since a DN may be the target of the A-Port, G-Port, or Migration message processing in a hybrid network (where an operator owns both GSM and IS41 network), message processing call disposition is based on what applications are turned on. [Table 2-2](#) summarizes A-Port message processing.

Table 2-2. A-Port Message Processing

NE/PT	LOCREQ	Any IS41	Any GSM or non-TCAP
RN and PT ≠ 0	ACK (RN from EPAP)	Relay	GTT
SP or (RN and PT= 0)	Relay	Relay	GTT
No NE and PT= 1, 2, or No PT	ACK (no NE)	GTT	GTT
No NE and PT= 1 or 5	GTT	GTT	GTT
No DN entry found	GTT	GTT	GTT

Database lookup results in the following:

1. Applying GTT or
2. Relaying the message to the destination as noted in the database or
3. Returning an acknowledge message to the originating switch.

Message Relay describes how the EAGLE 5 ISS formulates a relayed message or a returned ACK.

Message Relay

The rules for formatting the SCCPCdPAGTA field are based on the value specified in the DigitAction field. In the case where a received IS41 message is relayed, the EAGLE formulates the SCCPCdPAGTA field of the outgoing message according to DigitAction specified. If DigitAction = none, the EAGLE 5 ISS does not overwrite the SCCPCdPAGTA. For all other values, the EAGLE 5 ISS formats the SCCPCdPAGTA according to the value assigned to DigitAction. [Table 2-3](#) identifies the required DigitAction options as well as the samples of how the SCCPCdPAGTA of an outgoing message is formatted for each of the options. The illustration assumes the RN/SPID is 1404 and default country code is 886.

Table 2-3. DigitAction Applications

DigitAction	Value in Incoming CdPAGTA	Value in Outgoing CdPAGTA	Meaning
none	886944000213	886944000213	No change to the Called Party GTA (default)
prefix	886944000213	1404886944000213	Prefix Called Party GTA with the entity id
replace	886944000213	1404	Replace Called Party GTA with the entity id
insert	886944000213	8861404944000213	Insert entity id after country code. (CC + Entity Id + NDC + SN)
delccprefix	886944000213	1404944000213	Delete country code and add prefix
delcc	886944000213	944000213	Delete country code
spare1	886944000213	treated as none	No change to the Called Party GTA (default)
spare2	886944000213	treated as none	No change to the Called Party GTA (default)

Returning Acknowledgement

The following encoding rules are followed when a LOCREQ is returned:

1. When a response/ACK is returned, the EAGLE5ISS follows the LOCREQ encoding rules along with the following enhancements for added flexibility:
2. Allow users to specify which TCAPLOCREQ parameter (the TCAP Outgoing Called Party parameter) encodes the RN (and/or DN) information;
3. Allow users to specify the Digit Type value to encode the TCAP Outgoing Called Party parameter;
4. Allow users to specify the value to encode the Nature of Number field of the TCAP Outgoing Called Party parameter;
5. Allow users to specify the value to encode the Numbering Plan field of the TCAP Outgoing Called Party parameter;
6. Allow users to specify the digit encoding format of the LOCREQTCAP Outgoing Called Party parameter;
7. Allow users to specify the MSCID values to be encoded in the LOCREQ message;
8. Allow users to specify the ESN values to be encoded in the LOCREQ message;
9. Allow users to specify how the digits of the LOCREQMIN parameter shall be encoded.

MNP SCCP Service Re-Route Capability

This feature is designed to handle and control re-routing of MNP traffic from an affected node to alternate nodes within an operators network. This feature is an optional feature and doesn't affect the normal MNP functionality. This feature consists to the following main functions:

- Service State
- MNP Re-Routing
- MNP Capability Point Codes

Service State

Service state is part of the MNPSCCP Service Re-Route Capability. Service state is used to indicate the current state of MNP, either *ONLINE* or *OFFLINE*. Service state also gives the user the option to mark MNP as *OFFLINE* or *ONLINE* based on the current behavior. If a MNP problem is identified, MNP can be marked *OFFLINE* to initiate the re-routing procedure. In the case when SCCP cards need to be reloaded for some reason, MNP can be marked *OFFLINE* until enough cards are in-service and then bring *MNPOFFLINE* in a controlled fashion. This feature also provides the option to mark *MNPOFFLINE* to perform a controlled re-routing during this state.

MNP Re-Routing

MNP Re-Routing is an optional feature and is enabled by defining a list of alternate PCs or by defining the GTT option. MNP re-routing is activated by marking *MNPOFFLINE*. When MNP is *OFFLINE* and alternate PCs are provisioned, any messages destined for MNP are re-routed to the available alternate PCs that are defined for MNP. If alternate PCs are not provisioned or none are available, then the GTT option is used. If the GTT option is set to YES, then messages destined for MNP will fall through to GTT as part of the re-routing procedure.

Re-Routing is applied to all MNP messages (based on SRVSEL). There is no distinction of DPC of the messages. The DPC of the message can be either True, Secondary, or Capability Point code.

MNP Capability Point Codes

Capability Point Codes (CPC) are also supported for MNP. The use of MNP capability point code aids the adjacent nodes in knowing about MNP outages. When MNP is brought down through administrative commands, all traffic destined to this MNP node will generate a Transfer Prohibited (TFP) message to the adjacent node about the MNPCPC. The TFP response to the adjacent node causes the traffic originating nodes to stop sending MNP traffic to this node. All MNP traffic coming into this node is sent to the alternate MNP nodes. Adjacent nodes will initiate route-set-test procedures after receipt of the TFP response.

If the messages are destined to the EAGLE 5 ISS true point code, then TFP messages are not generated when the MNP service is *OFFLINE*. The originator would not be aware of the outage.

Once MNP is back in service on the EAGLE 5 ISS, a Transfer Allowed (TFA) message is sent to the traffic adjacent nodes in response to route-set-test message. The traffic originating nodes will then start sending MNP traffic to the original MNP node.

MNP Capability point codes can be provisioned when the MNP feature is ON. There can be more than one Capability Point Code assigned to MNPCPCType.

When the MNP feature is turned ON and the MNP service state is set to *OFFLINE*, the user can change the service to *ONLINE* at any point. Once the feature is turned *ONLINE*, MNP will start processing messages if at least one SCCP card is IS-NR.

The MNP service can be set to *OFFLINE* at any point. This causes the EAGLE 5 ISS to stop processing MNP traffic and re-routing is performed.

The MNP service state is persistent. Booting the OAM or all the SCCP cards will not change the service state. Commands must be used to change the service state.

MNP supports up to 7 alternate PCs per domain. All 6 domains (ANSI, ITU-I, ITUN14, ITUN14 spare, ITU-I spare and ITUN24) are supported. An entire set of alternate PCs are considered as a re-route set. A GTT option is supported for MNP re-route. When the MNP service is *OFFLINE*, MNP messages fall through to GTT based on the GTT option. This option is set to YES by default.

MNP SCCP Service Re-Route Capability Summary

If the MNP service is not normal (because the RTDB is not in sync with MPS or if cards are misrouting MNP messages) then the MNP service state should be changed to *OFFLINE*.

Before changing MNP service to *OFFLINE*, it should be decided what kind of re-routing will be used during the outage. The EAGLE 5 ISS supports re-routing data to alternate point codes or falling thru to GTT as two possible options. Rerouting to alternate point code has priority over falling through to GTT. Examples of the two options follow:

Option 1

Define alternate point codes to re-route MNP traffic. This is the recommended option. Up to 7 alternate MNP nodes can be provisioned to re-route all the incoming MNP traffic. Once provisioned, the MNP service can be changed to *OFFLINE*. This example has any incoming MNP traffic being load-shared to point codes based on the relative cost.

```
chg-sccp-
serv:serv=mnp:pci1=1-1-1:rc1=10:pci2=2-2-2:rc2=10:pci3=3-3-3:rc3=10:pci4=4
-4-4:rc4=10 chg-sccp-
serv:serv=mnp:pci1=1-1-1:rc1=10:pci2=2-2-2:rc2=10:pci3=3-3-3:rc3=10:pci4=4
-4-4:rc4=10 chg-sccp-
serv:serv=mnp:pci1=5-5-5:rc1=10:pci2=6-6-6:rc2=10:pci3=7-7-7:rc3=10:pci4=8
-8-8:rc4=10 chg-sccp-serv:serv=mnp:state=offline
```

Option 2

With this option default GTT translations are provisioned for MNP service. Then the chg-sccp-serv command is used to provision GTT=YES. All MNP messages will fall through to GTT. An example command follows:

```
chg-sccp-serv:serv=mnp:gtt=yes ( it is yes by default
```

Once the MNP re-routing data is provisioned, MNP service can be changed to *OFFLINE*. At this point all MNP traffic will be re-routed. The user can take necessary steps to correct the MNP service on the node. Until all the cards or enough cards are in active state with valid MNP database, MNP service should not be changed to *ONLINE*.

[Table 2-4](#) shows the actions taken when the MNP service is offline, a message arrives at the affected node requiring MNP service, and SCCP cards are available.

Table 2-4. MNP SCCP Service Re-Route Capability Summary

Result of service selector	DPC	Alternate point code defined and available	GTT to be performed as fall through	Message Handling	Network Management
MNP	MNP Capability PC	Yes	N/A	Re-Route to alternate point code based on relative cost	TFP concerning CPC
MNP	MNP Capability PC	No*	Yes	Fall through to GTT and perform GTT	TFP concerning CPC
MNP	MNP Capability PC	No*	No	Generate UDTS (return cause = network failure)	TFP concerning CPC
MNP	MNP Capability PC	Not Defined	Yes	Fall through to GTT and perform GTT	TFP concerning CPC
MNP	MNP Capability PC	Not Defined	No	Generate UDTS (return cause = no relation for this addr)	TFP concerning CPC
Not MNP	MNP Capability PC	N/A	N/A	Perform appropriate Service/GTT	None
MNP	True or Secondary PC or non-MNPCPC	Yes	N/A	Re-Route to alternate point code based on relative cost	None
MNP	True or Secondary PC or non-MNPCPC	No*	No	Generate UDTS (return cause = network failure)	None
MNP	True or Secondary PC or non-MNPCPC	No*	Yes	Fall through to GTT and perform GTT	None
MNP	True or Secondary PC or non-MNPCPC	Not Defined	Yes	Fall through to GTT and perform GTT	None
MNP	True or Secondary PC or non-MNPCPC	Not Defined	No	Generate UDTS (return cause = no relation for this addr)	None
Not MNP	True or Secondary PC or non-MNPCPC	N/A	N/A	Perform appropriate Service/GTT	None

*Alternate point codes are defined and unavailable (prohibited or congested).

MTP Routed SCCP Traffic for A-Port

A-Port supports MTP routed SCCP messages. LOCREQ messages are supported. This feature cannot be turned ON unless at least one of the following is turned ON:

- A-Port
- IGM
- G-Flex

Use of MTP Msgs for SCCP Apps feature adversely affects the SCCP capacity, as all of these messages are counted under SCCP capacity.

Once this feature is turned ON, all SCCP messages are routed to SCCP cards. The SCCP card then performs SCCP decode/verification. If the MTP routed messages have CDPAGTI =0 and A-Port is turned ON, then the message is sent for A-Port processing. If MNP service is OFFLINE, then MTP routing is performed on the messages.

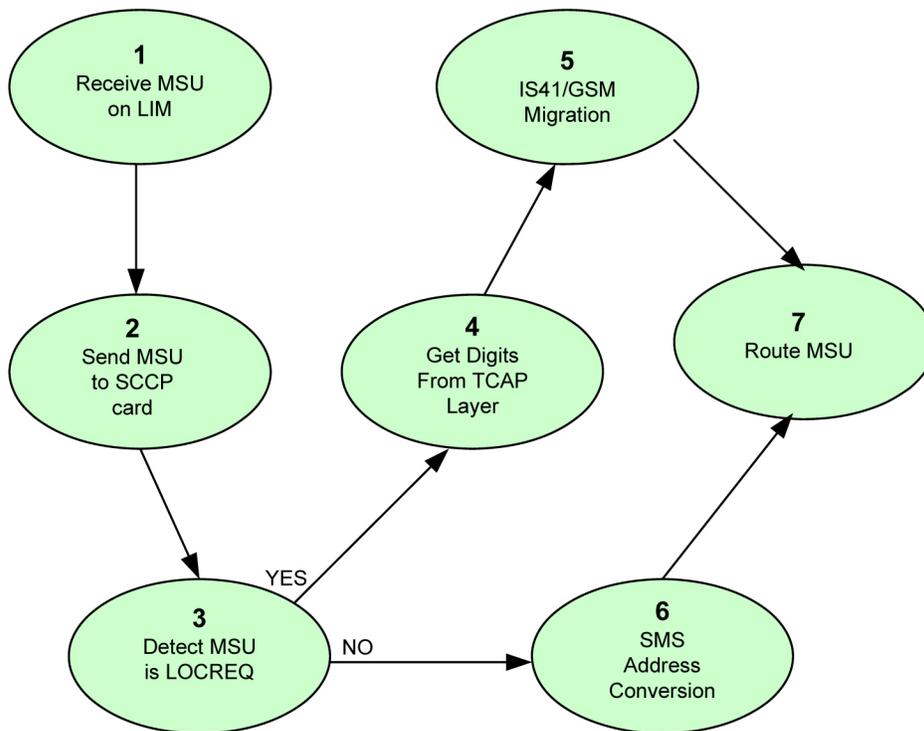
If the MTP routed messages have CDPAGTI ≠ 0, then SRVSEL lookup is performed using the SCCPCDPA information. If the result of the lookup is MNP service, the message is sent to MNP handling. If a service selector is not defined or does not match, or if the service is OFFLINE, then MTP routing is performed on the messages. The MNPSCCP Service re-route is not performed on MTP routed messages.

MNP checks to see if the TCAP portion of the message is ITU or ANSI. If the message is ITUTCAP then normal routing (or G-Flex if provisioned) is performed on the message. If the message has ANSITCAP, then A-Port general TCAP/MAP verification is performed if A-Port or IGM is turned ON.

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

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

Figure 2-8. Message Control Flow



1. The MSU is received by the EAGLE 5 ISS.
2. The MSU is sent to the SCCP Function.
3. The SCCP card examines the MSU and determines if it is a LOCREQ message.

4. For LOCREQ, the TCAP Digit Parameter contains the digits to apply to Migration. This is a mandatory parameter. The digits are in encoded.
5. IS41/GSM Migration is applied to the digits to determine if the subscriber is migrated. If so, a LOCREQ Return Result is generated to the OPC. If not, the LOCREQ is routed.
6. If the message is not a LOCREQ, ITUN-ANSISMS Address Conversion is applied. SMS Address conversion feature does not have any impact because on this feature because SMS conversion handles only Registration Notification and SMS Notification messages.
7. The MSU is routed. MTP and SCCP conversion are performed if crossing a network boundary.

MO-based IS41 SMS NP

The MO-based IS41 SMS NP feature provides network information to the short message service center (SMSC) for subscribers using the IS41 network. This information allows the SMSC to select a protocol to deliver Short Message Service Delivery Point-to-Point (SMDPP) messages to the called party.

The MO-based IS41 SMS NP feature:

- Intercepts SMDPP messages after they have undergone Prepaid SMS (PPSMS) and Portability Check for Mobile Originated SMS (MNPSMS) processing and before they reach the SMSC.
NOTE: The MO-based IS41 SMS NP feature does not require the PPSMS or MNPSMS features to be enabled.
- Decodes the TCAP/MAP message destination address and performs lookup in the number portability (NP) database
- Modifies the destination address in the TCAP message with directory number (DN) porting information, and
- Relays the message to the SMSC

The SMSC uses the DN porting information to determine whether to forward the message to other operators or to process the message for an in-network subscriber.

The MO-based IS41 SMS NP feature applies to ANSI TCAP/MAP and ANSI transport (MTP and SCCP) messages.

Operations

The MO-based IS41 SMS NP feature provides configurable options for controlling the processing of SMDPP messages:

- How to consider SMDPP destination address for processing
- Outbound digit format
- When an NP DB lookup is considered to be successful
- Handling of sub address field in destination address

Feature Control

The MO-based IS41 SMS NP feature has the following feature control requirements:

- A FAK for part number 893-0195-01
- The A-Port feature must be enabled and turned on before the feature can be enabled and turned on.
- The feature cannot be enabled if the LNP feature is enabled.
- A temporary FAK cannot be used to enable the feature.
- The feature cannot be turned off after it has been turned on.

System Options for MO-Based IS41 SMS NP

The system level options that control the MO-Based IS41 SMS NP feature are stored in the IS41OPTS database table. The MO_Based IS41 SMS NP feature must be enabled before the GSMOPTS table can be provisioned.

The content of the IS41OPTS table is used to help perform number conditioning, response generation, and other feature-specific options. The following table shows the options stored in the IS41OPTS table, their possible values, and the action taken for each value.

Table 2-5. MO-Based IS41 SMS NP Options

IS41OPTS	Value	Action in the EAGLE 5 ISS
MOSMSDNFMT	RN	Same as A-Port general action.
	RNDN (default)	
	CCRNDN	
MOSMSTYPE	SP	When the lookup in the NPDB has entitytype=SP, then the lookup is considered successful.
	RN	When the lookup in the NPDB has entitytype=RN, then the lookup is considered successful.
	SPRN	When the lookup in the NPDB has entitytype=SP or RN, then the lookup is considered successful.
	ALL	When the lookup in the NPDB has entitytype=SP or RN or no_entity, then the lookup is considered successful.
MOSMSNAI	NAT	The CdPN is treated as National number for lookup in the NPDB. DEFCC will be added to the DN before lookup in the NP database.
	INTL (default)	When SNAI=INTL, no number conditioning is required before lookup in the database.
	NAI	<p>The NAI from the SMDPP (short message delivery point to point) message is used for conditioning before lookup in database.</p> <ul style="list-style-type: none"> • If the NAI is INTL, then NP lookup is performed immediately. • If the NAI is any other value, then the number is considered to be in national format. DEFCC is added before NP lookup is performed.
MOSMSDNNAI	None (default)	The NAI is same as the NAI in the incoming message.
	0-7	The value to be encoded in the outgoing message.

MO-Based IS41 SMS NP Protocol Handling

After the MO-Based IS41 SMS NP feature has been enabled and turned, it provides the following protocol handling:

- The MO-Based IS41 SMS NP feature traps the SMDPP message and performs NPDB lookup based on the B number from the TCAP SMS_Destination_Address parameter. If the entity type is the same as the value

of the MOSMSTYPE option in the IS41OPTS table, then the MO-Based IS41 SMS NP feature modifies the outgoing MO_SMS based on the value of the MOSMSDNFMT option.

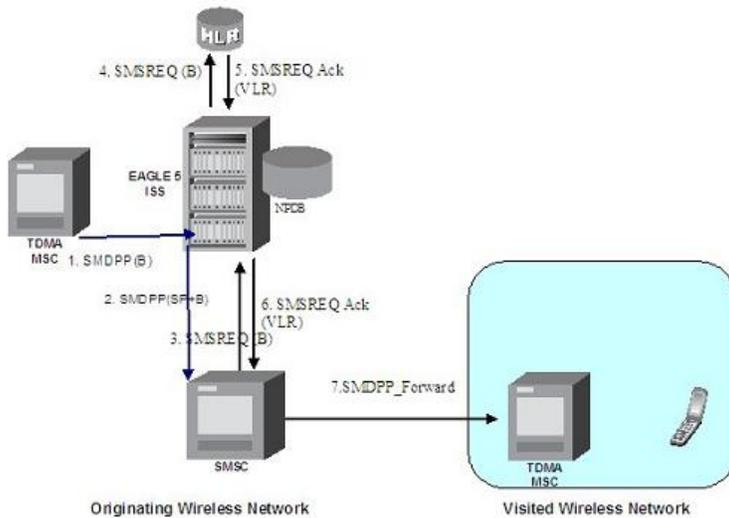
- When the outgoing SMDPP is modified, the NAI is based on the value of the MOSMSNAI parameter in the IS41OPTS table.
- The MO-Based IS41 SMS NP feature performs SCCPCDPAGTA lookup against the SMSC list maintained by the STP. If the lookup is not successful, the MSU falls through to GTT handling.
- The number conditioning is based on the value of the MOSMSNAI option:
 - If MOSMSNAI=NATL, then the number is treated like a national number: DEFCC is prepended before performing lookup in the NPDB.
 - If MOSMSNAI=INTL, then the number is treated like an international number: this number is used for lookup in the NPDB.
 - If MOSMSNAI=NAI, then the conditioning is based on the NAI value from the TCAP part.
- For messages handled within this feature, the SCCP CDPA is always used to route the message.
- If the MOSMSTYPE=ALL and MOSMSDNFMT=RN and the NPDB lookup has no entity assigned to the DN, then the message is not modified.
- If the modified SMDPP message SMS_Destination_Address digits are greater than 21, then the digits are not modified and the original message is routed to the SMSC based on SCCPCDPA.
- The MO-based IS41 SMS NP feature considers a successful NPDB lookup with entity_type=RN and portability-type=0 to be entity_type=SP, if the IS41-GSM Migration feature is enabled. (When the IS41-GSM Migration feature is enabled, entity_type=RN, and portability-type=0, the subscriber is considered to be migrated, and therefore is considered to be local (in-network, SP) for the MO-based IS41 SMS NP feature.)

MO-Based IS41 SMS NP Call Flows

This section illustrates the sequence of messages that occur when a mobile operator delivers SMS messages in a number portability environment to:

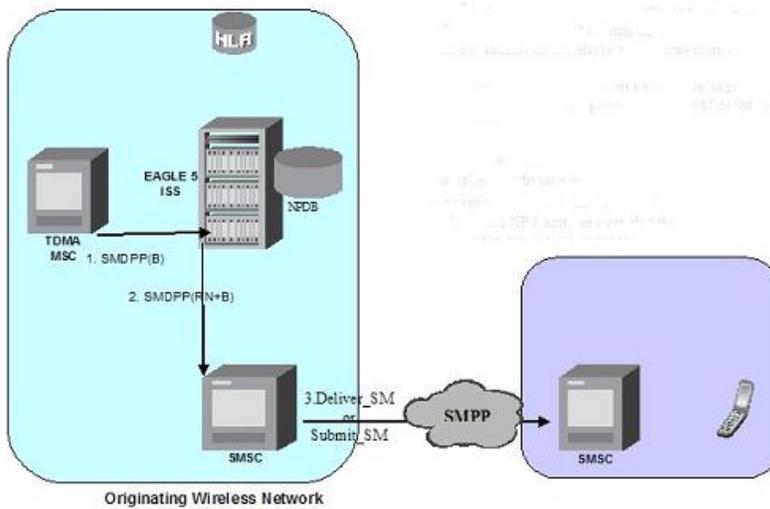
- A called subscriber that is in the same network as the calling subscriber
- A called subscriber that is a different network from the calling subscriber

Figure 2-9. MO-Based IS41 SMS NP Call Flow for In-Network Subscriber



Call considerations:

- The TCAP calling party is a wireless IS41 subscriber
- The TCAP called party is a non-porting or ported-in wireless subscriber that belongs to the same carrier as the TCAP calling party
- The call type is SMS
- The SMSC (Short Message Service Center) has to remove the prefix that indicates that the DN (dialed number) is ported in
- If the called subscriber is ported-in, it must be provisioned individually
- If the called subscriber is TDMA, the EAGLE IS41-to-GSM NP feature ensures that the message gets delivered in the TDMA network.

Figure 2-10. MO-Based IS41 SMS NP Call Flow for Other-Network Subscriber

Call considerations:

- The TCAP calling party is a wireless IS41 subscriber
- The TCAP called party is a non-ported or ported-in wireless subscriber that belongs to a different carrier from the TCAP calling party
- The call type is SMS
- The SMSC (Short Message Service Center) has to remove the prefix that indicates that the DN (dialed number) is ported in. If the called subscriber is ported-out, it must be provisioned individually.
- If the called subscriber is TDMA, the EAGLE IS41-to-GSM NP feature ensures that the message gets delivered in the TDMA network.

EAGLE 5 ISS A-Port Commands

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Introduction

This chapter describes the Commands for maintenance, measurements, and administration of the A-Port features. EAGLE 5 ISS A-Port commands provide for the provisioning, operations, and maintenance activities of the EAGLE 5 ISSDSM cards and associated network connections.

EAGLE 5 ISS Commands for A-Port

This section includes the EAGLE 5 ISS commands that are either entirely new or modified for the A-Port feature. This chapter contains a brief description of the functions they provide and appropriate examples of their use. User commands are listed in [Table 3-1](#).

The command examples in this chapter illustrate the requirements and provide suggestions for suitable names and output. Complete descriptions of these commands, however, are shown in detail in the Commands Manual, including parameter names, valid values, and output examples for the commands.

Table 3-1. Commands for EAGLE 5 ISS A-Port

EAGLE 5 ISS Commands for A-Port Feature			
act-gpl	copy-gpl	inh-alm	rept-stat-trbl
alw-card	dlt-map	inh-card	rtrv-ctrl-feat
chg-ctrl-feat	dlt-card	rept-ftp-meas	rtrv-card
chg-db	dlt-sccp-serv	rept-meas	rtrv-gpl

EAGLE 5 ISS Commands for A-Port Feature			
chg-gpl	dlt-srvsel	rept-stat-alm	rtrv-is41opts
chg-is41opts	dlt-sid	rept-stat-db	rtrv-measopts
chg-measopts	enable-ctrl-feat	rept-stat-gpl	rtrv-sccp-serv
chg-sccp-serv	ent-card	rept-stat-meas	rtrv-sid
chg-sid	ent-map	rept-stat-mps	rtrv-srvsel
chg-srvsel	ent-srvsel	rept-stat-sccp	unhb-alm
		rept-stat-sys	

EAGLE 5 ISS IS41 Options Commands

The A-Port system options (is41opts) commands are used to change and report on the values of one or more of the STP node level processing option indicators maintained in the IS41 option tables. All values are assigned initially to system defaults at STP installation time, and they can be updated later using the **chg-is41opts** command.

- **chg-is41opts: Change IS41 Options Command** – The **chg-is41opts** command changes IS41-specific options in the database. This command updates the IS41OPTS table. The default parameter values are always overwritten when specified. Refer to the *Commands Manual* for details of this command

Table 3-2. chg-is41opts Parameters - Class = DATABASE

Parameter	Optional/ Mandatory	Range	Description
esnmfg	Optional	0-255, none	TCAP locreq esn manufacture's code. Used to specify the value to be encoded in the TCAP locreq ESN parameter, manufacture's code part.
esnsn	Optional	0-16777215	TCAP locreq esn serial number. Used to specify the value to be encoded in the TCAP locreq ESN parameter, serial number part.
iec	Optional	digit string 1-5 digits, none	International escape code
locreqdn	Optional	tcap, sccp	Use this parameter to define whether the Called Party will be obtained from the SCCP layer or the TCAP layer of a received LOCREQ for database lookup.
locreqrmhrn	Optional	yes, no	Locreq RMHRN. Used to specify if HomeRN is to be removed from the TCAP Outgoing Called party for a relayed LOCREQ message.
mscmktid	Optional	0-65535	Locreq MSCID market id. Used to specify the value to be encoded in locreq MSCID parameter for Market ID.

Parameter	Optional/ Mandatory	Range	Description
mcseswitch	Optional	0-255	Locreq mscid market id switch part is used to specify the value to be encoded in locreq MSCID parameter, market id switch part.
mtplocreqnai	Optional	ccrndn, frmmsg, intl, natl, rmidn, rmdn, rnsdn, sub}, none	Message Translation Part LOCREQ nature of address indicator. Used to define how Called Party obtained from the TCAP layer of a received MTP-routed LOCREQ message, is interpreted.
nec	Optional	digit string 1-5 digits, none	National escape code
rspcdpari	Optional	frmmsg, gt, ssn	Response Called Party Routing Indicator. Use this parameter to specify the value of the Routing Indicator bit to encode the SCCPCdPAGTA of a returned locreq message.
rspcgpanai	Optional	ccrndn, frmmsg, intl, natl, rmidn, rmdn, rnsdn, sub}, none	Response calling party nature of address indicator. Used to specify a new NAI value to override the NAI value specified in the SCCPCdPA of a received LOCREQ/SMSREQ if the message is to be relayed after database lookup.
rspcgpanp	Optional	0-15, none	Response calling party numbering plan. Used to specify a new Numbering Plan value to override the Numbering Plan value specified in the SCCPCdPA of a received LOCREQ/SMSREQ if the message is to be relayed after database lookup.
rspcgpapcp	Optional	frmmsg, included, notincluded	Response Calling Party Point Code Present. Used to specify the value of the Point Code Present bit to encode the SCCPCgPAGTA of a returned locreq message.
rspcgpari	Optional	frmmsg, gt, ssn	Response Calling Party Routing Indicator. Used to specify the value of the Routing Indicator bit to encode the SCCPCgPAGTA of a returned locreq message.
rspcgpatt	Optional	0-255, none	Response calling party translation type. Used to specify a new TT value to override the TT value specified in the SCCPCdPA of a received LOCREQ/SMSREQ if the message is to be relayed after database lookup.
rspdig	Optional	ccrndn, hrnrndn, rn, mdn	Use this parameter to specify the digit encoding format of the locreq TCAP Outgoing Called Party parameter on a per EAGLE 5 ISS node basis.

Parameter	Optional/ Mandatory	Range	Description
rspdigtype	Optional	0-255	Response digit type. Used to specify DigitType value to encode the TCAP Outgoing Called Party parameter.
rspmin	Optional	homern, nothomern, tendelhomern, tenhomern, tenzero	Response locreq min parameter encoding. Used to specify how the digits of the locreq MIN parameter are to be encoded.
rspnon	Optional	0-255, none	MSRN nature of number. Used to specify the Nature of Number value of the TCAP Outgoing Called Party parameter.
rspnp	Optional	0-15, none	MSRN numbering plan. Used to specify the Numbering Plan values of the TCAP Outgoing Called Party parameter.
rspparm	Optional	ddigit, rtdigit, tlist	Response parameter. Used to specify which TCAP locreq parameter (TCAP Outgoing Called Party) will encode the RN and/or DN information.
smsreqbypass	Optional	yes, no	Use this parameter to specify whether a received SMSREQ that passes the MNP Service Selector (serv=mnpparameter is specified) will be subject to A-Port message processing.
tcapsnai	Optional	ccrnda, frmmsg, intl, natl, rnda, rnsda, sub}, none	Use this parameter to specify how Called Party, obtained from the TCAP layer of a received LOCREQ message shall be interpreted, either based on the Nature of Number encoded in the TCAP Digits[Dialed] parameter, or based on the selection specified by the mtplocreqnai parameter.

- **rtrv-is41opts: Retrieve IS41 Options Command** – The **rtrv-is41opts** command displays the IS41 option indicators maintained in the IS41OPTS table.

The following IS41 options are displayed.

```
rtrv-is41opts

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

IS41 OPTIONS
-----
SMSREQBYPASS = NO
LOCREQDN     = TCAP
IEC          = 0
NEC         = 00
RSPCGPARI    = FRMSG
RSPCGPAPCP  = FRMSG
RSPCDPARI    = FRMSG
RSPCDPAPCP  = FRMSG
RSPCGPANAI  = 0
RSPCGPANP   = 0
```

```

RSPCGPATT      = 0
MTPLOCREQNAI  = SUB
RSPPARM       = DDIGIT
RSPDIG        = RN
RSPNON        = 0
RSPNP         = 0
RSPMIN        = NOTHOMERN
MSCMKTID      = 32300
MSCSWITCH     = 20
ESNMF         = 0
ESNSN         = 0
RSPDIGTYPE    = 0
LOCREQMRHRN   = NO
TCAPSNAI      = SUB
    
```

EAGLE 5 ISS A-Port Service Selector Commands

The A-Port service selector (srvsel) commands are used to provision, remove, change, and report on the applicable service selectors required to change a service entry for DSM services. These commands provide some flexibility when provisioning the type of messages that require A-Port processing. There are four variants, each of which is described in the following sections: **ent-srvsel**, **chg-srvsel**, **dlt-srvsel**, and **rtrv-srvsel**. For further details on the EAGLE 5 ISS service selector commands (such as command rules and output format), refer to the *Commands Manual*.

- **ent-srvsel: Enter A-Port Service Selectors Command** – The **ent-srvsel** command specifies that the applicable A-Port service selectors indicating A-Port processing are required. The A-PortFAK must be enabled before entering this command. The available parameters follow:

Table 3-3. ent-srvsel Parameters - Class = DATABASE

Parameter	Optional/ Mandatory	Range	Description
gti, gtia, gtii, gtin, gtin24	Mandatory	2, 4	Global Title Indicator
serv	Mandatory	mnp	DSM service
ssn	Mandatory	0-255, *	Subsystem number
tt	Mandatory	0-255	Translation Type
nai	Optional	1sub, rsvd, natl, intl	Nature Of Address Indicator
naiv	Optional	0-127	NAI Value
np	Optional	1e164, generic, x121, f69, e210, e212, e214, private	Numbering Plan
npv	Optional	0-15	Numbering Plan Value
snai	Optional	1sub, natl, intl, rndn, rnsdn, ccrndn	Service Nature of Address Indicator
snp	Optional	1e164, e212, e214	Service Numbering Plan

- **chg-srvsel: Change A-Port Service Selector Command** – The **chg-srvsel** command specifies the applicable A-Port selectors required to change an existing A-Port selector entry. The available parameters follow:

Table 3-4. `chg-srvsel` Parameters - Class = DATABASE

Parameter	Optional/ Mandatory	Range	Description
gti, gtia, gtii, gtin, gtin24	Mandatory	2, 4	Global Title Indicator
ssn	Mandatory	0-255, *	Subsystem number
tt	Mandatory	0-255	Translation Type
nai	Optional	1sub, rsvd, natl, intl	Nature Of Address Indicator
naiv	Optional	0-127	NAI Value
np	Optional	1e164, generic, x121, f69, e210, e212, e214, private	Numbering Plan
npv	Optional	0-15	Numbering Plan Value
nserv	Mandatory	eir, gflex, gport, inpq, inpmr, mnpsms, smsmr, idps, idpr, mnp	New DSM service
nsnai	Optional	1sub, natl, intl, rmidn, rmidn, mnsdn, ccrndn	New Service Nature of Address Indicator
nsnp	Optional	1e164, e212, e214	New Service Numbering Plan

- **dlt-srvsel:Delete A-Port Service Selector Command** – The `dlt-srvsel` command deletes a A-Port service selector. The available parameters follow:

Table 3-5. `dlt-srvsel` Parameters - Class = DATABASE

Parameter	Optional/ Mandatory	Range	Description
gti, gtia, gtii, gtin, gtin24	Mandatory	2, 4	Global Title Indicator
tt	Mandatory	0-255	Translation Type
ssn	Mandatory	0-255, *	Subsystem number
nai	Optional	1sub, rsvd, natl, intl	Nature Of Address Indicator
naiv	Optional	0-127	NAI Value
np	Optional	1e164, generic, x121, f69, e210, e212, e214, private	Numbering Plan
npv	Optional	0-15	Numbering Plan Value

- **rtrv-srvsel: Retrieve A-Port Service Selector Command** – The `rtrv-srvsel` command displays a list of administered A-Port service selector combinations. All output is sorted first by service, then by global title domain (ANSI first, followed by ITU), GTI, translation type, numbering plan, and by the nature of address indicator. The output can be filtered by specifying any optional parameter. The available parameters follow:

Table 3-6. rtrv-srvsel Parameters - Class = DATABASE

Parameter	Optional/ Mandatory	Range	Description
gti, gtia, gtii, gtin, gtin24	Optional	2, 4	Global Title Indicator
nai	Optional	sub, rsvd, natl, intl	Nature Of Address Indicator
naiv	Optional	0-127	NAI Value
np	Optional	e164, generic, x121, f69, e210, e212, e214, private	Numbering Plan
npv	Optional	0-15	Numbering Plan Value
serv	Optional	mnp	DSM service
snai	Optional	1sub, natl, intl, rnidn, rnndn, rnsdn, ccrndn	Service Nature of Address Indicator
snp	Optional	1e164, e212, e214	Service Numbering Plan
ssn	Mandatory	0-255, *	Subsystem number
tt	Optional	0-255	Translation Type

EAGLE 5 ISS Feature Key Control Commands

These commands are used to enable, update, view, and control the A-Port feature. A Feature Access Key is used to turn the A-Port feature on. This feature must be purchased in order to have access to the Feature Access Key, which must be used when enabling these features.

There is no temporary key associated with this feature and once the feature is on it cannot be turned off. There are two steps that will be taken to turn the A-Port feature on. The first step is to enable the feature. The second step is to turn the status to **on**.

Additional verifications are done to ensure the correct hardware is present in the system. These checks include verifying that the GTT bit is on and that there are no SCCPLG cards provisioned. Refer to the *Commands Manual* for details of this command.

The part number 893016601 is used to enable A-Port feature on the EAGLE 5 ISS.

- **enable-ctrl-feat: Enable Control Feature Command** – The **enable-ctrl-feat** command is used for the permanent enabling of the A-Port feature. An example of the command using the A-Port part number follows:

```
enable-ctrl-feat:partnum=893016601:fak=<Feature Access Key>
```

- **chg-ctrl-feat: Change Control Feature Command** – The **chg-ctrl-feat** command is used to activate the A-Port feature. This command requires the A-Port feature to be enabled as a prerequisite. The A-Port feature cannot be enabled if any ASMs or TSMs are in the system.

```
chg-ctrl-feat:partnum=893016601:status=on
```

- **rtrv-ctrl-feat: Retrieve Control Feature Command** – The **rtrv-ctrl-feat** command is used display the status of the features (on/off) and to show the trial period remaining if temporarily enabled. An example output follows :

```

The following features have been permanently enabled:
Feature Name          Partnum  Status  Quantity
IPGWx Signaling TPS   893012805 on      2000
ISUP Normalization    893000201 on      ----
Command Class Management 893005801 on      ----
Prepaid SMS Intercept Ph1 893006701 on      ----
Intermed GTT Load Sharing 893006901 on      ----
MNP Circ Route Prevent 893007001 on      ----
XGTT Table Expansion   893006101 on      400000
XMAP Table Expansion   893007710 on      3000
Large System # Links   893005910 on      2000
Routesets              893006401 on      6000
EAGLE5 Product         893007101 off     ----
EAGLE Product          893007201 off     ----
IP7 Product            893007301 off     ----
Network Security Enhance 893009101 off     ----
HC-MIM SLK Capacity    893011801 on      64
MNP                    893016601 on      ----
EAGLE OA&M IP Security 893400001 off     ----
SCCP Conversion        893012001 on      ----

The following features have been temporarily enabled:
Feature Name          Partnum  Status  Quantity  Trial Period Left
MNP Circ Route Prevent 893007001 On      ----  20 days 8 hrs 57 mins

The following features have expired temporary keys:
Feature Name          Part Num
OnOffFeatV           893492401
;

```

EAGLE 5 ISS MNP SCCP Service Commands

The **sccp-serv** commands allow for services to be taken ON and OFF line and their processing load to be shifted to other designated nodes. These commands also support the assignment of PCs to PC groups used for MNP re-route assignment. There are three variants, each of which is described in the following sections: **chg-sccp-serv**, **dlt-sccp-serv**, and **rtrv-sccp-serv**.

Entries (using the **chg-sccp-serv** command) are provisioned in the SCCP-SERV table, and are shown by the **rtrv-sccp-serv** command output. This reduces the maximum number of entries that the MRN table can contain by the number of entries shown in the **rtrv-sccp-serv** command output. For more information on provisioning MRN tables, refer to the *Database Administration Manual - Global Title Transaltions* manual.

For further details on the EAGLE 5 ISSMNPSCCP service commands (such as command rules and output format), refer to the *Commands Manual*.

- **chg-sccp-serv: Change MNPSCCP Service Command** – The **chg-sccp-serv** command is used to add point codes to an existing service group, or to change the Relative Cost (RC) of existing point codes in a group. SCCP Service groups are organized by service (G-Flex, G-Port, MNP) and point code network type (ANSI, ITU-I, Spare ITU-I, ITU-N, Spare ITU-N, or ITUN-24). Up to seven PCs may be in a network type grouping for service re-route load sharing. This command allows for additions/modifications of up to 4 PCs at once. The point code parameters support the Spare Point Code subtype prefix **s-** for ITU-I and ITU-N point codes. The available parameters follow:

Table 3-7. chg-sccp-serv Parameters - Class = DATABASE

Parameter	Optional/ Mandatory	Range	Description
serv	Mandatory	gport, gflex, mnp	Service
state	Optional	offline, online	Status
gtt	Optional	no, yes	Global Title Translation
pc1, pca1, pci1, pcn1, pcn241	Optional	Refer to Commands Manual	Post GTT-translated PC
rc1	Optional	00-99	Relative Cost
pc2, pca2, pci2, pcn2, pcn242	Optional	Refer to Commands Manual	Post GTT-translated PC
rc2	Optional	00-99	Relative Cost
pc3, pca3, pci3, pcn3, pcn243	Optional	Refer to Commands Manual	Post GTT-translated PC
rc3	Optional	00-99	Relative Cost
pc4, pca4, pci4, pcn4, pcn244	Optional	Refer to Commands Manual	Post GTT-translated PC
rc4	Optional	00-99	Relative Cost

- dlt-sccp-serv: Delete MNPSCCP Service Command** – The **dlt-sccp-serv** command is used remove entries from the SCCP Service table. A single command may either remove a PC from a group, or remove the entire group. The available parameters follow:

Table 3-8. dlt-sccp-serv Parameters - Class = DATABASE

Parameter	Optional/ Mandatory	Range	Description
serv	Mandatory	gport, gflex, mnp	Service
pc1, pca1, pci1, pcn1, pcn241	Optional	Refer to Commands Manual	Post GTT-translated PC
pc2, pca2, pci2, pcn2, pcn242	Optional	Refer to Commands Manual	Post GTT-translated PC
pc3, pca3, pci3, pcn3, pcn243	Optional	Refer to Commands Manual	Post GTT-translated PC
pc4, pca4, pci4, pcn4, pcn244	Optional	Refer to Commands Manual	Post GTT-translated PC
all	Optional	No, Yes	Yes will delete the entire group

- rtrv-sccp-serv: Retrieve MNPSCCP Service Command** – The **rtrv-sccp-serv** command is used to display the SCCP Service application relationship information maintained by the EAGLE 5 ISS. Point codes are grouped by service. The sample output that follows indicates that the MNPt service is Online and there are ANSI and ITU-I point codes in the service set.

```

tekelecstp 05-12-20 08:51:53 EST 36.0.0-55.43.0
rtrv-sccp-serv
Command entered at terminal #4.
-----
Service      : GFLEX
State       : Offline
GTT Option  : Yes
-----
Service      : MNP
State       : Online
GTT Option  : Yes
-----
ANSI PC      RC
001-001-001  10
002-002-002  20
003-003-003  30
004-004-004  40
ITUI PC      RC
2-002-2      10
3-003-3      10
;

```

Maintenance and Measurements User Interface Commands

This section provides a description of the user interface for maintenance and measurements for the A-Port feature. The commands that follow allow provisioning, operations, and maintenance activities for DSM cards.

The command examples shown illustrate the requirements and provide suggestions for suitable names and output. The commands are described in detail in the *Commands Manual*, where the actual parameter names, valid values, and output for the commands are provided.

Commands described here include:

- [chg-sid / dlt-sid](#)
- [ent-map / dlt-map](#)
- [rept-stat-sys](#)
- [rept-stat-sccp](#)
- [rept-stat-mps](#)
- [rept-ftp-meas](#)
- [rept-meas](#)
- [rept-stat-meas](#)
- [rtrv-measopts / chg-measopts](#)
- [rept-stat-trbl](#)
- [rept-stat-alm](#)
- [chg-db](#)

- [rept-stat-db](#)
- [inh-card / alw-card](#)
- [ent-card / rtrv-card / dlt-card](#)
- [chg-gpl / act-gpl / rtrv-gpl / rept-stat-gpl / copy-gpl](#)
- [inh-alm / unhb-alm](#)

rept-stat-sys

This command is used to determine the location of troubles in the MNP subsystem. The display shows the number items that are in service (IS-NR) and the how many are in another state (IS-ANR, OOS-MT, OOS-MT-DSBLD). Refer to the *Commands Manual* for details of this command.

A sample output follows:

```
eagle10605 01-07-25 02:32:46 EST Rel 36.0.0-49.10.0
MAINTENANCE STATUS REPORT
Maintenance Baseline established.
Routing Baseline established.
SCCP Baseline established.
ALARMS:      CRIT=      9      MAJR=    10      MINR=      3      INH=      2
OAM 1113     IS-NR      Active      INH=      0
OAM 1115     IS-NR      Standby     INH=      0
LIM CARD     IS-NR=      3      Other=      0      INH=      0
X25 CARD     IS-NR=      0      Other=      0      INH=      0
SCCP CARD     IS-NR=      1      Other=      0      INH=      0
GLS CARD     IS-NR=      0      Other=      0      INH=      0
SLAN CARD     IS-NR=      0      Other=      0      INH=      0
EMDC CARD     IS-NR=      2      Other=      0      INH=      0
MCPM CARD     IS-NR=      2      Other=      0      INH=      0
IMT          IS-NR=      2      Other=      0
HMUX         IS-NR=      2      Other=      0      INH=      0
HIPR         IS-NR=      2      Other=      0      INH=      0
SLK          IS-NR=      0      Other=      6      INH=      0
DLK          IS-NR=      0      Other=      0      INH=      0
LINK SET     IS-NR=      0      Other=      4      INH=      0
NDC IP LK    IS-NR=      4      Other=      0      INH=      0
MCPM IP LK   IS-NR=      2      Other=      0      INH=      0
SS7 DPC     IS-NR=      0      Other=      6      INH=      0
X25 DPC     IS-NR=      0      Other=      0      INH=      0
CLUST DPC   IS-NR=      0      Other=      1      INH=      0
XLIST DPC   IS-NR=      0      Other=      0
DPC SS      Actv =      0      Other=      0
SEAS SS     IS-NR=      0      Other=      0
SEAS X25    IS-NR=      0      Other=      0      INH=      0
LSMS SS     IS-NR=      0      Other=      0
LSMS Conn   IS-NR=      0      Other=      0      INH=      0
NDC SS      IS-NR=      1      Other=      0
NDC Q.3     IS-NR=      0      Other=      2      INH=      1
TERMINAL    IS-NR=      2      Other=     14      INH=      0
MPS         IS-NR=      2      Other=      0
EIR SS      IS-NR=      1      Other=      0
```

rept-stat-sccp

The output for the **rept-stat-sccp** command displays the VSCCP cards and the GTT, G-Flex, MNP, INP, and EIR services executing on those cards. This command also displays any cards that are denied SCCP service. When turned on, the A-Port and IGM features share statistic status with the G-Port feature. If only the G-Port

feature is on, the display title is GPORT. If the A-Port or IGM feature are on, with or without the G-Port feature, the display title for the statistic status changes from GPORT to MNP.

The loc parameter displays detailed view of the status of SCCP services provided by a specific SCCP or VSCCP card. Fields are omitted if an associated feature is not turned on.

The mode parameter targets the general SCCP traffic performance for both SCCP and VSCCP cards. The report supplies message rates for group ticket voucher (TVG) performance.

Refer to the *Commands Manual* for details of this command.

The following sample output shows the output of the **rept-stat-sccp** command with the G-Flex, G-Port, INP, and A-Port features on. The EIR feature is not enabled, and the ansigflex system option is disabled:

```
tekelecstp 000623 13:34:22 EST EAGLE5 35.0.0
SCCP SUBSYSTEM REPORT IS-NR Active
SCCP ALARM STATUS = No Alarms
INPQ SUBSYSTEM REPORT IS-ANR Restricted -----
ASSUMING MATE'S LOAD
INPQ: SSN STATUS = Allowed MATE SSN STATUS = Prohibited
INPQ ALARM STATUS = No Alarms
GFLEX SERVICE REPORT IS-ANR Active
GFLEX ALARM STATUS = No Alarms
MNP SERVICE REPORT IS-ANR Active
MNP ALARM STATUS = No Alarms

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

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

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

TOTAL SERVICE STATISTICS:

SERVICE SUCCESS ERRORS FAIL REROUTE\ FORWARD TOTAL
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.
```

rept-stat-mps

This command is used to display the overall status of the application running on the MPS (multi-purpose server).

If the G-Port, G-Flex, A-Port, or Migration feature is turned on, the status of the GSM and EPAP are displayed.

Refer to the *Commands Manual* for details of this command.

The following sample output follows:

```
Integrat40 00-06-24 10:37:22 EST Rel 36.0.0-49.10.0
```

```

                VERSION      PST          SST          AST
EPAP A          027-015-000  IS-NR        Active       -----
CRITICAL PLATFORM ALARM DATA = No Alarms
MAJOR   PLATFORM  ALARM DATA = No Alarms
MINOR   PLATFORM  ALARM DATA = No Alarms
CRITICAL APPLICATION ALARM DATA = No Alarms
MAJOR   APPLICATION ALARM DATA = No Alarms
MINOR   APPLICATION ALARM DATA = No Alarms
        ALARM STATUS = No Alarms

                VERSION      PST          SST          AST

EPAP B          027-015-000

OOS-MT         Fault

Standby

CRITICAL PLATFORM  ALARM DATA = No Alarms
MAJOR   PLATFORM  ALARM DATA = h'0123456789ABCDEF
MINOR   PLATFORM  ALARM DATA = h'0123456789ABCDEF
CRITICAL APPLICATION ALARM DATA = No Alarms
MAJOR   APPLICATION ALARM DATA = h'0123456789ABCDEF
MINOR   APPLICATION ALARM DATA = No Alarms
        ALARM STATUS = ** 0371 Major Platform Failure(s)

CARD  PST          SST          EIR STAT
1106 P IS-NR      Active      ACT
1201  IS-ANR      Active      SWDL
1205  OOS-MT-DSBLD Manual      -----
1302  OOS-MT      Isolated   -----
1310  IS-ANR      Standby    SWDL

CARD 1106 ALARM STATUS = No Alarms
DSM PORT A: ALARM STATUS = No Alarms
DSM PORT B: ALARM STATUS = No Alarms

CARD 1201 ALARM STATUS = No Alarms
DSM PORT A: ALARM STATUS = ** 0084 IP Connection Unavailable
DSM PORT B: ALARM STATUS = ** 0084 IP Connection Unavailable
CARD 1205 ALARM STATUS = No Alarms
DSM PORT A: ALARM STATUS = ** 0084 IP Connection Unavailable
DSM PORT B: ALARM STATUS = ** 0084 IP Connection Unavailable
CARD 1302 ALARM STATUS = ** 0013 Card is isolated from the system
DSM PORT A: ALARM STATUS = ** 0084 IP Connection Unavailable
DSM PORT B: ALARM STATUS = ** 0084 IP Connection Unavailable
CARD 1310 ALARM STATUS = No Alarms
DSM PORT A: ALARM STATUS = ** 0084 IP Connection Unavailable
DSM PORT B: ALARM STATUS = ** 0084 IP Connection Unavailable
Command Completed.
;

```

rept-stat-trbl

This command displays a summary the device trouble notifications. The severity of each alarm is indicated in the output report. Refer to the *Commands Manual* for details of this command.

A sample output follows:

```

eagle10207 02-08-23 10:09:59 EST Rel 36.0.0-49.10.0

SEQN UAM AL DEVICE ELEMENT TROUBLE TEXT
0001.0013 ** CARD 1201 GLS Card is isolated from the system
0002.0013 ** CARD 1211 SS7ANSI Card is isolated from the system
0011.0013 ** CARD 1101 SCCP Card is isolated from the system
0013.0013 ** CARD 1103 GLS Card is isolated from the system

```

```

0015.0013 ** CARD 1105 VSCCP          Card is isolated from the system
0018.0013 ** CARD 1115 OAM           Card is isolated from the system
0019.0236 ** SLK 1211,B   ls1134     REPT-LKF: not aligned
0020.0236 ** SLK 1311,A   ls1134567  REPT-LKF: not aligned
0021.0236 ** SLK 1312,A   ls113456   REPT-LKF: not aligned
0022.0236 ** SLK 1313,A   ls11345    REPT-LKF: not aligned
0023.0236 ** SLK 1314,A   ls113467   REPT-LKF: not aligned
0024.0236 ** SLK 1315,A   ls11234567 REPT-LKF: not aligned
0025.0236 ** SLK 1316,A   ls11345678 REPT-LKF: not aligned
0026.0318 ** LSN ls11234567         REPT-LKSTO: link set prohibited
0027.0318 ** LSN ls11345678         REPT-LKSTO: link set prohibited
0028.0318 ** LSN ls1134567          REPT-LKSTO: link set prohibited
0029.0318 ** LSN ls113456          REPT-LKSTO: link set prohibited
0030.0318 ** LSN ls11345           REPT-LKSTO: link set prohibited
0035.0318 ** LSN ls113467          REPT-LKSTO: link set prohibited
0032.0318 ** LSN ls1134            REPT-LKSTO: link set prohibited
0033.0336 ** SCCP SYSTEM            LIM(s) have been denied SCCP service
0034.0349 *C SEAS SYSTEM            SEAS unavailable
0035.0356 *C LSMS SYSTEM            LSMS unavailable
0036.0455 *C EIR SYSTEM             EIR Subsystem is not available
0019.0236 *C T1PORT 1301,1         REPT-T1F:FAC-T1   LOS failure
Command Completed.

```

rept-stat-alm

This command includes the alarm totals of the A-Port subsystem and DSM/EPAPIP links. Refer to the *Commands Manual* for details of this command. Here is an example of the command and output.

```

rept-stat-alm
Command Accepted - Processing
eagle10605 99-06-24 23:59:39 EAGLE 35.0.0
rept-stat-alm
Command entered at terminal #10.
;

eagle10605 99-06-24 23:59:39 EAGLE 35.0.0
ALARM TRANSFER= RMC
ALARM  MODE      CRIT= AUDIBLE      MAJR= AUDIBLE      MINR= AUDIBLE
ALARM  FRAME 1   CRIT= 9          MAJR= 12          MINR= 2
ALARM  FRAME 2   CRIT= 0          MAJR= 0           MINR= 0
ALARM  FRAME 3   CRIT= 0          MAJR= 0           MINR= 0
ALARM  FRAME 4   CRIT= 0          MAJR= 0           MINR= 0
ALARM  FRAME 5   CRIT= 0          MAJR= 0           MINR= 0
ALARM  FRAME 6   CRIT= 0          MAJR= 0           MINR= 0
ALARM  FRAME GPF CRIT= 1          MAJR= 2           MINR= 1
PERM.  INH. ALARMS CRIT= 0          MAJR= 0           MINR= 0
TEMP.  INH. ALARMS CRIT= 0          MAJR= 0           MINR= 0
ACTIVE ALARMS     CRIT= 10         MAJR= 14          MINR= 3
TOTAL ALARMS     CRIT= 10         MAJR= 14          MINR= 3
Command Completed.
;

```

chg-db

The **chg-db** commands copies the EAGLE 5 ISSTDM resident A-Port database tables during database backup, restore, and repair.

rept-stat-db

This command displays the status information for the EAGLE 5 ISSdatabases. This includes the level information for each DSM network card, and for the active and standby EPAP databases. It reports database exception status such as corrupted, incoherent, or inconsistent, as well as providing the birthdates and levels. It is enhanced to show

the status of the PDB and RTDB databases if the A-Port feature is activated. For details about this command, refer to the *Commands Manual*.

inh-card / alw-card

The **inh-card** command is used to change the state of the card from in-service normal (IS-NR) to Out-of-Service Maintenance-Disabled (OOS-MT-DSBLD). A craftsperson then can test the DCM/LIM/ACM/ASM/DSM/GPSM-II/MIM card or physically remove it from the shelf.

The **alw-card** command is used to change the card from OOS-MT-DSBLD (out-of-service maintenance-disabled) to IS-NR (in-service normal) if the loading is successful.

Refer to the *Commands Manual* for details of these commands.

ent-card / rtrv-card / dlt-card

The **ent-card** command is used to add a card to the database. The card type and application specifies the function assigned to the card. This command verifies that if the A-Port feature is turned on, that the gpl that is being provisioned is a VSCCP gpl, and if it is, an error is displayed and the **ent-card** command is rejected.

The **rtrv-card** command is used to display the information about a card. This command displays the card type, the application the card is running, the linkset name, the signaling link code, and the ports.

The **dlt-card** command is used to remove a card entry from the system database.

Refer to the *Commands Manual* for details on using these commands.

ent-map / dlt-map

These commands are used to provision, remove, change, and report on the mate point code and subsystem number and its attributes. A mate point code defines an adjacent signaling point, which is considered the mated signal transfer point (STP) to the EAGLE 5 ISS.

These commands are updated to allow both ITU-N and ITU-I true point codes to be defined for the same SSN. Refer to the *Commands Manual* for details of these commands.

chg-sid / dlt-sid

These commands are used to change and report on the self-identification of the EAGLE 5 ISS. The self-identification identifies the EAGLE 5 ISS to other signaling points in the network. The **mnpcpc** type is used for A-Port. Refer to the *Commands Manual* for details of this command.

chg-gpl / act-gpl / rtrv-gpl / rept-stat-gpl / copy-gpl

The command-handling and scroll area output for these commands include the VSCCPGPL. Refer to the *Commands Manual* for details of these commands.

Here are samples of the reports produced by these commands.

```
chg-gpl:appl=vsccp:ver=101-3-0
  Command entered at terminal #3.
;
```

```

tekelecstp 99-10-24 06:54:39 EAGLE 35.0.0
VSCCP upload to 1114 completed
VSCCP upload to 1116 completed
;

act-gpl:appl=vsccp:ver=101-3-0
Command entered at terminal #3.
;

tekelecstp 99-10-24 06:54:39 EAGLE 35.0.0
VSCCP activate on 1114 completed
VSCCP activate on 1116 completed
;

rtrv-gpl:appl=vsccp
Command entered at terminal #3.
;

tekelecstp 99-10-04 07:01:08 EAGLE 35.0.0
GPL Auditing ON
APPL CARD RELEASE APPROVED TRIAL REMOVE TRIAL
VSCCP 1114 101-001-000 101-003-000 101-001-000 101-003-000
VSCCP 1116 101-001-000 101-003-000 101-003-000 -----
;

rept-stat-gpl:appl=vsccp
Command entered at terminal #3.
;

tekelecstp 99-10-04 12:55:50 EAGLE 35.0.0
APPL CARD RUNNING APPROVED TRIAL
VSCCP 1205 101-003-000 ALM 101-003-000 101-003-000
VSCCP 1211 101-001-000 ALM+ 101-003-000 -----
Command Completed.
;

```

inh-alm / unhb-alm

These commands allow both Port A and Port B to be specified for the dev=dlk. This allows alarms to be inhibited on the DSM ports. Refer to the *Commands Manual* for details of these commands.

rept-ftp-meas

This command provides on-demand measurements reporting capabilities. This command initiates generation and FTP transfer of a measurements report from the MCPM to the FTP server. The **enttype=np** supports A-Port measurements. The combination of this enttype and a report type determines which on-demand A-Port report is generated. Refer to the *Commands Manual* for details of this command.

This command provides on-demand measurements reporting capabilities. this command initiates generation and FTP transfer of a measurements report from the MCPM to the FTP server. The **rept-ftp-meas** command is modified to accept a new A-Port enttype. The combination of this enttype and a report type determines which on-demand A-Port report is generated. There are only two report types that are accepted in conjunction with enttype=eir: MTCH and MTCD. The A-Port enttype is only valid with the A-Port feature enabled. Refer to the *Commands Manual* for details of this command.

rept-meas

This command includes A-Port measurements in the output sent to the EAGLE 5 ISS Terminal. Refer to the *Commands Manual* for details of this command.

rept-stat-meas

Reports the status of the measurements subsystem including card location and state, Alarm level, and Subsystem State. Refer to the *Commands Manual* for details of this command.

rtrv-measopts / chg-measopts

The **chg-measopts** command provides the user with the capability to enable and disable measurement options related to the Measurements Platform. Use this command for the following functions:

- Enable the Measurements Platform collection function
- Turn on or turn off the 15 Minute Measurements collection function
- Enable or disable the automatic generation and FTP transfer of scheduled measurements reports to the FTP server
- Turn on or off the CLI-based file name option for measurements reports files

The **rtrv-measopts** command displays the current state of the Measurements Platform options.

Refer to the *Commands Manual* for details of these commands.

A-Port Feature Activation

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Introduction



CAUTION: For an in-service environment, contact Tekelec Technical Services (see [“Customer Assistance”](#)) before continuing to activate A-Port. For an environment that is not yet in-service, you may continue with this procedure.

The A-PortFAK cannot be turned on if any of the DSMs have less than 4 GB of memory installed. Refer to the *Dimensioning Guide for EPAP Advanced DB Features Technical Reference* for important information on the dimensioning rules and the DSM database capacity requirements.

This chapter identifies prerequisites for the A-Port feature activation procedure, an overview of the activation steps, and a matching number of detailed step descriptions to turn on the A-Port feature. The A-Port feature activation is performed at the EAGLE 5 ISS.

The A-Port features optimizes the use of subscriber numbers and number ranges in a IS-41 Mobile Network by providing a logical link between any Mobile Directory Number (MDN) and any International Mobile Station Identifier (IMSI). This feature allows subscribers to be moved easily from one Home Location Register (HLR) to another. The A-Port feature applies to ITU-N ANSI networks.

The A-Port feature, and other related features, are optional and can be purchased from Tekelec. If you are not sure whether you have purchased a specific feature, contact your Tekelec Sales or Account Representative.



CAUTION: Once a feature has been turned on with the `enable-ctrl-feat` command, it cannot be turned off. Since features may overwrite other features or create changes in the database, assure that you have a license and full technical support from Tekelec before turning on this or any feature.

The A-Port feature requires a DSM card running the VSCCP application. Systems with TSM cards running the SCCP application need to be upgraded to 4 GBDSM cards prior to turning on the A-Port feature.

Refer to the Dimensioning Guide for EPAP Advanced DB Features Technical Reference for important information on the dimensioning rules and the DSM database capacity requirements. Refer to the Dimensioning Guide for EPAP Advanced DB Features Technical Reference for important information on the dimensioning rules and the DSM database capacity requirements.

Procedures described in the remainder of this section apply only to the A-Port feature and can only be performed if the A-Port feature is enabled.

The following features are related to the A-Port feature (see your Tekelec Sales or Account Representative for additional information):

- Global Title Translation (GTT)
- Enhanced Global Title Translation (EGTT)
- Variable-Length Global Title Translation (VGTT)
- Mobile Number Portability Circular Route Prevention (MNPCRP)

Prerequisites

The A-Port feature activation assumes that at least one of the following features are provisioned.

- Global Title Translation (GTT)
- Enhanced Global Title Translation (EGTT)
- Variable-Length Global Title Translation (VGTT)

Refer to the Database Administration Manual - Features for provisioning procedures.

The A-Port feature activation assumes that the EPAP software is already configured; refer to EPAP Administration Manual, EPAP Software Configuration.

The NT serial number (**ent-serial-num**) must be entered and locked before A-Port can be enabled and turned-on.

The A-Port feature activation assumes that 4 Gb DSM cards need to be installed and TSM cards to be removed are identified:

- Note installed DSM card locations if any
- Note available odd-even card slots for DSM card installation
- Note installed TSM card locations
- Note adjacent odd-even TSM card slot number positions for DSM card replacement

NOTE: TSM cards use one card slot; DSM cards require two card slots, odd-even.

The A-Port feature cannot be turned on until the TSM cards running the SCCP application are removed from the system.

- Determine DSM card IP addresses and have them available during the activation procedure.

For in-service systems, schedule DSM card replacement in maintenance window that allows the reboot of DSM cards (`init-card:loc=<DSM card location>`) one at a time.



CAUTION: In an in-service environment and when replacing TSM cards with DSM cards, initialize one DSM card at a time. Verify its return to IS-NR state before initializing another DSM card. This precaution keeps cards in service and precludes an interruption of SCCP services.

For in-service systems with TSM cards running SCCP traffic, one DSM card must be installed in an available double-slot odd-even location and provisioned for VSCCP prior to inhibiting the SCCP card. The DSM card running the VSCCP application will take over the SCCP traffic (`alw-card`) once the SCCP card becomes inhibited.



CAUTION: SCCP traffic redundancy will be lost if inhibiting two SCCP cards at a time with only one VSCCP card available in their place. Redundancy will be re-established once the two SCCP cards are replaced with a second VSCCP card.

For in-service systems that already have the G-Port, G-Flex and/or INP feature enabled, only perform steps [70](#) through [88](#) to turn on the A-Port feature. With the G-Port, G-Flex and/or INP feature enabled, the DSM cards already contain the RTDB database.

For new systems, DSM cards may be rebooted all at one time using the `init-card:appl=vsccp` command.

For new systems, GTT, EGTT, and VGTT features may be turned on prior to or immediately following the reboot of all DSM cards.

Feature Activation Overview

This section provides an overview of the A-Port feature activation procedure. The procedure is described in detail in [Feature Activation Procedure](#).

The feature activation consists of these sections:

- Configure system for HLR destinations in [Step 1](#) through [Step 28](#).
- Install DSM cards in available slots and configure for VSCCP in [Step 29](#) through [Step 44](#).
- Replace TSM cards configured for SCCP with DSM cards configured for VSCCP and inhibit/remove any remaining SCCP cards in [Step 45](#) through [Step 69](#).
- Turn on and configure the A-Port feature in [Step 70](#) through [Step 90](#).

[Step 1](#) through [Step 28](#) configure the system to be able to communicate with the system of the HLR database. The route to this database may already be configured. Perform these steps to verify that you have entered all HLR destinations for A-Port and make configuration changes as needed.

1. Display and note current system settings for point codes (PCs) and capability point codes (CPCs), destination point codes (DPCs), routes, and linksets using [Step 2](#) through [Step 7](#).
2. Use `rtrv-sid` command to display current PCs and CPCs.
3. Use `rtrv-dstn` command to display current DPCs.
4. Use `rtrv-rte` command to display current route configurations.
5. Identify PCs and CPCs; determine new PC and CPC to be entered in [Step 9](#).
6. Use `rtrv-stpopts` command to display PC or CPC format if ITU-N network.
7. Use `rtrv-map` command to display PCs of mated applications in database; remove system PC from table if necessary (refer to *Database Administration Manual - Features*, Removing A Mated Application).



CAUTION: Changing a system's point code requires a system reboot using the `init-sys` command to fully implement the changes. The `init-sys` command causes a complete system reload and should be used only in an environment that is not in service. Using this command ensures the updated self identification information is loaded onto all cards, but does interrupt service.

8. Change PC, CPC, DPC, route, linkset, and LIM card configurations for the HLR database using [Step 9](#) through [Step 28](#).
9. Use `chg-sid` command to configure PC and CPC by network type.
10. Use `init-sys` command to initialize system if changes were made in [Step 9](#) to any `pca/pci/pcn` parameter.



CAUTION: The `init-sys` command causes a complete system reload and should be used only in an environment that is not in service. Using this command ensures the updated self identification information is loaded onto all cards, but does interrupt service.

When the `init-sys` command executes, the system does not retain the manually initiated state (for example, OOS-MT-DSBLD) for the signaling link, card, or terminal. After the command executes, the system attempts to bring all provisioned links, cards, and terminals on line, including those that were previously out of service. You will need to manually put each device back into its previous state after the system is back on line. Print or electronically capture the output of the `rept-stat-slk`, `rept-stat-card`, and `rept-stat-trm` commands for reference prior to issuing the `init-sys` command. To restore a device to its previous state, issue the appropriate `inhibit/deactivate` command listed in the EAGLE 5 ISS Commands Manual in the Related Commands section for each of the above `rept-stat` commands.

11. Use `rtrv-sid` command to display new PC and CPC.
12. Use `ent-dstn` command to enter DPC for HLR destinations.
13. Use `rtrv-dstn` command to display new HLRDPC.
14. Use `ent-ls` command to enter linkset and assign DPC for HLR destinations.
15. Use `rtrv-ls` command to display new linkset and assigned DPC for HLR destinations.
16. Use `ent-card` command to enter LIM card(s) into database.
17. Use `rtrv-card` command to display new LIM card(s) in database.
18. Use `ent-slk` command to assign signaling link(s) to LIM card(s).
19. Use `rtrv-slk` command to display new signaling link(s) assigned to LIM card(s).
20. Use `ent-rte` command to assign route to new DPC.
21. Use `rtrv-rte` command to display route assigned to new DPC.
22. Use `ent-map` command to enter mated application into database.
23. Use `rtrv-map` command to display new mated application in database.
24. Use `alw-card` command to allow LIM card(s).
25. Use `rept-stat-card` command to display status of new LIM card(s) in database.
26. Use `act-slk` command to activate new signaling link(s) for LIM card(s).
27. Use `rept-stat-slk` command to display IS-NR status of signaling link(s).

28. Use **rtrv-card** command to confirm the new LIM card(s) and identify VSCCP cards (DSM cards running VSCCP application) and SCCP cards (TSM cards running SCCP application).



CAUTION: When adding DSM cards in an in-service environment, you must take care not to interrupt traffic. Before replacing SCCP cards with DSMs, first install a VSCCP card in an available odd-even double-slot prior to removing SCCP cards to make additional room for other DSM cards.

29. Install and configure DSM card(s) in available odd-even slots as needed using [Step 30](#) through [Step 44](#).
30. Install DSM card(s) in available odd-even slots and verify green IMT bus LEDs.
31. Use **ent-card** command to enter DSM card(s) as VSCCP card(s) into database.
32. Use **rtrv-card** command to display new VSCCP card(s) in database.
33. Use **rtrv-ip-lnk** command to display current link parameters associated with the VSCCP card.
34. Use **chg-ip-lnk** command to set the IP address port and speed associated with the VSCCP card.
35. Use **rtrv-ip-lnk** command to display changed link parameters.
36. Use **rtrv-ip-host** command to display current IP host information in database.
37. Use **ent-ip-host** command to add host name and IP address for each VSCCP link.
38. Use **rtrv-ip-host** command to display changed IP host information.
39. Use **chg-ip-card** command to set local domain and IP router address if necessary.
40. Use **rtrv-ip-card** command to display changed VSCCP card information.
41. Use **alw-card** command to boot DSM card in TSM emulation mode.
42. Use **rept-stat-card** command to display IS-NR status of VSCCP card.
43. Use **pass** command to test presence of EPAP hosts on network.
44. Repeat [Step 30](#) through [Step 43](#) to add all DSM cards (N+1) to be installed in available slots.
Go to the next step to start replacing TSM cards.
45. Replace TSM card(s) with DSM cards if applicable, and add DSM card(s) to database using [Step 46](#) through [Step 68](#).
46. Use **rtrv-card** command to display TSM cards running the SCCP application (SCCP cards) in database.
47. Use **rept-stat-card** command to display SCCP cards in IS-NR status.
48. Use **inh-card** command to inhibit SCCP card(s).
49. Use **rept-stat-card** command to display OOS-MT-DSBLD status of SCCP card(s).
50. Use **dlt-card** command to delete SCCP card(s) from database.
51. Use **rtrv-card** command to verify removal of SCCP cards from database.
52. Remove first TSM card from shelf.
53. Remove second TSM card from shelf.
54. Install DSM card in shelf and verify green IMT bus LEDs.
55. Use **ent-card** command to enter DSM card as VSCCP card into database.
56. Use **rtrv-card** command to display new VSCCP card in database.
57. Use **rtrv-ip-lnk** command to display current link parameters associated with VSCCP card.
58. Use **chg-ip-lnk** command to set the IP address port and speed associated with VSCCP card.
59. Use **rtrv-ip-lnk** command to display changed link parameters associated with the VSCCP card.
60. Use **alw-card** command to boot DSM card in TSM emulation mode.
61. Use **rtrv-ip-host** command to display IP host information in database.
62. Use **ent-ip-host** command to add host name and IP address for VSCCP link.
63. Use **rtrv-ip-host** command to display changed IP host information in database.
64. Use **chg-ip-card** command to set local domain and IP router address if necessary.
65. Use **rtrv-ip-card** command to display changed VSCCP card information.
66. Use **rept-stat-card** command to display IS-NR status of VSCCP card.
67. Use **pass** command to test presence of EPAP hosts on network.
68. Repeat [Step 46](#) through [Step 67](#) to replace all adjacent TSM cards identified in the prerequisites and to be replaced with DSM cards.

69. Repeat [Step 48](#) through [Step 52](#) to inhibit any remaining TSM cards running the SCCP application and remove them from database and shelf.

NOTE : The A-Port feature cannot be turned on until TSM cards running the SCCP application are removed from the system.



CAUTION: Contact Tekelec Technical Services at this point for assistance in completing this A-Port activation procedure (see [Customer Care Center](#)). Do not proceed without consulting with Tekelec Technical Services.

70. Turn on and configure the A-Port feature using steps [Step 71](#) through [Step 90](#).
 71. Use `enable-ctrl-feat` command to enable the A-Port feature.
 72. Use `chg-ctrl-feat` command to turn on the A-Port feature.

NOTE: [Step 77](#) through [Step 85](#) describe the commands that administer the A-Port protocol flow to support:

- A-PortLOCREQ (Ported-out MDNs)
- A-PortLOCREQ (Foreign MDNs not known to be ported)
- A-Port Message Relay (Ported-in, non-porting MDNs)

73. Use `enable-ctrl-feat` command to enable the optional MTPMSGS for SCCP Apps feature, if required.
 74. Use `chg-ctrl-feat` command to turn on the optional MTPMSGS for SCCP Apps feature, if required.
 75. Use `enable-ctrl-feat` command to enable the optional MO-Based IS41 SMS NP feature, if required.
 76. Use `chg-ctrl-feat` command to turn on the optional MO-Based IS41 SMS NP feature, if required.
 77. Use `chg-stpopts` command to enter default country code (CC) and default network destination code (NDC) if handling non-international numbers.
 78. Use `rtrv-stpopts` command to verify changes of CC and NDC.
 79. Use `chg-is41opts` command to change IS41 options.
 80. Use `rtrv-is41opts` command to verify changes to IS41 options.
 81. Use the `ent-homern` command to enter any Home RNs that are prefixed to DN for incoming A-PortMR messages.
 82. Use `rtrv-homern` command to verify routing number prefixes.
 83. Use the `rtrv-srvsel` command to read the service selector combinations.
 84. Use `ent-srvsel` command to enter MNP service selectors.
 85. Use `rtrv-srvsel` command to verify changes to MNP service selectors



CAUTION: When you have an in-service environment and you are replacing TSM cards with DSM cards, initialize one DSM card at a time. Verify its return to IS-NR state before initializing another card. This precaution keeps cards in service and precludes an interruption of SCCP services.

86. Use `init-card:loc=<DSM card>` command to load RTDB, OAM, GPL, and GTT data to VSCCP card.
 87. Use `rept-stat-card` command to display IS-NR status of VSCCP card.
 88. Repeat [Step 86](#) and [Step 87](#) to reboot each DSM card.

NOTE: Once the A-Port feature is turned on, always boot the DSM cards with the `init-card:loc=<DSM card location>` command.

89. Use `chg-sccp-serv:serv=mnp:state=online` to set the MNP service to online.
 90. Confirm success of activation procedure with `rept-stat-sccp`, `rept-stat-mps`, and `rept-stat-db:display=all` commands.

EPAP can now administer A-Port entity objects and A-Port subscribers. For the details about performing these actions, refer to the *EPAP Administration Manual*.

The detailed A-Port activation procedure is described next.

Feature Activation Procedure



CAUTION: Refer to the *Dimensioning Guide for EPAP Advanced DB Features Technical Reference* for important information on the dimensioning rules and the DSM database capacity requirements.

1. Before changing a true point code (PC) and adding a capability point code (CPC) for the A-Port feature, display the current values of the self-identification configuration (shown in [Step 2](#)), the destination point codes (DPCs) (shown in [Step 3](#)), and the routes and linksets assigned to the DPCs (shown in [Step 4](#)).

The A-Port feature applies to ITU-N ANSI networks.

2. Display the current self identification of the system (PC and CPC) using the `rtrv-sid` command.

This is an example of the possible output:

```
tklcl081301 06-10-05 11:43:02 EST EAGLE5 36.0.0
  PCA          PCI          PCN          CLLI          PCTYPE
  006-010-006  5-010-5          5-010-5-aa   tklcl081301  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
;
```

This example retrieved all capability point codes with `cpctype=mnpc`.

3. Display the current destination point codes in the destination point code table (`dpc/dpca`) using the `rtrv-dstn` command.

This is an example of the possible output:

```
tklcl1191001 06-05-11 08:02:13 EST EAGLE5 36.0.0
  DPCA          CLLI          BEI  ELEI  ALIASI          ALIASN/N24  DOMAIN
  008-030-008  stpa038a     no  ---  -----  -----  SS7
  006-010-006  stpc016a     no  ---  -----  -----  SS7
  042-052-012  tk1ca4212a2 no  ---  4-075-2      4-075-2-aa  SS7
  042-054-012  tk1ca4212a4 no  ---  4-077-2      4-077-2-aa  SS7
  042-056-012  tk1ca4212a6 no  ---  4-079-2      4-079-2-aa  SS7
  255-*-*      mobrncr001a ---  ---  -----  -----  SS7
  255-225-*    mobrncr002a no  no  -----  -----  SS7
  225-225-199 mobrnte001a no  ---  7-255-7      7-255-7-aa  SS7

  DPCI          CLLI          BEI  ELEI  ALIASA          ALIASN/N24  DOMAIN
  7-030-7       stpa037i     no  ---  -----  -----  SS7
s-7-030-7     -----  no  ---  -----  -----  SS7
  5-010-5       stpc015i     no  ---  -----  -----  SS7
  DPCN24        CLLI          BEI  ELEI  ALIASA          ALIASI       DOMAIN
  008-030-008  stpa038c     no  ---  -----  -----  SS7
  006-010-006  stpc016c     no  ---  -----  -----  SS7
  006-090-006  stpd096c     no  ---  -----  -----  SS7
  006-132-002  sc3a040i00  no  ---  -----  -----  SS7
  DESTINATION ENTRIES ALLOCATED: 6000
  FULL DPC(s): 664
  EXCEPTION DPC(s): 5272
  NETWORK DPC(s): 1
  CLUSTER DPC(s): 1
```

```
TOTAL DPC(s):          5938
CAPACITY (% FULL):    99%
ALIASES ALLOCATED:    12000
ALIASES USED:         1185
CAPACITY (% FULL):    10%
X-LIST ENTRIES ALLOCATED: 500
```

The example shows a truncated display of all provisioned destinations.

4. Display the current route configuration using the **rtrv-rte** command.

This is an example of the possible output:

```
r1ghncxa03w 01-03-07 11:43:04 GMT EAGLE 36.0.0
DPCA          ALIASI      ALIASN      CLLI      LSN          RC APCA
-----
DPCI          ALIASN      ALIASA      CLLI      LSN          RC APCI
2-100-1      121111      -----    idp1      1s100001     10 1-234-5
                                     1s100002     10 1-234-6
                                     1s100003     20 1-234-7
                                     1s100004     30 1-234-1
                                     1s100005     40 1-234-2
                                     1s100006     50 1-234-3

DPCN          ALIASA      ALIASI      CLLI      LSN          RC APCN
21111      -----    0-001-1     ndp1      1s200001     10 11111
                                     1s200002     10 11112
                                     1s200003     20 11113
                                     1s200004     30 11114
                                     1s200005     40 11115
                                     1s200006     50 11116
```

5. If the system's point code (**pc/pca**) or capability point code (**cpc/cpca**) to be configured in this procedure is shown in [Step 2](#), [Step 3](#), or [Step 4](#), choose another point code to configure with this procedure ([step Step 9](#)).
6. If configuring the system point code or capability point code (**pc** or **cpca**) of an ITU-N ANSI network, view the current value of the ANSI point code format.

Otherwise continue with [Step 7](#). Enter the **rtrv-stpopts** command and specify the point code format option **npcfmt i**. The **npcfmt i** option identifies how the point code is entered into the database and how it is displayed in any outputs. The value is shown in the **NPCFMTI** field. This is an example of the possible output:

```
r1ghncxa03w 01-03-17 16:02:05 GMT EAGLE 36.0.0
STP OPTIONS
-----
MTPT31CTL      1
MTPLTI         yes
MTPLTCTDPCQ    3
MTPLTST        10000
MTPXLQ         500
MTPXLET        0100
MTPXLOT        90%
MTPDPCQ        1750
TFATFRPR       1000
MTPRSI         yes
MTPRSIT        5000
MTPLPRST       yes
MTPT10ALT      30000
SLSCNV         perls
UIMRD          yes
CRITALMINH     no
DISPACTALMS    no
NPCFMTI        4-4-4-2
DEFCC          49
DEFNDC         177
DSMAUD         on
```

If you wish to change the format of the ANSI point code, go to the “ANSI Point Code” section in the *EAGLE 5 ISS Database Administration Manual - SS7*. Then continue with [Step 7](#).

7. Display the mated applications in the database using the **rtrv-map** command.

These are examples of possible output:

```
rlghncxa03w 04-01-07 11:43:04 EST EAGLE 36.0.0
MAP TABLE IS 1 % FULL (1 of 3000)
PCA          SSN RC MPCA          SSN MATERC MULT SRM MRC GRP NAME SSO
002-002-002  10 10                                YES YES ----- ON
                                002-002-003 20  10 SHR  YES YES ----- ON
```

- If the system's point code is shown in the **rtrv-map** command output (in the **PCA**, **PCI**, **PCN**, **MPCA**, **MPCI**, or **MPCN** fields), remove the system's point code from the mated application table. Refer to procedure "Removing a Mated Application" in the *EAGLE 5 ISS Database Administration Manual - Features*.
 - If the system's point code or capability point code is a destination point code of a route, select a point code that is not the destination point code of a route (see output of the **rtrv-rte** command in [Step 4](#)) and not in the destination point code table (see output of the **rtrv-dstn** command in [Step 3](#)).
8. Change PC, CPC, DPC, route, linkset, and LIM card configurations for the HLR database using [Step 9](#) through [Step 28](#).



CAUTION: Changing a system's point code requires a system reboot using the **init-sys** command to fully implement the changes. The **init-sys** command causes a complete system reload and should be used only in an environment that is not in service. Using this command ensures the updated self identification information is loaded onto all cards but does interrupt service.

9. Configure the system's point code (**pc/pca**) and capability point code (**cpc/cpca**) by network type using the **chg-sid** command.

For example, enter one of these commands:

```
chg-sid:pc=002-002-002:pca=003-002-002
```

```
chg-sid:cpc=10-20-30:cpca=20-20-30
```

where:

pc/pca

The point code used to uniquely identify the system.

cpc/cpca

The point code used by the SS7 protocol to identify a group of functionally related EAGLE 5 ISSs in the signaling network to which the EAGLE 5 ISS belongs.

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-03-07 00:57:31 GMT EAGLE 36.0.0
CHG-SID: MASP A - COMPLTD
```

When any of the **pci/pcn** parameters have changed, the system needs to be reinitialized. The following caution message is displayed:

CAUTION: SYSTEM SITE ID HAS BEEN CHANGED, MANUAL RE-INITIALIZATION IS NEEDED



CAUTION: The **init-sys** command causes a complete system reload and should be used only in an environment that is not in service. Using this command ensures the updated self identification information is loaded onto all cards, but does interrupt service.

When the **init-sys** command executes, the system does not retain the manually initiated state (for example, OOS-MT-DSBLD) for the signaling link, card, or terminal. After the command executes, the system attempts to bring all provisioned links, cards, and terminals on line, including those that were previously out of service. You will need to manually put each device back into its previous state after the system is back on line. Print or electronically capture the output of the **rept-stat-slk**, **rept-stat-card**, and **andrept-stat-trm** commands for reference prior to issuing the **init-sys** command. To restore a device to its previous state, issue the appropriate **inhibit/deactivate** command listed in the EAGLE 5 ISS Commands Manual in the Related Commands section for each of the above **rept-stat** commands.

10. Reinitialize the system by entering the **init-sys** command if changes were made in step [Step 9](#) to any **pca/pci/pcn** parameter.

NOTE: The **init-sys command must be entered twice within 30 seconds for the system to re-initialize. If the **init-sys** command is not executed twice within 30 seconds, the attempt to re-initialize the system is aborted.**

When the **init-sys** command is first entered, this message should appear.

```
rlghncxa03w 01-03-07 00:57:31 GMT EAGLE 36.0.0
CAUTION: This command causes a complete system reload, and
will result in traffic loss.
Re-enter command within 30 seconds to confirm.
```

When the **init-sys** command is re-entered within the 30 second time limit, this message should appear.

```
rlghncxa03w 01-03-07 00:57:31 GMT EAGLE 36.0.0
Init System command issued at terminal #3
```

From the time that the **init-sys** command is accepted, you must wait approximately two minutes before you can perform [Step 11](#) (logging into the system). If the terminal is in the VT-100/VT-320 mode, the terminal display will be refreshed with non-zero alarm counts. During this two-minute interval, an intermediate screen refresh occurs, which is caused by the MASP's role change from active to standby and from standby to active. This screen refresh is typically a partial refresh and the alarm indicators are set to zero.

If you are logged into the system in the KSR mode, the only response you will receive of being able to log into the system is the message 'UAM 0009, MASP became active'. UAM 0009 could be issued twice due to a possible transient MASP role change (switching from active to standby). Following the execution of the **init-sys** command, the MASP that was active before the **init-sys** command was entered will be the active MASP again when the system has finished reinitializing.

11. Verify the SID changes using the **rtrv-sid** command.

This is an example of the possible output:

```
tekelecstp 04-06-14 15:18:11 EST EAGLE 36.0.0
  PCA          PCI          PCN          CLLI          PCTYPE
  003-002-002  1-023-4      01234       tekelecstp    ANSI
                s-1-023-4    s-01234
  CPCI
  s-4-056-0
  CPCN
  s-00456
```

12. Enter a destination point code for the HLR location in the Destination Point Code table by network type using the **ent-dstn** command.

For example, enter one of these commands:

```
ent-dstn:dpc=002-100-002
```

```
ent-dstn:dpca=002-111-002
```

where:

dpci/dpcn

The destination point code being added to the database

The system returns this message:

```
rlghncxa03w 01-03-17 15:35:05 GMT EAGLE 36.0.0
Destination table is (40 of 4000) 1% full
ENT-DSTN: MASP A - COMPLTD
```

13. Verify the changes using the **rtrv-dstn** command and specifying the DPC that was entered in [Step 12](#).

For example, enter one of these commands:

```
rtrv-dstn:dpci=002-100-002
```

```
rtrv-dstn:dpca=002-111-002
```

This is an example of the possible output **for DPCs**.

```
rtrv-dstn:dpc=002-100-002
RLGHNCXA03W 01-03-30 21:16:37 GMT EAGLE 36.0.0
DPC          CLLI          BEI ELEI  ALIASA      ALIASN      DOMAIN
002-100-002  -----          no  ---  -----          002-111-002  SS7
              SPC              NCAI
              -----          no
Destination table is (20 of 2000) 1% full
```

This is an example of the possible output **for DPCAs**.

```
rtrv-dstn:dpcn=002-111-002
RLGHNCXA03W 01-03-30 21:16:37 GMT EAGLE 36.0.0
DPCA         CLLI          BEI ELEI  ALIASA      ALIASI      DOMAIN
002-111-002  -----          no  ---  -----          002-100-002  SS7
              SPC              NCAI
              -----          no
Destination table is (20 of 2000) 1% full
```

14. Enter a linkset with the **ent-ls** command, and assign it to the destination point code by network type.

For example, enter one of these commands:

```
ent-ls:lsn=ls400001:apc=002-200-002:lst=c
```

```
ent-ls:lsn=ls500001:apca=002-112-002:lst=c
```

where:

lsn

The name of the linkset

apc/apca

Adjacent point code – the point code identifying the node that is next to the system

lst

The linkset type of the specified linkset

After successful completion of this command, the system returns the following message:

```
RLGHNCXA03W 01-03-17 16:23:21 GMT EAGLE 36.0.0
```

```
Link set table is ( 114 of 1024) 12% full
ENT-LS: MASP A - COMPLTD
```

- Verify the changes using the **rtrv-ls** command and specifying the linkset name.

For example, enter one of these commands:

```
rtrv-ls:lsn=ls400001
```

```
rtrv-ls:lsn=ls500001
```

For lsn400001, the system returns output similar to the following:

```

                L3T SLT                      GWS GWS GWS
LSN           APC   (SS7)  SCRNL  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
ls400001      002-200-002  scr1  1   1  yes a  1   off off off ---  off
                CLLI           TFATCABMLQ  MTPRSE  ASL8
                -----  --  ---  -----
                IPGWAPC MATELSN  IPTPS    LSUSEALM  SLKUSEALM
                no           -----  ---  ---
                L2T          L1
                SET BPS    MODE TSET  ECM  N1  N2
                LOC  PORT SLC TYPE          1   56000  ---  ---  BASIC ---  -----
                1205  a   0   LIMV35
Link set table is (114 of 1024) 12% full
```

For lsn500001, the system returns output similar to the following:

```

                L3T SLT                      GWS GWS GWS
LSN           APC   (SS7)  SCRNL  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
ls500001      002-112-002  scr3  1   1  yes a  1   off off off ---  off
                CLLI           TFATCABMLQ  MTPRSE  ASL8
                -----  --  ---  -----
                IPGWAPC MATELSN  IPTPS    LSUSEALM  SLKUSEALM
                no           -----  ---  ---
                L2T          L1
                SET BPS    MODE TSET  ECM  N1  N2
                LOC  PORT SLC TYPE          1   56000  ---  ---  BASIC ---  -----
                1205  a   0   LIMV35
Link set table is (114 of 1024) 12% full
```

- Add the LIM cards to the database using the **ent-card** command.

For this example, enter these commands:

```
ent-card:loc=1105:type=limocu:appl=ccs7itu
```

```
ent-card:loc=1106:type=limocu:appl=ccs7itu
```

where:

loc

Specifies the slot number for the card

type

Specifies that the card is a LIMOCU card

appl

Specifies that the application is CCS7ITU

After successful completion of this command, the system returns the following message:

```
RLGHNCXA03W 01-03-12 09:12:36 GMT EAGLE 36.0.0
ENT-CARD: MASP A - COMPLTD
```

- Verify the changes using the **rtrv-card** command with the card location specified.

For this example, enter these commands:

```
rtrv-card:loc=1105
```

```
rtrv-card:loc=1106
```

These are examples of the possible output:

```
RLGHNCXA03W 01-03-30 09:12:36 GMT EAGLE 36.0.0
CARD  TYPE          APPL          PORT A LSET (SLC)  PORT B LSET (SLC) 1105
  LIMOCU          CCS7ITU  -----  (--)  -----  (--)
RLGHNCXA03W 01-03-30 09:12:36 GMT EAGLE 36.0.0
CARD  TYPE          APPL          PORT A LSET (SLC)  PORT B LSET (SLC) 1106
  LIMOCU          CCS7ITU  -----  (--)  -----  (--)
```

18. Assign signaling links to the LIM cards using the **ent-slk** command.

Signaling links are the only elements in the database directly supported by a hardware device. When a link is added to a linkset, the link remains in the state OOS-MT-DSBLD (out of service maintenance disabled) until it is activated; see [Step 26](#).

For example, enter these commands:

```
ent-slk:loc=1105:port=a:lsn=1s400001:slc=0:l2tset=1
```

```
ent-slk:loc=1106:port=a:lsn=1s500001:slc=0:l2tset=1
```

where:

loc

The card location of the LIM that the SS7 signaling link will be assigned to.

port

The port on the card specified in the loc parameter.

lsn

The name of the linkset that will contain the signaling link.

slc

The signaling link code. The slc must be unique within the linkset. It must be the same at both the system location and the distant node

l2tset

The level 2 timer set table. A signaling link may be assigned to any of the twenty tables

After successful completion of this command, the system returns the following message:

```
RLGHNCXA03W 01-03-07 08:29:03 GMT EAGLE 36.0.0
ENT-SLK: MASP A - COMPLTD
```

19. Verify the changes using the **rtrv-slk** command, specifying the card location and port of the signaling link entered in [Step 18](#).

```
rtrv-slk:loc=1105:port=a
```

```
rtrv-slk:loc=1106:port=a
```

This is an example of the possible output.

```
RLGHNCXA03W 01-03-19 21:16:37 GMT EAGLE 36.0.0
LOC  PORT LSN          SLC TYPE          SET  BPS  MODE TSET  ECM  PCR  PCR
LIMOCU
  1    56000  ---  ---  BASIC  ---  -----
RLGHNCXA03W 01-03-19 21:16:37 GMT EAGLE 36.0.0
LOC  PORT LSN          SLC TYPE          SET  BPS  MODE TSET  ECM  PCR  PCR
  1    56000  ---  ---  BASIC  ---  -----
```

```
LIMOCU
 1 56000 --- --- BASIC --- -----
```

- 20. Add a route for the new DPC by network type using the **ent-rte** command.

For example, enter one of these commands:

```
ent-rte:dpc=002-100-002:lsn=ls400001:rc=10
ent-rte:dpca=002-111-002:lsn=ls500001:rc=10
```

where:

dpc/dpca

Destination point code of the node that the traffic is bound for

lsn

The name of the linkset that will carry the traffic bound for the node specified by the destination point code.

rc

The relative cost (priority) for this route.

After successful completion of this command, the system returns the following message:

```
RLGHNCXA03W 01-03-07 08:28:30 GMT EAGLE 36.0.0
ENT-RTE: MASP A - COMPLTD
```

- 21. Verify the changes using the **rtrv-rte** command and specifying the destination point code of the route.

This is an example of the possible output:

```
rlghncxa03w 01-03-07 11:43:04 GMT EAGLE 36.0.0
DPCA      ALIASI      ALIASN      CLLI      LSN      RC APCA
-----
          ALIASN      ALIASA      CLLI      LSN      RC APC
002-100-001 121111      240-111-111 idp1      ls100001 10 1-234-5
          ls100002 10 1-234-6
          ls100003 20 1-234-7
          ls100004 30 1-234-1
          ls100005 40 1-234-2
          ls100006 50 1-234-3 002-100-002
          121111      240-111-111 idp1      ls400001
10 1-200-2 DPCA
          ALIASA      ALIASI      CLLI      LSN      RC APCA
21111      011-222-111 0-001-1      ndp1      ls200001 10 11111
          ls200002 10 11112
          ls200003 20 11113
          ls200004 30 11114
          ls200005 40 11115
          ls200006 50 11116 21112
          011-222-111 0-001-1      ndp1      ls500001
10 11122
```

- 22. Add a mated application to the database by network type using the **ent-map** command.

For this example, enter this command:

```
ent-
map:pci=2-100-1:ssn=12:rc=20:mpci=3-200-1:mssn=50 :materc=99:grp=grp03
ent-map:pcn=11112:ssn=12:rc=10:mpcn=11114:mssn=250:materc=99 :grp=grp07
```

where:

pci/pcn

The point code of the primary signaling point that is to receive the message.

ssn

Subsystem number – the subsystem address of the primary point code that is to receive the message.

rc

The relative cost

mpc/mpca/mpci/mpcn

The point code of the backup signaling point that is to receive the message.

mssn

Mate subsystem number – the subsystem address of the backup point code that is to receive the message.

materc

Mate relative cost.

grp

The name of the concerned signaling point code group that contains the point codes that should be notified of the subsystem status. This parameter applies to both RPCs/SSNs.

When each of these commands have successfully completed, this message should appear.

```
RLGHNCXA03W 01-03-07 00:28:31 GMT EAGLE 36.0.0
ENT-MAP: MASP A - COMPLTD
```

23. Verify the changes using the **rtrv-map** command.

These are examples of possible output.

```
rlghncxa03w 01-03-07 11:43:04 GMT EAGLE 36.0.0
PCN          SSN RC MPCN          MSSN MATERC SRM MRC GRP NAME
11111        5  20 12347          250      99 --- --- GRP07
11112        12  0 12347          250      99 --- --- GRP07
rlghncxa03w 01-03-07 11:43:04 GMT EAGLE 36.0.0
PCI          SSN RC MPCN          MSSN MATERC SRM MRC GRP NAME
1-100-1      5  0 3-200-1        250      99 --- --- GRP03
2-100-1      12 20 3-200-1        50       99 --- --- GRP03
```

24. Allow the LIM cards that were entered in [Step 16](#) by using the **alw-card** command.

For example, enter these commands:

alw-card:loc=1105

alw-card:loc=1106

This message appears:

```
RLGHNCXA03W 01-03-30 21:20:37 GMT EAGLE 36.0.0
Card has been allowed.
```

25. Verify the in-service normal (IS-NR) status of the cards using the **rept-stat-card** command.

This is an example of the possible output:

```
RLGHNCXA03W 01-03-27 16:43:42 GMT EAGLE 36.0.0
CARD VERSION          TYPE  APPL  PST      SST      AST 1101 100-000-00003-000
TSM SSCP IS-NR
Active --- 1102 100-000-00003-000 TSM SSCP IS-NR
Active ---
1103 100-000-00003-000 ACMENET STPLAN IS-NR Active ---
1104 100-000-00003-000 ACMENET GLS IS-NR Active --- 1105 100-000-00003-000
LIMOCU CCS7ITU IS-NR
Active --- 1106 100-000-00003-000 LIMOCU CCS7ITU IS-NR
Active ---
1113 100-000-00002-000 MCAP OAM IS-NR Active ---
1114 100-000-00002-000 TDM IS-NR Active ---
1115 100-000-00002-000 MCAP OAM IS-NR Active ---
1116 100-000-00002-000 TDM IS-NR Active ---
1117 100-000-00002-000 MDAL IS-NR Active ---
```

1201	100-000-00003-000	LIMDS0	SS7ANSI	IS-NR	Active	---
1202	100-000-00002-000	LIMV35	SS7GX25	IS-NR	Active	---
1203	100-000-00003-000	LIMV35	SS7ANSI	IS-NR	Active	---
1204	100-000-00003-000	LIMATM	ATMANSI	IS-NR	Active	---
1205	100-000-00001-000	DCM	IPLIM	IS-NR	Active	---
1207	100-000-00001-000	DCM	SS7IPGW	IS-NR	Active	---
1303	100-000-00001-000	DCM	IPLIM	IS-NR	Active	---
1305	100-000-00001-000	DCM	SS7IPGW	IS-NR	Active	---

26. Activate the signaling links entered in [Step 18](#) using the **act-slk** command.

For example, enter these commands:

```
act-slk:loc=1105:port=a
act-slk:loc=1106:port=a
```

The link changes its state from *OOS-MT-DSBLD* (out-of-service maintenance-disabled) to *IS-NR* (in-service normal).

The output confirms the activation.

```
RLGHNCXA03W 01-03-07 11:11:28 GMT EAGLE 36.0.0
Activate Link message sent to card
```

27. Verify the in-service normal (IS-NR) status of the signaling link using the **rept-stat-slk** command.

For example, enter these commands:

```
rept-stat-slk:loc=1105
rept-stat-slk:loc=1106
```

This message should appear:

```
RLGHNCXA03W 01-03-30 21:16:37 GMT EAGLE 36.0.0
SLK      LSN      CLLI      PST      SST      AST 1105,A 1s400001
----- IS-NR  Avail  ----
Command Completed.
RLGHNCXA03W 01-03-30 21:16:37 GMT EAGLE 36.0.0
SLK      LSN      CLLI      PST      SST      AST 1106,A 1s500001
----- IS-NR  Avail  ----
Command Completed
```

28. Display the new LIM cards in the database using the **rtrv-card** command.

This is an example of the possible output:

```
RLGHNCXA03W 01-03-15 16:34:56 GMT EAGLE 36.0.0
CARD  TYPE      APPL      PORT A LSET (SLC)  PORT B LSET (SLC)
1101  TSM          SCCP      -----  (--)  -----  (--)
1102  TSM          SCCP      -----  (--)  -----  (--)
1103  ACMENET      STPLAN   -----  (--)  -----  (--)
1104  ACMENET      GLS       -----  (--)  -----  (--) 1105 LIMOCU CCS7ITU
1s400001
( 00
) -----  (--) 1106 LIMOCU CCS7ITU 1s500001
( 00
) -----  (--)
1113  MCAP          OAM1114   TDM
1115  MCAP          OAM
1116  TDM
1117  MDAL
1201  LIMDS0       SS7ANSI   lsn1      (00)    lsn2      (01)
1202  LIMV35       SS7GX25   lsngwy    (00)    -----  (--)
1203  LIMV35       SS7ANSI   lsn2      (00)    lsn1      (01)
```

1204	LIMATM	ATMANSI	atmgwy	(00)	-----	(--)
1205	DCM	IPLIM	ipgwy1	(00)	ipgwy3	(01)
1207	DCM	SS7IPGW	ipgwy2	(00)	-----	(--)
1303	DCM	IPLIM	ipgwy1	(00)	ipgwy3	(01)
1305	DCM	SS7IPGW	ipgwy4	(00)	-----	(--)

Determine a location where the double-slot DSM card can be inserted. Also determine adjacent (odd-even slots) SCCP cards for later TSM card replacements. The output shows slots 1107 and 1108 are not occupied.



CAUTION: When adding DSM cards in an in-service environment, you must take care not to interrupt traffic. Before replacing SCCP cards with DSMs, first install a VSCCP card in an available odd-even double-slot prior to removing SCCP cards to make additional room for other DSM cards.

29. Install and configure DSM card(s) as needed in available odd-even slots using steps [Step 30](#) through [Step 44](#).

For our example, install a DSM card in slots 1107 and 1108.

30. Install the DSM card in slots 1107 and 1108.

The DSM card requires two slots and must be installed in an odd slot with an adjacent empty even slot on its right side.

- a. Open the ejector levers on the DSM card. Carefully align the card's edges with the top and bottom card guides. Then push the card along the length of the card guides until the rear connectors on the card engage the mating connectors on the target shelf backplane.
- b. Press the left edge of the card's faceplate using constant pressure until you feel the card's progress cease.



WARNING: Do not impact the faceplate in order to mate the connectors. Any impact to the card's faceplate can damage the faceplate, the pins, or the connectors.

- c. Push in the top and bottom inject/eject clamps.

This locks the card in place and ensures a strong connection with the pins on the target shelf backplane.

Figure 4-1. Push in Inject/Eject Clamp



Push in the inject/eject clamps to lock the card in place.

- d. Verify that both IMT bus LEDs are green.
- e. Install the cabling required to connect the DSM card to the MPS.

Refer to the Installation Manual for details.

31. Add the DSM card to the database and configure it as VSCCP card using the **ent-card** command.

For this example, enter this command.

```
ent-card:loc=1107:type=dsm:appl=vsccp
```

where:

loc

Specifies the slot number for the card. The slot number must be an odd number.

type

Specifies that the card is a DSM card.

appl

Specifies that the application is VSCCP.

After successful completion of this command, the system returns the following message:

```
RLGHNCXA03W 01-03-12 09:12:36 GMT EAGLE 36.0.0
ENT-CARD: MASP A - COMPLTD
```

32. Verify the VSCCP card using the **rtrv-card** command with the card location specified.

For this example, enter this command:

```
rtrv-card:loc=1107
```

This is an example of the possible output:

```
RLGHNCXA03W 01-03-30 09:12:36 GMT EAGLE 36.0.0
CARD  TYPE          APPL      PORT A LSET (SLC)  PORT B LSET (SLC) 1107 DSM VSCCP
-----  (--)  -----  (--)
```

33. Display the current link parameters associated with the VSCCP card in the database by entering the **rtrv-ip-lnk** command.

This is an example of the possible output:

```
RLGHNCXA03W 01-03-30 21:14:37 GMT EAGLE 36.0.0
LOC  PORT IPADDR          SUBMASK          DUPLEX SPEED MACTYPE AUTO MCAST
1107 A  -----  -----  HALF  10  DIX  NO  NO
1107 B  -----  -----  HALF  10  DIX  NO  NO
```

34. Enter the IP address port and speed associated with the VSCCP card in the database using the **chg-ip-lnk** command.

where: **loc** –

For this example, enter these commands:

```
chg-ip-
```

```
lnk:loc=1107:port=a:duplex=half:ipaddr=192.168.122.1 :mactype=dix:spe  
d=100:mcast=yes:submask=255.255.255.0
```

```
chg-ip-
```

```
lnk:loc=1107:port=b:duplex=half:ipaddr=192.168.123.1 :mactype=dix:spe  
d=10:mcast=yes:submask=255.255.255.0
```

where:

loc

The card location of the VSCCP card within the EAGLE 5 ISS.

port

The port ID. The port parameter of the **chg-ip-lnk** command specifies the physical interface of the DSM card.

ipaddr

IP address assigned to the port. This is a TCP/IP address expressed in standard “dot notation.” IP addresses consist of the system’s network number and the machine’s unique host number.

duplex

This is the mode of operation of the interface.

speed

This is interface bandwidth in megabits per second. The speed is either 100 Mbps for main DSM network or 10 Mbps for backup DSM network.

mactype

This is the Media Access Control Type of the interface. Specify dix for the Digital/Inter/Xerox de facto standard for the Ethernet.

mcast

This is the Multicast Control of the interface.

submask

The subnet mask of the IP interface, in the form of an IP address with a restricted range of values.

When this command has successfully completed, the following message appears:

```
RLGHNCXA03W 01-03-30 21:18:37 GMT EAGLE 36.0.0
CHG-IP-LNK: MASP A - COMPLTD
```

35. Verify the IP address port and speed associated with the VSCCP card in the database by entering the **rtrv-ip-lnk** command.

This is an example of the possible output:

```
RLGHNCXA03W 01-03-30 21:14:37 GMT EAGLE 36.0.0
LOC  PORT  IPADDR          SUBMASK          DUPLEX  SPEED  MACTYPE  AUTO  MCAST
1107  A    192.168.122.1    255.255.255.0    HALF    100    DIX      NO    YES
1107  B    192.168.123.1    255.255.255.0    HALF    10     DIX      NO    YES
```

36. Display the current IP host information in the database by entering the **rtrv-ip-host** command.

This is an example of the possible output:

```
RLGHNCXA03W 01-03-30 21:17:37 GMT EAGLE 36.0.0
IPADDR          HOST
192.1.1.32      KC_HLR2
192.1.1.50      DN_MSC1
192.1.1.52      DN_MSC2
```

37. Add the host name and IP address for each VSCCP link using the **ent-ip-host** command.

For example, enter these commands:

```
ent-ip-host:host=vsccp_1107_a:ipaddr=192.168.122.1
```

```
ent-ip-host:host=vsccp_1107_b:ipaddr=192.168.123.1
```

where:

host

Specifies the host name. Each VSCCP link must be specified separately.

ipaddr

Specifies the IP network address for each EPAP. The first three octets of the IP address must be the same as MPS A and B ports, respectively. The fourth octet identifies the DSM card and must have a unique octet

identifier for the card's IP address; we recommend numbering the DSM cards sequentially, using values 1 to 25. (This example shows the assignment of the first DSM card.)

After successful completion of this command, the system returns the following message:

```
RLGHNCXA03W 01-03-30 21:18:37 GMT EAGLE 36.0.0
ENT-IP-HOST: MASP A - COMPLTD
```

38. Verify the new IP host information in the database by entering the **rtrv-ip-host** command.

```
RLGHNCXA03W 01-03-30 21:19:37 GMT EAGLE 36.0.0
IPADDR      HOST
192.1.1.32  KC_HLR2
192.1.1.50  DN_MSC1
192.1.1.52  DN_MSC2
192.168.122.1 VSCCP_1107_A
192.168.123.1 VSCCP_1107_B
```

39. If your network configuration does require a default router to connect the DSM card communication to the EPAP, then only one default router is assignable to each DSM card. Assign the default router address to each DSM card by entering a local domain and IP router address for the VSCCP card using the **chg-ip-card** command.

NOTE: Most A-Port customer private networks do not require setting up a default router for the DSM card.

For this example, enter this command:

```
chg-ip-card:loc=1107:domain=nc.tekelec.com :defrouter=192.168.122.250
```

where:

loc

The location of the VSCCP card within the EAGLE 5 ISS.

domain

The domain name of domain server.

defrouter

Default router address. The IP address for default router. This is a TCP/IP address expressed in standard "dot notation". IP addresses consist of the system's network number and the machine's unique host number.

After successful completion of this command, the system returns the following message:

```
RLGHNCXA03W 01-03-30 21:20:37 GMT EAGLE 36.0.0
CHG-IP-CARD: MASP A - COMPLTD
```

40. Verify the new TCP/IP parameters associated with the VSCCP card in the database by entering the **rtrv-ip-card** command.

This is an example of the possible output:

```
RLGHNCXA03W 01-03-30 21:21:37 GMT EAGLE 36.0.0
LOC 1107
SRCHORDR  LOCAL
DNSA      -----
DNSB      -----
DEFROUTER 192.168.122.250
DOMAIN    NC.TEKELEC.COM
```

41. Boot the DSM card that was added in [Step 31](#) in TSM emulation mode by using the **alw-card** command.

For example, enter this command:

```

RLGHNCXA03W 01-03-30 21:14:37 GMT EAGLE 36.0.0
LOC  PORT IPADDR          SUBMASK          DUPLEX SPEED MACTYPE AUTO MCAST
1107 A   192.168.122.1      255.255.255.0   HALF  100  DIX    NO  YES
1107 B   192.168.123.1      255.255.255.0   HALF  10   DIX    NO  YES

```

42. Verify the in-service normal (IS-NR) status of the VSCCP card using the **rept-stat-card** command.

This is an example of the possible output.

```

RLGHNCXA03W 01-03-27 16:43:42 GMT EAGLE 36.0.0
CARD  VERSION          TYPE  APPL  PST      SST      AST
1101  100-000-00003-000  TSM   SCCP  IS-NR    Active   ---
1102  100-000-00003-000  TSM   SCCP  IS-NR    Active   ---
1103  100-000-00002-000  ACMENET STPLAN IS-NR    Active   ---
1104  100-000-00003-000  TSM   GLS   IS-NR    Active   ---
1105  100-000-00003-000  LIMOCU CCS7ITU IS-NR    Active   ---
1106  100-000-00003-000  LIMOCU CCS7ITU IS-NR    Active   ---
1107  100-000-00003-000  DSM   VSCCP IS-NR    Active   ---
1113  100-000-00002-000  MCAP  OAM    IS-NR    Active   ---
1114  100-000-00002-000  TDM   IS-NR  IS-NR    Active   ---
1115  100-000-00002-000  MCAP  OAM    IS-NR    Active   ---
1116  100-000-00002-000  TDM   IS-NR  IS-NR    Active   ---
1117  100-000-00002-000  MDAL  IS-NR  IS-NR    Active   ---
1201  100-000-00003-000  LIMDS0 SS7ANSI IS-NR    Active   ---
1202  100-000-00002-000  LIMV35 SS7GX25 IS-NR    Active   ---
1203  100-000-00003-000  LIMV35 SS7ANSI IS-NR    Active   ---
1204  100-000-00003-000  LIMATM ATMANSI IS-NR    Active   ---
1205  100-000-00001-000  DCM   IPLIM  IS-NR    Active   ---
1207  100-000-00001-000  DCM   SS7IPGW IS-NR    Active   ---
1303  100-000-00001-000  DCM   IPLIM  IS-NR    Active   ---
1305  100-000-00001-000  DCM   SS7IPGW IS-NR    Active   --

```

43. Test the presence of the EPAP hosts on the network using the **pass** command with the **ping** parameter.

This command is invoked with a destination (either a hostname or IP address).

For example, enter the following command:

```
pass:loc=1107:cmd="ping 192.168.122.100".
```

```
pass:loc=1107:cmd="ping 192.168.122.200".
```

```
pass:loc=1107:cmd="ping 192.168.123.100".
```

```
pass:loc=1107:cmd="ping 192.168.123.200".
```

After successful completion of each command, the system returns output similar to the following:

```

rlghncxa03w 00-06-27 08:30:44 GMT EAGLE 36.0.0
pass: loc=1107: cmd="ping 192.168.122.100"
Command entered at terminal #1.
;
rlghncxa03w 00-06-27 08:30:44 GMT EAGLE 36.0.0
PASS: Command sent to card
;
rlghncxa03w 00-06-27 08:30:44 GMT EAGLE 36.0.0
PING command in progress
;
rlghncxa03w 00-06-27 08:30:46 GMT EAGLE 36.0.0
PING 192.168.122.100: 56 data bytes
64 bytes from tekral.nc.tekelec.com (192.168.122.100):icmp_seq=0.time=5. ms
64 bytes from tekral.nc.tekelec.com (192.168.122.100):icmp_seq=1.time=0. ms
64 bytes from tekral.nc.tekelec.com (192.168.122.100):icmp_seq=2.time=0. ms
----192.168.100.3 PING Statistics----
3 packets transmitted, 3 packets received, 0% packet loss
round-trip (ms) min/avg/max = 0/1/5
PING command complete

```

If the **pass** commands with the **ping** parameter is not successful, verify the the correct connection of the hardware cabling and try again. If the command fails again, contact Technical Services (see [Customer Care Center](#)).

- 44. Repeat [Step 30](#) through [Step 43](#) to add all DSM cards (N+1) to be installed in available slots. Go to the next step to start replacing TSM cards with DSM cards.
- 45. Replace TSM card(s) with DSM cards if applicable and add DSM card(s) to the database using [Step 46](#) through [Step 68](#).

In this procedure, we are removing two existing adjacent TSM cards and replacing them with a double-slot DSM card in slots 1101 and 1102.

NOTE: When adding DSM cards in an in-service environment, you must take care not to interrupt traffic. Before replacing SCCP cards with DSMs, first install a VS CCP card in an available double-slot.

- 46. Determine the cards to be removed from the database by displaying the TSM cards running the SCCP application in the database using the **rtrv-card** command.

This is an example of the possible output:

```

RLGHNCXA03W 01-03-15 16:34:56 GMT EAGLE 36.0.0
CARD   TYPE      APPL      PORT A LSET (SLC)  PORT B LSET (SLC)  1101 TSM SCCP
-----  (--)  -----  (--)  1102 TSM SCCP
-----  (--)  -----  (--)
1103   ACMENET    STPLAN    -----  (--)  -----  (--)
1104   ACMENET    GLS       -----  (--)  -----  (--)
1105   LIMOCU     CCS7ITU   1s300001  (00)  -----  (--)
1106   LIMOCU     CCS7ITU   1s400001  (00)  -----  (--)
1107   DSM        VS CCP    1s300001  (00)  -----  (--)
1113   MCAP       OAM
1114   TDM
1115   MCAP       OAM
1116   TDM
1117   MDAL
1201   LIMDS0     SS7ANSI   lsn1      (00)   lsn2      (01)
1202   LIMV35     SS7GX25   lsn1      (00)   -----  (--)
1203   LIMV35     SS7ANSI   lsn2      (00)   lsn1      (01)
1204   LIMATM     ATMANSI   atm1      (00)   -----  (--)
1205   DCM        IPLIM     ipgwy1    (00)   ipgwy3    (01)
1207   DCM        SS7IPGW   ipgwy2    (00)   -----  (--)
1303   DCM        IPLIM     ipgwy1    (00)   ipgwy3    (01)
1305   DCM        SS7IPGW   ipgwy4    (00)   -----  (--)
    
```

In this procedure, we will remove the SCCP cards in card locations **1101 and 1102**.

- 47. Display the SCCP cards that are in service with the **rept-stat-card:stat=nr** command.

For this example, enter the following command:

rept-stat-card:stat=nr

This is an example of the possible output:

```

RLGHNCXA03W 01-03-27 16:43:42 GMT EAGLE 36.0.0
CARD  VERSION      TYPE  APPL  PST      SST      AST 1101 100-000-00003-000
TSM SCCP
IS-NR      Active  ---  1102 100-000-00003-000 TSM SCCP
IS-NR      Active  ---
1103  100-000-00003-000  ACMENET  STPLAN  IS-NR      Active  ---
1104  100-000-00003-000  ACMENET  GLS      IS-NR      Active  ---
1105  100-000-00003-000  LIMOCU   CCS7ITU  IS-NR      Active  ---
1106  100-000-00003-000  LIMOCU   CCS7ITU  IS-NR      Active  ---
1107  100-000-00003-000  DSM      VS CCP   IS-NR      Active  ---
    
```

1113	100-000-00002-000	MCAP	OAM	IS-NR	Active	---
1114	100-000-00002-000	TDM		IS-NR	Active	---
1115	100-000-00002-000	MCAP	OAM	IS-NR	Active	---
1116	100-000-00002-000	TDM		IS-NR	Active	---
1117	100-000-00002-000	MDAL		IS-NR	Active	---
1201	100-000-00003-000	LIMDS0	SS7ANSI	IS-NR	Active	---
1202	100-000-00002-000	LIMV35	SS7GX25	IS-NR	Active	---
1203	100-000-00003-000	LIMV35	SS7ANSI	IS-NR	Active	---
1204	100-000-00003-000	LIMATM	ATMANSI	IS-NR	Active	---
1205	100-000-00001-000	DCM	IPLIM	IS-NR	Active	---
1207	100-000-00001-000	DCM	SS7IPGW	IS-NR	Active	---
1303	100-000-00001-000	DCM	IPLIM	IS-NR	Active	---
1305	100-000-00001-000	DCM	SS7IPGW	IS-NR	Active	---

48. Inhibit the SCCP cards using the **inh-card** command and specifying the card locations.

```
inh-card:loc=1101
```

```
inh-card:loc=1102
```

When each command has successfully completed, this message appears:

```
RLGHNCXA03W 01-03-12 09:12:36 GMT EAGLE 36.0.0
Card has been inhibited.
```

49. Verify that the SCCP cards are in the Out-of-Service Maintenance-Disabled (OOS-MT-DSBLD) state with the **rept-stat-card** command.

This is an example of the possible output:

```
RLGHNCXA03W 01-03-27 16:43:42 GMT EAGLE 36.0.0
CARD  VERSION      TYPE  APPL  PST      SST      AST
1101  100-000-00003-000  TSM   SCCP   OOS-MT-DSBLD  Isolated  ---
1102  100-000-00003-000  TSM   SCCP   OOS-MT-DSBLD  Isolated  ---
1103  100-000-00002-000  ACMENET STPLAN  IS-NR      Active    ---
1104  100-000-00002-000  ACMENET STPLAN  IS-NR      Active    ---
1105  100-000-00003-000  LIMOCU CCS7ITU  IS-NR      Active    ---
1106  100-000-00003-000  LIMOCU CCS7ITU  IS-NR      Active    ---
1107  100-000-00003-000  DSM    VSCCP  IS-NR      Active    ---
1113  100-000-00002-000  MCAP   OAM     IS-NR      Active    ---
1114  100-000-00002-000  TDM    IS-NR      Active    ---
1115  100-000-00002-000  MCAP   OAM     IS-NR      Active    ---
1116  100-000-00002-000  TDM    IS-NR      Active    ---
1117  100-000-00002-000  MDAL   IS-NR      Active    ---
1201  100-000-00003-000  LIMDS0 SS7ANSI  IS-NR      Active    ---
1202  100-000-00002-000  LIMV35 SS7GX25  IS-NR      Active    ---
1203  100-000-00003-000  LIMV35 SS7ANSI  IS-NR      Active    ---
1204  100-000-00003-000  LIMATM ATMANSI  IS-NR      Active    ---
1205  100-000-00001-000  DCM    IPLIM   IS-NR      Active    ---
1207  100-000-00001-000  DCM    SS7IPGW IS-NR      Active    ---
1303  100-000-00001-000  DCM    IPLIM   IS-NR      Active    ---
1305  100-000-00001-000  DCM    SS7IPGW IS-NR      Active    ---
```

50. Remove the SCCP cards from the database using the **dlt-card** command.

The **dlt-card** command has only one parameter, **loc**, which is the location of the card.

For this example, enter these commands:

```
dlt-card:loc=1101
```

```
dlt-card:loc=1102
```

After successful completion of this command, the system returns the following message:

```
RLGHNCXA03W 01-03-12 09:12:36 GMT EAGLE 36.0.0  
DLT-CARD: MASP A - COMPLTD
```

51. Verify that the SCCP cards are removed from the database using the **rtrv-card** command and specifying the cards that were removed in [Step 50](#).

For this example, enter these commands:

```
rtrv-card:loc=1101
```

```
rtrv-card:loc=1102
```

After successful completion of this command, the system returns the following message:

```
E2144 Cmd Rej: Location invalid for hardware configuration
```

52. Locate the TSM card to be removed from the shelf.
Because the TSM card takes just one slot and the DSM card requires two slots, the DSM card must be installed in an odd slot that is adjacent to an even slot on its right side. In this procedure, we will remove two TSM cards from slots 1101 and 1102 to make space for one DSM card.
 - a. Push the inject/eject clamps outward from the card's faceplate (top clamp in the "UP" position, bottom clamp in the "DOWN" position). Pull the levers away from the shelf until they are parallel to the floor. Gently pull the card towards you until the card clears the shelf.

Figure 4-2. Push Inject/Eject Clamps Outward



- b. Place the card you have removed in an electrostatic discharge (ESD) protective container, or place the card in the spare card storage shelf.
53. Repeat [Step 52](#) to remove the second TSM card.
54. Install the DSM card in slots 1101 and 1102.
 - a. Open the ejector levers on the DSM card. Carefully align the card's edges with the top and bottom card guides. Then push the card along the length of the card guides until the rear connectors on the card engage the mating connectors on the target shelf backplane.

- b. Press the left edge of the card's faceplate using constant pressure until you feel the card's progress cease.



WARNING: Do not impact the faceplate in order to mate the connectors. Any impact to the card's faceplate can damage the faceplate, the pins, or the connectors.

- c. Push in the top and bottom inject/eject clamps.

This locks the card in place and ensures a strong connection with the pins on the target shelf backplane.

Figure 4-3. Push in Inject/Eject Clamps



Push in the inject/eject clamps to lock the card in place.

- d. Verify that both IMT bus LEDs are green.
 - e. Install the cabling required to connect the DSM card to the MPS. Refer to the *EAGLE 5 ISS Installation Manual* for details.
55. Add the DSM card to the database and assign the VSCCP application using the **ent-card** command.

For this example, enter this command:

```
ent-card:loc=1101:type=dsm:appl=vsccp
```

where:

loc

Specifies the slot number for the card. The slot number must be an odd number.

type

Specifies that the card is a DSM card.

appl

Specifies that the application is VSCCP.

After successful completion of this command, the system returns the following message:

```
RLGHNCXA03W 01-03-12 09:12:36 GMT EAGLE 36.0.0
ENT-CARD: MASP A - COMPLTD
```

56. Display the new VSCCP card using the **rtrv-card** command with the card location specified.

For this example, enter this command:

```
rtrv-card:loc=1101
```

This is an example of the possible output:

```
RLGHNCXA03W 01-03-30 09:12:36 GMT EAGLE 36.0.0
CARD   TYPE           APPL       PORT A LSET (SLC)   PORT B LSET (SLC) 1101 DSM VSCCP
-----  (--)  -----  (--)
```

57. Display the current link parameters associated with the VSCCP card in the database by entering the **rtrv-ip-lnk** command.

This is an example of the possible output:

```
RLGHNCXA03W 01-03-30 21:14:37 GMT EAGLE 36.0.0
LOC  PORT IPADDR           SUBMASK           DUPLEX SPEED MACTYPE AUTO MCAST
1101 A  -----  -----  HALF  10  DIX  NO  NO
1101 B  -----  -----  HALF  10  DIX  NO  NO
1107 A  -----  -----  HALF  10  DIX  NO  NO
1107 B  -----  -----  HALF  10  DIX  NO  NO
```

58. Change the link parameters associated with the VSCCP card in the database using the **chg-ip-lnk** command.

For this example, enter these commands:

```
chg-ip-  
lnk:loc=1107:port=a:duplex=half:ipaddr=192.168.122.1 :mactype=dix:spe  
d=100:mcast=yes:submask=255.255.255.0
```

```
chg-ip-  
lnk:loc=1107:port=b:duplex=half:ipaddr=192.168.123.1 :mactype=dix:spe  
d=10:mcast=yes:submask=255.255.255.0
```

where:

loc

The card location of the VSCCP card within the EAGLE 5 ISS.

port

The port ID. The port parameter of the **chg-ip-lnk** command specifies the physical interface of the DSM card.

ipaddr

IP address assigned to the port. This is a TCP/IP address expressed in standard "dot notation." IP addresses consist of the system's network number and the machine's unique host number.

duplex

This is the mode of operation of the interface.

speed

This is interface bandwidth in megabits per second. The speed is either 100 Mbps for main DSM network or 10 Mbps for backup DSM network.

mactype

This is the Media Access Control Type of the interface. Specify dix for the Digital/Inter/Xerox de facto standard for the Ethernet.

mcast

This is the Multicast Control of the interface.

submask

The subnet mask of the IP interface, in the form of an IP address with a restricted range of values.

When this command has successfully completed, the following message should appear.

```
RLGHNCXA03W 01-03-30 21:18:37 GMT EAGLE 36.0.0
CHG-IP-LNK: MASP A - COMPLTD
```

59. Verify the new link parameters associated with the VSCCP card in the database by entering the **rtrv-ip-lnk** command.

The following is an example of the possible output.

```
RLGHNCXA03W 01-03-30 21:14:37 GMT EAGLE 36.0.0
LOC  PORT  IPADDR          SUBMASK          DUPLEX  SPEED  MACTYPE  AUTO  MCAST
1101  A    192.168.122.2      255.255.255.0    HALF    100    DIX      NO   YES
1101  B    192.168.123.2      255.255.255.0    HALF    10     DIX      NO   YES
1107  A    192.168.122.1      255.255.255.0    HALF    100    DIX      NO   YES
1107  B    192.168.123.1      255.255.255.0    HALF    10     DIX      NO   YES
```

60. Display the current IP host information in the database by entering the **rtrv-ip-host** command.

The following is an example of the possible output.

```
RLGHNCXA03W 01-03-30 21:17:37 GMT EAGLE 36.0.0
IPADDR      HOST
192.1.1.32   KC_HLR2
192.1.1.50   DN_MSC1
192.1.1.52   DN_MSC2
192.168.122.1 VSCCP_1107_A
192.168.123.1 VSCCP_1107_B
```

61. Add the host name and IP address for each VSCCP link using the **ent-ip-host** command.

For example, enter these commands:

```
ent-ip-host:host=vsccp_1101_a:ipaddr=192.168.122.2
```

```
ent-ip-host:host=vsccp_1101_b:ipaddr=192.168.123.2
```

where:

host

Specifies the host name. Each VSCCP link must be specified separately.

ipaddr

Specifies the IP network address for each EPAP. The first three octets of the IP address must be the same as MPS A and B ports, respectively. The fourth octet identifies the DSM card and must have a unique octet identifier for the card's IP address; we recommend numbering the DSM cards sequentially, using values 1 to 25. (This example shows the assignment of the second DSM card.)

After successful completion of this command, the system returns the following message:

```
RLGHNCXA03W 01-03-30 21:18:37 GMT EAGLE 36.0.0
ENT-IP-HOST: MASP A - COMPLTD
```

62. Verify the new IP host information in the database by entering the **rtrv-ip-host** command.

This is an example of the possible output:

```
RLGHNCXA03W 01-03-30 21:19:37 GMT EAGLE 36.0.0
IPADDR      HOST
192.1.1.32   KC_HLR2
192.1.1.50   DN_MSC1
192.1.1.52   DN_MSC2
192.168.122.1 VSCCP_1107_A
```

```
192.168.123.1 VSCCP_1107_B
192.168.122.2 VSCCP_1101_A 192.168.123.2 VSCCP_1101_B
```

- 63. If your network configuration requires a default router to connect the DSM card communication to the EPAP, then only one default router is assignable to each DSM card. Assign the default router address to each DSM card by entering the local domain and IP router address for the VSCCP card using the **chg-ip-card** command.

NOTE: Most A-Port customer private networks do not require setting up a default router for the DSM card. However, if your network configuration does require a default router to connect the DSM card communication to the EPAP, then only one default router is assignable to each DSM card. Assign the default router address to each DSM card as shown in this step.

For this example, enter this command:

```
chg-ip-card:loc=1107:domain=nc.tekelec.com :defrouter=192.168.122.250
```

where:

loc

The card location of the card within the EAGLE 5 ISS.

domain

The domain name of domain server.

defrouter

Default router address. The IP address for default router. This is a TCP/IP address expressed in standard “dot notation”. IP addresses consist of the system’s network number and the machine’s unique host number.

After successful completion of this command, the system returns the following message:

```
RLGHNCXA03W 01-03-30 21:20:37 GMT EAGLE 36.0.0
CHG-IP-CARD: MASP A - COMPLTD
```

- 64. Verify the local domain and IP router address associated with the VSCCP card in the database by entering the **trv-ip-card** command.

This is an example of the possible output:

```
RLGHNCXA03W 01-03-30 21:21:37 GMT EAGLE 36.0.0
LOC 1101
SRCHORDR LOCAL
DNSA -----
DNSB -----
DEFROUTER 192.168.122.250
DOMAIN NC.TEKELEC.COM
```

- 65. Boot the DSM card that was inhibited in [Step 48](#) in TSM emulation mode by using the **alw-card** command.

For example, enter this command:

```
alw-card:loc=1101
```

This message appears:

```
RLGHNCXA03W 01-03-30 21:20:37 GMT EAGLE 36.0.0
Card has been allowed
```

- 66. Verify the in-service normal (IS-NR) status of the VSCCP card using the **rept-stat-card** command.

This is an example of the possible output:

```

RLGHNCXA03W 01-03-27 16:43:42 GMT EAGLE 36.0.0
CARD  VERSION          TYPE  APPL  PST      SST      AST
1101  100-000-00003-000  DSM   VSCCP  IS-NR    Active   ---
1103  100-000-00002-000  ACMENET STPLAN  IS-NR    Active   ---
1104  100-000-00003-000  TSM    GLS    IS-NR    Active   ---
1105  100-000-00003-000  LIMOCU  CCS7ITU IS-NR    Active   ---
1106  100-000-00003-000  LIMOCU  CCS7ITU IS-NR    Active   ---
1107  100-000-00003-000  DSM   VSCCP  IS-NR    Active   ---
1113  100-000-00002-000  MCAP   OAM    IS-NR    Active   ---
1114  100-000-00002-000  TDM    IS-NR    Active   ---
1115  100-000-00002-000  MCAP   OAM    IS-NR    Active   ---
1116  100-000-00002-000  TDM    IS-NR    Active   ---
1117  100-000-00002-000  MDAL   IS-NR    Active   ---
1201  100-000-00003-000  LIMDS0  SS7ANSI IS-NR    Active   ---
1202  100-000-00002-000  LIMV35  SS7GX25 IS-NR    Active   ---
1203  100-000-00003-000  LIMV35  SS7ANSI IS-NR    Active   ---
1204  100-000-00003-000  LIMATM  ATMANSI IS-NR    Active   ---
1205  100-000-00001-000  DCM    IPLIM  IS-NR    Active   ---
1207  100-000-00001-000  DCM    SS7IPGW IS-NR    Active   ---
1303  100-000-00001-000  DCM    IPLIM  IS-NR    Active   ---
1305  100-000-00001-000  DCM    SS7IPGW IS-NR    Active   ---

```

67. Test the presence of the EPAP hosts on the network using the **pass** command with the **ping** parameter. This command is invoked with a destination (either a hostname or IP address).

For example, enter the following commands:

```
pass:loc=1101:cmd="ping 192.168.122.100".
```

```
pass:loc=1101:cmd="ping 192.168.122.200".
```

```
pass:loc=1101:cmd="ping 192.168.123.100".
```

```
pass:loc=1101:cmd="ping 192.168.123.200".
```

After successful completion of each command, the system returns output similar to the following:

```

rlghncxa03w 00-06-27 08:30:44 GMT EAGLE 36.0.0
pass: loc=1101: cmd="ping 192.168.122.100"
Command entered at terminal #1.
;
rlghncxa03w 00-06-27 08:30:44 GMT EAGLE 36.0.0
PASS: Command sent to card
;
rlghncxa03w 00-06-27 08:30:44 GMT EAGLE 36.0.0
PING command in progress
;
rlghncxa03w 00-06-27 08:30:46 GMT EAGLE 36.0.0
PING 192.168.122.100: 56 data bytes
64 bytes from tekral.nc.tekelec.com (192.168.122.100):icmp_seq=0.time=5. ms
64 bytes from tekral.nc.tekelec.com (192.168.122.100):icmp_seq=1.time=0. ms
64 bytes from tekral.nc.tekelec.com (192.168.122.100):icmp_seq=2.time=0. ms
----192.168.100.3 PING Statistics----
3 packets transmitted, 3 packets received, 0% packet loss
round-trip (ms) min/avg/max = 0/1/5
PING command complete

```

If the **pass** command with the **ping** parameter is not successful, verify the the correct connection of the hardware cabling and try again. If the command fails again, contact Technical Services (see [Customer Care Center](#)).

68. Repeat [Step 46](#) through [Step 67](#) to replace all adjacent TSM cards identified in the prerequisites and to be replaced with DSM cards.
69. Repeat steps [Step 48](#) through [Step 52](#) to inhibit any remaining TSM cards running the SCCP application and remove them from database and shelf.

NOTE: The A-Port feature cannot be turned on until TSM cards running the SCCP application are removed from the system.



CAUTION: At this point in the procedure, contact Tekelec Technical Services for assistance in completing this A-Port activation procedure (see [Customer Care Center](#)). Do not proceed without consulting with Technical Services.

70. Turn on and configure the A-Port feature using steps [Step 71](#) through [Step 90](#).
71. Enter the **enable-ctrl-feat** command to enable the A-Port feature.
enable-ctrl-feat:partnum=893016601:fak=<Feature Access Key>
72. Enter the **chg-ctrl-feat** command to activate the A-Port feature.
chg-ctrl-feat:partnum=893016601:status=ON
73. Enter the **enable-ctrl-feat** command to enable the MTPMSGS for SCCP Apps feature.
enable-ctrl-feat:partnum=893017401:fak=<Feature Access Key>
74. Enter the **chg-ctrl-feat** command to activate the MTPMSGS for SCCP Apps feature.
chg-ctrl-feat:partnum=893017401:status=ON
75. Enter the **enable-ctrl-feat** command to enable the MO-Based IS41 SMS NP feature, if required.
enable-ctrl-feat:partnum=893019901:fak=<Feature Access Key>
76. Enter the **chg-ctrl-feat** command to activate the MO-Based IS41 SMS NP feature, if required.
chg-ctrl-feat:partnum=893019901:status=ON
77. Enter the default country code (CC) and default network destination code (NDC) to convert the nature of address indicator (NAI) of MDNs to the international format (**nai=intl**) with the **chg-stpopts** command.

The parameters in this command are used for number conditioning.

For example, enter this command:

```
chg-stpopts:defcc=49:defndc=177:dsmaud=on:npcfnti=14-9-2-1
```

where:

defcc

The default country code.

defndc

The default network destination code.

dsmaud

The DSM audit running state (on or off).

npcfnti

The ITU National Point Code Format Identifier, which identifies how the ITU-N point code is entered into the database and how it is displayed in all EAGLE 5 ISS outputs. This code is a 14-bit integer.

After successful completion of this command, the system returns the following output:

```
rlghncxa03w 01-03-07 00:57:31 GMT EAGLE 36.0.0
CHG-STPOPTS: MASP A - COMPLTD
```

78. Verify the new country code and network destination code using the **rtrv-stpopts** command.

This is an example of the possible output:

```
rlghncxa03w 04-04-17 16:02:05 EST EAGLE 36.0.0
STP OPTIONS
-----
```

MTPT31CTL	1
MTPLTI	yes
MTPLTCTDPCQ	3
MTPLTST	10000
MTPXLQ	500
MTPXLET	0100
MTPXLOT	90%
MTPDPCQ	8000
TFATFRFR	1000
MTPRSI	yes
MTPRSIT	5000
MTPLPRST	yes
MTPT10ALT	30000
UIMRD	yes
SLSCNV	perls
CRITALMINH	yes
DISPACTALMS	no
NPCFMTI	14-9-2-1
GSMDFLT	PASS
GSMDECERR	PASS
DEFCC	49
DEFNDC	177
DSMAUD	on
RPTLNPMRSS	yes
RANDSL	all
GR2878RGLBL	no
RSTRDEV	on
SECMPMATE	off
SECMTPSID	off
SECMTPSNM	notify
SECSCCPSCMG	notify
CNVCGDA	yes
CNVCGDI	yes
CNVCGDN	yes
CNVCGDN24	yes
GTCNVDFLT	yes
ANSIGFLEX	yes
HSCLKSRC	RS422
HSCLKLL	LONGHAUL

79. Change the IS41 system options in the database for the A-Port feature.

For example, enter this command:

chg-is41opts:rspcgpanai=7:rspcgpanp=15:rspdig=ccrndn

where:

rspcgpanai

Specifies a new NAI value to override the NAI value specified in the SCCPCdPA of a received LOCREQ/SMSREQ if the message is to be relayed after database lookup.

rspcgpanp

Defines the numbering plan value of the MNP_SRF.

rspdig

Specifies the digit encoding format of the LOCREQTCAP Outgoing Called Party parameter on a per EAGLE 5 ISS node basis.

The system returns the following message:

```
rlghncxa03w 00-08-20 09:04:14 GMT EAGLE 36.0.0
CHG-IS41OPTS: MASP A - COMPLTD
```

80. Change the IS41 system options in the database for the MO-Based IS41 SMS NP feature.

For example, enter this command:

chg-is41opts:mosmsdnfmt=rn:mosmstype=sp:mosmsnai=nat:mosmsdnnai=7

where:

mosmsdnfmt

Specifies the format of a dialed number.

mosmstype

Indicates the entity type for which a database lookup is considered successful.

mosmsnai

Indicates how the called party number will be conditioned before lookup in the database.

mosmsdnnai

Indicates the value to be encoded in the outgoing message..

The system returns the following message:

```
rlghncxa03w 00-08-20 09:04:14 GMT EAGLE 36.0.0
CHG-IS41OPTS: MASP A - COMPLTD
```

- 81. Verify the changes using the **rtrv-is41opts** command.

This command displays all is41 options from the database.

This is an example of the possible output:

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

```
IS41 OPTIONS
-----
SMSREQBPASS      = NO
LOCREQDN         = TCAP
IEC              = 0
NEC              = 00
RSPCGPARI        = FRMSG
RSPCGPAPCP       = FRMSG
RSPCDPARI        = FRMSG
RSPCDPAPCP       = FRMSG
RSPCGPANAI       = 7
RSPCGPANP        = 15
RSPCGPATT        = 0
MTPLOCREQNAI     = SUB
RSPPARM          = DDIGIT
RSPDIG           = CCRNDN
RSPNON           = 0
RSPNP            = 0
RSPMIN           = NOTHOMERN
MSCMKTID         = 32300
MSCSWITCH        = 20
ESNMFG           = 0
ESNSN            = 0
RSPDIGTYPE       = 0
LOCREQRMHRN      = NO
TCAPSNAI         = SUB

MOSMSDNFMT       = RN
MOSMSTYPE         = SP
MOSMSNAI          = NAT
MOSMSDNNAI       = 7
```

- 82. Add routing number prefixes for the operating network using the **ent-homern** command.

Use this command to enter any Home RNs that are prefixed to DNs for incoming A-Port messages. Use this command to enter up to 100 routing number prefixes for the operating network into the HOMERN table.

For example, enter this command:

ent-homern:rn=34

where:

rn

The home routing number prefix. The range is 1 to 15 hex digits (0-F).

When this command has successfully completed, this message appears:

```
RLGHNCXA03W 01-03-07 00:28:31 GMT EAGLE 36.0.0
HOMERN table is (1 of 100) 1% full
ENT-HOMERN: MASP A - COMPLTD
```

83. Verify the changes using the **rtrv-homern** command.

This command retrieves a list of routing number prefixes that belong to the operating network.

Here is an example of the possible output.

```
rlghncxa03w 01-03-28 00:29:31 GMT EAGLE 36.0.0.0
RN
-----
216780909087654
76345098
c10234567
c222
cabade
abc
abc123
HOMERN table is (6 of 100) 6% full
```

84. Verify the changes using the **rtrv-srvsel** command.

This command retrieves a list of administered service selector combinations.

This is an example of the possible output:

```
rlghncxa03w 00-06-20 09:09:14 GMT EAGLE 36.0.0
GTII TT NP NAI NPV NAIV SSN SNP SNAI SERV
4 1 e214 intl --- --- 3 --- --- gport
```

85. Use the **ent-srvsel** command to enter the A-Port service selectors by network type.

This command assigns applicable service selectors required to specify the service entry for DSM services.

For example, enter the following command:

```
ent-  
srvsel:gtia=2:tt=1:snp=e164:snai=intl:serv=mnp:nai=intl :np=e164:ssn=9
```

where:

gtia

Specifies the global title translation indicator (2 = ANSI, ITU; 4 = ITU)

tt

Specifies the translation type.

snp

Defines the service numbering plan (e164, e212, or e214).

snai

Specifies the international Service Nature of Address Indicator.

serv

Specifies the service feature.

nai

Specifies the nature of address indicator.

np

Specifies the numbering plan.

ssn

Defines the subsystem number.

The system returns the following message:

```
rlghncxa03w 01-03-07 00:28:31 GMT EAGLE 36.0.0
Service Selector table is (114 of 1024) 11% full
ENT-SRVSEL: MASP A - COMPLTD
```

- 86. Verify the changes using the **rtrv-srvsel** command.

This command retrieves a list of administered service selector combinations. Avoid lengthy output by filtering the list using various parameter combinations. (The selector table can have over 1,000 entries.)

For example, enter this command:

```
rtrv-srvsel:gtai=2
```

After successful completion of this command, the system returns output similar to the following:

```
GTAI TT NP NAI NPV NAIV SNP SNAI SERV
2 0 e164 intl --- --- e164 intl mnp
2 1 e164 intl --- --- e164 intl mnp
```



CAUTION: When you have an in-service environment and you are replacing TSM cards with DSM cards, initialize one DSM card at a time. Verify its return to IS-NR state before initializing another DSM card. This precaution keeps cards in service and precludes an interruption of SCCP services.

GTT, EGTT, and VGTT traffic are routed based on the global titles in the OAM database while G-Flex, A-Port, and INP traffic is routed based on the global title in the RTDB. Rebooting a DSM card running the VSCCP application causes both the OAM and RTDB databases on the DSM card to reload.

- 87. Reload a DSM card using the **init-card** command.

For example, enter this command:

```
init-card:loc=1101
```

The system returns the following message:

```
rlghncxa03w 01-03-07 00:28:31 GMT EAGLE 36.0.0
Command entered at terminal #3.
Init Card command issued to card 1101
```

- 88. Verify its return to IS-NR state with the **rept-stat-card** command.

(Wait until in-service state is restored.)

This is an example of the possible output:

```
RLGHNCXA03W 01-03-07 00:30:42 GMT EAGLE 36.0.0
CARD VERSION TYPE APPL PST SST AST 1101 100-000-00003-000
DSM VSCCP IS-NR
Active ---
1103 100-000-00002-000 ACMENET STPLAN IS-NR Active ---
1104 100-000-00003-000 TSM GLS IS-NR Active ---
1105 100-000-00003-000 LIMOCU CCS7ITU IS-NR Active ---
1106 100-000-00003-000 LIMOCU CCS7ITU IS-NR Active ---
1107 100-000-00003-000 DSM VSCCP IS-NR Active ---
1113 100-000-00002-000 MCAP OAM IS-NR Active ---
1114 100-000-00002-000 TDM IS-NR Active ---
1115 100-000-00002-000 MCAP OAM IS-NR Active ---
```

1116	100-000-00002-000	TDM		IS-NR	Active	---
1117	100-000-00002-000	MDAL		IS-NR	Active	---
1201	100-000-00003-000	LIMDS0	SS7ANSI	IS-NR	Active	---
1202	100-000-00002-000	LIMV35	SS7GX25	IS-NR	Active	---
1203	100-000-00003-000	LIMV35	SS7ANSI	IS-NR	Active	---
1204	100-000-00003-000	LIMATM	ATMANSI	IS-NR	Active	---
1205	100-000-00001-000	DCM	IPLIM	IS-NR	Active	---
1207	100-000-00001-000	DCM	SS7IPGW	IS-NR	Active	---
1303	100-000-00001-000	DCM	IPLIM	IS-NR	Active	---
1305	100-000-00001-000	DCM	SS7IPGW	IS-NR	Active	---

89. After the **init-card** and the **rept-stat-card** commands show that service is successfully restored, repeat [Step 85](#) and [Step 88](#) for each DSM card in your system.
90. Enter the **chg-sccp-serv:serv=mnp:state=online** command to set the MNP service state online.
91. Confirm that essential activation procedures are successful.
 - a. Use **rept-stat-sccp** to verify all your DSM cards are loaded and are IS-NR (in-service normal) status.
 - b. Use **rept-stat-mps** to verify all your DSM cards and the EPAP are connected and operational.
 - c. Use **rept-stat-db:display=all** to verify database levels are identical for the EPAPPDB and RTDB and the RTDBs on the DSM cards.

The A-Port feature is now installed, activated, and ready for operations.

The 1100 TPS/DMS for ITU NP Feature

This procedure is used to enable and turn on the 1100 TPS/DSM for ITU NP feature. This feature provides up to 26,400 transactions per second when the maximum number of DSM cards are installed in the EAGLE 5 ISS and one or more EPAP-related features (such as G-Port, G-Flex, A-Port, INP, EIR, Migration) are enabled and turned on.

This feature can be enabled only for DSMs that are rated at 850 transactions per second (TPS).



CAUTION: The increase of the DSM capacity, 1100 TPS per DSM, assumes incoming traffic consists of at least 30% of GTT routed traffic that does not require EPAP based lookup. If more than 70% of incoming traffic requires EPAP based lookup, Group Ticket Voucher (TVG) may shutdown and overall TVG capacity of 1100 for the card may not be met.

The feature access key is based on the feature's part number and the serial number of the EAGLE 5 ISS, making the feature access key site-specific.

The **enable-ctrl-feat** command enables the 1100 TPS/DSM for ITU NP feature by inputting the feature's access key and the feature's part number with these parameters:

:fak

The feature access key provided by Tekelec. The feature access key contains 13 alphanumeric characters and is not case sensitive.

:partnum

The Tekelec-issued part number of the 1100 TPS/DSM for ITU NP feature, 893018001.

After the 1100 TPS/DSM for ITU NP feature has been enabled, the feature must be turned on with the **chg-ctrl-feat** command. The **chg-ctrl-feat** command uses these parameters:

:partnum

The Tekelec-issued part number of the 1100 TPS/DSM or ITU NP feature, 893019101.

:status=on

Used to turn the 1100 TPS/DSM for ITU NP feature on.

Activating the 1100 TPS/DSM for ITU NP Feature

Before you start:

The 1100 TPS/DSM for ITU NP feature cannot be enabled with a temporary feature access key.

The 1100 TPS/DSM for ITU NP feature cannot be enabled if:

- The EAGLE 5 ISS does not contain any DSM cards.
- The LNP feature is enabled.

The status of the LNP feature is shown with the **rtrv-ctrl-feat** command output.

- The ANSI G-Flex STP Option is enabled.

The status of the ANSI G-Flex STP Option is shown in the **rtrv-stpopts** command output.

- The GTT feature is not turned on.

The status of the GTT feature is shown in the **rtrv-feat** command output.

The **enable-ctrl-feat** command requires that the database contain a valid serial number for the EAGLE 5 ISS, and that this serial number is locked. This can be verified with the **rtrv-serial-num** command. The EAGLE 5 ISS is shipped with a serial number in the database, but the serial number is not locked. The serial number can be changed, if necessary, and locked once the EAGLE 5 ISS is on-site, with the **ent-serial-num** command. The **ent-serial-num** command uses these parameters.

:serial

The serial number assigned to the EAGLE 5 ISS. The serial number is not case sensitive.

:lock

Specifies whether or not the serial number is locked. This parameter has only one value, yes, which locks the serial number. Once the serial number is locked, it cannot be changed.

NOTE: To enter and lock the EAGLE 5 ISS's serial number, the **ent-serial-num command must be entered twice, once to add the correct serial number to the database with the **serial** parameter, then again with the **serial** and the **lock=yes** parameters to lock the serial number. Verify that the serial number in the database is correct before locking the serial number. The serial number can be found on a label affixed to the control shelf (shelf 1100).**

The 1100 TPS/DSM for ITU NP feature increases the processing capacity of SCCP traffic for an EAGLE 5 ISS processing EPAP-based traffic to 26,400 transactions per second. To achieve this increase in SCCP processing capacity, a maximum of 25 DSM cards must be provisioned and installed in the EAGLE 5 ISS.

1. Display the status of the 1100 TPS/DSM feature by entering the **rtrv-ctrl-feat** command.

The following is an example of the possible output:

```
rlghncxa03w 07-05-28 21:15:37 GMT EAGLE5 37.5.0
```

The following features have been permanently enabled:

Feature Name	Partnum	Status	Quantity
TPS	893000110	on	1000
ISUP Normalization	893000201	on	----
Prepaid SMS Intercept Ph1	893006701	on	----
MNP Circ Route Prevent	893007001	on	----
1100 TPS/DSM for ITU NP	893018001	on	----

The following features have been temporarily enabled:

Feature Name	Partnum	Status	Quantity	Trial Period Left
TPS	893000140	on	4000	20 days 8 hrs 57 mins

The following features have expired temporary keys:

Feature Name	Part Num
OnOffFeatV	893492401

2. Based on the output from the previous step, do one of the following:
 - If the **rtrv-ctrl-feat** output shows that the 1100 TPS/DMS for ITU NP feature is enabled, shown by the entry 1100 TPS/DMS for ITU NP, and its status is **on**, no further action is necessary.
 - If the feature is enabled, and its status is **off**, skip [Step 3](#) through [Step 12](#), and go to [Step 13](#).
 - If the **rtrv-ctrl-feat** output shows that the LNP feature is enabled, this procedure cannot be performed. The 1100 TPS/DMS for ITU NP feature cannot be enabled if the LNP feature is enabled.
 - If the 1100 TPS/DMS for ITU NP and LNP features are not enabled, go to [Step 3](#).

3. Determine whether the G-Flex feature is turned on by entering the **rtrv-feat**.

(If the G-Flex feature is off, then the ANSIGFLEX option is not displayed in the **rtrv-stpopts** output in [Step 4](#).)

The G-Flex feature is shown by the entry **G-Flex** in the **rtrv-feat** output.

- If the G-Flex feature is turned off, skip to [Step 5](#).
- If the G-Flex feature is turned on, go to [Step 4](#).

4. Verify that the ANSI G-Flex option is not enabled or turned on by entering the **rtrv-stpopts** command.

The 1100 TPS/DMS ITU NP feature cannot be enabled if the ANSI G-Flex option is turned on.

The ANSI G-Flex option is shown by the entry **ANSIGFLEX** in the **rtrv-stpopts** output. If the **ANSIGFLEX** entry is displayed in the **rtrv-stpopts** output, both the G-Flex and the GTT features are turned on.

- If the ANSIGFLEX value is **yes**, the ANSI G-Flex option is enabled and this procedure cannot be performed.
- If the ANSIGFLEX value is **no**, the ANSI G-Flex option is not enabled. Skip [Step 5](#) and go to [Step 6](#).

5. Determine whether the GTT feature is turned on by examining the output of the **rtrv-ctrl-feat** command.

The 1100 TPS/DMS ITU NP feature cannot be enabled unless the GTT feature is turned on. The GTT feature is shown by the entry **GTT** in the **rtrv-feat** output executed in [Step 3](#).

- If the GTT feature is turned on, go to [Step 6](#).
- If the GTT feature is turned off, perform the "Adding an SCCP card" in the *Database Administration Manual - Global Title Translation* to turn the GTT feature on and to add the required number of DSM cards to the database. After the "Adding an SCCP card" has been performed, skip [Step 6](#) through [Step 10](#), and go to [Step 11](#).

6. Verify the number of DSM cards that are provisioned in the database using the **rept-stat-gpl:gpl=sccphc** command.

This is an example of the possible output.

```
rlghncxa03w 07-05-01 11:40:26 GMT EAGLE5 37.5.0
GPL   CARD   RUNNING   APPROVED   TRIAL
VSCCP 1201   126-002-000 126-002-000 126-003-000
VSCCP 1203   126-002-000 126-002-000 126-003-000
```

```
VSCCCP 1207 126-002-000 126-002-000 126-003-000
VSCCCP 1213 126-002-000 126-002-000 126-003-000
VSCCCP 1215 126-002-000 126-002-000 126-003-000
VSCCCP 1305 126-002-000 126-002-000 126-003-000
VSCCCP 1313 126-002-000 126-002-000 126-003-000
VSCCCP 2103 126-002-000 126-002-000 126-003-000
Command Completed
```

7. Based on the output shown in [Step 6](#), do one of the following:
 - If the required number of DSM cards are provisioned in the database, go to [Step 8](#).
 - If the required number of DSM cards are not provisioned in the database, perform the "Adding an SCCP card" in the *Database Administration Manual - Global Title Translation* to add the required number of DSM cards to the database. After the "Adding an SCCP card" has been performed, go to [Step 8](#).
8. Display the serial number in the database with the **rtrv-serial-num** command.

This is an example of the possible output.

```
rlghncxa03w 07-05-28 21:15:37 GMT EAGLE5 37.5.0
System serial number = nt00001231
System serial number is not locked
.
rlghncxa03w 07-05-28 21:15:37 GMT EAGLE5 37.5.0 Command Completed
```

9. Compare the actual serial number (located on a label affixed to the control shelf, shelf 1100) to the output shown in [Step 8](#), and do one of the following:
 - If the serial number is correct and locked, skip [Step 10](#) through [Step 12](#), and go to [Step 13](#).
 - If the serial number is correct but not locked, skip [Step 10](#) and [Step 11](#), and go to [Step 12](#).
 - If the serial number is not correct, but is locked, this feature cannot be enabled and the remainder of this procedure cannot be performed. Contact the [Customer Care Center](#) to get an incorrect and locked serial number changed.
10. Enter the correct serial number into the database using the **ent-serial-num** command with the serial parameter.

For this example, enter this command.

```
ent-serial-num:serial=<EAGLE 5 ISS's correct serial number>
```

When this command has successfully completed, the following message appears.

```
rlghncxa03w 07-05-28 21:15:37 GMT EAGLE5 37.5.0
ENT-SERIAL-NUM: MASP A - COMPLTD
```

11. Verify that the serial number entered into step 7 was entered correctly:
 - a. Enter the **rtrv-serial-num** command.

This is an example of the possible output.

```
rlghncxa03w 07-05-28 21:15:37 GMT EAGLE5 37.5.0
System serial number = nt00001231
System serial number is not locked.
rlghncxa03w 07-05-28 21:15:37 GMT EAGLE5 37.5.0
Command Completed
```

- b. If the serial number was not entered correctly, repeat steps [Step 10](#) and [Step 11](#) and re-enter the correct serial number.
12. Lock the serial number in the database by entering the **ent-serial-num** command with the serial number shown in step [Step 8](#), if the serial number shown in step [Step 8](#) is correct, or with the serial number shown in step [Step 10](#), if the serial number was changed in step [Step 10](#), and with the **lock=yes** parameter.

For this example, enter this command.

```
ent-serial-num:serial=<EAGLE 5 ISS's serial number>;lock=yes
```

When this command has successfully completed, the following message should appear.

```
rlghncxa03w 07-05-28 21:15:37 GMT EAGLE5 37.5.0
ENT-SERIAL-NUM: MASP A - COMPLTD
```

13. Enable the 1100 TPS/DSM for ITU NP feature with the permanent key by entering the **enable-ctrl-feat** command.

For this example, enter this command.

```
enable-ctrl-feat:partnum=893018001:fak=<1100 TPS/DSM for ITU NP feature
access key>
```

NOTE: The values for the feature access key (the fak parameter) are provided by Tekelec. If you do not have the feature access key for the 1100 TPS/DSM for ITU NP feature, contact your Tekelec Sales Representative or Account Representative.

When the **enable-ctrl-feat** command has successfully completed, this message should appear.

```
rlghncxa03w 07-05-28 21:15:37 GMT EAGLE5 37.5.0
ENABLE-CTRL-FEAT: MASP B - COMPLTD
```

14. Do one of the following:
- If you do not wish to turn the 1100 TPS/DSM for ITU NP feature on, skip this step and go to step [Step 16](#). If you do not turn this feature on, the transaction rate will remain at 850 TPS/DSM.
 - If you do wish to turn on the 1100 TPS/DSM for ITU NP feature, enter the **chg-ctrl-feat** command, specifying the 1100 TPS/DSM for ITU NP feature part number used in step [Step 13](#) and the **status=on** parameter and enter the command again as shown in step [Step 15](#).

For this example, enter this command:

```
chg-ctrl-feat:partnum=893018001:status=on
```

The following output message appears:

```
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.
```



CAUTION: If the EPAP-based traffic is higher than 70% of all traffic on the EAGLE 5ISS, the DSM cards performance may not reach 1100 TPS per DSM.

15. Reenter the **chg-ctrl-feat** command to turn the feature ON.
- ```
chg-ctrl-feat:partnum=893018001:status=on
```

When this command has successfully completed, the following message should appear:

```
rlghncxa03w 07-05-28 21:15:37 GMT EAGLE5 37.5.0
CHG-CTRL-FEAT: MASP B - COMPLTD
```

16. Verify the changes by entering the **rtrv-ctrl-feat** command with the 1100 TPS/DSM for ITU NP feature part number specified in steps [Step 14](#) or [Step 15](#).

```
rtrv-ctrl-feat:partnum=893018001
```

The following is an example of the possible output.

```
rlghncxa03w 07-05-28 21:15:37 GMT EAGLE5 37.5.0
The following features have been permanently enabled:
Feature Name Partnum Status Quantity
TPS 893000110 on 1000
ISUP Normalization 893000201 on ----
Prepaid SMS Intercept Ph1 893006701 on ----
MNP Circ Route Prevent 893007001 on ----
1100 TPS/DSM for ITU NP 893018001 on ----
```

```
The following features have been temporarily enabled:
Feature Name Partnum Status Quantity Trial Period Left
TPS 893000140 on 4000 20 days 8 hrs 57 mins
```

```
The following features have expired temporary keys:
Feature Name Part Num
OnOffFeatV 893492401
```

17. Backup the new changes by entering:

```
chg-db:action=backup:dest=fixed
```

These messages should appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
BACKUP (FIXED) : MASP A - Backup starts on active MASP.
BACKUP (FIXED) : MASP A - Backup on active MASP to fixed disk complete. BACKUP (FIXED) : MASP
A - Backup starts on standby MASP.
BACKUP (FIXED) : MASP A - Backup on standby MASP to fixed disk complete.
```

18. If you wish to turn off TPS/DSM for ITU NP feature, enter the **chg-ctrl-feat** command, specifying the 1100 TPS/DSM feature part number used in step [Step 14](#) and the **status=off** parameter.

For this example, enter this command.

```
chg-ctrl-feat:partnum=893018001:status=off
```

The following output message appears:

```
CAUTION: This command decreases the total TPS of the SCCP system from 1100 to 850 TPS for each
DSM card.
```

19. Confirm that you wish to turn off TPS/DSM for ITU NP feature by re-entering the command, as shown below, within 30 seconds:

```
chg-ctrl-feat:partnum=893018001:status=off
```

When this command has successfully completed, the following message should appear.

```
rlghncxa03w 07-05-28 21:15:37 GMT EAGLE5 37.5.0
CHG-CTRL-FEAT: MASP B - COMPLTD
```

## Activating the E5-SM4G Throughput Capacity Feature

This procedure is used to enable and turn on the E5-SM4G Throughput Capacity feature. This feature provides up to 75,000 transactions per second when the maximum number of E5-SM4G cards are installed in the EAGLE 5 ISS and one or more EPAP-related features (such as G-Port, A-Port, G-Flex) are enabled and turned on.

The feature access key is based on the feature's part number and the serial number of the EAGLE 5 ISS, making the feature access key site-specific.

The **enable-ctrl-feat** command enables the E5-SM4G Throughput Capacity feature by inputting the feature's access key and the feature's part number with these parameters:

**:fak**

The feature access key provided by Tekelec. The feature access key contains 13 alphanumeric characters and is not case sensitive.

**:partnum**

The Tekelec-issued part number of the E5-SM4G Throughput Capacity feature, 893019101.

This feature cannot be enabled with a temporary feature access key.

The E5-SM4G Throughput Capacity feature cannot be enabled if:

- The LNP feature is enabled.
- The STPLAN feature is turned on.
- The GTT feature is not turned on.

The E5-SM4G Throughput Capacity feature cannot be enabled unless the EAGLE 5 ISS contains E5-SM4G cards, and E5-SM4G cards cannot be installed in the EAGLE 5 ISS unless HIPR cards are installed in all shelves containing E5-SM4G cards. Enter the **rept-stat-gpl:gpl=hipr** command to verify if HIPR cards are installed in all shelves containing E5-SM4G cards.

The status of the LNP feature is shown with the **rtrv-ctrl-feat** command output.

The status of the GTT is shown in the **rtrv-feat** command output.

The **enable-ctrl-feat** command requires that the database contain a valid serial number for the EAGLE 5 ISS, and that this serial number is locked. This can be verified with the **rtrv-serial-num** command. The EAGLE 5 ISS is shipped with a serial number in the database, but the serial number is not locked. The serial number can be changed, if necessary, and locked once the EAGLE 5 ISS is on-site, with the **ent-serial-num** command. The **ent-serial-num** command uses these parameters.

**:serial**

The serial number assigned to the EAGLE 5 ISS. The serial number is not case sensitive.

**:lock**

Specifies whether or not the serial number is locked. This parameter has only one value, yes, which locks the serial number. Once the serial number is locked, it cannot be changed.

**NOTE: To enter and lock the EAGLE 5 ISS's serial number, the ent-serial-num command must be entered twice, once to add the correct serial number to the database with the serial parameter, then again with the serial and the lock=yes parameters to lock the serial number. Before locking the serial number, insure that the serial number in the database is correct. The serial number can be found on a label affixed to the control shelf (shelf 1100).**

Once the E5-SM4G Throughput Capacity feature has been enabled, the feature must be turned on with the **chg-ctrl-feat** command. The **chg-ctrl-feat** command uses these parameters:

**:partnum**

The Tekelec-issued part number of the E5-SM4G Throughput Capacity feature, 893019101

**:status=on**

used to turn the E5-SM4G Throughput Capacity feature on.

This feature increases the processing capacity of SCCP traffic for an EAGLE 5 ISS processing EPAP-based traffic to 75,000 transactions per second. To achieve this increase in SCCP processing capacity, a maximum of 25 E5-SM4G cards must be provisioned and installed in the EAGLE 5 ISS.

1. Display the status of the E5-SM4G Throughput Capacity feature by entering the **rtrv-ctrl-feat** command.

**Possible output of this command follows:**

```
rlghncxa03w 07-05-28 21:15:37 GMT EAGLE5 37.0.0
The following features have been permanently enabled:
```

| Feature Name              | Partnum   | Status | Quantity |
|---------------------------|-----------|--------|----------|
| IPGWx Signaling TPS       | 893012814 | on     | 20000    |
| ISUP Normalization        | 893000201 | on     | ----     |
| Command Class Management  | 893005801 | on     | ----     |
| Intermed GTT Load Sharing | 893006901 | off    | ----     |
| XGTT Table Expansion      | 893006101 | off    | ----     |
| XMAP Table Expansion      | 893007710 | on     | 3000     |
| Large System # Links      | 893005910 | on     | 2000     |
| Routesets                 | 893006401 | on     | 6000     |
| HC-MIM SLK Capacity       | 893012707 | on     | 64       |

The following features have been temporarily enabled:

| Feature Name        | Partnum | Status | Quantity | Trial Period Left |
|---------------------|---------|--------|----------|-------------------|
| Zero entries found. |         |        |          |                   |

The following features have expired temporary keys:

| Feature Name           | Partnum   | Status | Quantity | Trial Period Left     |
|------------------------|-----------|--------|----------|-----------------------|
| Zero entries found.    |           |        |          |                       |
| MNP Circ Route Prevent | 893007001 | On     | ----     | 20 days 8 hrs 57 mins |

If the **rtrv-ctrl-feat** output shows that the E5-SM4G Throughput Capacity feature is enabled, shown by the entry E5-SM4G Throughput Cap, and its status is on, no further action is necessary.

If the feature is enabled, and its status is off, skip [Step 2](#) through [Step 8](#), and go to [Step 9](#).

If the **rtrv-ctrl-feat** output shows that the LNP feature is enabled, this procedure cannot be performed. The E5-SM4G Throughput Capacity feature cannot be enabled if the LNP feature is enabled.

If the E5-SM4G Throughput Capacity and LNP features are not enabled, go to [Step 2](#).

2. Enter the **rtrv-feat** command to verify the status of the STPLAN feature.

To enable the E5-SM4G Throughput Capacity feature, the STPLAN feature cannot be turned on.

The STPLAN feature is shown by the entry LAN in the **rtrv-feat** output.

If the STPLAN feature is turned on, this procedure cannot be performed.

If the STPLAN feature is turned off, go to [Step 3](#)

3. Verify that the GTT feature is turned on.

To enable the E5-SM4G Throughput Capacity feature, the GTT feature must be turned on. The GTT feature is shown by the entry GTT in the rtrv-feat output executed in [Step 2](#). If the GTT feature is turned on, go to [Step 4](#). If the GTT feature is turned off, perform the "Adding an SCCP card" in the Database Administration Manual - Global Title Translation to:

- Turn the GTT feature
- add the required number of E5-SM4G cards to the database

After the "Adding an SCCP card" has been performed, skip [Step 4](#), and go to [Step 5](#).

4. Verify the number of E5-SM4G cards that are provisioned in the database using the **rept-stat-gpl:gpl=sccphc** command.

This is an example of the possible output.

```
rlghncxa03w 07-05-01 11:40:26 GMT EAGLE5 37.0.0
GPL CARD RUNNING APPROVED TRIAL
SCCPHC 1201 126-002-000 126-002-000 126-003-000
SCCPHC 1203 126-002-000 126-002-000 126-003-000
SCCPHC 1207 126-002-000 126-002-000 126-003-000
SCCPHC 1213 126-002-000 126-002-000 126-003-000
SCCPHC 1215 126-002-000 126-002-000 126-003-000
SCCPHC 1305 126-002-000 126-002-000 126-003-000
SCCPHC 1313 126-002-000 126-002-000 126-003-000
SCCPHC 2103 126-002-000 126-002-000 126-003-000
Command Completed
```

If the required number of E5-SM4G cards are provisioned in the database, go to [Step 5](#).

If the required number of E5-SM4G cards are not provisioned in the database, perform the "Adding an SCCP card" in the Database Administration Manual - Global Title Translation to add the required number of E5-SM4G cards to the database. After the "Adding an SCCP card" has been performed, go to [Step 5](#).

5. Verify whether HIPR cards are installed on all the EAGLE 5 ISS shelves containing E5-SM4G cards using the **rept-stat-gpl:gpl=hipr** command.

```
the rept-stat-gpl:gpl=hipr command.
rlghncxa03w 07-05-01 11:40:26 GMT EAGLE5 37.0.0
GPL CARD RUNNING APPROVED TRIAL
HIPR 1109 126-002-000 126-002-000 126-003-000
HIPR 1110 126-002-000 126-002-000 126-003-000
HIPR 1209 126-002-000 126-002-000 126-003-000
HIPR 1210 126-002-000 126-002-000 126-003-000
HIPR 1309 126-002-000 126-002-000 126-003-000
HIPR 1310 126-002-000 126-002-000 126-003-000
HIPR 2109 126-002-000 126-002-000 126-003-000
HIPR 2110 126-002-000 126-002-000 126-003-000
Command Completed
```

If HIPR cards are installed in all shelves containing E5-SM4G cards, go to [Step 6](#).

If HIPR cards are not installed on all shelves containing E5-SM4G cards, refer to the Installation Manual - EAGLE 5 ISS and install the HIPR cards. Once the HIPR cards have been installed, go to [Step 6](#).

6. Display the serial number in the database with the **rtrv-serial-num** command.

An example of output from this command follows:

```
rlghncxa03w 07-05-28 21:15:37 GMT EAGLE5 37.0.0
System serial number = nt00001231

System serial number is not locked.

rlghncxa03w 07-05-28 21:15:37 GMT EAGLE5 37.0.0
Command Completed
```

If the serial number is correct and locked, skip [Step 7](#), [Step 8](#), and [Step 9](#), and go to [Step 10](#). If the serial number is correct but not locked, skip [Step 7](#), [Step 8](#), and go to [Step 9](#). If the serial number is not correct, but is locked, this feature cannot be enabled and the remainder of this procedure cannot be performed. Contact the Customer Care Center to get an incorrect and locked serial number changed. Refer to [Customer Care](#)

[Center](#) for the contact information. The serial number can be found on a label affixed to the control shelf (shelf 1100)

7. Enter the correct serial number into the database using the **ent-serial-num** command with the serial parameter .

For this example, enter this command:

```
ent-serial-num:serial=<EAGLE 5 ISS's correct serial number>
```

When this command has successfully completed, the following message appears.

```
rlghncxa03w 07-05-28 21:15:37 GMT EAGLE5 37.0.0
ENT-SERIAL-NUM: MASP A - COMPLTD
```

8. Verify that the serial number entered into [Step 7](#) was entered correctly using the **rtrv-serial-num** command.

An example of output from this command follows:

```
rlghncxa03w 07-05-28 21:15:37 GMT EAGLE5 37.0.0
System serial number = nt00001231
```

System serial number is not locked.

```
rlghncxa03w 07-05-28 21:15:37 GMT EAGLE5 37.0.0
Command Completed
```

If the serial number was not entered correctly, repeat [Step 7](#) and [Step 8](#) and re-enter the correct serial number.

9. Lock the serial number in the database by entering the **ent-serial-num** command with the serial number shown in [Step 6](#) , if the serial number shown in [Step 6](#) is correct, or with the serial number shown in [Step 8](#) , if the serial number was changed in [Step 7](#) , and with the **lock=yes** parameter.

For this example, enter this command:

```
ent-serial-num:serial=<EAGLE 5 ISS's serial number>:lock=yes
```

When this command has successfully completed, the following message appears:

```
rlghncxa03w 07-05-28 21:15:37 GMT EAGLE5 37.0.0
ENT-SERIAL-NUM: MASP A - COMPLTD
```

10. Enable the E5-SM4G Throughput Capacity feature with the permanent key by entering the **enable-ctrl-feat** command.

For this example, enter the following command:

```
enable-ctrl-feat:partnum=893019101:fak=<E5-SM4G Throughput Capacity feature access key>
```

**NOTE: The values for the feature access key (the fak parameter) are provided by Tekelec. If the feature access key for the E5-SM4G Throughput Capacity feature is not known, contact your Tekelec Sales Representative or Account Representative.**

When the **enable-ctrl-feat** command has successfully completed, this message appears:

```
rlghncxa03w 07-05-28 21:15:37 GMT EAGLE5 37.0.0
ENABLE-CTRL-FEAT: MASP B - COMPLTD
```

Note: If you do not wish to turn the E5-SM4G Throughput Capacity feature on, skip [Step 11](#) and go to [Step 12](#).

11. Turn the E5-SM4G Throughput Capacity feature using the **chg-ctrl-feat** command, specifying the E5-SM4G Throughput Capacity feature part number used in [Step 10](#) and the **status=on** parameter.

For example, enter the following command:

```
chg-ctrl-feat:partnum=893019101:status=on
```

**NOTE: Once this feature is turned on, it cannot be turned off.**

When this command has successfully completed, the following message appears:

```
rlghncxa03w 07-05-28 21:15:37 GMT EAGLE5 37.0.0
CHG-CTRL-FEAT: MASP B - COMPLTD
```

12. Verify the changes by entering the `rtrv-ctrl-feat` command with the E5-SM4G Throughput Capacity feature part number specified in [Step 10](#) or [Step 11](#).

For example, enter the following command:

```
rtrv-ctrl-feat:partnum=893019101
```

An example of output from this command follows:

```
rlghncxa03w 07-05-28 21:15:37 GMT EAGLE5 37.0.0
The following features have been permanently enabled:
```

| Feature Name           | Partnum   | Status | Quantity |
|------------------------|-----------|--------|----------|
| E5-SM4G Throughput Cap | 893019101 | on     | ----     |

The following features have been temporarily enabled:

| Feature Name              | Partnum   | Status | Quantity | Trial Period Left     |
|---------------------------|-----------|--------|----------|-----------------------|
| Zero entries found.       |           |        |          |                       |
| G-Port Circ Route Prevent | 893007001 | On     | ----     | 20 days 8 hrs 57 mins |

The following features have expired temporary keys:

| Feature Name        | Partnum |
|---------------------|---------|
| Zero entries found. |         |

13. Backup the new changes using the `chg-db:action=backup:dest=fixed` command.

The following messages appear, with the active Maintenance and Administration Subsystem Processor (MASP) appearing first, as shown.

```
BACKUP (FIXED) : MASP A - Backup starts on active MASP.
BACKUP (FIXED) : MASP A - Backup on active MASP to fixed disk complete.
BACKUP (FIXED) : MASP A - Backup starts on standby MASP.
BACKUP (FIXED) : MASP A - Backup on standby MASP to fixed disk complete.
```



## Maintenance and Measurements

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### Hardware Requirements

The A-Port feature requires DSM-based boards to run the VSCCP GPL. The EAGLE 5 ISS may be equipped with from 1 to 25 DSM cards to support A-Port.



**CAUTION:** Having a mix of SCCP and VSCCP card types is not permitted with the IGM feature enabled, that is, VSCCP cards and SCCP cards cannot coexist in a system operating the IGM feature. Refer to the Dimensioning Guide for EPAP Advanced DB Features Technical

**Reference for important information on the dimensioning rules and the DSM database capacity requirements.**

The A-Port feature also requires a T1000 AS based MPS system.

## EPAP Status and Alarms

EPAP has no direct means of accepting user input or displaying output messages on EAGLE 5 ISS terminals, so maintenance, measurements, and status information are routed through a DSM. EPAP sends two types of messages to the DSM: and [DSM Status Requests](#). Each is discussed in the following sections.

### EPAP Maintenance Blocks

The active EPAP generates and sends maintenance blocks to the primary DSM. One maintenance block is sent as soon as the IP link is established between the active EPAP and the primary DSM. Additional maintenance blocks are sent whenever the EPAP needs to report any change in status or error conditions. The information returned in maintenance blocks is included in the output of the `rept-stat-mps` and `rept-stat-sccp` commands.

The EPAP sends maintenance blocks that contain (at least) the following information.

- Status of EPAP 'A' - actual states are active, standby, and down (inoperative). Maintenance blocks include a field so this information can be forwarded to the EPAP A Device Control Block (DCB), where it is available for the output of the `rept-stat-mps` command.
- Status of EPAP 'B' - actual states are active, standby, and down (inoperative). Maintenance blocks include a field so this information can be forwarded to the EPAP B DCB, where it is available for the output of the `rept-stat-mps` command.
- Identification of Active EPAP - a field to identify the active EPAP.
- Congestion Indicator - an indicator showing provisioning link congestion. The link between the EPAPs and the external source of provisioning data can become congested in high provisioning traffic situations. When this occurs and subsequently as the congestion clears, the EPAP sends maintenance blocks to the DSM. The EPAP must ensure that no more than one maintenance block per second is sent to the primary DSM if the only reason is to report a change in congestion status.
- Alarm Conditions - an error code field. If the EPAP needs to report an alarm condition, it puts an appropriate UAM identifier in this field.
- Current MPS Database Size - a field indicating the current RTDB size. The DSM uses this information to calculate the percentage of memory utilized by the RTDB.

### DSM Status Requests

When the EPAP needs to know the status of a DSM, it sends a DSM status request to that DSM. Since status messages are sent over UDP, the EPAP broadcasts the DSM status request and each DSM returns its status to the EPAP.

### *DSM Status Reporting to the EPAP*

The sections that follow describe the DSM status reporting for the EPAP.

### *DSM Status Messages – When Sent*

The EPAP needs to know the current status of various aspects of the DSMs. Accordingly, the DSMs send a DSM status message to the EPAP when the following events occur in the DSM:

- When the DSM is booted
- When the DSM receives a DSM Status Request message from the EPAP
- When the DSM determines that it needs to download the entire database, for example, if the DSM determines that the RTDB needs to be downloaded (for instance, if the database is totally corrupted), or if a craftsperson requests that the database be reloaded
- When the DSM starts receiving DB downloads or DB updates. When the DSM card(s) starts downloading the RTDB, or if the DSM starts accepting database updates, it needs to send a status message informing the EPAP of the first record received. This helps the EPAP keep track of downloads in progress.

### *DSM Status Messages Fields*

The DSM status message provides the following information to the EPAP:

- **DSM Memory Size.** When the DSM is initialized, it determines the amount of applique memory present. The EPAP uses the value to determine if the DSM has enough memory to hold the RTDB.  
  
Refer to the *Dimensioning Guide for EPAP Advanced DB Features Technical Reference* for important information on the dimensioning rules and the DSM database capacity requirements.
- **Load Mode Status.** This indicator indicates whether or not 80% of the IS-NR in-service normalLIMs have access to SCCP services.

## A-Port System Status Reports

Status reporting described here includes the following:

- System status
- A-Port status
- DSM memory capacity status
- Loading mode support status

### **System Status Reporting**

The **rept-stat-sys** command supports the DSM cards running the VSCCP application.

The **rept-stat-sccp** command supports the DSM cards running the VSCCP application and reports A-Port statistics.

## A-Port Status Reporting

The **rept-stat-mps** command supports A-Port system reporting. **rept-stat-mps** concentrates on reporting the status of the A-Port provisioning system. See “[Maintenance and Measurements User Interface Commands](#)”, for more details. A-Port statistics are placed in the **rept-stat-sccp** command.

## DSM Memory Capacity Status Reporting

As mentioned in the “[DSM Status Reporting to the EPAP](#)”, the DSM sends a message to the EPAP containing the amount of memory on the DSM board. The EPAP determines whether the DSM has enough memory to store the RTDB and sends an ack or nak back to the DSM indicating whether or not the DSM has an adequate amount of memory. Refer to the *Dimensioning Guide for EPAP Advanced DB Features Technical Reference* for important information on the dimensioning rules and the DSM database capacity requirements.

When the EPAP sends database updates to the DSMs, the update messages include a field that contains the new database memory requirements. Each DSM monitors the DB size requirements, and issues a minor alarm if the size of the DB exceeds 80% of its memory. If a database increases to the point that there is insufficient DSM memory, a major alarm is issued.

The **rept-stat-mps:loc=xxxx** command shows the amount of memory used by the RTDB as a percent of available DSM memory.

## Loading Mode Support Status Reporting

The OAM application determines whether or not the system is in an unstable loading mode since it knows the state of all LIM, SCCP, and DSM cards in the system. When the loading mode is unstable, the **rept-stat-sys** command reports the existence of the unstable loading mode and the specific conditions that caused it. Refer to “[Loading Mode Support](#)”, for more details.

# Code and Application Data Loading

In general, administrative updates can occur while a DSM card is loading. The DSM card should also remain in an in-transition state if the STP portion of the database has completed loading and is waiting for the RTDB to download.

## DSM Code Loading

The EAGLE 5 ISSOAM performs code loading of the DSM card.

## EPAP Application Data Loading

The A-Port feature requires that new TDM-resident data tables be loaded in addition to those currently supported by EAGLE 5 ISS. The GPL and data loading support this additional table loading while maintaining support for loading the existing EAGLE 5 ISS tables.

In order to support both RTDB and EAGLE 5 ISS data loading, the VSCCP GPL verifies its hardware configuration during initialization to determine if it has the capacity to support the RTDB.

The VSCCP GPL application data loader registers all tables for loading, independent of the A-Port feature provisioning and main board / applique hardware configuration. As a result, load requests are always identical.

During loading, multiple DSM load requests are combined into a single download, reducing the overall download time. The DSM card stores or discards RTDB table data based on whether or not it has RTDB-capable hardware for features like G-Port, G-Flex, INP, and EIR.

The OAM, on the other hand, downloads or sets memory boundaries for the A-Port options, HOMERN, and service selector tables only if the A-Port feature is provisioned. When the A-Port feature is not provisioned, the OAM does not attempt to read these tables from disk. Instead, empty tables (i.e., tables without entries) are downloaded. All other tables requested for loading are read from disk and downloaded routinely.

### ***Non- A-Port Data Initialization***

If the DSM card's hardware configuration cannot support the RTDB, the A-Port tables are marked as absent during Service Management System initialization. Memory is not reserved for the A-Port table data. Also, A-Port tables are registered with the application data loader (ADL) specifying a data discard function. A-Port table data is discarded during loading by the ADL discard function, rather than storing it in memory.

### ***A-Port Data Initialization***

If the DSM card detects A-Port-capable hardware, the A-Port tables are registered with ADL specifying a data load function. Any A-Port table data downloaded are stored in memory during loading.

### ***EPAP-DSM Loading Interface***

The DSM must convey to the EPAP that it needs to download the RTDB. This occurs when the DSM sends a Full Download Request message to the EPAP.

### ***Loading Mode Support***

No more than 16 LIMs can be serviced by each SCCP (or VSCCP) card.

### ***80% Threshold of Support***

Loading mode is based on the ability of the system to provide SCCP service to at least 80% of the LIMs.

### ***VSCCP Capacity***

An insufficient number of VSCCP cards that are is-nr or oos-mt-dsbl relative to 80% of the number of provisioned LIMs is called a “failure to provide adequate SCCP capacity.”

### ***Insufficient SCCP Service***

It is also possible for LIMs or VSCCP cards to be inhibited or to have problems that prevent them from operating normally. If enough VSCCP cards are out of service, it may not be possible for the remaining is-nr VSCCP cards to service at least 80% of the number of is-nr LIMs. This is called “insufficient SCCP service.” When this occurs, some of the LIMs are denied SCCP service. It is possible to inhibit LIMs to bring the ratio back to 16:1 (or better).

### *Conditions That Create an Unstable Loading Mode*

Current system implementation interrupts and aborts card loading upon execution of an STP database **chg** command. Loading mode support denies the execution of EAGLE 5 ISS database **chg** commands when the system is in an unstable loading mode. An unstable loading mode exists when any of the following conditions are true:

- The system's maintenance baseline has not been established.
- Less than 80% of the number of LIMs provisioned are is-nr or oos-mt-dsblld.
- The number of is-nr and oos-mt-dsblld sccp cards is insufficient to service at least 80% of all provisioned LIMs.
- Insufficient SCCP service occurs when an insufficient number of is-nr VSCCP cards are available to service at least 80% of the number of is-nr LIMs.
- LIM cards are being denied SCCP service and any VSCCP cards are in an abnormal state (oos-mt, is-anr).

### *Actions Taken When the System is in an Unstable Loading Mode*

- No affect on RTDB downloads or updates.

Unstable loading mode has no impact on RTDB downloads or the stream of RTDB updates.

- **rept-stat-sys** reports unstable loading mode.

When the loading mode is unstable, the **rept-stat-sys** command reports the existence of the unstable loading mode and the specific trigger that caused it.

- No STP database updates allowed.

When in an unstable loading mode, the EAGLE 5 ISS does not accept STP database updates. When updates are rejected, the reason is given as: E3112 Cmd Rej: Loading Mode unstable due to SCCP service is deficient.

The **inh-card** and **alw-card** commands can be used to alter SCCP service levels to achieve the 80% threshold. This can be repeated for each card until the system is able to supply SCCP services to at least 80% of the is-nr LIMs. The remaining 20% LIM or supporting VSCCP cards may remain out of service until the stream of database updates ceases. This stream of updates can be temporarily interrupted to allow the remaining 20% of the system to come in service.

Once an STP database has been loaded, that database can be updated (as long as the system is not in an unstable loading mode). However, if an STP update comes in during STP database loading, the DSM aborts the current loading, issues a class 01D7 orbit, and reboots. [Figure 5-1](#) shows an example.

**Figure 5-1.** Obit Message for Abort of Card Loading

```

tekelecstp 97-04-08 12:29:04 EAGLE 35.0.0

Card 1317 Module RADB_MGR.C Line 337 Class 01d7
Card 1317 Module RADB_MGR.C Line 337 Class 01d7
Register Dump :
 EFL=00000246 CS =0058 EIP=0000808d SS =0060
 EAX=000a6ff3 ECX=000a0005 EDX=00000000 EBX=000a6fa0
 ESP=00108828 EBP=0010882c ESI=001f1e10 EDI=00000000
 DS =0060 ES =0060 FS =0060 GS =0060

Stack Dump :
[SP+1E]=001f [SP+16]=0000 [SP+0E]=000a [SP+06]=0010
[SP+1C]=1e10 [SP+14]=0004 [SP+0C]=6fa0 [SP+04]=8850
[SP+1A]=0010 [SP+12]=001f [SP+0A]=0004 [SP+02]=0001
[SP+18]=886c [SP+10]=4928 [SP+08]=7ec3 [SP+00]=504b

User Data Dump :

14 02 fa ed 01 01 1d 01 5a 01 00 Z..

Report Date:97-04-08 Time:12:29:04

```

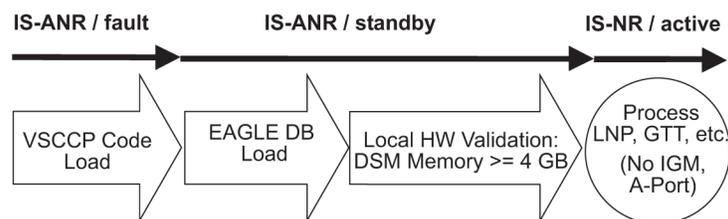
***Using the force Option***

Use the force option to execute commands that would put the system in unstable loading mode. If executing the **ent-card** or **inh-card** commands would cause the system to enter an unstable loading mode, use the force option on the command.

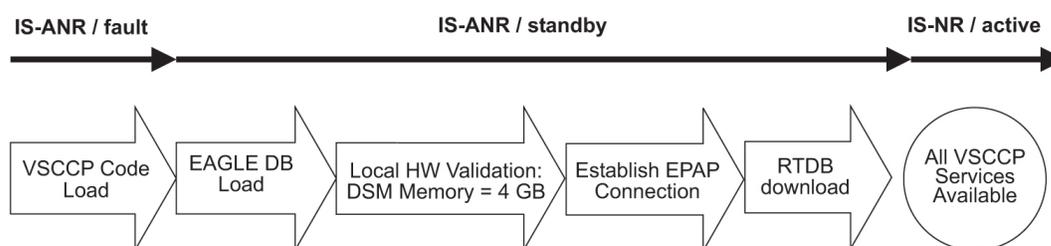
**State Transitions during Start-Up**

Figures [Figure 5-2](#) through [Figure 5-8](#) show the transitions that a DSM card goes through as it boots, loads code and data, and runs various VSCCP services. These figures do not illustrate every possible situation, but they do include the most common scenarios involving the A-Port feature.

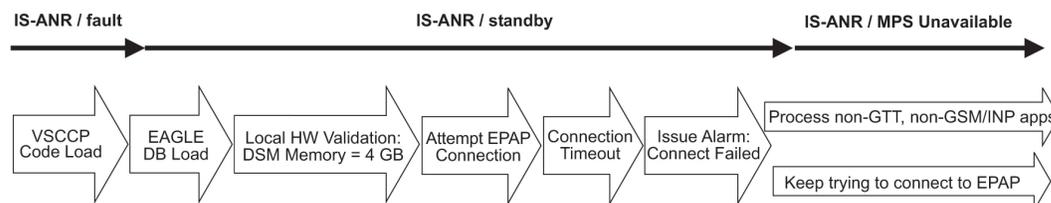
In [Figure 5-2](#), the A-Port feature is not enabled, and the DSM card can operate in TSM emulation mode, although it does not provide A-Port operation.

**Figure 5-2.** A-Port Not Enabled, DSM Running in TSM Emulation

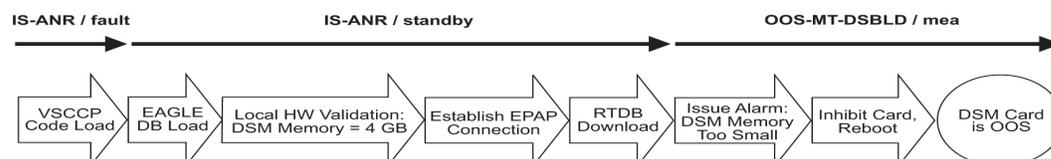
In [Figure 5-3](#), the A-Port feature is enabled, and the DSM card memory is 4 GB and is connected to the EPAP. A normal DSM card operating sequence occurs, providing A-Port service.

**Figure 5-3.** A-Port Enabled, Normal Operating Sequence

In [Figure 5-4](#), the A-Port feature is enabled, the DSM card memory is 4 GB, but the DSM card is unable to connect EPAP; the A-Port cannot begin operation.

**Figure 5-4.** A-Port Enabled, but DSM Not Connected to EPAP

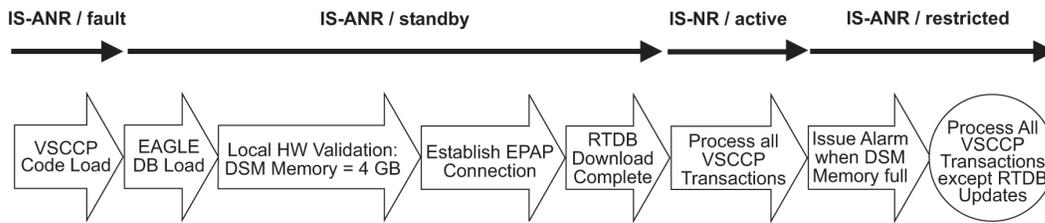
In [Figure 5-5](#), the A-Port feature is enabled, the DSM card has the required 4 GB memory and is connected to the EPAP, but the DSM card is too small for the required database; A-Port cannot begin operation. Refer to the *Dimensioning Guide for EPAP Advanced DB Features Technical Reference* for important information on the dimensioning rules and the DSM database capacity requirements.

**Figure 5-5.** A-Port Enabled, but DSM Memory Insufficient for Database

In [Figure 5-6](#), the A-Port feature is enabled, the DSM card is connected to the EPAP, but the RTDB grows eventually to exceed the capacity of the DSM card memory, despite its memory size of 4 GB (an alarm is issued when the DSM memory becomes full from the RTDB update). The A-Port cannot begin operation. Refer to the

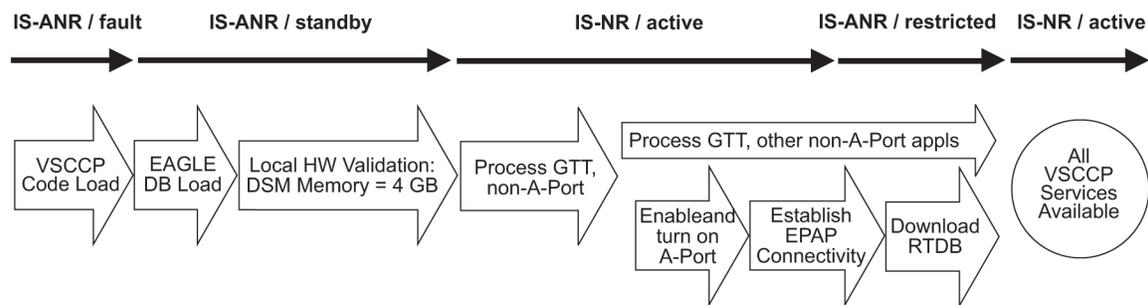
*Dimensioning Guide for EPAP Advanced DB Features Technical Reference* for important information on the dimensioning rules and the DSM database capacity requirements.

**Figure 5-6.** A-Port Enabled, but Database Exceeds DSM Memory



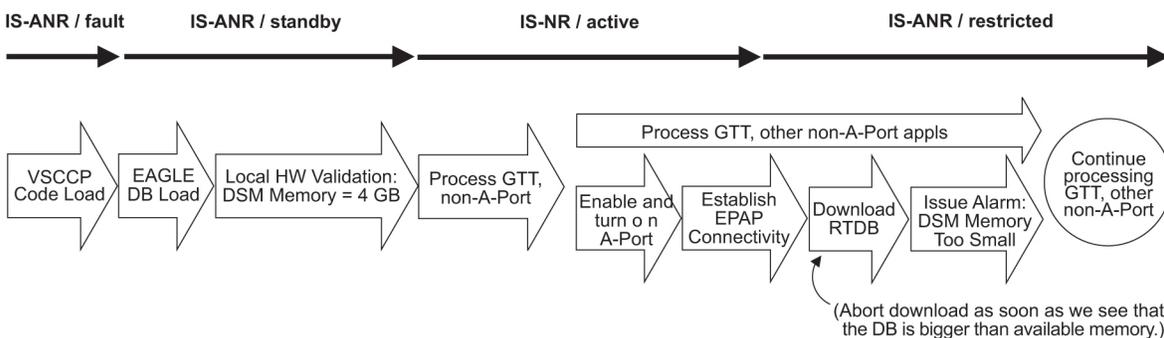
In [Figure 5-7](#), the A-Port feature is not initially enabled; the DSM card memory is 4 GB but no EPAP connection; the DSM card is running other applications when the A-Port feature is enabled and turned on; the DSM has sufficient memory to provide A-Port service.

**Figure 5-7.** A-Port Not Enabled at First, but then Activated on DSM



In [Figure 5-8](#), the A-Port feature is not initially enabled; the DSM card memory is 4 GB but no EPAP connection, and is running other applications when the A-Port feature is turned on. However, the DSM card memory is insufficient for the needed database, and the cannot provide A-Port operation. Refer to the *Dimensioning Guide for EPAP Advanced DB Features Technical Reference* for important information on the dimensioning rules and the DSM database capacity requirements.

**Figure 5-8.** A-Port Activation Unsuccessful due to Insufficient Database



## A-Port Alarms

All A-Port related UAMs are output to the Maintenance Output Group. The *Maintenance Manual* contains a complete description of all UAMs. [Table 5-1](#) contains a listing of UAMs used to support the A-Port feature.

Refer to the *EAGLE 5 ISS Maintenance Manual* for more information and corrective procedures for the EAGLE 5 ISS related alarms. Refer to the *MPS Platform Software and Maintenance Manual* for more information and corrective procedures for the MPS related alarms.

**Table 5-1. A-Port Related UAMs**

| UAM  | Severity | Message Text                           | MPS or EAGLE 5 ISS |
|------|----------|----------------------------------------|--------------------|
| 0013 | Major    | Card is isolated from system           | EAGLE 5 ISS        |
| 0084 | Major    | IP Connection Unavailable              | EAGLE 5 ISS        |
| 0085 | None     | IP Connection Available                | EAGLE 5 ISS        |
| 0099 | Major    | Incompatible HW for provisioned slot   | EAGLE 5 ISS        |
| 0250 | None     | MPS available                          | MPS                |
| 0261 | Critical | MPS unavailable                        | MPS                |
| 0328 | None     | SCCP is available                      | EAGLE 5 ISS        |
| 0329 | None     | SCCP capacity normal, card(s) abnormal | EAGLE 5 ISS        |
| 0330 | Major    | SCCPTPS Threshold exceeded             | EAGLE 5 ISS        |
| 0331 | Critical | SCCP is not available                  | EAGLE 5 ISS        |
| 0335 | None     | SCCP is removed                        | EAGLE 5 ISS        |
| 0336 | Major    | LIM(s) have been denied SCCP service   | EAGLE 5 ISS        |
| 0370 | Critical | Critical Platform Failure(s)           | MPS                |
| 0371 | Critical | Critical Application Failure(s)        | MPS                |
| 0372 | Major    | Major Platform Failure(s)              | MPS                |
| 0373 | Major    | Major Application Failure(s)           | MPS                |
| 0374 | Minor    | Minor Platform Failure(s)              | MPS                |
| 0375 | Minor    | Minor Application Failure(s)           | MPS                |
| 0422 | Major    | Insufficient extended memory           | EAGLE 5 ISS        |
| 0423 | None     | Card reload attempted                  | EAGLE 5 ISS        |
| 0441 | Major    | Incorrect MBD - CPU                    | EAGLE 5 ISS        |
| 0442 | Critical | RTDB database capacity is 95% full     | EAGLE 5 ISS        |
| 0443 | Major    | RTDB database is corrupted             | EAGLE 5 ISS        |
| 0444 | Minor    | RTDB database is inconsistent          | EAGLE 5 ISS        |

| UAM  | Severity | Message Text                         | MPS or EAGLE 5 ISS |
|------|----------|--------------------------------------|--------------------|
| 0445 | None     | RTDB database has been corrected     | EAGLE 5 ISS        |
| 0446 | Major    | RTDBDatabase capacity is 80% full    | EAGLE 5 ISS        |
| 0447 | None     | RTDB database capacity alarm cleared | EAGLE 5 ISS        |
| 0448 | Minor    | RTDB database is incoherent          | EAGLE 5 ISS        |
| 0449 | Major    | RTDB resynchronization in progress   | EAGLE 5 ISS        |
| 0451 | Major    | RTDB reload is required              | EAGLE 5 ISS        |
| 0526 | None     | Service is available                 | EAGLE 5 ISS        |
| 0527 | Minor    | Service abnormal                     | EAGLE 5 ISS        |
| 0528 | Critical | Service is not available             | EAGLE 5 ISS        |
| 0529 | Critical | Service is disabled                  | EAGLE 5 ISS        |
| 0530 | None     | Service is removed                   | EAGLE 5 ISS        |

### DSM-EPAP Link

Two alarms are used to indicate the DSM-to-EPAP link status. Refer to the *Signaling Products Maintenance Manual* for more information and corrective procedures for the following alarms.

- **UAM 0084 - IP Connection Unavailable**

This message indicates that an IP application socket is out of service due to a IP link down (Ethernet problem) or due to the DSM card.

```
station1234 00-09-30 16:28:08 EAGLE 36.0.0
** 5676.0084 ** DSM B 1101 IP Connection Unavailable
```

- **UAM 0085 - IP Connection Available**

This message indicates that a previously broken link between the EPAP and DSM card is now functioning properly.

```
station1234 00-09-30 16:28:08 EAGLE 36.0.0
5676.0085 DSM B 1101 IP Connection Available
```

### MPS (EPAP) Alarms

The following alarms are output on the EAGLE 5 ISS and include an alarm data string in the output. Refer to the *MPS Platform Software and Maintenance Manual*(except where noted)for more information and corrective procedures for the following MPS related alarms.

- **UAM 0261 - MPS unavailable**

This message indicates that the EAGLE 5 ISS is unable to communicate with the MPS or the MPS has an internal failure. Refer to the *Maintenance Manual* for the corrective action procedure.

Example:

```
station1234 00-09-30 16:28:08 EAGLE 36.0.0
*C 0259.0261 *C MPS B MPS unavailable
```

- **UAM 0370 - Critical Platform Failure (s)**

This message indicates the application running in the MPS server has detected a critical platform failure. The Alarm Data in the message contains a 16-character hexadecimal string in the format of h'1xxxxxxxxxxxxxx'. This alarm will be reset when UAM #250, MPS Available is issued.

Example:

```
station1234 00-09-30 16:28:08 EAGLE 36.0.0
*C 0259.0370 *C MPS B Critical Platform Failure(s)
ALARM DATA = h'100000000000000008'
```

- **UAM 0371 - Critical Application Failure (s)**

This message indicates the application running in the MPS server has detected a critical application failure. The Alarm Data in the message contains a 16-character hexadecimal string in the format of h'2xxxxxxxxxxxxxx'. This alarm will be reset when UAM #250, MPS Available is issued.

Example:

```
station1234 00-09-30 16:28:08 EAGLE 36.0.0
*C 0259.0371 *C MPS B Critical Application Failure(s)
ALARM DATA = h'200000000000000001'
```

- **UAM 0372 - Major Platform Failure (s)**

This message indicates the application running in the MPS server has detected a major platform failure. The Alarm Data in the message contains a 16-character hexadecimal string in the format of h'3xxxxxxxxxxxxxx'. This alarm will be reset when UAM #250, MPS Available is issued.

Example:

```
station1234 00-09-30 16:28:08 EAGLE 36.0.0
** 0259.0372 ** MPS B Major Platform Failure(s)
ALARM DATA = h'300000000000000002'
```

- **UAM 0373 - Major Application Failure (s)**

This message indicates the application running in the MPS server has detected a major application failure. The Alarm Data in the message contains a 16-character hexadecimal string in the format of h'4xxxxxxxxxxxxxx'. This alarm will be reset when UAM #250, MPS Available is issued.

Example:

```
station1234 00-09-30 16:28:08 EAGLE 36.0.0
** 0259.0373 ** MPS B Major Application Failure(s)
ALARM DATA = h'400000000000000008'
```

- **UAM 0374 - Minor Platform Failure (s)**

This message indicates the application running in the MPS server has detected a minor platform failure. The Alarm Data in the message contains a 16-character hexadecimal string in the format of h'5xxxxxxxxxxxxxx'. This alarm will be reset when UAM #250, MPS Available is issued.

Example:

```
station1234 00-09-30 16:28:08 EAGLE 36.0.0
```

```
* 0259.0374 * MPS B Minor Platform Failure(s)
ALARM DATA = h'5000000000000004'
```

- **UAM 0375** - Minor Application Failure (s)

This message indicates the application running in the MPS server has detected a minor application failure. The Alarm Data in the message contains a 16-character hexadecimal string in the format of h'6xxxxxxxxxxxxxx'. This alarm will be reset when UAM #250, MPS Available is issued.

Example:

```
station1234 00-09-30 16:28:08 EAGLE 36.0.0
* 0259.0375 * MPS B Minor Application Failure(s)
ALARM DATA = h'6000000000000001'
```

## Card Related MPS Alarms

The following alarms are output on the EAGLE 5 ISS. Refer to the *Signaling Products Maintenance Manual* for more information and corrective procedures for the following card related MPS alarms.

- **UAM 0013** - Card is isolated from system

This indicates a card has become isolated and is unable to communicate to other cards in the system. This could be caused by a defective card, a power failure occurred on the card, or the system software has ordered a reset.

This also appears when the card has been manually reset by a command.

Example:

```
station1234 00-04-30 16:28:08 EAGLE 36.0.0
** 0012.0013 ** CARD 1101 SCCP Card is isolated from the system
ASSY SN: 102199815a1234
```

- **UAM 0099** - Incompatible HW for provisioned slot

This indicates a DCM or DSM card does not have an extended memory. This card is automatically inhibited.

Example:

```
station1234 00-04-30 16:28:08 EAGLE 36.0.0
** 0012.0099 ** CARD 1101 VSCCP Incompatible hardware for provisioned slot
ASSY SN: 102199815a1234
```

- **UAM 0422** - Insufficient extended memory

At least one SCCP card does not have enough memory for the A-Port application. Loading of the SCCP card is automatically inhibited.

Example:

```
station1234 00-04-30 16:28:08 EAGLE 36.0.0
** 0012.0422 ** CARD 1108 SCCP Insufficient extended memory
```

- **UAM 0423** - Card reload attempted

Card loading is no longer inhibited. The once inhibited card is now attempting to load.

Example:

```
station1234 00-04-30 16:28:08 EAGLE 36.0.0
0012.0423 CARD 1108 SCCP Card reload attempted
```

- **UAM 0441** - Incorrect main board - CPU

A DSM card does not have the required hardware configuration for the A-Port application.

Example:

```
station1234 00-04-30 16:28:08 EAGLE 36.0.0
** 0012.0441 ** CARD 1108 VSCCP Incorrect MBD - CPU
```

- **UAM 0442** - Insufficient RTDB database capacity

At least one DSM card does not have at least 4Gb of memory or does not have enough capacity for the RTDB. Loading of the DSM card is automatically inhibited.

Example:

```
station1234 00-04-30 16:28:08 EAGLE 36.0.0
*C 0012.0442 *C CARD 1108 VSCCP RTDB database capacity is 95% full
```

- **UAM 0443** - RTDB database is corrupted

A RTDB database is corrupt. The calculated checksum did not match the checksum value stored for one or more records.

Example:

```
station1234 00-04-30 16:28:08 EAGLE 36.0.0
** 0012.0443 ** CARD 1108 VSCCP RTDB database is corrupted
```

- **UAM 0444** - RTDB database is inconsistent

One or more DSM card's real time database is not identical to the current real time database on the active EPAP fixed disks.

Example:

```
station1234 00-04-30 16:28:08 EAGLE 36.0.0
* 0012.0444 * CARD 1108 VSCCP RTDB database is inconsistent
```

- **UAM 0445** - RTDB database has been corrected

This message indicates that a problem with the RTDB has been corrected.

Example:

```
station1234 00-04-30 16:28:08 EAGLE 36.0.0
0012.0445 CARD 1108 VSCCP RTDB database has been corrected
```

- **UAM 0446** - RTDBDatabase capacity is 80% full

This message is displayed when a DSM card detects that its daughterboard memory is at least 80% full.

Example:

```
station1234 00-04-30 16:28:08 EAGLE 36.0.0
** 0012.0446 ** CARD 1108 VSCCP RTDB Database capacity is 80% full
```

- **UAM 0447** - RTDB database capacity alarm cleared

This message indicates that a problem with the RTDB memory has been corrected.

Example:

```
station1234 00-04-30 16:28:08 EAGLE 36.0.0
0012.0447 CARD 1108 VSCCP RTDB database capacity alarm cleared
```

- **UAM 0448** - RTDB database is incoherent

This message indicates that the RTDB database download is in-process.

Example:

```
station1234 00-04-30 16:28:08 EAGLE 36.0.0
* 0012.0448 * CARD 1108 VSCCP RTDB database is incoherent
```

- **UAM 0449** - RTDB resynchronization in progress

This message indicates that the MPS database resynchronization is in-process.

Example:

```
station1234 00-04-30 16:28:08 EAGLE 36.0.0
** 0012.0449 ** CARD 1108 VSCCP RTDB resynchronization in progress
```

- **UAM 0451** - RTDB reload is required

The RTDB database on the DSM card needs to be reloaded because the resynch log does not contain all of the required updates.

Example:

```
station1234 00-04-30 16:28:08 EAGLE 36.0.0
** 0012.0451 ** CARD 1108 VSCCP RTDB reload is required
```

## A-Port Subsystem Alarms

The following alarms are output on the EAGLE 5 ISS for the A-Port subsystem.

- **UAM 0526** - Service is available

A problem with the specified SCCP service has been corrected. All SCCP cards are IS-NR and have a service status of Active.

Example:

```
station1234 00-04-30 16:28:08 EAGLE 36.0.0
0056.0526 MNP SERVICE Service is available
```

- **UAM 0527** - Service abnormal

One or more of the cards providing the specified SCCP service do not have a service status of Active.

Example:

```
station1234 00-04-30 16:28:08 EAGLE 36.0.0
* 0056.0527 * MNP SERVICE Service abnormal
```

- **UAM 0528** - Service is not available

The A-Port service is not available. No IS-NRSCCP cards are associated the A-Port service. No SCCP cards providing the A-Port service have a service status of Active.

Example:

```
station1234 00-04-30 16:28:08 EAGLE 36.0.0
*C 0056.0528 *C MNP SERVICE Service is not available
```

- **UAM 0529** - Service is disabled

The A-Port service has been manually disabled with the chg-sccp-serv command. All IS-NR cards providing the A-Port have service status of Offline.

Example:

```
station1234 00-04-30 16:28:08 EAGLE 36.0.0
*C 0056.0529 *C MNP SERVICE Service is disabled
```

- **UAM 0530** - Service is removed

The A-PortSCCP service is not equipped. No SCCP cards are configured with the A-Port service.

Example:

```
station1234 00-04-30 16:28:08 EAGLE 36.0.0
0056.0530 MNP SERVICE Service is removed
```

## A-Port UIMs

The EAGLE 5 ISS Maintenance Manual contains a complete description of all UIM text and formats. If A-Port is provisioned, then the following UIMs ([Table 5-2](#)) are used.

**Table 5-2. A-Port UIMs**

| UIM  | Text                                     | Description                                                       | Action                                                             | Output Group (UI Output Direction) |
|------|------------------------------------------|-------------------------------------------------------------------|--------------------------------------------------------------------|------------------------------------|
| 1035 | SCCP rsp did not route - invalid GTI     | The SCCP response did not route due to an invalid GTI             | Use a valid GTI in the CGPA part of the query                      | gtt                                |
| 1036 | SCCP rsp did not route - invalid TT      | The SCCP response did not route due to an invalid TT              | Provision the CGPATT in the GTTTT table                            | gtt                                |
| 1037 | SCCP rsp did not route - bad Xlation     | The SCCP response did not route due to a bad translation          | Provision the CGPAGTA address in the GTT database                  | gtt                                |
| 1038 | SCCP rsp did not route - SSP not True PC | The SCCP response did not route due to SSP is not true point code | Use the true point code in the CGPA point code or OPC of the query | gtt                                |

| UIM  | Text                                    | Description                                                                                                                                                          | Action                                                                                       | Output Group (UI Output Direction) |
|------|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------------------------------------|
| 1039 | SCCP rsp did not route - bad Selectors  | The SCCP response did not route due to invalid selectors                                                                                                             | Provision the CGPAGTI, TT, NP, and NAI in the EGTT selector table                            | gtt                                |
| 1130 | LOCREQ rcvd - IS412GSM not provisioned  | The IS-41 to GSM Migration prefix (specified by the IS412GSM parameter) is not provisioned on this system.                                                           | The IS412GSM prefix must be specified in the GSMOPTS table.                                  | gtt                                |
| 1131 | Invalid digits in IS41MAP Digits parms  | The EAGLE 5 ISS encountered an error in decoding the digits parameter in the LocationRequest message.                                                                | Correct the digits parameter                                                                 | gtt                                |
| 1169 | SCCP rcvd inv TCAP portion              | This indicates that SCCP discarded a message because the TCAP provided in the called party address is invalid in the EAGLE 5 ISS.                                    | No action is necessary.                                                                      | application subsystem              |
| 1227 | SCCP did not route - DPC not in MAP tbl | This message indicates that SCCP did not route a message because the destination point code was not in the mated application (MAP) table. The message was discarded. | If the DPC indicated in the message should not be routed to, no further action is necessary. | gtt                                |
| 1230 | SCCP did not route - SS not in MAP tbl  | This message indicates that SCCP did not route a message because the destination subsystem was not in the Mated Application (MAP) table. The message was discarded.  | No action is necessary.                                                                      | gtt                                |
| 1242 | Conv to intl num - Dflt CC not found    | Conversion to international number failed because default CC was not found                                                                                           | Define the default CC with <b>chg-stpopts :defcc=xxx</b>                                     | application subsystem              |
| 1243 | Conv to intl num - Dflt NC not found    | Conversion to international number failed because default NC was not found                                                                                           | Define the default NDC with <b>chg-stpopts :defndc=xxx</b>                                   | application subsystem              |
| 1246 | Invalid length of conditioned digits    | Invalid length of conditioned international number is less than 5 or greater than 15)                                                                                | Use an international number with length in the acceptable range                              | application subsystem              |
| 1256 | MNP Circular Route Detected             | This message indicates the network has incorrect number portability data for a subscriber.                                                                           | Verify and update number portability data.                                                   | application subsystem              |
| 1294 | Invalid digits in MAPMSISDN parameter   | No digits found in MAPMSISDN parameter                                                                                                                               | Specify valid digits in the MSISDN                                                           | application subsystem              |
| 1295 | Translation PC is EAGLE's               | PC translation is invalid because it is one of EAGLE 5 ISS's PCs                                                                                                     | Change the point code                                                                        | application subsystem              |
| 1296 | Translation PC type is ANSI             | PC translation is invalid because it is an ANSI point code                                                                                                           | Change the point code                                                                        | application subsystem              |
| 1297 | Invalid length of prefix/suffix digits  | Attempted digit action of prefixing entity ID is invalid because combined length of entity ID and GT digits was greater than 21 digits                               | Change the attempted digit action or decrease the length of the entity ID and/or GT digits   | application subsystem              |

| UIM  | Text                                     | Description                                                                                                          | Action                                                                                                                                                                                                                    | Output Group (UI Output Direction) |
|------|------------------------------------------|----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|
| 1341 | SRI revd - GSM2IS41 not provisioned      | MIGRPFIX=SINGLE and GSM2IS41 prefix is NONE. The GSM to IS-41 Migration prefix is not provisioned on this system.    | The GSM2IS41 prefix must be specified in the GSMOPTS table.                                                                                                                                                               | gtt                                |
| 1374 | SMS NP destination address decode failed | An error was detected during decode of SMS message destination address.                                              | The message should be analyzed to determine the error, and the originating node should be contacted to send corrected message.                                                                                            | application subsystem              |
| 1375 | SMS NP failed to modify TCAP message     | The formatted outbound digit string length generated by SMS NP for encoding the TCAP message exceeded system limits. | The message and outbound digits formatting options should be analyzed to determine the error and the originating node or the requested outbound digit formatting option should be modified to correct the encoding error. | application subsystem              |
| 1376 | SMS NP outbound digits leng exceed limit | During processing of SMS message, the formatted outbound digit string length exceeded limit for number of digits.    | The message and the digit format provisioning should be analyzed to determine the error and the originating node or the requested outbound digit formatting option should be modified to correct the encoding error.      | application subsystem              |

## A-Port Related Measurements

Refer to the *Maintenance Manual* for for detailed measurement usage information.

### OAM Based Measurements

A-Port measurements are available via the FTA (File Transfer Area) feature and not directly via EAGLE 5 ISS terminals. The File Transfer Area feature supports the transfer of file data between an EAGLE 5 ISS and a remote computer. It provides the capability to download files from the EAGLE 5 ISS via a data communications link. The data communications link is accessed through a dial-up modem using one of the EAGLE 5 ISS's RS-232 I/O ports. The link is illustrated in [Figure 2-7 "Dial-Up PPP Network"](#).

See the *Commands Manual* for details about using FTA commands, which are:

- Activate File Transfer: **act-file-trns**
- Copy to or from Transfer Area: **copy-fta**
- Delete Entry from File Transfer Area: **dlt-fta**
- Display File Transfer Area: **disp-fta-dir**

### Measurements Platform

The Measurements Platform (MP) is required for an EAGLE 5 ISS with more than 700 links. It provides a dedicated processor for collecting and reporting EAGLE 5 ISS, LNP, INP, G-FLEX, EIR, Migration, A-Port, and G-PORT measurements data. The interface to the customer's network supports the FTP transfer of Measurements reports to an FTP server. Following collection, scheduled reports are automatically generated and transferred to the customer's FTP server via the FTP interface.

**NOTE: Existing FTP file server reports are overwritten by subsequent requests that produce the identical file name.**

Reports can be scheduled or printed on-demand. Scheduled and on-demand reports are accessible by the following administrative commands:

- **chg-measopts** - Used to enable or disable the automatic generation and FTP transfer of scheduled measurement reports to the FTP server.
- **rept-stat-meas** - Reports the status of the measurements subsystem including card location and state, Alarm level, and Subsystem State.
- **rept-ftp-meas** - Manually initiates generation and FTP transfer of a measurements report from the MCPM to the FTP server.
- **rtrv-measopts** - Generates a user interface display showing the enabled/disabled status of all FTP scheduled reports.

The following Pegs per System measurement peg counts of MSUs (Message Signaling Units) are supported for the A-Port feature ([Table 5-3](#)).

**Table 5-3. Pegs for Per System A-Port Measurements**

| Event Name | Description                                                            | Type   | Unit      |
|------------|------------------------------------------------------------------------|--------|-----------|
| APSMSRCV   | Number of SMS Request messages received                                | System | Peg count |
| APSMSREL   | Number of SMS Request messages relayed                                 | System | Peg count |
| GPSRRCV    | Number of call-related SRI messages received                           | System | Peg count |
| GPSRGTT    | Number of call-related SRI messages that fell through to GTT           | System | Peg count |
| GPSRREP    | Number of call-related SRI messages that received A-Port service       | System | Peg count |
| GPSRERR    | Number of call-related messages that cause errors and SRI Negative ACK | System | Peg count |
| IS41LRERR  | Number of IS-41 Location Request - Error response messages sent.       | System | Peg count |
| IS41LRMRCV | Number of IS-41 Location Request messages received.                    | System | Peg count |

| Event Name | Description                                                    | Type   | Unit      |
|------------|----------------------------------------------------------------|--------|-----------|
| IS41LRRTRN | Number of IS-41 Location Request - Return Result messages sent | System | Peg count |

The following Pegs per SSP measurement peg counts of MSUs are supported for the A-Port feature ([Table 5-4](#)).

**Table 5-4. Pegs for Per SSP A-Port Measurements**

| Event Name | Description                                                             | Type       | Unit      |
|------------|-------------------------------------------------------------------------|------------|-----------|
| APLRACK    | Number of call related LOCREQ messages acknowledged.                    | Point Code | Peg count |
| APLRRLY    | Number of call related LOCREQ messages relayed                          | Point Code | Peg count |
| APNOCL     | Number of non-call non-LOCREQ related messages relayed                  | Point Code | Peg count |
| APNOCLGT   | Number of non-call non-LOCREQ related messages that fell through to GTT | Point Code | Peg count |
| GPSRACK    | Number of call-related SRI responses                                    | Point Code | Peg count |
| GPSRRLY    | Number of call-related SRI messages relayed                             | Point Code | Peg count |

The following Pegs for both Per System and Per SSP measurement peg counts of MSUs are supported for the A-Port feature ([Table 5-5](#)).

**Table 5-5. Pegs for Per System and Per SSP A-Ports Measurements**

| Event Name | Description                                                  | Type               | Unit      |
|------------|--------------------------------------------------------------|--------------------|-----------|
| GPNOCL     | Number of non-call-related messages relayed by G-Port        | System, Point Code | Peg count |
| GPNOCLGT   | Number of non-call-related messages that fell through to GTT | System, Point Code | Peg count |

## Measurement Reports

Measurements are available with these report commands. Refer to the *Commands Manual* for detailed usage information.

The commands are specified as follows, where **xxx** is a three-letter abbreviation for a day of the week (MON, TUE, WED, THU, FRI, SAT, or SUN) and **yy** is an hour of the day:

- OAM Daily **rept-meas:type=mtcd:enttype=np**
- OAM hourly: **rept-meas:type=mtch:enttype=np**
- MP daily: **rept-ftp-meas:type=mtcd:enttype=np**
- MP hourly: **rept-ftp-meas:type=mtch:enttype=np**

# Glossary

## A

|        |                                          |
|--------|------------------------------------------|
| ACK    | Data Acknowledgement                     |
| ACM    | Address Complete Message                 |
| ACM    | <i>Application Communications Module</i> |
| ADL    | Application Data Loader                  |
| AINPQ  | ANSI-41 INP Query                        |
| ANSI   | American National Standards Institute    |
| A-Port | ANSI-41 Mobile Number Portability        |
| AS     | Application Server                       |
| ASM    | Application Services Module              |

## C

|                           |                                                                                                                                                                                                                                                                                   |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CC                        | Connection Confirmed                                                                                                                                                                                                                                                              |
| CC                        | Country Code                                                                                                                                                                                                                                                                      |
| CCS7ITU                   | The generic program load and application for the ITU SS7 signaling links that is used with card types <b>limds0</b> , <b>limch</b> , <b>limocu</b> , <b>limv35</b> , <b>lime1</b> , and <b>limt1</b> .                                                                            |
| CD                        | Carrier Detect                                                                                                                                                                                                                                                                    |
| CD                        | Compact Disk                                                                                                                                                                                                                                                                      |
| CdPA                      | Called Party Address                                                                                                                                                                                                                                                              |
| CgPA                      | Calling Party Address                                                                                                                                                                                                                                                             |
| Circular Route Prevention | A G-Port MNP feature that detects instances of circular routing caused by incorrect information in one or more of the network number portability databases. If a circular route has been detected, a message will be generated by the EAGLE 5 ISS and returned to the originator. |
| CLLI                      | Common Language Location Identifier                                                                                                                                                                                                                                               |
| CPC                       | Capability Point Code                                                                                                                                                                                                                                                             |
| CPU                       | Central Processing Unit                                                                                                                                                                                                                                                           |
| CRP                       | Circular Route Prevention                                                                                                                                                                                                                                                         |
| CSR                       | Customer Service Request                                                                                                                                                                                                                                                          |

## D

|          |                                                                                                                                                                                                                                                                                                    |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Database | All data that can be administered by the user, including cards, destination point codes, gateway screening tables, global title translation tables, links, LNP services, LNP service providers, location routing numbers, routes, shelves, subsystem applications, and 10 digit telephone numbers. |
| DB       | Database                                                                                                                                                                                                                                                                                           |
| DB       | Daughter Board                                                                                                                                                                                                                                                                                     |
| DB       | Documentation Bulletin                                                                                                                                                                                                                                                                             |

|             |                                                                                                                                                                          |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DCB         | Device Control Block                                                                                                                                                     |
| DCM         | Database Communication Module<br>The DCM provides IP connectivity for applications. Connection to a host is achieved through an ethernet LAN using the TCP/IP protocol.  |
| DEFCC       | Default Country Code                                                                                                                                                     |
| Destination | The node to which the signaling link traffic is routed. This destination is identified by a point code, either a full point code or a cluster point code.                |
| DN          | Directory number<br>A DN can refer to any mobile or wireline subscriber number, and can include MSISDN, MDN, MIN, or the wireline Dialed Number.                         |
| DPC         | Destination Point Code<br>The point code of the signaling point to which the MSU is routed. This point code can be adjacent to the EAGLE 5 ISS, but does not have to be. |
| DSM         | Database Service Module.                                                                                                                                                 |

## E

|                                   |                                                                                                                                                                                                                                                            |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EGTT                              | Enhanced Global Title Translation                                                                                                                                                                                                                          |
| EIR                               | Equipment Identity Register                                                                                                                                                                                                                                |
| Enhanced Global Title Translation | A feature that is designed for the signaling connection control part (SCCP) of the SS7 protocol. The EAGLE 5 ISS uses this feature to determine to which service database to send the query message when a Message Signaling Unit (MSU) enters the system. |
| EPAP                              | EAGLE Provisioning Application Processor                                                                                                                                                                                                                   |
| ESD                               | Electro-Static Discharge                                                                                                                                                                                                                                   |
| ESN                               | Electronic Serial Number                                                                                                                                                                                                                                   |
| ETSI                              | European Technical Standards Institute                                                                                                                                                                                                                     |

## F

|     |                         |
|-----|-------------------------|
| FAK | Feature Access Key.     |
| FTA | File Transfer Area.     |
| FTP | Feature Test Plan       |
| FTP | File Transfer Protocol. |

## G

|         |                                                                                                                                                                                                        |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GB      | Gigabyte — 1,073,741,824 bytes                                                                                                                                                                         |
| G-Flex  | GSM Flexible numbering<br>A feature that allows the operator to flexibly assign individual subscribers to HLRs and route signaling messages, based on subscriber numbering, accordingly.               |
| GPL     | Generic Program Load                                                                                                                                                                                   |
| G-Port  | GSM Mobile Number Portability<br>A feature that provides mobile subscribers the ability to change the GSM subscription network within a portability cluster, while retaining their original MSISDN(s). |
| GPSM    | General Purpose Service Module                                                                                                                                                                         |
| GPSM-II | General Purpose Service Module                                                                                                                                                                         |
| GSM     | Global System for Mobile Communications                                                                                                                                                                |

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|      |                                    |
|------|------------------------------------|
| GT   | Global Title Routing Indicator     |
| GTA  | Global Title Address               |
| GTAI | Global Title Address Information   |
| GTI  | Global Title Translation Indicator |
| GTT  | Global Title Translation.          |
| GUI  | Graphical User Interface           |

### H

|        |                                    |
|--------|------------------------------------|
| HLR    | Home Location Register             |
| HOMERN | Home Network Routing Number Prefix |
| HRN    | Home Routing Number                |
| HW     | Hardware                           |

### I

|                 |                                                                                                                                                       |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| ID              | Identity                                                                                                                                              |
| ID              | Identity, identifier                                                                                                                                  |
| IEC             | Inter-Exchange Carrier                                                                                                                                |
| IEC             | International escape code                                                                                                                             |
| IGM             | IS41 GSM Migration                                                                                                                                    |
| IMSI            | International Mobile Station Identifier                                                                                                               |
| IMT             | Inter-Module-Transport<br>The communication software that operates the inter-module-transport bus on all cards except the LIMATM, DCM, DSM, and HMUX. |
| IN              | Intelligent Network                                                                                                                                   |
| INAP            | Intelligent Network Application Protocol                                                                                                              |
| INP             | INAP-based Number Portability                                                                                                                         |
| INP             | Intelligent Network (IN) Portability                                                                                                                  |
| INP             | INAP-based Number Portability                                                                                                                         |
| IP              | Intelligent Peripheral                                                                                                                                |
| IP              | Internet Protocol                                                                                                                                     |
| IP <sup>7</sup> | Tekelec's Internet Protocol to SS7 Interface                                                                                                          |
| IS-41           | Interim Standard 41, same as and interchangeable with ANSI-41.                                                                                        |
| IS-ANR          | In Service - Abnormal<br>The entity is in service but only able to perform a limited subset of its normal service functions.                          |
| IS-NR           | In Service - Normal                                                                                                                                   |
| ISS             | Integrated Signaling System                                                                                                                           |
| ITU             | International Telecommunications Union                                                                                                                |

### K

|     |                            |
|-----|----------------------------|
| KSR | Keyboard Send/Receive Mode |
|-----|----------------------------|

## L

|        |                          |
|--------|--------------------------|
| LIM    | Link Interface Module    |
| Link   | Signaling Link           |
| LNP    | Local Number Portability |
| LOCREQ | Location Request Message |

## M

|                        |                                                                                                                                                                                              |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MAP                    | Mated Application Part                                                                                                                                                                       |
| MAP                    | Mobile Application Part                                                                                                                                                                      |
| MASP                   | Maintenance and Administration Subsystem Processor                                                                                                                                           |
| Mated Application      | The point codes and subsystem numbers of the service databases that messages are routed to for global title translation.                                                                     |
| MCPM                   | Measurement Collection and Polling Module                                                                                                                                                    |
| MDN                    | Mobile Dialed Number                                                                                                                                                                         |
| MDN                    | Mobile Directory Number                                                                                                                                                                      |
| MEA                    | Memory Extension Applique                                                                                                                                                                    |
| MEA                    | Mismatch of Equipment and Attributes                                                                                                                                                         |
| MIM                    | Multi-Channel Interface Module                                                                                                                                                               |
| MIN                    | Mobile Identification Number                                                                                                                                                                 |
| MNP                    | Mobile Number Portability                                                                                                                                                                    |
| MO                     | Magneto Optical                                                                                                                                                                              |
| MO                     | Managed Object                                                                                                                                                                               |
| MO                     | Mobile Originated                                                                                                                                                                            |
| MP                     | Measurement Platform                                                                                                                                                                         |
| MPS                    | Multi-Purpose Server                                                                                                                                                                         |
| MR                     | Message Relay                                                                                                                                                                                |
| MRN                    | Message Reference Number                                                                                                                                                                     |
|                        | Mated Relay Node                                                                                                                                                                             |
| MSISDN                 | Mobile Station International Subscriber Directory Number<br>The MSISDN is the number dialed by someone trying to reach the subscriber.                                                       |
| MSRN                   | Mobile Station Roaming Number                                                                                                                                                                |
| MSU                    | Message Signaling Unit                                                                                                                                                                       |
| MTP                    | Message Transfer Part                                                                                                                                                                        |
| MTP                    | Module Test Plan                                                                                                                                                                             |
| MTP Msgs for SCCP Apps | A feature that supports MTP-routed SCCP messages for the ANSI-41 Mobile Number Portability feature and the IS41 GSM Migration feature. The feature supports both LOCREQ and SMSREQ messages. |

## N

|     |                             |
|-----|-----------------------------|
| NAI | Nature of Address Indicator |
| NC  | Network Cluster             |
| NC  | Network Code                |

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|      |                             |
|------|-----------------------------|
| NDC  | Network destination code    |
| NDC  | Network Data Collection     |
| NE   | Network Element             |
| NE   | North East                  |
| NEC  | National Escape Code        |
| NP   | Number Plan                 |
| NP   | Numbering Plan              |
| NP   | Number Portability          |
| NPDB | Number Portability Database |

### O

|        |                                             |
|--------|---------------------------------------------|
| OAM    | Operations, Administration, and Maintenance |
| OOS-MT | Out of Service - Maintenance                |
| OPC    | Originating Point Code                      |
| OPS    | Operator Provisioning System                |
| OS     | Operating System                            |
| OS     | Operations Systems                          |

### P

|       |                                         |
|-------|-----------------------------------------|
| PC    | Point Code.                             |
| PDB   | Provisioning Database                   |
| PDBA  | Provisioning Database Application       |
| PDBI  | Provisioning Database Interface         |
| PPP   | Point-to-Point Protocol                 |
| PPSMS | Prepaid Short Message Service           |
| PPSMS | Prepaid Short Message Service Intercept |
| PT    | Portability Type                        |

### R

|            |                                                                                                                                                                                                                                                                                                                                                                                                         |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RC         | Relative Cost                                                                                                                                                                                                                                                                                                                                                                                           |
| RC         | Restriction Criteria                                                                                                                                                                                                                                                                                                                                                                                    |
| Restricted | The network management state of a route, link set, or signaling link that is not operating properly and cannot carry all of its traffic. This condition only allows the highest priority messages to sent to the database entity first, and if space allows, followed by the other traffic. Traffic that cannot be sent on the restricted database entity must be rerouted or the traffic is discarded. |
| RFC        | Request for Comment                                                                                                                                                                                                                                                                                                                                                                                     |
| RMTTP      | Reliable Multicast Transport Protocol                                                                                                                                                                                                                                                                                                                                                                   |
| RN         | Routing Number                                                                                                                                                                                                                                                                                                                                                                                          |
| RNIDN      | Routing Number - International DN                                                                                                                                                                                                                                                                                                                                                                       |
| RNNDN      | Routing Number - National DN                                                                                                                                                                                                                                                                                                                                                                            |
| RNSDN      | Routing Number - Subscriber DN                                                                                                                                                                                                                                                                                                                                                                          |
| ROM        | Read Only Memory                                                                                                                                                                                                                                                                                                                                                                                        |

|       |                                    |
|-------|------------------------------------|
| Route | A path to another signaling point. |
| RS    | Requirement Specification          |
| RTDB  | DSM Real-time database             |

## S

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SAT                                 | Supervisory Audio Tone                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| SCCP                                | Signaling Connection Control Part                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| SCM                                 | System Configuration Manager<br>System Configuration Matrix.                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Self Point Code                     | The True, Secondary, or Capability Point Code of the EAGLE.                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Service Nature of Address Indicator | An internal G-Port parameter that allows a user to specify how to interpret the signaling connection control part (SCCP) called party address (CdPA) GTA of a LOCREQ/SMSREQ message.                                                                                                                                                                                                                                                                                                                                                  |
| SMS                                 | Short Message Service                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| SMSC                                | Short Message Service Center                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| SMSREQ                              | SMS Request Message                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| SNAI                                | Service Nature of Address Indicator                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| SP                                  | Service Provider                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| SP                                  | Signaling Point                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Spare Point Code                    | The EAGLE ITU International/National Spare Point Code feature allows a network operator to use the same Point Codes across two networks (either ITU-I or ITU-N). The feature also enables National and National Spare traffic to be routed over the same linkset. The EAGLE uses the MSU Network Indicator (NI) to differentiate the same point code of one network from the other. In accordance with the SS7 standard, unique Network Indicator values are defined for Point Code types ITU-I, ITU-N, ITU-I Spare, and ITU-N Spare. |
| SRF                                 | Signaling Relay Function                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| SRI                                 | Send Routing Information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| SRI                                 | Send_Route_Information Message                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| SS                                  | Subsystem                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| SS7                                 | Signaling System #7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| SSN                                 | Subsystem Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| SSN                                 | SS7 Subsystem Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| SSP                                 | Subsystem Prohibited network management message.<br>Subsystem Prohibited SCCP (SCMG) management message. (CER)<br>Service Switching Point (SS7 Network)                                                                                                                                                                                                                                                                                                                                                                               |
| STP                                 | Signal Transfer Point.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

## T

|        |                                                 |
|--------|-------------------------------------------------|
| TCAP   | Transaction Capabilities Application Part       |
| TCP    | Transfer-Cluster-Prohibited                     |
| TCP    | Transfer Control Protocol                       |
| TCP    | Transmission Control Protocol                   |
| TCP/IP | Transmission Control Protocol/Internet Protocol |
| TDM    | Terminal Disk Module.                           |

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|     |                             |
|-----|-----------------------------|
| TPS | Transactions Per Second     |
| TSM | Translation Service Module  |
| TSM | Translation Services Module |
| TT  | Translation Type.           |
| TVG | Group Ticket Voucher        |

### U

|      |                                 |
|------|---------------------------------|
| UAM  | Unsolicited Alarm Message.      |
| UDP  | User Datagram Protocol          |
| UDT  | Unit Data Transfer              |
| UDTS | Unit Data Transfer Service      |
| UI   | User Interface                  |
| UIM  | Unsolicited Information Message |

### V

|       |                                                                                                                                                                                                                                                                                  |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| VGTT  | Variable Length GTT<br>A feature that provides the ability to provision global title entries of varying lengths to a single translation type or GTT set. Users are able to assign global title entries of up to 10 different lengths to a single translation type or GTT set.    |
| VSCCP | VxWorks Signaling Connection Control Part<br>The application used by the DSM card to support the G-Flex, G-Port, INP, EIR, and LNP features. If the G-Flex, G-Port, INP, or LNP feature is not turned on, and a DSM card is present, the VSCCP GPL processes normal GTT traffic. |

### X

|      |                    |
|------|--------------------|
| XUDT | Extended Unit Data |
| XUDT | Extended User Data |



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