Tekelec Signaling Products Database Administration Manual - Features

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Database Administration Manual - Features

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TEKELEC

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Feature Overview

The *Database Administration Manual – Features* describes the procedures necessary for database administration personnel or translations personnel to configure the Eagle and its database to implement these features:

- X.25 Gateway
- STP LAN
- Database Transport Access
- GSM MAP Screening
- Eagle Support for Integrated Sentinel

NOTE: Previous editions of this manual contained the procedures for provisioning the Global Title Translation and Enhanced Global Title Translation features. These procedures have been removed from this manual and are now located in the *Database Administration Manual - Global Title Translation*.

NOTE: Before enabling any one of these features, make sure you have purchased the feature to be turned on. If you are not sure whether you have purchased the feature to be turned on, contact your Tekelec Sales Representative or Account Representative.

NOTE: Database administration privileges are password restricted. Only those persons with access to the command class "Database Administration" can execute the administrative functions. Refer to the *Commands Manual* for more information on command classes and commands allowed by those classes.

It is possible for two or more users to make changes to the same database element at any time during their database administration sessions. It is strongly recommended that only one user at a time make any changes to the database.

X.25 Gateway

The X.25 Gateway feature provides connectivity between SS7 and X.25 networks. This feature enables cellular (IS.41) applications using different transport services to connect. The gateway is physically positioned between the SS7 network and the X.25 network and transports IS.41 messages from one network to the other using the SS7 Transaction Capability Application Part (TCAP) protocol.

STP LAN

The STP LAN feature provides a TCP/IP connection from any interface shelf to support external applications. Message signaling units (MSUs) that are processed by the Eagle can be copied and directed through the LAN interface to an external server or microcomputer application such as a usage measurements system. The gateway screening feature must be available on the STP in order to use the STP LAN feature.

The feature requires an STPLAN card, either the Application Communications Module (ACM) running the **`stplan`** application, or the Database Communications Module (DCM) running the **`vxwslan`** application.

Database Transport Access

The Database Transport Access (DTA) feature provides a mechanism for the redirection of specific Message signaling units (MSUs) to a customized database. The Eagle uses gateway screening to qualify incoming MSUs for redirection. Once gateway screening is passed, the original MSU is encapsulated into a new MSU and routed to its new destination.

GSM MAP Screening

The GSM MAP Screening feature examines the Mobile Application Part (MAP) level of incoming SCCP messages to against predefined criteria in the system database to determine whether or not to allow an external server to interrogate an HLR and obtain information about the location and/or state of a GSM subscriber. This feature also allows the user to control which external entities can request this information, and what information they can request before allowing the message to pass through to the HLR.

Eagle Support for Integrated Sentinel

The Eagle Support for Integrated Sentinel feature allows the network traffic on the Eagle's signaling links to be monitored by an ESP (extended services platform) without additional intrusive cabling. Message Signaling Units (MSUs), alarms, and events are copied to the Sentinel to provide the network traffic monitoring. The monitored traffic is delivered to the Sentinel using the Eagle's STCs (Sentinel Transport Cards) which are connected to the ESP subsystem by Ethernet links. The ESP subsystem delivers the monitored traffic to the Sentinel.

Manual Organization

Throughout this document, the terms database and system software are used. Database refers to all data that can be administered by the user, including shelves, cards, links, routes, global title translation tables, and gateway screening tables. System software refers to data that cannot be administered by the user, including generic program loads (GPLs).

This document is organized into the following sections.

Chapter 1, "Introduction," contains an overview of the features described in this manual, general information about the database, and the organization of this manual.

Chapter 2, "X.25 Gateway Configuration," describes the X.25 Gateway feature and the procedures necessary to configure the Eagle to support this feature.

Chapter 3, "STP LAN Configuration," describes the STP LAN feature and the procedures necessary to configure the Eagle to support this feature.

Chapter 4, "Database Transport Access (DTA) Configuration," describes the Database Transport Access (DTA) feature and the procedures necessary to configure the Eagle to support this feature.

Chapter 5, "GSM MAP Screening Configuration," describes the GSM MAP Screening feature and the procedures necessary to configure the Eagle to support this feature.

Chapter 6, "Eagle Support for Integrated Sentinel Configuration," describes the Eagle Support for Integrated Sentinel feature and the procedures necessary to configure the Eagle to support this feature.

Related Publications

The *Database Administration Manual – Features* references other manuals in the Eagle documentation set as follows:

- The *Commands Manual* contains procedures for logging into or out of an Eagle STP or IP^7 Secure Gateway system, a general description of the terminals, printers, the disk drive used on the system, and a description of all the commands used in the system. The *Commands Manual* also contains the *Commands Pocket Guide* and the *Commands Quick Reference*.
- The *Commands Error Recovery Manual* contains the procedures to resolve error message conditions generated by the commands in the *Commands Manual*. These error messages are presented in numerical order.
- The *Database Administration Manual - Gateway Screening* contains a description of the Gateway Screening (GWS) feature and the procedures necessary to configure an Eagle STP or IP^7 Secure Gateway system to support this feature.

- The *Database Administration Manual – Global Title Translation* contains procedural information required to configure an Eagle STP or IP^7 Secure Gateway system to implement these features:
  - Global Title Translation
  - Enhanced Global Title Translation
  - Variable Length Global Title Translation
  - Interim Global Title Modification
  - Intermediate GTT Load Sharing
  - ANSI-ITU SCCP Conversion
- The *Database Administration Manual – IP^7 Secure Gateway* contains procedural information required to configure the system to implement the SS7-IP Gateway.
- The *Database Administration Manual – LNP* contains procedural information required to configure an Eagle STP system or an IP^7 Secure Gateway system to implement the local number portability (LNP) feature.
- The *Database Administration Manual – SEAS* contains the procedures that can be performed from the Signaling Engineering and Administration Center (SEAC) or a Signaling Network Control Center (SNCC) to configure the Eagle. These procedures contain a brief description of the procedure, a reference to the procedure in either the *Database Administration Manual – SS7, Database Administration Manual – Global Title Translation,* or *Database Administration Manual – Gateway Screening* that contains more information on that procedure, and a flowchart showing the order that the tasks must be performed.
- The *Database Administration Manual – SS7* contains procedural information required to configure an Eagle STP system or an IP^7 Secure Gateway system to implement the SS7 protocol.
- The *Database Administration Manual – System Management* contains procedural information required to manage the Eagle's database and GPLs, and to configure basic system requirements such as user names and passwords, system-wide security requirements, and terminal configurations.
- The *ELAP Administration Manual* provides a definition of the user interface to the Eagle LNP Application Processor on the MPS/ELAP platform. The manual defines the methods for accessing the interface, menus, screens available to the user, and describes their impact. It provides the syntax and semantics of user input and defines the output the user receives, including information and error messages.

- The *EPAP Administration Manual* describes how to administer to the Eagle Provisioning Application Processor on the MPS/EPAP platform. The manual defines the methods for accessing the user interface, menus, screens available to the user, and describes their impact. It provides the syntax and semantics of user input and defines the output the user receives, including messages, alarms, and status.
- The *Feature Manual - EIR* provides details of the feature providing network operators with the capability to prevent stolen or disallowed GSM mobile handsets from accessing the network. This manual gives the instructions and information on how to install, use, and maintain the EIR feature on the Multi-Purpose Server (MPS) platform of the Eagle System.
- The *Feature Manual - G-Flex C7 Relay* provides an overview of a feature supporting the efficient management of Home Location Registers in various networks. This manual gives the instructions and information on how to install, use, and maintain the G-Flex feature on the Multi-Purpose Server (MPS) platform of the Eagle System.
- The *Feature Manual - G-Port* provides an overview of a feature providing the capability for mobile subscribers to change the GSM subscription network within a portability cluster while retaining their original MSISDNs. This manual gives the instructions and information on how to install, use, and maintain the G-Port feature on the Multi-Purpose Server (MPS) platform of the Eagle System.
- The *Feature Manual - INP* provides information and instructions on how to implement, utilize, and maintain the INAP-based Number Portability (INP) feature on the Multi-Purpose Server (MPS) platform of the Eagle System.
- The *FTP-Based Table Retrieve Application (FTRA) User Guide* describes how to set up and use a PC to serve as the offline application for the Eagle FTP Retrieve and Replace feature.
- The *LNP Database Synchronization Manual - LSMS 6.0/Eagle* describes how to keep the LNP databases at a release 6.0 LSMS and a network element (the Eagle is a network element) synchronized through the use of resynchronization, audits and reconciles, and bulk loads.

  NOTE: LNP Database Synchronization Manuals for LSMS release 5.0 and 4.0 can be ordered separately. Contact your sales representative for part number information.
- The *LNP Feature Activation Guide* contains procedural information required to configure the system for the LNP feature using telephone number quantities from 24 million to 96 million telephone numbers.
- The *Maintenance Manual* contains procedural information required for maintaining the Eagle STP system, the IP^7 Secure Gateway system. The *Maintenance Manual* provides preventive and corrective maintenance procedures used in maintaining the different systems.

- The *Eagle STP with TekServer IAS MPS Platform Software and Maintenance Manual* describes the TekServer core platform features and the MPS customization features that make up the Multi-Purpose Server (MPS) platform software. This manual also describes how to perform preventive and corrective maintenance for the MPS.
- The *Signaling Products Hardware Manual* contains hardware descriptions and specifications of Tekelec's Network Systems Division (NSD) products. These include the Eagle STP system, the IP^7 Secure Gateway (SG) system, and OEM-based products which include the AS*i* 4000 Service Control Point (SCP), and the Integrated Sentinel with Extended Services Platform (ESP) subassembly.

  The *Signaling Products Hardware Manual* provides an overview of each system and its subsystems, details of standard and optional hardware components in each system, and basic site engineering. Refer to this manual to obtain a basic understanding of each type of system and its related hardware, to locate detailed information about hardware components used in a particular release, and to help configure a site for use with the system hardware.
- The *NSD Installation Manual* contains cabling requirements, schematics, and procedures for installing the Eagle systems along with LEDs, Connectors, Cables, and Power Cords to Peripherals. Refer to this manual to install components or the complete systems.
- The *Signaling Products Integrated Applications Installation Manual* provides the installation information on Frame Floors and Shelves for Integrated Applications Products such as MPS EPAP 4.0, AS*i* 4000 SCP, and VX*i* Media Gateway Controller, Integrated and Non-Integrated Sentinel, LEDs, Connectors, Cables, and Power Cords to Peripherals. Refer to this manual to install components or the complete systems.
- The *TekServer Services Platform Hardware Manual* provides general specifications and a description of the TekServer. This manual also includes site preparation, environmental and other requirements, procedures to physically install the TekServer, and troubleshooting and repair of Field Replacable Units (FRUs).
- The *Provisioning Database Interface Manual* defines the programming interface that populates the Provisioning Database (PDB) for the Eagle features supported on the MPS/EPAP platform. The manual defines the provisioning messages, usage rules, and informational and error messages of the interface. The customer uses the PDBI interface information to write his own client application to communicate with the MPS/EPAP platform.

- The *Release Documentation* contains the following documents for a specific release of the system:

  Release Notice - Describes the changes made to the system during the lifecycle of a release. The initial Release Notice includes Generic Program Loads (GPLs) only. The final Release Notice provides a list of PRs resolved in a build and all known PRs.
  NOTE: The *Release Notice* is maintained solely on Tekelec's Customer Support Website to provide you with instant access to the most up-to-date release information.

  Feature Notice - Describes the features contained in the specified release. Also provides the hardware baseline for the specified release, describes the customer documentation set, provides information about customer training, and explains how to access the Customer Service website.

  Technical Bulletins - Contains a compilation of updates to methods or procedures used to maintain the system (if applicable).

  System Overview - Provides high-level information on SS7, the IP^7 Secure Gateway, system architecture, LNP, and EOAP.

  Master Glossary - Contains an alphabetical listing of terms, acronyms, and abbreviations relevant to the system.

  Cross-Reference Index - Lists all first-level headings used throughout the documentation set.

- *Previously Released Features* - The Previously Released Features Manual briefly describes the features of previous Eagle and IP^7 Secure Gateway releases, and it identifies the release number of their introduction.

Documentation Packaging and Updates

Customer documentation is updated whenever significant changes that affect system operation or configuration are made.

The document part number is shown on the title page along with the current revision of the document, the date of publication, and, if applicable, the software release that the document covers. The bottom of each page contains the document part number and the date of publication.

Documentation Admonishments

Admonishments are icons and text that may appear in this and other Tekelec manuals that alert the reader to assure personal safety, to minimize possible service interruptions, and to warn of the potential for equipment damage.

Following are the admonishments, listed in descending order of priority.

	DANGER: (This icon and text indicate the possibility of ***personal injury***.)
	CAUTION: (This icon and text indicate the possibility of ***service interruption***.)
	WARNING: (This icon and text indicate the possibility of ***equipment damage***.)

Tekelec Technical Services

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

To receive technical assistance, call the Tekelec Technical Services department at one of the following locations:

- Tekelec, UK

  Phone (within the UK) 07071232453
  (outside the UK) +44 7071232453 or +44 1784437067.

- Tekelec, USA

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

Or you can request assistance by way of electronic mail at **`eaglets@tekelec.com`**.

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

If a critical problem exists, Technical Services initiates emergency procedures (see the following topic, "Emergency Response").

Emergency Response

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

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

- Failure in the system that prevents transaction processing
- Reduction in system capacity or in system traffic-handling capability
- Inability to restart the system
- Corruption of the database
- Inability to perform maintenance or recovery operations
- Inability to provide any required critical or major trouble notification
- Any other problem severely affecting service, capacity, traffic, and billing. Maintenance capabilities may be defined as critical by prior discussion and agreement with Tekelec Technical Services.

Maintenance and Administration Subsystem

The maintenance and administration subsystem consists of two processors, MASP (maintenance and administration subsystem processor) A and MASP B.

Each MASP is made up of of two cards, the GPSM-II card (general purpose service module) and the TDM (terminal disk module).

The GPSM-II card contains the communications processor and applications processor and provides connections to the IMT bus. The GPSM-II controls the maintenance and database administration activity.

The TDM contains the fixed disk drive, the terminal processor for the 16 serial I/O ports and interfaces to the MDAL (maintenance disk and alarm) card which contains the removable cartridge drive and alarm logic. There is only one MDAL card in the maintenance and administration subsystem and it is shared between the two MASPs.

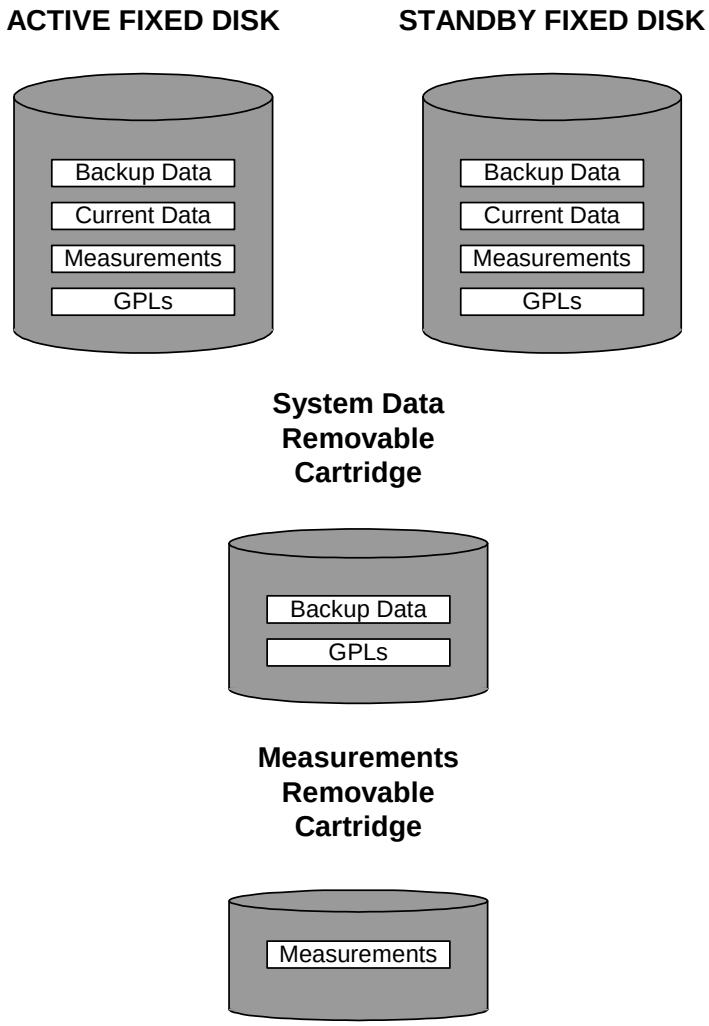
The procedures in the *Database Administration Manual – Features* refer to the terms MASP and MDAL. The database commands, such as **`rept-stat-db`**, refer to the MASP because the MASP controls the input to the TDM and MDAL, and output from the TDM and MDAL. The MDAL is only referred to when inserting or removing the removable cartridge because the removable cartridge drive resides on the MDAL.

For more information on these cards, go to the *Installation Manual*.

Database Partitions

The data that the Eagle uses to perform its functions are stored in two separate areas: the fixed disk drives, and the removable cartridge. The following sections describe these areas and data that is stored on them. These areas and their partitions are shown in Figure 1-1.

Figure 1-1. Database Partitions



Fixed Disk Drive

There are two fixed disk drives on the system. The fixed disk drives contain the "master" set of data and programs for the system. The two fixed disk drives are located on the terminal disk modules (TDMs). Both disks have the same files. The data stored on the fixed disks is partially replicated on the various cards in the system. Changes made during database administration sessions are sent to the appropriate cards.

The data on the fixed disks can be viewed as four partitions.

- Current partition
- Backup partition
- Measurements partition
- Generic program loads (GPLs) partition

The data which can be administered by users is stored in two partitions on the fixed disk, a current database partition which has the tables which are changed by on-line administration, and a backup database partition which is a user-controlled copy of the current partition.

All of the on-line data administration commands effect the data in the current partition. The purpose of the backup partition is to provide the users with a means of rapidly restoring the database to a known good state if there has been a problem while changing the current partition.

A full set of GPLs is stored on the fixed disk, in the GPL partition. There is an approved GPL and a trial GPL for each type of GPL in this set and a utility GPL, which has only an approved version. Copies of these GPLs are downloaded to the system cards. The GPL provides each card with its functionality. For example, the **`ss7ansi`** GPL provides MTP functionality for link interface modules (LIMs).

Measurement tables are organized as a single partition on the fixed disk. These tables are used as holding areas for the measurement counts.

Removable Cartridge

A removable cartridge is used for two purposes.

- To hold an off-line back-up copy of the administered data and system GPLs
- To hold a copy of the measurement tables

Because of the size of the data stored on the fixed disk drives on the TDMs, a single removable cartridge cannot store all of the data in the database, GPL and measurements partitions.

To use a removable cartridge to hold the system data, it must be formatted for system data. To use a removable cartridge to hold measurements data, it must be formatted for measurements data. The system provides the user the ability to format a removable cartridge for either of these purposes. A removable cartridge can be formatted on the system by using the **`format-disk`** command. More information on the **`format-disk`** command can be found in the *Commands Manual*. More information on the removable cartridge drive can be found in the *Installation Manual*.

The removable cartridge drive is located on the MDAL card in card location 1117.

Removable cartridges that are preformatted for system data are available from Tekelec. If you need additional removable cartridges, contact Tekelec Network Switching Division at (919) 460-5500.

List of Acronyms and Abbreviations

ACM.....Application Communications Module

ACMENET.....The card type assigned to an ACM with the **`ent-card`** command.

ACT.....The action taken, either copy the MSU for the STP LAN feature or redirect the MSU for the gateway screening redirect function, if the NSFI is STOP.

ACT.....Activate

AFTPC.....Affected Point Code

AINF .....Application Interface Appliqué

ALIAS .....The alias of the global title translation type

ALIASA .....The ANSI alias point code

ALIASI.....The ITU international alias point code

ALIASN.....The ITU national alias point code

ANSI .....American National Standards Institute

APC .....Adjacent Point Code

APCA.....The ANSI adjacent point code

APCI.....The ITU international adjacent point code

APCN.....The ITU national adjacent point code

API .....Application Programming Interface

APPL.....The application software assigned to the card.

ARP .....Address Resolution Protocol

ASM .....Application Services Module

ASM-SCCP.....Application Services Module with the SCCP application

AST.....Associated State for Maintenance

ATM .....Asynchronous Transfer Mode

ATMTSEL.....ATM Timing Selector

BEI .....Broadcast Exception Indicator

BLKDPC .....Blocked Destination Point Code

BLKOPC .....Blocked Originating Point Code

BPS .....Bits per Second or Bytes per Second

CANC .....Cancel

CAP.....The maximum percentage of ethernet capacity for the STP LAN node connection.

CDPA.....Called Party Address

CDR.....Call Detail Record

CGPA.....Calling Party Address

CHG.....Change

CLLI.....Common Language Location Identifier

Cmd Rej.....Command Rejected

CPC.....Capability Point Code

CPCA.....ANSI capability point code

CPCI.....ITU international capability point code

CPCN.....ITU national capability point code

CSPC GRP.....The name of the concerned signaling point code group that contains the point codes that should be notified of the subsystem status.

CSPC.....Concerned Signaling Point Code

CSR.....Customer Service Report

DCE.....Data Communication Equipment

DCM.....Database Communications Module

DE.....Destination Entity

DESTFLD.....Allowed Affected Destination Field

DHCP.....Dynamic Host Configuration Protocol

DLK.....Data Link

DLT.....Delete

DPC.....Destination Point Code

DPCA.....ANSI Destination Point Code

DPCI.....ITU International Destination Point Code

DPCN.....ITU National Destination Point Code

DPCSSN.....The global title translation performed on the DPC and subsystem number of the MSU

DPL.....Dual-Port Link Layer

DS0.....Digital Signal Zero (56 or 64 Kbs/second)

DS0A.....Digital Signal Level - 0

DSM .....Database Services Module

DTA .....Database Transport Access

DTE .....Data Terminal Equipment

ECM .....Error Correction Method

EGTA .....The end value of a range of global title addresses

EILA .....Enhanced Integrated LIM Applique

EIS .....Eagle Integrated Sentinel

ELAP .....Eagle LNP Application Processor

ELEI.....Exception List Exclusion Indicator

ENT .....Enter

EOAM.....Enhanced Operations, Administration, and Maintenance

EOAP .....Embedded Operations Support System Application Processor

EPAP .....Eagle Provisioning Application Processor

ESP .....Extended Services Platform

FISU .....Fill In Signal Unit

FTP .....File Transfer Protocol

GLS.....Gateway Loading Services — The application software for the gateway screening loading services

GPL .....Generic Program Load

GRP .....The name of the concerned signaling point code group

GPSM.....General Purpose Service Module

GRT .....Gateway Routing Table

GSM .....Global System for Mobile Communications

GT.....Global Title Routing Indicator

GTA .....Global Title Address

GTT .....Global Title Translation

GWS .....Gateway Screening

GWSA .....Gateway Screening Application

GWSD .....Gateway Screening Message Discard

GWSM .....Gateway Screening Mode

H0 .....The H0 heading code in the service information octet.

H1 ..... The H1 heading code in the service information octet.

HMUX ..... High-Speed Multiplexer

I/O ..... Input/Output

ICMP ..... Internet Control Message Protocol

ID ..... Identity

ILA ..... Integrated LIM Applique

IMT ..... Interprocessor Message Transport

INP ..... INAP-based Number Portability

IP ..... Internet Protocol

IPADDR ..... IP Address

IPAPPL ..... IP Application

IPLIM ..... The application software for TCP/IP point-to-point connectivity

IPPORT ..... IP Port

IPRTE ..... IP Router

IS-NR ..... In Service - Normal

IP-SCP ..... Signaling Control Point with an IP Interface

ISUP ..... ISDN User Part

ITU ..... International Telecommunications Union

ITU-I ..... ITU International

ITU-N ..... ITU National

L1MODE ..... The mode of operation used to select the link clocking source at layer 1

L2TSET ..... The level 2 timer set table

L3MODE ..... The logical layer 3 address of the X.25 connection

L3TSET ..... The level 3 timer set table

LAN ..... Local Area Network

LC ..... Logical Channel

LC2NM ..... Logical Channel to Network Management

LIM ..... Link Interface Module

LIMDS0 ..... A LIM with a DS0A interface

LIMOCU ..... A LIM with an OCU interface

LIMV35.....A LIM with a V.35 interface

LNKS .....The number of signaling links in the linkset

LNP .....Local Number Portability

LOC.....Card Location

LS.....Link Set

LSMS.....Local Service Management System

LSN .....Link Set Name

LST .....The linkset type of the specified linkset

MAP.....Mated Application

MAP.....Mobile Application Part

MAS .....Maintenance and Administration Subsystem

MASP.....Maintenance and Administration Subsystem Processor

MAU .....Media Access Unit

MDAL.....Maintenance Disk and Alarm Card

MPC .....Mate Point Code

MPCA .....ANSI Mate Point Code

MPCI.....ITU International Mate Point Code

MPCN.....ITU National Mate Point Code

MPS.....The maximum packet size (in bytes) allowed on an X.25 signaling link

MPS.....Multi-Purpose Server

MRC.....Message routing under congestion

MRN .....Mated Relay Node

MRN .....Message Reference Number

MSISDN.....Mobile Station (international) ISDN Number

MSSN.....Mate Subsystem Number

MSU .....Message Signaling Unit

MTP.....Message Transfer Part

MTPRSE .....The node adjacent to the linkset is equipped with the MTP restart capability.

MTPRSI .....MTP Restart Indicator

MULT.....The multiplicity indicator for a mated point code

N1 ..... The maximum number of bits in a frame

N2 ..... The maximum number of retransmission attempts to complete a transmission.

NC ..... The network cluster of an ANSI point code, expressed as ni-nc-ncm.

NCM ..... The network cluster member of an ANSI point code, expressed as ni-nc-ncm.

NDGT ..... The number of digits contained in the global title translation.

NGT ..... The new type of global title translation

NI ..... The network identifier of an ANSI point code, expressed as ni-nc-ncm.

NIC ..... Internet Network Information Center

NIC ..... The network indicator code in the service information octet.

NPC ..... The ITU national point code.

NSFI ..... Next Screening Function Identifier

NSR/ACT ..... The field in gateway sreening retrieve command outputs containing either the gateway screening stop action set name, if the NSFI is STOP, or the next screening reference name.

OAP ..... Operations Support System Application Processor

OCU ..... Office Channel Unit

OOS-MT-DSBLD ..... Out of Service - Maintenance Disabled

OPC ..... Originating Point Code

PC ..... Point Code

PCA ..... ANSI Point Code

PCI ..... ITU International Point Code

PCN ..... ITU National Point Code

PCR ..... Preventive Cyclic Retransmission

PCRN1 ..... The threshold of the number of MSUs available for retransmission used with the PCR method of error correction on signaling links.

PCRN2 ..... The threshold of the number of MSU octets available for retransmission used with the PCR method of error correction on signaling links.

PCTYPE.....Point code type

PDB.....Provisioning Database

PDN.....Public Data Network

PDU.....Protocol Data Unit

PORT.....The port on the LIM assigned to the signaling link.

PORT A LSET.....The name of the linkset to which port A of the signaling link is assigned.

PORT B LSET.....The name of the linkset to which port B of the signaling link is assigned.

PRI.....The priority of a single message or the beginning message priority in a range of priorities in the service information octet.

PST.....Primary State for Maintenance

PVC.....Permanent Virtual Circuit

PVN.....Private Virtual Network

RC.....The relative cost value of a route, a mated application, or a mated relay node

REPT-STAT.....Report Status

RI.....The routing indicator in the called party address (CDPA) and the calling party address (CGPA).

RST.....Restore

RT.....The type of routing performed for messages originating in the SS7 domain and destined for the X.25 domain.

RTRV.....Retrieve

SADDR.....a pseudo X.25 network address used to address an SS7 application entity

SCCP.....Signaling Connection Control Part – The application software used by the ASMs and TSMs for the global title translation (GTT) feature.

SCP.....Service Control Point

SCRN.....Screen Set Name

SCRSET.....Screen Set

SEAC.....Signaling Engineering and Administration Center

SEAS.....Signaling Engineering and Administration System

SENS	Scalable Enhanced Network Stack - VxWorks TCP/IP Stack
SI	The service indicator for the service information octet, which are the last two bits of the subservice field.
SIO	Service Information Octet
SLC	Signaling Link Code
SLK	Signaling Link
SLS	Signaling Link Selector
SLSCI	5- to 8-bit SLS Conversion Indicator
SLTSET	The signaling link test message record associated with the linkset.
SNCC	Signaling Network Control Center
SOL	Solitary Multiplicity
SPC	Secondary Point Code
SR	The name of the screening reference.
SRM	Subsystem routing messages
SS7 ADDR	The dummy X.25 address assigned to the SS7 destination entity on the SS7 side of the circuit.
SS7 APC	Adjacent Point Codes in the SS7 domain
SS7 DPC	SS7 Destination Point Code
SS7	Signaling System #7
SS7ANSI	The application software for the ANSI SS7 signaling links
SS7GX25	The application software for the X.25/SS7 gateway feature
SSA	Subsystem Allowed network management message
SSN	SS7 Subsystem Number
SSP	Subsystem Prohibited network management message
SST	Secondary State for Maintenance
SST	Subsystem Status Test network management message
STC	Sentinel Transport Card
STP LAN	A feature that copies MSUs selected through the gateway screening process and sends these MSUs to an external host computer for further processing.

STP .....Signal Transfer Point

STPLAN .....The application software used with the ACM for the STP LAN feature

SVC .....Switched Virtual Circuit

SVCA .....Automatic Switched Virtual Circuit

SVCR.....Remote Switched Virtual Circuit

T1.....The amount of time to wait before retransmitting a frame.

TCAP .....Transaction Capability Application Part

TCP.....Transmission Control Protocol

TCP/IP .....Transmission Control Protocol + Internet Protocol

TDM.....Terminal Disk Module

TFA.....Transfer Allowed network management message

TFATCABMLQ.....the TFA/TCA broadcast minimum link quantity

TFP .....Transfer Prohibited network management message

TSC.....Time Slot Counter

TSET.....Transmitter Signaling Element Timing

TSM.....Translation Services Module

TT .....Translation Type

TTN .....Translation Type Name

TVG.....Ticket Voucher Group

TYPE .....The global title translation type

TYPEA .....The ANSI global title translation type

TYPEI.....The ITU International global title translation type

TYPEN.....The ITU National global title translation type

UAM .....Unsolicited Alarm Message

UDP.....User Datagram Protocol

VCI .....Virtual Channel Identifier

VPI.....Virtual Path Identifier

VSCCP .....The application software used with the DSM for the global title translation (GTT) feature

VXWSLAN.....The application software used with the DCM for the STP LAN feature

WIN	The number of packets allowed for a window on an X.25 signaling link.
WNP	Wireless Number Portability
X.25 APC	Adjacent Point Codes in the X.25 domain
X.25 DE	X.25 Destination Entity
X25 ADDR	The X.25 network address of the X.25 destination entity or the SS7 node.
XADDR	The X.25 address assigned to the X.25 destination entity on the X.25 side of the circuit
XLAT	Translate Indicator
XPC	a pseudo point code, along with a pseudo subsystem number, used by the SS7 network to address an X.25 application entity
XSSN	a pseudo subsystem number, along with a pseudo point code, used by the SS7 network to address an X.25 application entity

2

X.25 Gateway Configuration

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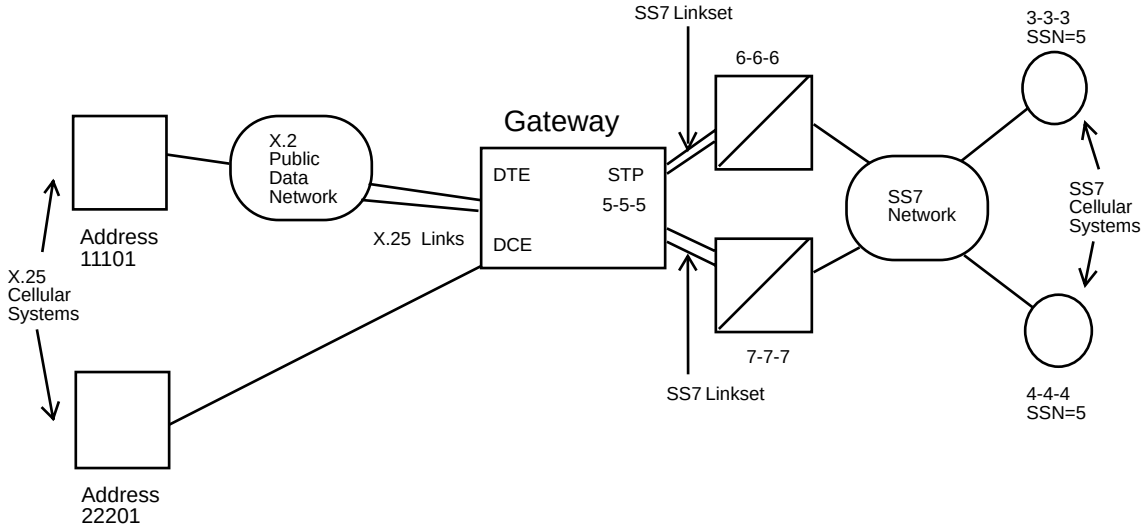
The X.25 Gateway

The Eagle X.25/SS7 gateway feature provides connectivity between SS7 and X.25 networks. This enables cellular (IS.41) applications using different transport services to connect. The gateway is physically positioned between the SS7 network and X.25 network. See Figure 2-1. The gateway transports IS.41 messages from one network to the other using the SS7 Transaction Capability Application Part (TCAP) protocol.

Figure 2-1. X.25 Gateway Network



The X.25 gateway requires a new communications capability between SS7 and X.25 networks. The gateway uses a LIM card running the **`ss7gx25`** application. The LIM supports the DS0A, OCU, or V.35 interfaces at lines speeds of 4800, 9600, 19,200, 56,000, and 64,000 bps.

The card looks and operates like any other LIM card. The card is labeled as a LIM-DS0, LIM-V35, and so forth. It can perform gateway screening. It must also provide three distinct functional components: MTP (Level 3) processing, IS.41 gateway and X.25 conversion.

The MTP Level 3 processing is similar to the operation on SS7 LIM cards. The IS.41 gateway function converts the MTP portion of the packet to X.25 protocol. The X.25 function controls the X.25 protocol and the X.25 link status.

Connectivity to the X.25 Node

The gateway supports these two types of connectivity to the X.25 node:

- direct connectivity
- connectivity through a public or private data network

If the gateway has a direct link to the X.25 node, the gateway appears as a DCE to the X.25 node. The gateway can also connect to the X.25 node through a public data network where it appears as a DTE to the X.25 network.

Message Conversion

The gateway performs the message conversion for all TCAP traffic in both directions. The message conversion removes and adds protocol envelopes used by the X.25 and SS7 networks. The TCAP portion of the data is not changed. The MTP/SCCP of SS7 is converted to X.25 and reverse, depending upon the traffic direction. TCAP is passed through the gateway unchanged. IS.41 uses TCAP as the "carrier."

Address Mapping

In order to route traffic between networks, the gateway performs address mapping between the X.25 domain and the SS7 domain. The X.25 application entities and the SS7 application entities must have addresses not only in their domain but also in the opposite network domain. For example, the X.25 application entity is addressed by the SS7 network using a pseudo point code and pseudo subsystem number (XPC and XSSN). Conversely, the SS7 application entity must be addressed by the X.25 network using a pseudo X.25 network address (SADDR).

X.25 Gateway Description

X.25 requires that any data that is transmitted must be sent on a connection. A connection represents a route between two application entities (one in the X.25 domain and one in the SS7 domain). It must exist before any messages can be transferred. The connection can be one of three types:

- PVC (permanent virtual circuit): A fixed connection that can only be altered through administration.
- SVCA (switched virtual circuit-automatic): A connection established by the STP as soon as the X.25 gateway card initializes.
- SVCR (switched virtual circuit-remote): A connection established by the X.25-user end when necessary.

For these connections, a route must be defined through administration. Every application entity that can be connected through the gateway must be defined. The association between the application entities must also be defined.

An X.25 link appears to the STP as though it is an SS7 link. Adjacent point codes are either the originating point code of the X.25 distant end (if the connection is direct), or a virtual point code (if the connection is through a network). This is equivalent to routing through an adjacent STP to the signaling points connected to it. See Figure 2-1.

As messages travel from the X.25 network to the SS7 network, the gateway determines the destination point code (DPC) and adds the SS7 SCCP and MTP envelopes to the TCAP message. The gateway determines the virtual circuit and removes the SCCP and MTP envelopes on messages transmitted from the SS7 network side to an X.25 destination.

Other attributes of the gateway are as follows:

- Each X.25 link supports up to 255 logical channels as SVCs or PVCs or a combination.
- The Eagle supports up to 1024 X.25 logical connections. If the 2000 X.25 routes feature is turned on, shown by the entry **`X252000 = on`** entry in the **`rtrv-feat`** command output, the Eagle supports up to 2000 X.25 logical connections.
- All X.25 network-initiated calls are accepted when the calling X.25 node is correctly defined in the STP.
- Gateway screening is supported from the X.25 to the SS7 network.
- Routing does not occur through the X.25 gateway between two X.25 points.
- X.25 networks that do not supply the calling address in the call request are not supported for network-initiated connections.

X.25 Gateway Routing

Gateway routing is performed through four different functions:

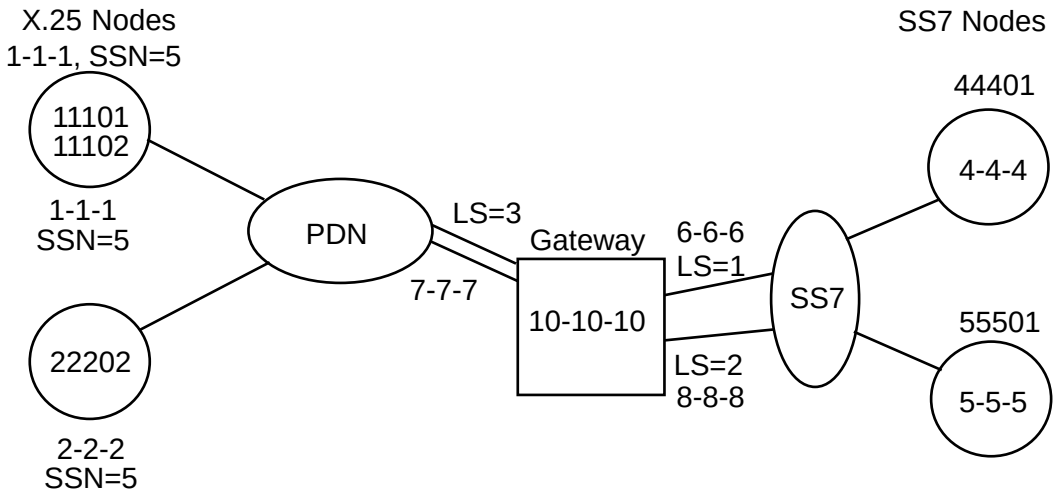
- Connection Determination
- X.25 Connection Control
- Same-Link Management
- Logical Channel to Network Management Mapping

Connection Determination

The destination address for X.25 is defined as a destination element (X.25 DE). An X.25 DE is an object on the X.25 network to which a connection can be made and has a point code assigned to it. An X.25 link can be either point-to-point (direct) or through an intermediary network. A destination for SS7 is a point code, plus an optional subsystem number (SSN).

A destination for X.25 is dependent upon whether a connection is established. A connection is defined as a pair of destinations that are exchanging messages. The destination for X.25 is an X.25 address before connection, and a logical channel (LC) after connection. One of the destinations must be in the X.25 domain and the other in the SS7 domain. See Figure 2-2.

Figure 2-2. X.25 Gateway Connection Determination



The connection is determined using the gateway routing table (GRT). This process can be divided by whether the message arrives from the X.25 side (inbound) or the SS7/MTP side (outbound):

- Inbound messages:

  If the logical channel on which the message arrives is in the connected state, it already points to an entry in the gateway routing table. The destination point code (DPC) is the value in the SS7 point code field. The origination point code (OPC) is the value in the X.25 point code field.

  For an incoming SVC (SVCR), the X.25 user must first establish the connection.

- Outbound messages:

  The DPC is used to locate the connection on which to send the message. The order of the lookup in the GRT is as follows:

1. The STP locates an entry in the X.25 point code field that matches the DPC. If no entry is found for that point code, the gateway produces MRN #1140 and the MSU is discarded.

   NOTE: If no entry is found, or an SVCA defined, the connection cannot be established.

2. The STP verifies that the OPC matches the SS7 point code field. If there is no match, the gateway produces MRN #1134 and the MSU is discarded.

3. Once the connection entry is found in the Gateway Routing Table (GRT), the STP examines the card address field and proceeds as follows:

If...	then...
the card address is the same as the card that receives the MSU,	the routing is complete and the message passes to format conversion.
the card address is not the same card that receives the MSU,	the STP passes the MSU to "single link" management for the card defined in the card address field.

X.25 Connection Control

There is an additional routing requirement, connection routing and control, that is different from SS7 routing.

A connection must be established before any message can be transferred between the STP and an X.25 DE. A connection is established depending upon when and where the connection is made.

A fixed connection route is defined through administration and can be either PVC (permanent virtual circuit), SVCA (switched virtual circuit-automatic) or SVCR (switched virtual circuit - remote). If the connection type field is PVC, the PVC is already established when the link is initialized through provisioning in the public data network (PDN) and STP. The PVC remains in effect while the link is operational.

If the connection type field is SVCA, the connection is established by the designated LIM card (defined in the location field) immediately after the link becomes initialized. It is possible that the remote end becomes available during this cycle, and makes the connection from the remote end. The remote end could make the connection to any card. The connection remains in effect while the link is operational or until the remote end fails or clears the connection.

If the connection type field is SVCR, the connection can only be made by the X.25 DE as follows:

If an X.25 DE wants to send a message to an SS7 node, and the STP has not established a connection to that node, the X.25 DE attempts to establish one before sending the message. The X.25 DE establishes the connection by sending a call request to the STP with identification in the calling address field, and the SS7 node in the called address field.

When the STP receives the incoming call, the STP verifies both the calling and called addresses using the X.25 address and SS7 address fields. If the STP finds an entry for the X.25 address pair, it checks to see if a connection is active.

If...	then...
the connection is active,	the STP clears the incoming call.
the connection is not active, and the SS7 point code is accessible from the STP,	it is set as active. Otherwise, the STP clears the incoming call.
an entry for the X.25 address pair is not found,	the STP checks the X.25 destination table to see if the designated X.25 addresses are present.
both addresses are present (the caller is in the X.25 domain and the called address is in the SS7 domain),	the connection is established and a temporary entry is added to the database.

Same Link Management

X.25 requires that if there is a set of links into a PDN (or directly to an X.25 DE), a response to a request must be returned on the same link and logical channel as the request was received. Because MTP routing does not use a particular link on a linkset, it is likely that a response would go to a non-originating LIM. Same link management assures that the message is sent out on the same link. This is achieved by each LIM informing all others LIMs when the state of a connection changes.

Logical Channel to Network Management Mapping

The Eagle X.25/SS7 gateway also provides management procedures for failed X.25 logical channels. This feature allows traffic destined for failed logical channels to be rerouted to an alternate route.

When configuring logical channel to network management mapping (LC2NM), you must determine if the X.25 entity is expecting associated queries and responses to use the same logical channel, or if they may be assigned to different logical channels. If associated queries and responses can be received over different logical channels, load balancing and failure recovery through alternate routing is supported.

If logical channel to network management mapping is enabled, and the X.25 entity can receive associated queries and responses on different logical channels, data destined to a failed logical channel is diverted by forced rerouting procedures in the Eagle to the alternate route. All other associated traffic is diverted, and the logical channels to which associated traffic is assigned are made unavailable.

If the X.25 entity expects all associated queries and responses to be received on the same logical channel, traffic is still diverted to the alternate route if the logical channel fails. Forced rerouting procedures are not needed in this case.

If the alternate route is not available, the Eagle uses level three network management procedures. For example, an X.25 link interface module (LIM) determines a logical channel has failed. Network management diverts traffic away from the failed logical channel to a defined terminate route.

No network management messages are sent outside the Eagle, and therefore should have no adverse effects on the SS7 network. The Eagle uses SS7 network management procedures in software to divert traffic from the failed X.25 signaling link to another X.25 signaling link.

If route management mapping is not enabled on the X.25 linkset, there is no indication of logical channel failures. An unsolicited alarm message (UAM) output is created, which provides a textual message to indicate failure of an X.25 logical channel. All traffic destined to the failed logical channel is discarded.

If X.25 level 2 should fail within the X.25 LIM, all X.25 routes associated with the LIM are considered unavailable and forced rerouting procedures are used.

In either of the above cases, when the logical channel is restored to service, network management will divert traffic back to the newly restored logical channel.

X. 25 Gateway Routing on Mated STPs

If the network uses two STPs as gateways between an X.25 network (or set of X.25 networks) and the SS7 network, there are special routing considerations.

To use the mated STPs, you must define two connections between each pair of nodes that communicate through the mated pair. The view is different for the X.25 node and the SS7 node. To the SS7 node, there is one destination for the messages. To the X.25 node, there are two X.25 address pairs that represent this same logical connection.

The X.25 application on one MSC sees two connection paths to another MSC – one is primary the other secondary.

X.25 Gateway Configuration Procedures

For the Eagle to implement the X.25/SS7 gateway feature, the Eagle must be configured to support the X.25 network. These items must be configured to support the X.25 network.

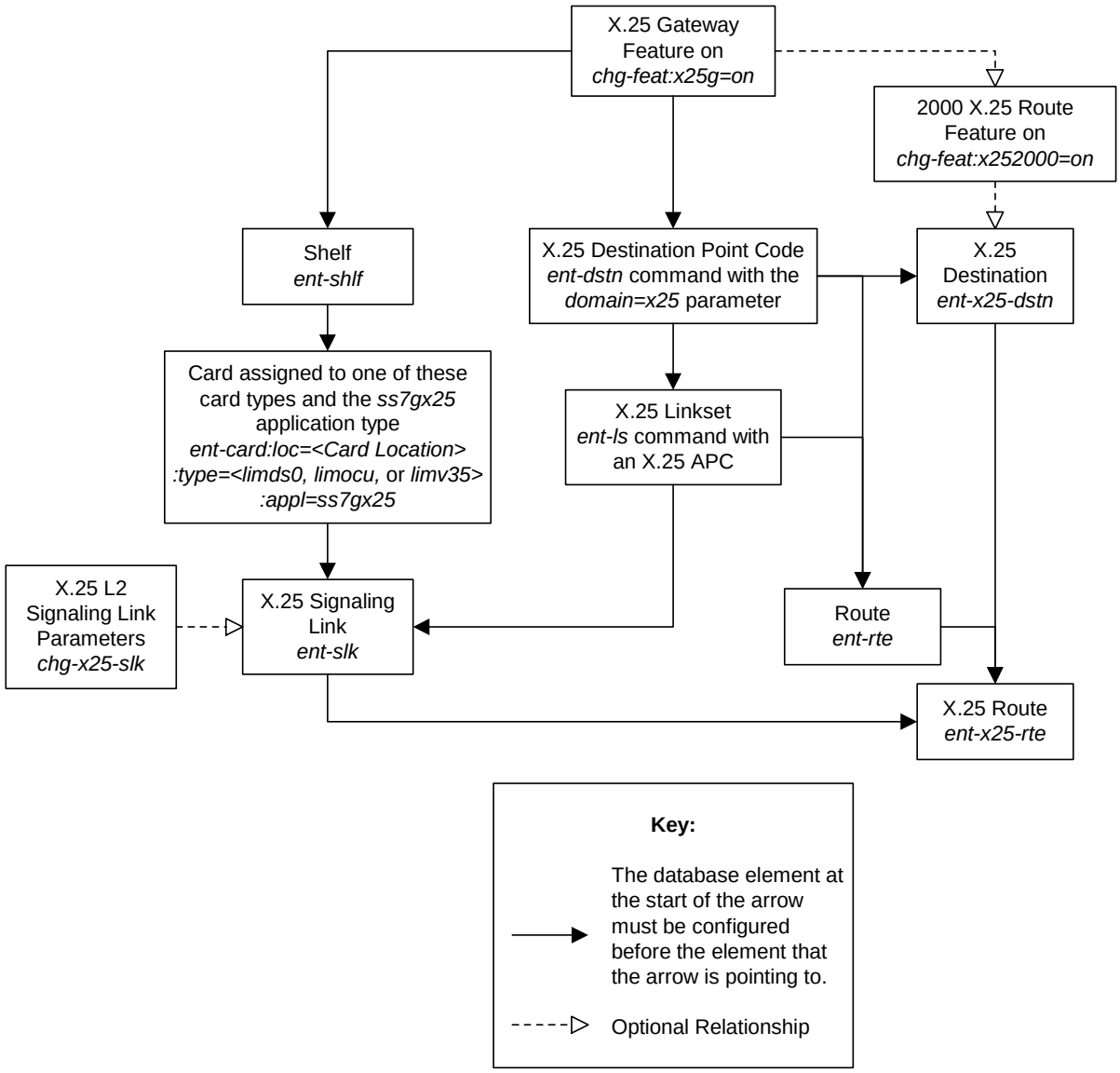
- X.25 LIMs
- X.25 gateway destinations
- X.25 linksets
- X.25 signaling links
- X.25 routes
- X.25 signaling link parameters – if the default X.25 signaling link parameters need to be changed

The procedures shown in this chapter use a variety of commands. If more information on these commands is needed, go to the *Commands Manual* to find the required information.

In addition to the X.25 gateway destinations, X.25 linksets, X.25 signaling links, X.25 routes, and X.25 signaling link parameters, other entities must be provisioned in the database to support the X.25 network. The entities that are required for the particular X.25 entity are listed with the particular procedure. They are also shown here to give an overview of what is required to configure the Eagle to support the X.25 network. These entities must also be provisioned in the order that they are shown.

Figure 2-3 shows the relationships of the database elements that are configured in these procedures.

Figure 2-3. X.25 Gateway Database Relationships



1. The X.25/SS7 gateway feature must be turned on with the **chg-feat:x25g=on** command. If the database is to contain more that 1024 X.25 destinations and routes, the 2000 X.25 routes feature must be turned on with the **chg-feat:x252000=on** command. The **rtrv-feat** command is used to verify whether these features are on or off.

   NOTE: Once the X.25 gateway feature and the 2000 X.25 routes features are turned on with the chg-feat command, they cannot be turned off.

2. Make sure that the required shelf is in the database with the **rtrv-shlf** command. If it is not in the database, add it with the **ent-shlf** command.

3. Make sure the cards that the X.25 signaling links will be assigned to are in the database with the **rtrv-card** command. These cards must be LIMs (card types **limds0**, **limocu**, or **limv35**) and must have the **ss7gx25** application assigned to them. If these cards are not in the database, add them with the **ent-card** command, specifying a LIM (**:type=limds0**, **:type=limocu**, or **:type=limv35**) and the **ss7gx25** application (**:appl=ss7gx25**).

4. The X.25 network configuration for the Eagle requires linksets, routes, and X.25 destinations. These entities use point codes and these point codes must be defined in the database. Verify that the necessary point codes are in the database with the **rtrv-dstn** command. If they are not in the database, add them with the **ent-dstn** command. The point codes must also be assigned to the X.25 domain.

   NOTE: No database entity used for the X.25/SS7 gateway feature can contain ITU international and ITU national point codes. The ent-dstn command does not allow an ITU international or ITU national point code to be assigned to the X.25 domain.

5. The X.25 destination, used to assign an X.25 address to a point code, must be in the database. Verify this with the **rtrv-x25-dstn** command. If it is not in the database, add it with the **ent-x25-dstn** command, specifying a point code in the X.25 domain.

6. The linksets that will contain the X.25 signaling links must be in the database. These linksets must be assigned an adjacent point code (APC) that is in the X.25 domain. Verify this with the **rtrv-ls** command. If the APC is in the X.25 domain, the entry **X25** is shown in the **DOMAIN** field of the output. If the necessary linksets are not in the database, add them with the **ent-ls** command, specifying an APC that is in the database and in the X.25 domain, added in step 4.

7. The X.25 signaling links must be in the database. Verify this with the **rtrv-slk** command. The X.25 signaling links are assigned to linksets in the X.25 domain, from step 6 and to LIMs with the **ss7gx25** application, from step 3. They also have dashes in the **L2TSET** field in the **rtrv-slk** command. If the necessary X.25 signaling links are not in the database, add them with the **ent-slk** command. These signaling links must be assigned to LIMs with the **ss7gx25** application and to linksets whose APC is in the X.25 domain.

8. When the X.25 signaling links are added to the database, there are parameters that control the behavior of these signaling links that are not configured with the **ent-slk** command and are assigned default values. These values can be changed with the **chg-x25-slk** command. If you wish to change the values for these parameters, display the current values with the **rtrv-x25-slk** command. Change these values with the **chg-x25-slk** command.

9. The point codes assigned to each of the X.25 destinations must also be assigned to a route. A route must also be assigned to the linksets containing the X.25 APCs. Verify this with the **rtrv-rte** command. If the necessary routes are not in the database, add them to the database with the **ent-rte** command, specifying a point code assigned to an X.25 destination, from step 5, and a linkset with an X.25 APC, from step 6.

10. The X.25 routes, containing the X.25 addresses from step 5, and the X.25 signaling links from step 7, must be in the database. The connection type assigned to each X.25 route must conform to the number of connection types allowed for X.25 signaling link assigned to the X.25 route. This is shown in output of the **rtrv-x25-slk** command, from step 8, in the **PVC** and **SVC** fields. Verify this with the **rtrv-x25-rte** command. If the X.25 routes are not in the database, add them with the **ent-x25-rte** command.

Figure 2-4 shows a typical network configuration and Table 2-1 shows the information in the gateway routing table (GRT) after the typical network is provisioned.

Figure 2-4. Typical X.25/SS7 Gateway Configuration

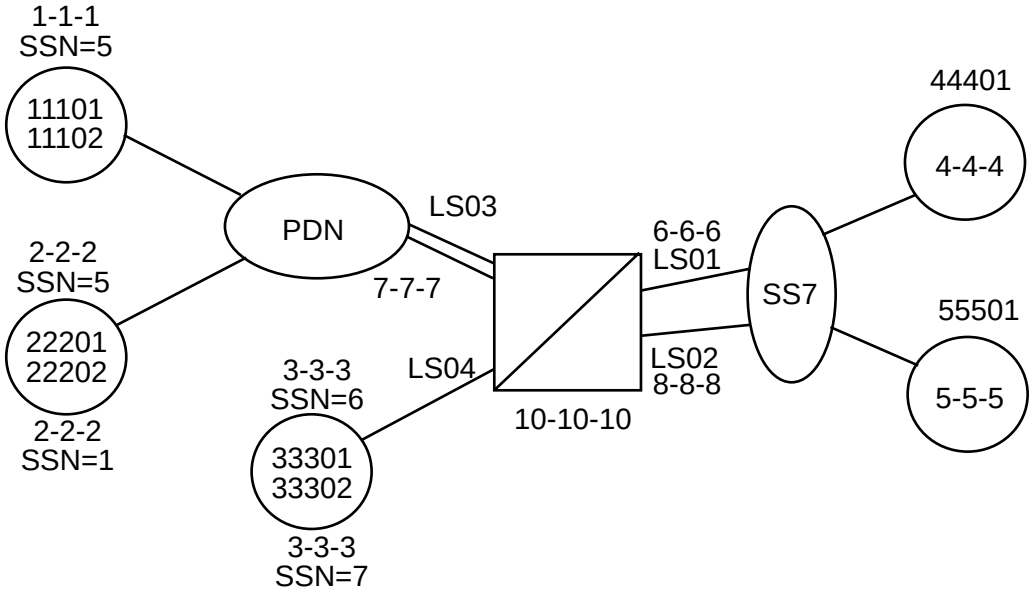


Table 2-1. Typical X.25/SS7 Gateway Routing Table

Conn #	X.25 Address	SS7 Address	X.25 Point Code/ SSN	SS7 Point Code/ SSN	Connection Type	Location	Port	Logical Channel
1	11101	44401	1-1-1/5	4-4-4/5	PVC	1205	A	1
2	11102	55501	1-1-1/5	5-5-5/5	PVC	1206	A	2
3	22201	44401	2-2-2/5	4-4-4/5	PVC	1205	A	2
4	22202	55501	2-2-2/10	5-5-5/10	PVC	1206	A	1
5	33301	44401	3-3-3/6	4-4-4/6	Auto-SVC	1207	A	--
6	33302	55501	3-3-3/7	5-5-5/7	Auto-SVC	1207	A	--

Adding an X.25 LIM

This procedure is used to add an X.25 LIM to the database using the **ent-card** command. The **ent-card** command uses these parameters.

:loc – The location of the card being added to the database.

:type – The type of card being added to the database. The X.25 LIM can be assigned to one of three card types: **limds0**, **limocu**, or **limv35**. Table 2-2 shows the names and part numbers of the cards that can be configured as X.25 LIMs in the database. This can be used to verify that the card being entered into the database matches the card physically installed in the Eagle.

Table 2-2. X.25 LIM Card Type Combinations

Card Name	Part Number	Card Type (:type)
LIM or LIM-AINF	870-1014-XX 870-1488-XX	limds0, limocu, limv35
EILA	870-2049-XX	limds0, limocu, limv35
LIM-DS0	870-1009-XX 870-1485-XX	limds0
LIM-OCU	870-1010-XX 870-1486-XX	limocu
LIM-V.35	870-1012-XX 870-1487-XX	limv35
The LIM, LIM-AINF, or EILA is a link interface module using the AINF interface and can be installed in place of the LIM-DS0, LIM-OCU, or LIM-V.35. It is configured in the database as either a LIM-DS0, LIM-OCU, or LIM-V.35 card.		

:appl – The application software or GPL that is assigned to the card. For this procedure, the value of this parameter is **ss7gx25**.

:force – If the global title translation feature is on, the **force=yes** parameter allows the LIM to be added to the database even if the current SCCP transactions-per-second threshold (see the **chg-th-sccp** command description in the *Commands Manual*) is unable to support the additional SCCP transaction-per-second capacity created by adding the LIM. The default value for this parameter is **no**, which does not allow the LIM to be added to the database unless there are enough SCCP cards in the database. If the global title translation feature is not on, this parameter has no meaning and should not be used.

NOTE: For more information on using the force parameter, see "Using the FORCE Parameter" on page 2-15.

If the force=yes parameter is used to add a LIM to the database, it is recommended that you increase the SCCP transactions-per-second capacity of the system by adding additional SCCP cards to the database after the LIM is added to avoid losing GTT traffic.

The shelf to which the card is to be added, must already be in the database. This can be verified with the **rtrv-shlf** command. If the shelf is not in the database, see the "Adding a Shelf" procedure in the *Database Administration Manual – System Management*.

The card cannot be added to the database if the specified card location already has a card assigned to it.

Before an X.25 LIM can be configured in the database, the X.25 gateway feature must be turned on with the **chg-feat** command. The **rtrv-feat** command can verify that the X.25 gateway feature is on.

NOTE: Once the X.25 gateway feature is turned on with the chg-feat command, it cannot be turned off.

The examples in this procedure are used to configure an X.25 LIM on a LIM-V.35 card in card slot 1202 in the database.

Using the FORCE Parameter

When LIMs or DCMs containing IP links, also known as SS7 cards, are added to the database and the global title translation feature is on, the system must contain enough SCCP cards to handle the number of SCCP transactions per second the SS7 cards will send to the SCCP cards.

The global title translation feature is on if the entries **SCCP** or **VSCCP** are shown in the **APPL** field of the **rtrv-card** command output. The entry **GTT = on** in the **rtrv-feat** command output also shows that the global title translation feature is on.

An SCCP card is either an ASM or TSM running the SCCP application, or a DSM running the VSCCP application. Table 2-3 shows the maximum number of transactions per second that an SCCP card can handle.

Table 2-3. Number of Transactions per Second for each SCCP Card

Type of SCCP Card	Transactions per Second
ASM	850
TSM	850
DSM	1700

The system uses the live SCCP transactions-per-second and the number of SCCP transactions the SS7 card can deliver to the SCCP cards to determine if the additional LIM card transactions-per-second rating will exceed the SCCP transactions-per-second threshold. Table 2-4 shows the card types that can be in the database, card applications that can be assigned to these cards, the type of signaling link that is assigned to the card running that application, and the number of SCCP transactions the card can deliver to an SCCP card. Please refer to Tables 2-3 and 2-4 to determine the transactions-per-second rating of a card.

Table 2-4. SS7 Card Applications and Signaling Link Types

Card Type	Card Application	Signaling Link Assigned to the Card	Number of SCCP Transactions per Second
limds0	ss7ansi, ss7gx25, ccs7itu	Low-speed signaling link	53
limocu	ss7ansi, ss7gx25, ccs7itu	Low-speed signaling link	53
limv35	ss7ansi, ss7gx25, ccs7itu	Low-speed signaling link	53
limds0 (Multi-Port LIM)	ss7ansi	Low-speed signaling link	186
lime1 & limch (2-port LIM-E1)	ss7ansi, ccs7itu	E1 signaling link	53
lime1, limt1, limch (8-port E1/T1 MIM)	ss7ansi, ccs7itu	E1 and T1 signaling links	53
limatm	atmansi	High-speed signaling link	480
lime1atm	atmitu	E1 ATM high-speed signaling link	480
dcm	iplim, iplimi	IP Link	1000

The **rept-stat-sccp** output shows the status of the SCCP cards and the GTT (Global Title Translation), G-Flex (GSM Flexible Numbering), or INP (INAP-based Number Portability) services executing on those cards. This command also displays the SCCP capacity threshold, in the **System TPS Alarm Threshold** field, and the average SCCP capacity, in the **SCCP Service Average MSU Capacity** field. The **MSU USAGE** field shows the percentage of MSUs each SCCP card is processing.

```
rlghncxa03w 04-03-12 09:12:36 GMT  EAGLE5 31.4.0
SCCP SUBSYSTEM REPORT IS-NR          Active     -----
SCCP Cards Configured=2  Cards IS-NR=2
System TPS Alarm Threshold = 80% Total Capacity
System Peak SCCP Load = 550 TPS
System Total SCCP Capacity = 1700 TPS

CARD   VERSION      PST          SST          AST       MSU USAGE  CPU USAGE
------------------------------------------------------------------------------
1101   113-001-000  IS-NR        Active       -----       47%         54%
1301   113-001-000  IS-NR        Active       -----       34%         31%
------------------------------------------------------------------------------
SCCP Service Average MSU Capacity = 41%       Average CPU Capacity = 43%
Command Completed.
```

If the **mode=perf** parameter is specified with the **rept-stat-sccp** command, the general SCCP traffic performance including the total number of SCCP transactions per second the system currently contains. The SCCP capacity threshold is shown in the **System TPS Alarm Threshold** field, and the average SCCP capacity is shown in the **AVERAGE MSU USAGE** field.

```
rlghncxa03w 04-03-12 09:12:36 GMT  EAGLE5 31.4.0
SCCP SUBSYSTEM REPORT IS-NR          Active     -----
SCCP Cards Configured=2  Cards IS-NR=2
System TPS Alarm Threshold =  80% Total Capacity
System Peak SCCP Load = 550 TPS
System Total SCCP Capacity = 1700 TPS

TPS STATISTICS
======================================================================
CARD   CPU      TOTAL     CLASS 0   Class 1
       USAGE    MSU RATE  TVG RATE  TVG RATE
----------------------------------------------------------------------
1101   54%      850       770        80
1301   31%      490       400        90
----------------------------------------------------------------------
AVERAGE MSU USAGE = 44%
AVERAGE CPU USAGE = 24%
TOTAL MSU RATE    = 1440

STATISTICS FOR PAST 30 SECONDS
======================================================================
TOTAL TRANSACTIONS:   5400
TOTAL ERRORS:    5
Command Completed.
```

For more information on the **rept-stat-sccp** command, go to the *Commands Manual*.

When a new SS7 card is being added to the database, the number of transactions per second the new SS7 card is expected to deliver to the SCCP card is added to the average number of transactions per second the existing SS7 cards are delivering to the SCCP cards. If this sum is above the SCCP card threshold, the **ent-card** command is rejected with command rejected error message E3715.

```
E3715 Cmd Rej: SYSTEM CURRENT RATED TPS UNABLE TO SUPPORT ADDITIONAL SS7
               CARD - USE FORCE=YES
```

A warning message is also displayed in the scroll area of the terminal display.

```
WARNING: Insufficient system TPS to support addition of new SS7 card.
```

The SS7 card can still be added to the database by adding more SCCP cards to the database, by raising the SCCP alarm threshold with the **chg-th-sccp** command, or by specifying the **force=yes** parameter with the **ent-card** command. When the **force=yes** parameter is specified, the **ent-card** command is accepted, but the warning message is displayed in the scroll area of the terminal display.

If the system does not have enough SCCP cards in the database and the **force=yes** parameter is used with the **ent-card** command, it is recommended that the required number of SCCP cards be added to the database after the SS7 card is added to avoid losing GTT traffic. To add more SCCP cards to the database, perform the "Adding an SCCP Card" procedure in the *Database Administration Manual - Global Title Translation*.

Procedure

1. Display the cards in the Eagle using the **rtrv-card** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 09:12:36 GMT EAGLE5 31.4.0
CARD   TYPE      APPL      LSET NAME     PORT SLC LSET NAME     PORT SLC
1101   ASM       SCCP      ------------  --   --  ------------  --   --
1102   ASM       GLS       ------------  --   --  ------------  --   --
1113   GPSM      EOAM
1114   TDM-A
1115   GPSM      EOAM
1116   TDM-B
1117   MDAL
1118   RESERVED
1201   LIMDS0    SS7ANSI   sp2           A    0   sp1           B    0
1203   LIMDS0    SS7ANSI   sp3           A    0   ------------  --   --
1204   LIMDS0    SS7ANSI   sp3           A    1   ------------  --   --
1206   LIMDS0    SS7ANSI   nsp3          A    1   nsp4          B    1
1207   LIMV35    SS7GX25   nsp1          A    0   ------------  --   --
1208   LIMV35    SS7GX25   nsp1          A    1   ------------  --   --
1216   ACMENET   STPLAN    ------------  --   --  ------------  --   --
1301   ASM       SCCP      ------------  --   --  ------------  --   --
1308   LIMDS0    SS7ANSI   sp6           A    1   sp7           B    0
1314   LIMDS0    SS7ANSI   sp7           A    1   sp5           B    1
1317   ACMENET   STPLAN    ------------  --   --  ------------  --   --
```

The cards should be distributed throughout the system for proper power distribution. Refer to the *Installation Manual* for the shelf power distribution.

If the **APPL** field of the **rtrv-card** command output shows cards assigned to the **ss7gx25** GPL, skip steps 2, and 3, and go to step 4.

If the **rtrv-card** command output shows the entry **SCCP** or **VSCCP** in the **APPL** field, then the global title translation field is on. If the global title translation feature is on, go to step 3 and verify that the database contains enough SCCP cards to support the number of LIMs the database will contain when the new LIM is added to the database.

If there are not enough SCCP cards, the **force=yes** parameter must be specified with the **ent-card** command. Additional SCCP cards can be added to the database before the **ent-card** command is executed, making the **force=yes** parameter unnecessary. There are three types of SCCP cards that can be added: ASMs, TSMs, or DSMs, depending on which SCCP-related features are enabled. To add more SCCP cards to the database, perform the "Adding an SCCP Card" procedure in the *Database Administration Manual - Global Title Translation*.

If there are no SCCP cards shown in the **rtrv-card** output, go to step 4 to verify whether or not the global title translation feature is on.

---

2. Verify that the X.25 gateway and global title translation features are on, by entering the **rtrv-feat** command. If the X.25 gateway feature is on, the **X25G** field should be set to **on** For this example, the X.25 gateway feature is off.

   If the global title translation feature is on, shown by the entry **GTT = on** in the **rtrv-feat** output, then the system must contain the proper number of SCCP cards to support the X.25 LIM being added.

   NOTE: The rtrv-feat command output contains other fields that are not used by this procedure. If you wish to see all the fields displayed by the rtrv-feat command, see the rtrv-feat command description in the *Commands Manual*.

   If the X.25 gateway feature is on and the global title translation feature is off, skip steps 3, 4, and 5, and go to step 6.

   If the X.25 gateway and global title translation features are on, skip steps 3, and 4 and go to step 5.

---

3. If the X.25 gateway feature is not on, shown by the **X25G = off** entry in the **rtrv-feat** command output in step 2, turn the X.25 gateway feature on by entering this command.

   chg-feat:x25g=on

   NOTE: Once the X.25 gateway feature is turned on with the chg-feat command, it cannot be turned off.

   When the **chg-feat** has successfully completed, this message should appear.

   ```
   rlghncxa03w 04-03-07 00:57:31 GMT EAGLE5 31.4.0
   CHG-FEAT: MASP A - COMPLTD
   ```

NOTE: If the rtrv-feat command was executed in step 2, and the global title translation feature is on, skip this step and go to step 5. If the global title translation feature is off, skip this step and step 5, and go to step 6.

4. Verify whether or not that the global title translation feature is on, by entering the **rtrv-feat** command. If the global title translation feature is on, the entry **GTT = on** appears in the **rtrv-feat** command output.

   NOTE: The rtrv-feat command output contains other fields that are not used by this procedure. If you wish to see all the fields displayed by the rtrv-feat command, see the rtrv-feat command description in the *Commands Manual*.

---

5. Display the status of the SCCP cards by entering the **rept-stat-sccp** command. This is an example of the possible output.

```
rlghncxa03w 04-03-12 09:12:36 GMT  EAGLE5 31.4.0
SCCP SUBSYSTEM REPORT IS-NR          Active     -----
SCCP Cards Configured=2  Cards IS-NR=2
System TPS Alarm Threshold = 80% Total Capacity
System Peak SCCP Load = 550 TPS
System Total SCCP Capacity = 1700 TPS

CARD   VERSION      PST          SST          AST       MSU USAGE  CPU USAGE
------------------------------------------------------------------------------
1101   113-001-000  IS-NR        Active       -----       47%         54%
1301   113-001-000  IS-NR        Active       -----       34%         31%
------------------------------------------------------------------------------
SCCP Service Average MSU Capacity = 41%       Average CPU Capacity = 43%
Command Completed.
```

6. Using Table 2-2 on page 2-14 as a reference, verify that the card has been physically installed into the proper location.

7. Add the card using the **ent-card** command. If the global title translation feature is on and the outputs of either the **rtrv-card** command (step 1) or the **rept-stat-sccp** command (step 5) shows that there are not enough SCCP cards to support the number of LIMs the database will contain when the new LIM is added to the database, the **force=yes** parameter must be specified with the **ent-card** command. For more information on using the **force** parameter and determining the number of SCCP cards required in the system, see "Using the FORCE Parameter" on page 2-15.

   For this example, enter this command.

   ent-card:loc=1202:type=limv35:appl=ss7gx25

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

```
rlghncxa03w 04-03-12 09:12:36 GMT  EAGLE5 31.4.0
ENT-CARD: MASP A - COMPLTD
```

8. Verify the changes using the **rtrv-card** command with the card location specified. For this example, enter this command.

   rtrv-card:loc=1202

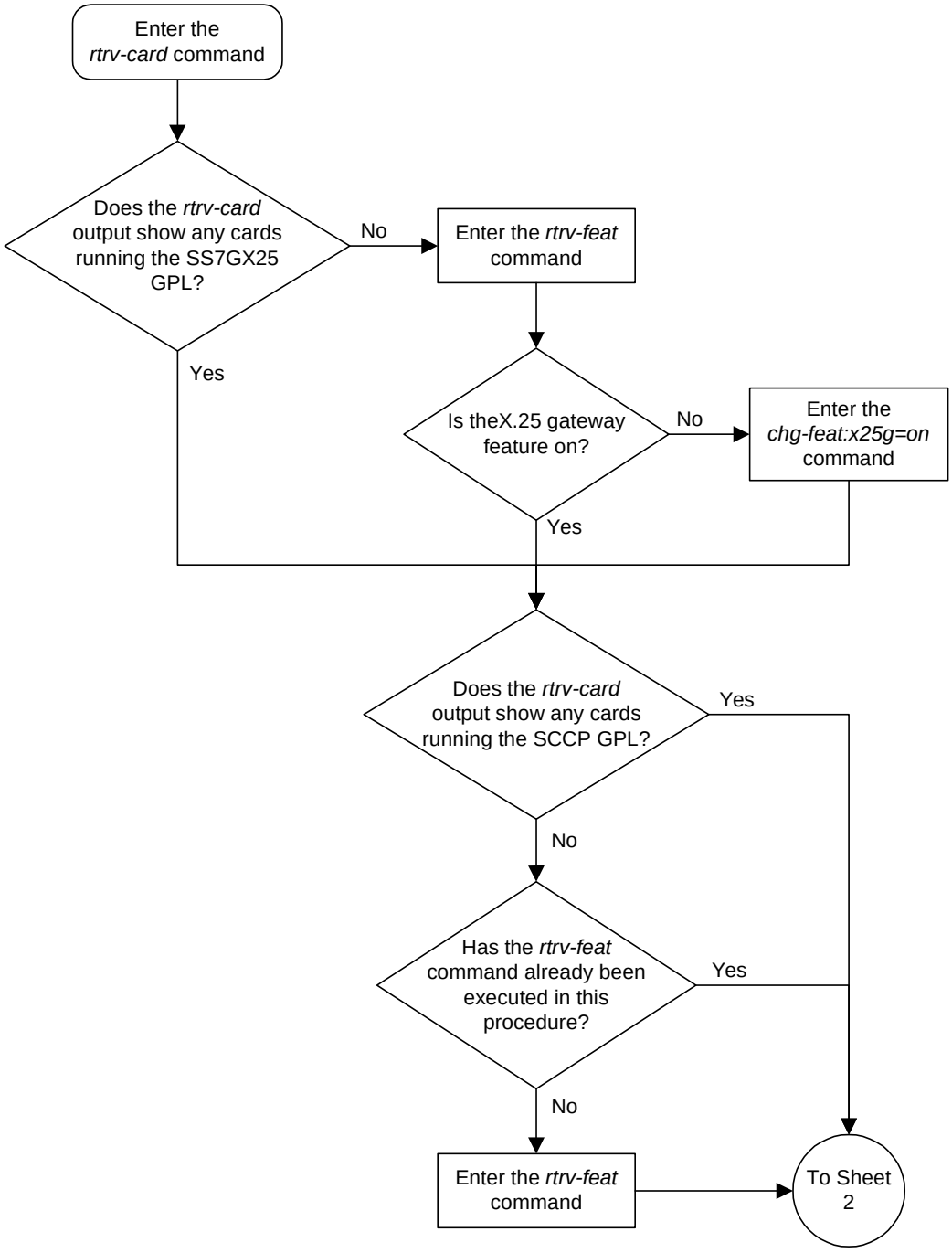
   This is an example of the possible output.

```
rlghncxa03w 04-03-28 09:12:36 GMT EAGLE5 31.4.0
CARD   TYPE      APPL      LSET NAME     PORT SLC LSET NAME     PORT SLC
1202   LIMV35    SS7GX25   ------------  --   --  ------------  --   --
```

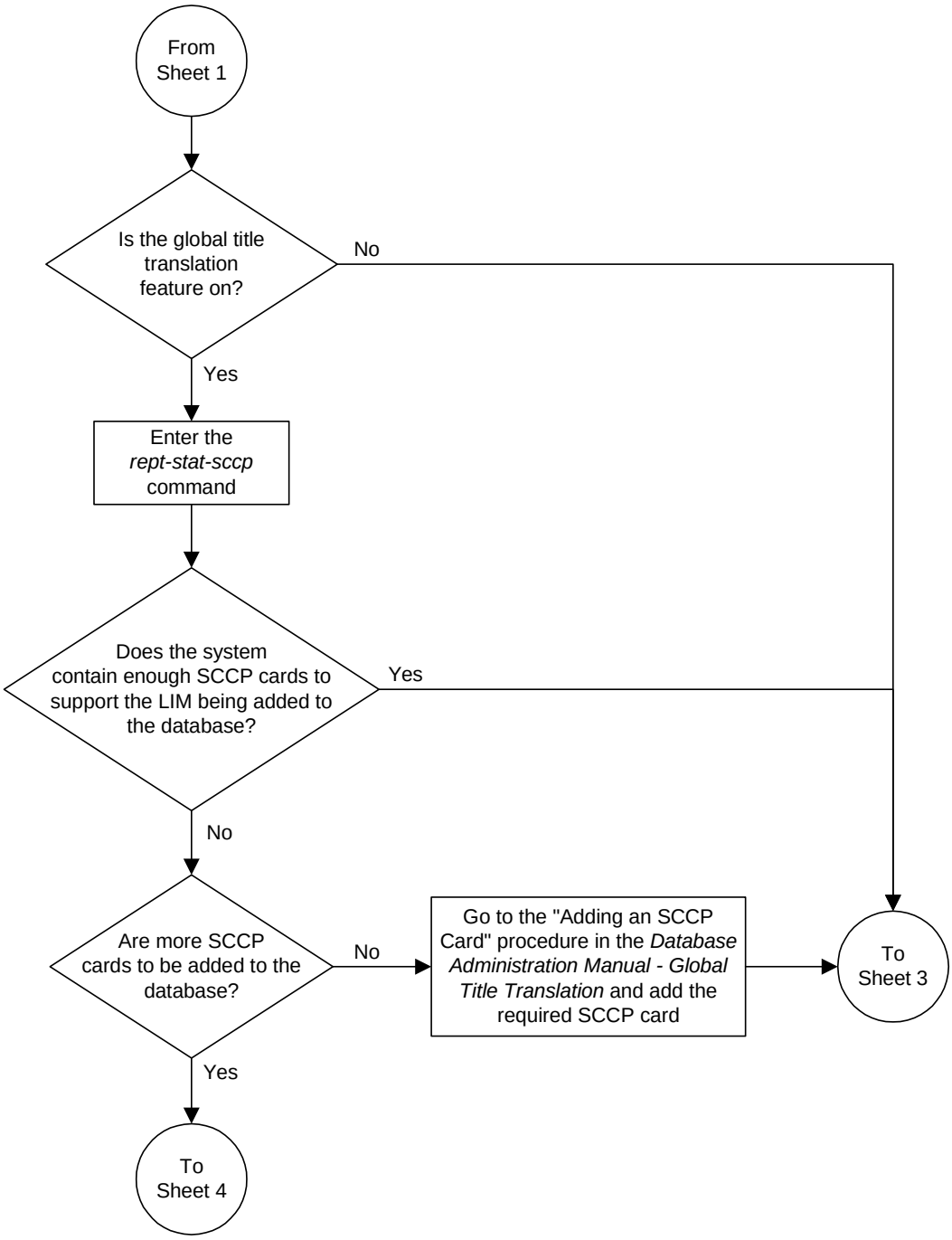
9. Backup the new changes using the **chg-db:action=backup:dest=fixed** command. These messages should appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
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.
```

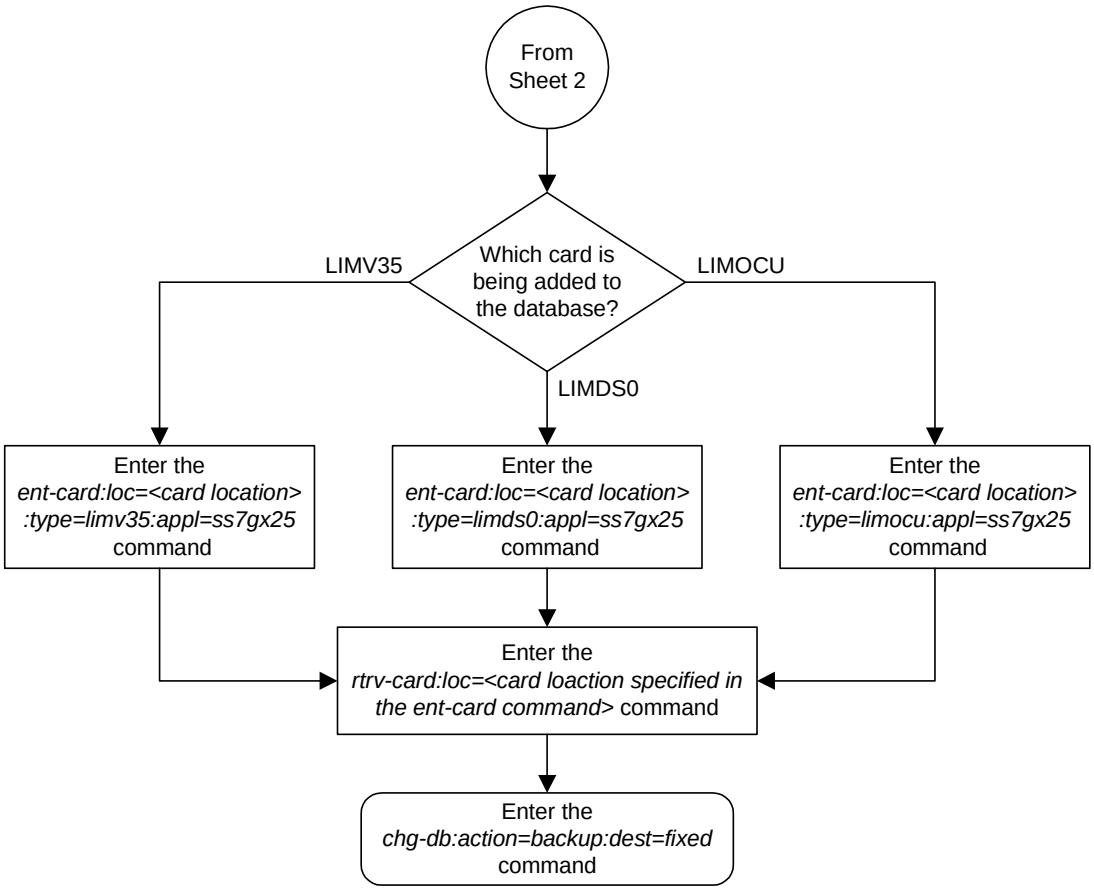
Flowchart 2-1. Adding an X.25 LIM to the Database (Sheet 1 of 4)



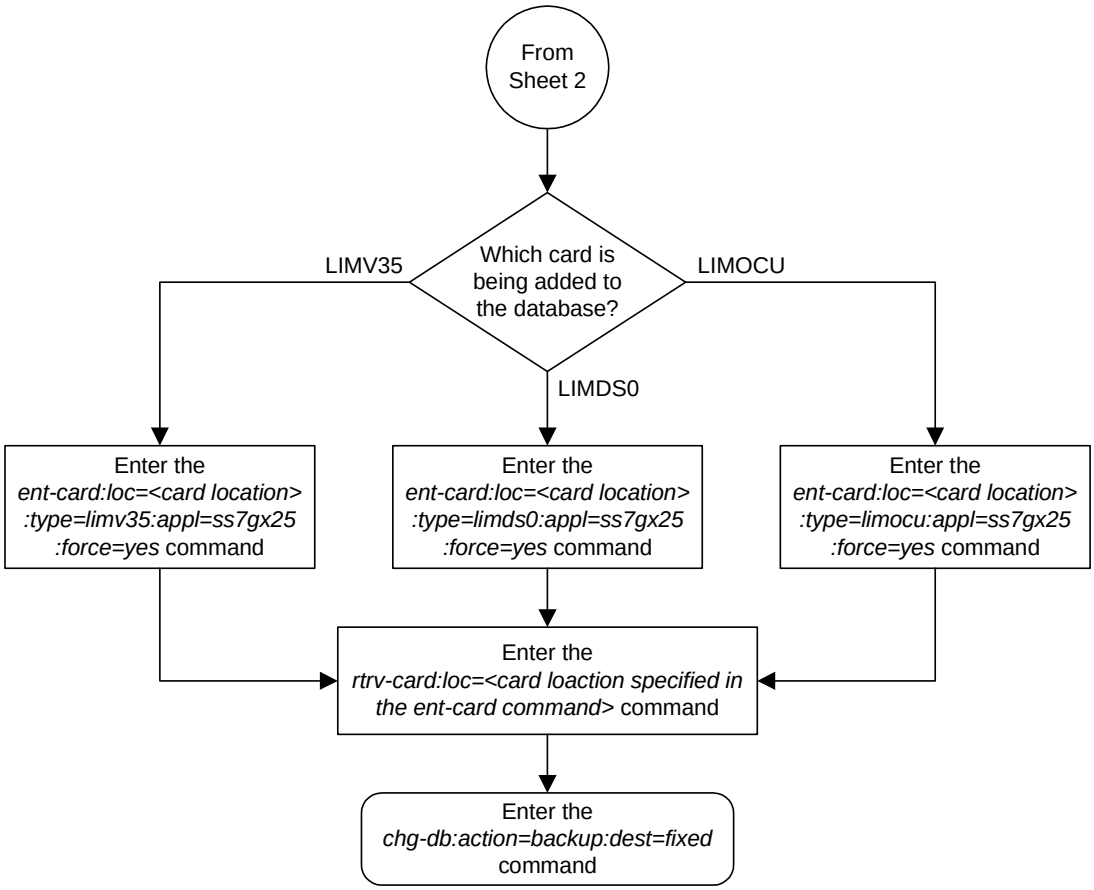
Flowchart 2-1. Adding an X.25 LIM to the Database (Sheet 2 of 4)



Flowchart 2-1. Adding an X.25 LIM to the Database (Sheet 3 of 4)



Flowchart 2-1. Adding an X.25 LIM to the Database (Sheet 4 of 4)



Removing an X.25 LIM

This procedure is used to remove an X.25 LIM from the database using the **dlt-card** command.

The card being removed must exist in the database.

CAUTION: If the X.25 LIM is the last X.25 LIM in service, removing this card from the database will cause X.25 traffic to be lost.

The examples in this procedure are used to remove the X.25 LIM in card location 1202.

Canceling the REPT-STAT-CARD Command

Because the **rept-stat-card** command used in this procedure can output information for a long period of time, the **rept-stat-card** command can be canceled and the output to the terminal stopped. There are three ways that the **rept-stat-card** command can be canceled.

- Press the **F9** function key on the keyboard at the terminal where the **rept-stat-card** command was entered.
- Enter the **canc-cmd** without the **trm** parameter at the terminal where the **rept-stat-card** command was entered.
- Enter the **canc-cmd:trm=<xx>**, where **<xx>** is the terminal where the **rept-stat-card** command was entered, from another terminal other that the terminal where the **rept-stat-card** command was entered. To enter the **canc-cmd:trm=<xx>** command, the terminal must allow Security Administration commands to be entered from it and the user must be allowed to enter Security Administration commands. The terminal's permissions can be verified with the **rtrv-secu-trm** command. The user's permissions can be verified with the **rtrv-user** or **rtrv-secu-user** commands.

For more information about the **canc-cmd** command, go to the *Commands Manual*.

Procedure

1. Display the cards in the database using the **rtrv-card** command. The X.25 LIMs are shown by the entry **SS7GX25** in the **APPL** field. This is an example of the possible output.

```
rlghncxa03w 04-03-28 09:12:36 GMT EAGLE5 31.4.0
CARD   TYPE      APPL      LSET NAME     PORT SLC LSET NAME     PORT SLC
1101   ASM       SCCP      ------------  --   --  ------------  --   --
1102   ASM       GLS       ------------  --   --  ------------  --   --
1113   GPSM      EOAM
1114   TDM-A
1115   GPSM      EOAM
1116   TDM-B
1117   MDAL
1118   RESERVED
1201   LIMDS0    SS7ANSI   sp2           A    0   sp1           B    0
1202   LIMV35    SS7GX25   ------------  --   --  ------------  --   --
1203   LIMDS0    SS7ANSI   sp3           A    0   ------------  --   --
1204   LIMDS0    SS7ANSI   sp3           A    1   ------------  --   --
1206   LIMDS0    SS7ANSI   nsp3          A    1   nsp4          B    1
1207   LIMV35    SS7GX25   nsp1          A    0   ------------  --   --
1208   LIMV35    SS7GX25   nsp1          A    1   ------------  --   --
1216   ACMENET   STPLAN    ------------  --   --  ------------  --   --
1301   ASM       SCCP      ------------  --   --  ------------  --   --
1308   LIMDS0    SS7ANSI   sp6           A    1   sp7           B    0
1314   LIMDS0    SS7ANSI   sp7           A    1   sp5           B    1
1317   ACMENET   STPLAN    ------------  --   --  ------------  --   --
```

2. Display the current configuration of the X.25 routes in the database by entering the **rtrv-x25-rte** command. This is an example of the possible output.

```
rlghncxa03w 04-03-12 09:12:36 GMT EAGLE5 31.4.0
X25 ADDR          SS7 ADDR         TYPE  LOC   PORT  LC  RT   LC2NM
2510010011234567  342342341234567  pvc   1202  a     02  xpc  no
251001002         234234231        pvc   1202  a     04  pc   no
51200105          34223422845      svca  1202  a     --  pc   no
2510103           232330           pvc   1206  a     06  xpc  yes
2510103           232330           svcr  ----  -     --  pc   no
2516019002        24247235         svca  1206  a     --  pc   no
345454            4545434          svca  1206  a     --  pc   no
X.25 ROUTE TABLE IS  30 % FULL
```

3. Remove the X.25 route assigned to the card that you wish to remove (in this example, 1202) by entering the **dlt-x25-rte** command. For this example, enter these commands.

dlt-x25-rte:xaddr=2510010011234567:saddr=342342341234567

dlt-x25-rte:xaddr=251001002:saddr=234234231

dlt-x25-rte:xaddr=51200105:saddr=34223422845

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

```
rlghncxa03w 04-03-12 09:12:36 GMT  EAGLE5 31.4.0
DLT-X25-RTE: MASP A - X.25 Route table 45% full
DLT-X25-RTE: MASP A - COMPLTD
```

4. Display the status of the X.25 signaling link assigned to the card by entering the **rept-stat-slk** command, specifying the card location and port. For this example, enter this command.

   rept-stat-slk:loc=1202:port=a

   This is an example of the possible output.

```
rlghncxa03w 04-03-12 09:12:36 GMT  EAGLE5 31.4.0
SLK      LSN       CLLI        PST          SST       AST
1202,A   lsngwy    ----------- IS-NR        Avail     ----
  ALARM STATUS       = No Alarms.
  UNAVAIL REASON     = --
Command Completed.
```

5. If the X.25 signaling link is not in an OOS-MT-DSBLD state, deactivate the X.25 signaling link using the **dact-slk** command. For this example, enter this command.

   dact-slk:loc=1202:port=a

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

```
rlghncxa03w 04-03-12 09:12:36 GMT  EAGLE5 31.4.0
Deactivate Link message sent to card
```

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

   rept-stat-card:stat=nr

   This is an example of the possible output.

```
rlghncxa03w 04-03-27 16:43:42 GMT  EAGLE5 31.4.0
CARD  VERSION      TYPE    APPL      PST           SST       AST
1101  113-003-000  ASM     SCCP      IS-NR         Active    ---
1102  113-003-000  ASM     GLS       IS-NR         Active    ---
1109  113-003-000  HMUX    BPHMUX    IS-NR         Active    ---
1110  113-003-000  HMUX    BPHMUX    IS-NR         Active    ---
1201  113-003-000  LIMDS0  SS7ANSI   IS-NR         Active    ---
1202  113-003-000  LIMV35  SS7GX25   IS-NR         Active    ---
1203  113-003-000  LIMDS0  SS7ANSI   IS-NR         Active    ---
1204  113-003-000  LIMDS0  SS7ANSI   IS-NR         Active    ---
1206  113-003-000  LIMDS0  SS7ANSI   IS-NR         Active    ---
1207  113-003-000  LIMV35  SS7GX25   IS-NR         Active    ---
1208  113-003-000  LIMV35  SS7GX25   IS-NR         Active    ---
1209  113-003-000  HMUX    BPHMUX    IS-NR         Active    ---
1210  113-003-000  HMUX    BPHMUX    IS-NR         Active    ---
1216  113-003-000  ACMENET STPLAN    IS-NR         Active    ---
1301  113-003-000  ASM     SCCP      IS-NR         Active    ---
1308  113-003-000  LIMDS0  SS7ANSI   IS-NR         Active    ---
1309  113-003-000  HMUX    BPHMUX    IS-NR         Active    ---
1310  113-003-000  HMUX    BPHMUX    IS-NR         Active    ---
1314  113-003-000  LIMDS0  SS7ANSI   IS-NR         Active    ---
1317  113-003-000  ACMENET STPLAN    IS-NR         Active    ---
```

7. If the signaling link on the card to be removed from the database is the last signaling link in a linkset, the **force=yes** parameter must be used with the **dlt-slk** command. To verify this, enter the **rtrv-ls** command with the linkset name shown in step 1 (**PORT A LSET** field). For this example, enter this command.

   rtrv-ls:lsn=lsngwy

   This is an example of the possible output

```
rlghncxa03w 04-03-28 16:31:35 GMT EAGLE5 31.4.0
                              L3T SLT              GWS GWS GWS
LSN          APCA (X25)   SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
lsngwy       240-020-000  scr1  1   1   yes A   1    off off off yes   off

          CLLI         TFATCABMLQ  MTPRSE  ASL8
          -----------  --          ---     ---

                               L2T          L1              PCR  PCR
          LOC   PORT SLC TYPE  SET  BPS    MODE TSET  ECM   N1   N2
          1202  A    0   LIMV35  1    56000  ---  ---   BASIC ---  -----

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

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

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

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

Link set table is ( 10 of 1024)  1% full
```

8. Inhibit the card using the **rmv-card** command, specifying the card location. If the LIM to be inhibited contains the only signaling link in the linkset that in service, the **force=yes** parameter must also be specified. For this example, enter this command.

   rmv-card:loc=1202:force=yes

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

```
rlghncxa03w 04-03-12 09:12:36 GMT  EAGLE5 31.4.0
Card has been inhibited.
```

9. Remove the signaling link on the specified card by using the **dlt-slk** command. If the output of step 7 shows that the signaling link being removed is the last signaling link in a linkset, the **force=yes** parameter must be used. For this example, enter this command.

   dlt-slk:loc=1202:port=a:force=yes

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

```
rlghncxa03w 04-03-12 09:12:36 GMT  EAGLE5 31.4.0
DLT-SLK: MASP A - COMPLTD
```

10. Remove the card using the **dlt-card** command with the card location of the card to be removed. The **dlt-card** command has only one parameter, **loc**, which is the location of the card. For this example, enter this command.

dlt-card:loc=1202

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

```
rlghncxa03w 04-03-12 09:12:36 GMT  EAGLE5 31.4.0
DLT-CARD: MASP A - COMPLTD
```

11. Verify the changes using the **rtrv-card** command specifying the card that was removed in step 11. For this example, enter this command.

rtrv-card:loc=1202

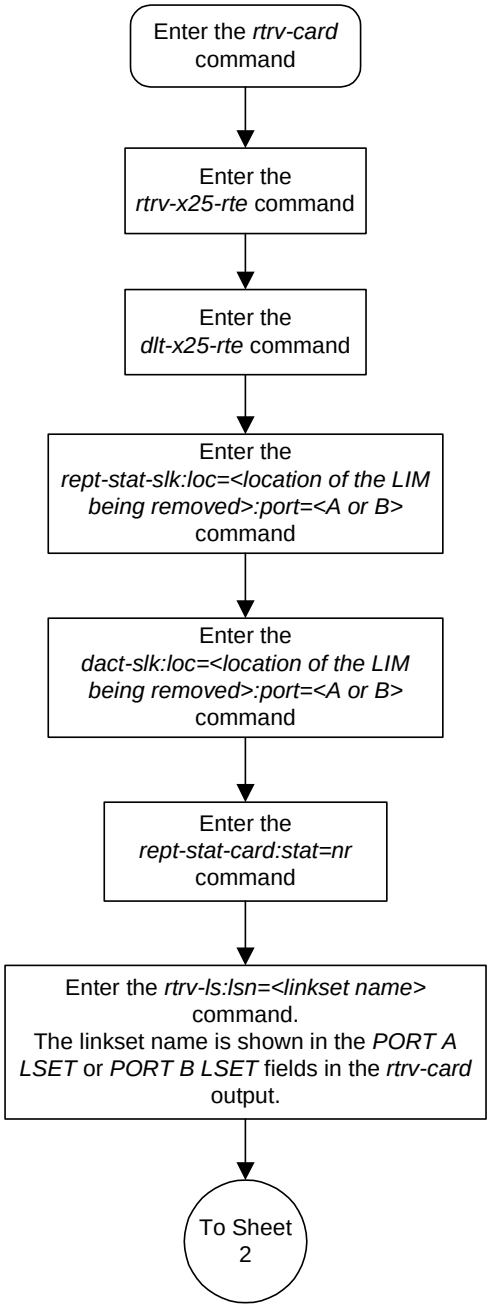
When this command has successfully completed, this message should appear.

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

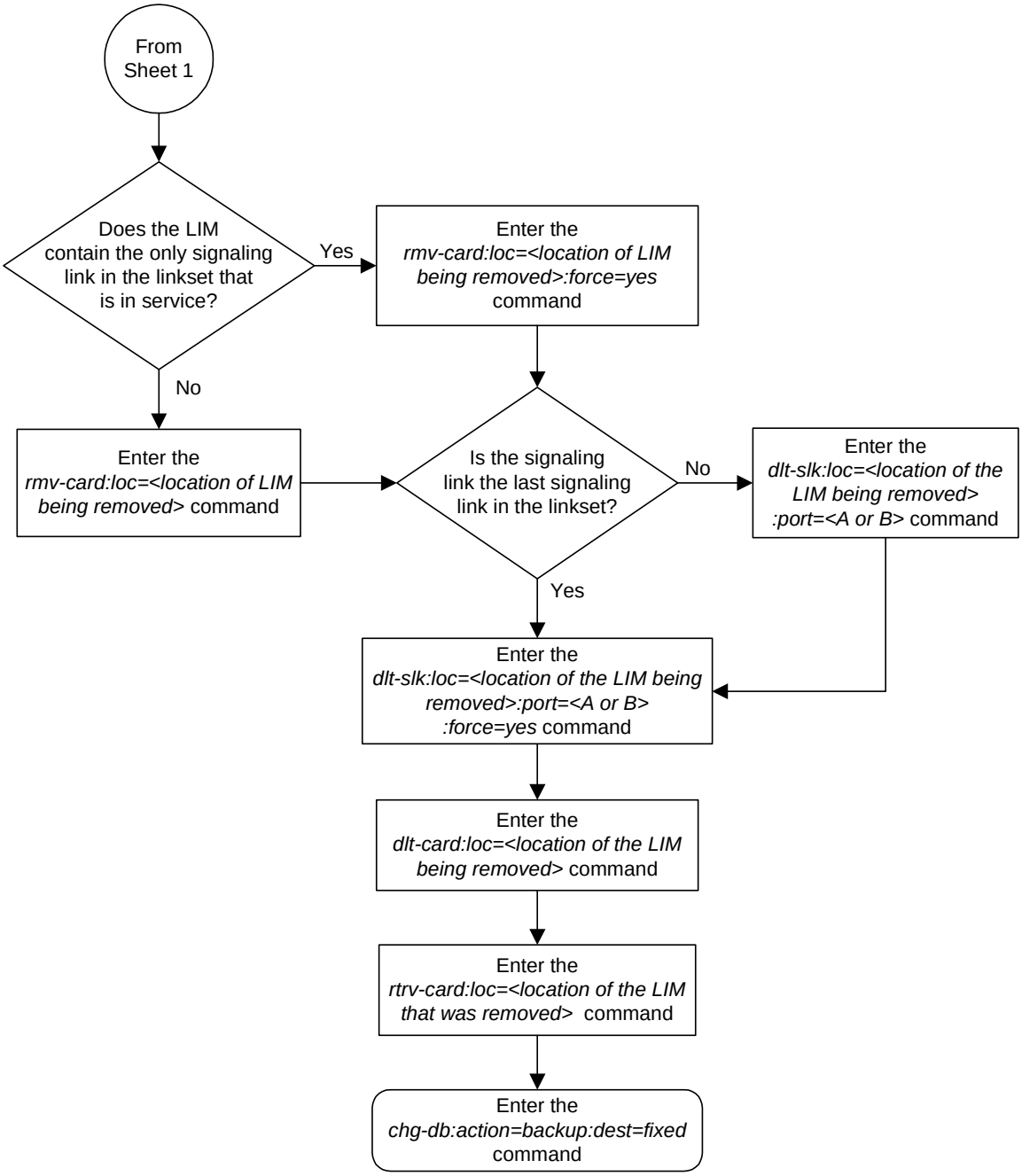
12. Backup the new changes using the **chg-db:action=backup:dest=fixed** command. These messages should appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
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.
```

Flowchart 2-2. Removing an X.25 LIM (Sheet 1 of 2)



Flowchart 2-2. Removing an X.25 LIM (Sheet 2 of 2)



Adding an X.25 Gateway Destination

This procedure is used to add an X.25 destination to the database using the **ent-x25-dstn** command.

The **ent-x25-dstn** command uses these parameters.

:xaddr – The X.25 network address of the X.25 destination entity or the SS7 node.

:dpc – The real SS7 point code assigned to a real SS7 node or the dummy point code for an X.25 destination entity. The value for this parameter is an ANSI point code.

:ssn – The subsystem number of the destination point code to be assigned to the X.25 address.

The examples in this procedure are based on the example network shown in Figure 2-4 and Table 2-1.

A destination point code (DPC) in the X.25 domain – see the "Adding a ANSI Destination Point Code" procedure in the *Database Administration Manual – SS7*.

NOTE: The point code assigned to the X.25 address in the X.25 destination cannot be an ITU international or ITU national point code. The ent-dstn command does not allow an ITU international or ITU national point code to be assigned to the X.25 domain.

The destination point code specified with the **ent-x25-dstn** command must be a full point code. Cluster point codes and network routing point codes cannot be specified for X.25 destinations. For more information on cluster point codes, go to the "Cluster Routing and Management Diversity" section in the *Database Administration Manual – SS7*. For more information on network routing point codes, go to the "Network Routing" section in the *Database Administration Manual – SS7*.

The X.25 gateway destination to be added cannot already be in the database. This can be verified in step 2.

The X.25/SS7 gateway feature must be turned on. Verify this by entering the **rtrv-feat** command. If the X.25/SS7 gateway feature is off, shown by the entry **X25G = off** in the output of the **rtrv-feat** command, it can be turned on by entering the **chg-feat:x25g=on** command.

If the database is to contain more than 1024 X.25 destinations and routes, The 2000 X.25 routes feature must be turned on. Verify this by entering the **rtrv-feat** command. If the 2000 X.25 routes feature is off, shown by the entry **X252000 = off** in the output of the **rtrv-feat** command, it can be turned on by entering the **chg-feat:x252000=on** command.

NOTE: Once the X.25 gateway feature and the 2000 X.25 routes features are turned on with the chg-feat command, they cannot be turned off.

Canceling the RTRV-DSTN Command

Because the **rtrv-dstn** command used in this procedure can output information for a long period of time, the **rtrv-dstn** command can be canceled and the output to the terminal stopped. There are three ways that the **rtrv-dstn** command can be canceled.

- Press the **F9** function key on the keyboard at the terminal where the **rtrv-dstn** command was entered.
- Enter the **canc-cmd** without the **trm** parameter at the terminal where the **rtrv-dstn** command was entered.
- Enter the **canc-cmd:trm=<xx>**, where **<xx>** is the terminal where the **rtrv-dstn** command was entered, from another terminal other that the terminal where the **rtrv-dstn** command was entered. To enter the **canc-cmd:trm=<xx>** command, the terminal must allow Security Administration commands to be entered from it and the user must be allowed to enter Security Administration commands. The terminal's permissions can be verified with the **rtrv-secu-trm** command. The user's permissions can be verified with the **rtrv-user** or **rtrv-secu-user** commands.

For more information about the **canc-cmd** command, go to the *Commands Manual*.

Procedure

1. Verify that the X.25 gateway feature is on, by entering the **rtrv-feat** command. If the X.25 gateway feature is on, the **X25G** field should be set to **on**. For this example, the X.25 gateway feature is off.

NOTE: The rtrv-feat command output contains other fields that are not used by this procedure. If you wish to see all the fields displayed by the rtrv-feat command, see the rtrv-feat command description in the *Commands Manual*.

If the X.25 gateway feature is on, skip step 2 and go to step 3.

If the X.25 gateway feature is not on, go to step 2.

2. If the X.25 gateway feature is not on, shown by the **X25G = off** entry in the **rtrv-feat** command output in step 1, turn the X.25 gateway feature on by entering this command.

```
chg-feat:x25g=on
```

NOTE: Once the X.25 gateway feature is turned on with the chg-feat command, it cannot be turned off.

When the **chg-feat** has successfully completed, this message should appear.

```
rlghncxa03w 04-03-07 00:57:31 GMT EAGLE5 31.4.0
CHG-FEAT: MASP A - COMPLTD
```

3. Display the DPCs in the database by entering the **rtrv-dstn** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 16:02:05 GMT  EAGLE5 31.4.0
DPCA        CLLI        BEI ELEI  ALIASI   ALIASN      DOMAIN
020-002-*   rlghncbb000 yes yes   -------  ----------  SS7
004-004-004 --------    yes ---   -------  ----------  SS7
005-005-005 --------    yes ---   -------  ----------  SS7
240-012-004 rlghncbb001 yes ---   1-111-1  11111       SS7
240-012-005 rlghncbb002 yes ---   1-112-2  11112       SS7
240-012-006 rlghncbb003 yes ---   1-112-3  11113       SS7
240-012-008 --------    yes ---   1-113-5  11114       SS7
001-001-001 --------    yes ---   -------  ----------  X25
002-002-002 --------    yes ---   -------  ----------  X25
003-003-003 --------    yes ---   -------  ----------  X25

DPCI        CLLI        BEI ELEI  ALIASA       ALIASN      DOMAIN
2-131-1     rlghncbb023 no  ---   222-210-000  12001       SS7
2-131-2     --------    no  ---   222-211-001  12002       SS7
2-131-3     --------    no  ---   222-211-002  12003       SS7

DPCN        CLLI        BEI ELEI  ALIASA       ALIASI  DOMAIN
11211       rlghncbb013 no  ---   222-200-200 2-121-1  SS7
11212       rlghncbb013 no  ---   222-200-201 2-121-2  SS7

DESTINATION ENTRIES ALLOCATED:   2000
    FULL DPC(s):                   14
    NETWORK DPC(s):                 0
    CLUSTER DPC(s):                 1
    TOTAL DPC(s):                  15
    CAPACITY (% FULL):             1%
X-LIST ENTRIES ALLOCATED:         500
```

If the required DPC is not in the database, go to the "Adding a Destination Point Code" procedure in the *Database Adminsitration Manual - SS7* and add the DPC to the database.

---

4. Display the X.25 destinations in the database by entering the **rtrv-x25-dstn** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 21:16:37 GMT EAGLE5 31.4.0
X25 ADDR         SS7 DPC      SSN
220525586456772  240-012-004  002
234234231        240-012-005  113
23423422834      244-010-006  235
2342342325       244-010-006  236
23423423         244-010-007  112
423423045656767  244-010-008  112
9342             244-010-006  234
X.25 DSTN TABLE IS  30 % FULL
```

If the database is to contain more than 1024 X.25 destinations and routes, the X.25 gateway feature and the 2000 X.25 routes feature must be turned on. If the 2000 X.25 routes feature is on, the **X252000** field in the **rtrv-feat** command output in step 1 should be set to **on**.

If the database is to contain 1024 X.25 destinations and routes or less, skip step 5 and go to step 6.

If the 2000 X.25 routes feature is on, skip step 5 and go to step 6.

If the 2000 X.25 routes feature is off, and the database is to contain more than 1024 X.25 destinations and routes, go to step 5.

---

5. If the 2000 X.25 routes feature is not on, shown by the **X252000 = off** entry in the **rtrv-feat** command output in step 1, turn the 2000 X.25 routes feature on by entering this command.

   chg-feat:x252000=on

   NOTE: Once the 2000 X.25 routes feature is turned on with the chg-feat command, it cannot be turned off.

   When the **chg-feat** has successfully completed, this message should appear.

   ```
   rlghncxa03w 04-03-07 00:57:31 GMT EAGLE5 31.4.0
   CHG-FEAT: MASP A - COMPLTD
   ```

---

6. Add the X.25 destination to the database using the **ent-x25-dstn** command. For this example, enter these commands.

   ent-x25-dstn:xaddr=11101:dpc=001-001-001:ssn=5
   ent-x25-dstn:xaddr=11102:dpc=001-001-001:ssn=5
   ent-x25-dstn:xaddr=22201:dpc=002-002-002:ssn=5
   ent-x25-dstn:xaddr=22202:dpc=002-002-002:ssn=10
   ent-x25-dstn:xaddr=33301:dpc=003-003-003:ssn=6
   ent-x25-dstn:xaddr=33302:dpc=003-003-003:ssn=7
   ent-x25-dstn:xaddr=44401:dpc=004-004-004
   ent-x25-dstn:xaddr=55501:dpc=005-005-005

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

   ```
   rlghncxa03w 04-03-28 08:38:53 GMT  EAGLE5 31.4.0
   X.25 DSTN TABLE  33 % FULL
   ENT-X25-DSTN: MASP A - COMPLTD
   ```

---

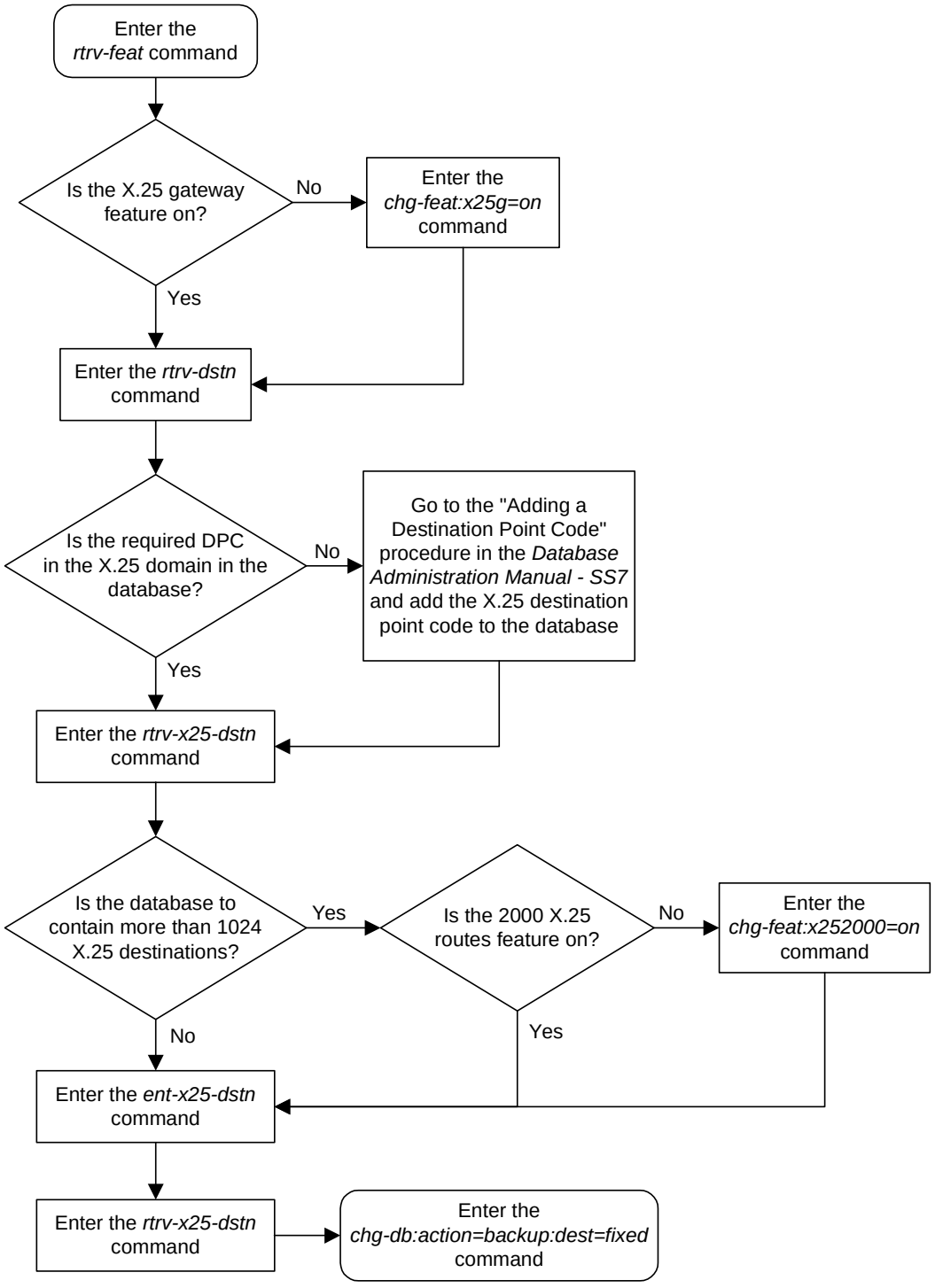
7. Verify the changes using the **rtrv-x25-dstn** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 21:16:37 GMT EAGLE5 31.4.0
X25 ADDR         SS7 DPC      SSN
11101            001-001-001  005
11102            001-001-001  005
22201            002-002-002  005
22202            002-002-002  010
220525586456772  240-012-004  002
234234231        240-012-005  113
23423422834      244-010-006  235
2342342325       244-010-006  236
23423423         244-010-007  112
33301            003-003-003  006
33302            003-003-003  007
3450912          244-010-005  114
423423045656767  244-010-008  112
44401            004-004-004  005
55501            005-005-005  005
9342             244-010-006  234
X.25 DSTN TABLE IS  30 % FULL
```

8. Backup the new changes using the **chg-db:action=backup:dest=fixed** command. 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.
```

Flowchart 2-3. Adding an X.25 Gateway Destination



Removing an X.25 Gateway Destination

This procedure is used to remove an X.25 destination from the database using the **dlt-x25-dstn** command.

The **dlt-x25-dstn** command has only one parameter, **xaddr**, which is the X.25 network address of the X.25 destination entity or the SS7 node.

The examples in this procedure are used to remove the X.25 destination **33301** from the database.

The X.25 gateway destination to be removed must be in the database. This can be verified in step 1.

The X.25 gateway destination to be removed cannot have any X.25 routes assigned to it. This can be verified in step 2.

Procedure

1. Display the X.25 destinations in the database by entering the **rtrv-x25-dstn** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 21:16:37 GMT EAGLE5 31.4.0
X25 ADDR         SS7 DPC      SSN
11101            001-001-001  005
11102            001-001-001  005
22201            002-002-002  005
22202            002-002-002  010
220525586456772  240-012-004  002
234234231        240-012-005  113
23423422834      244-010-006  235
2342342325       244-010-006  236
23423423         244-010-007  112
33301            003-003-003  006
33302            003-003-003  007
3450912          244-010-005  114
423423045656767  244-010-008  112
44401            004-004-004  005
55501            005-005-005  005
9342             244-010-006  234
X.25 DSTN TABLE IS  30 % FULL
```

2. Verify that there are no X.25 routes assigned to the X.25 destination to be removed by entering the **rtrv-x25-rte** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 21:16:37 GMT EAGLE5 31.4.0
X25 ADDR          SS7 ADDR         TYPE  LOC   PORT  LC  RT   LC2NM
11101             44401            pvc   1205  a     01  xpc  no
11102             55501            pvc   1206  a     02  pc   no
22201             44401            pvc   1205  a     02  pc   no
22202             55501            pvc   1206  a     01  xpc  yes
33301             44401            svca  1207  a     --  pc   no
33302             55501            svca  1207  a     --  pc   no
X.25 ROUTE TABLE IS  30 % FULL
```

3. If the X.25 destination to be removed, shown in the **X25 ADDR** column in the output of step 1, is shown in either the **X25 ADDR** or **SS7 ADDR** columns in the output of step 2, then the X.25 destination has an X.25 route assigned to it. Remove these X.25 routes by using the **dlt-x25-rte** command. For this example, enter this command.

   dlt-x25-rte:xaddr=33301:saddr=44401

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

```
rlghncxa03w 04-03-28 11:43:04 GMT EAGLE5 31.4.0
DLT-X25-RTE: MASP A - X.25 Route table 45% full
DLT-X25-RTE: MASP A - COMPLTD
```

4. Verify the changes using the **rtrv-x25-rte** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 21:16:37 GMT EAGLE5 31.4.0
X25 ADDR          SS7 ADDR         TYPE  LOC   PORT  LC  RT   LC2NM
11101             44401            pvc   1205  a     01  xpc  no
11102             55501            pvc   1206  a     02  pc   no
22201             44401            pvc   1205  a     02  pc   no
22202             55501            pvc   1206  a     01  xpc  yes
33302             55501            svca  1207  a     --  pc   no
X.25 ROUTE TABLE IS  30 % FULL
```

5. Remove the X.25 destination from the database using the **dlt-x25-dstn** command. For this example, enter this command.

   dlt-x25-dstn:xaddr=33301

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

```
rlghncxa03w 04-03-28 08:38:53 GMT  EAGLE5 31.4.0
X.25 DSTN TABLE  33 % FULL
DLT-X25-DSTN: MASP A - COMPLTD
```

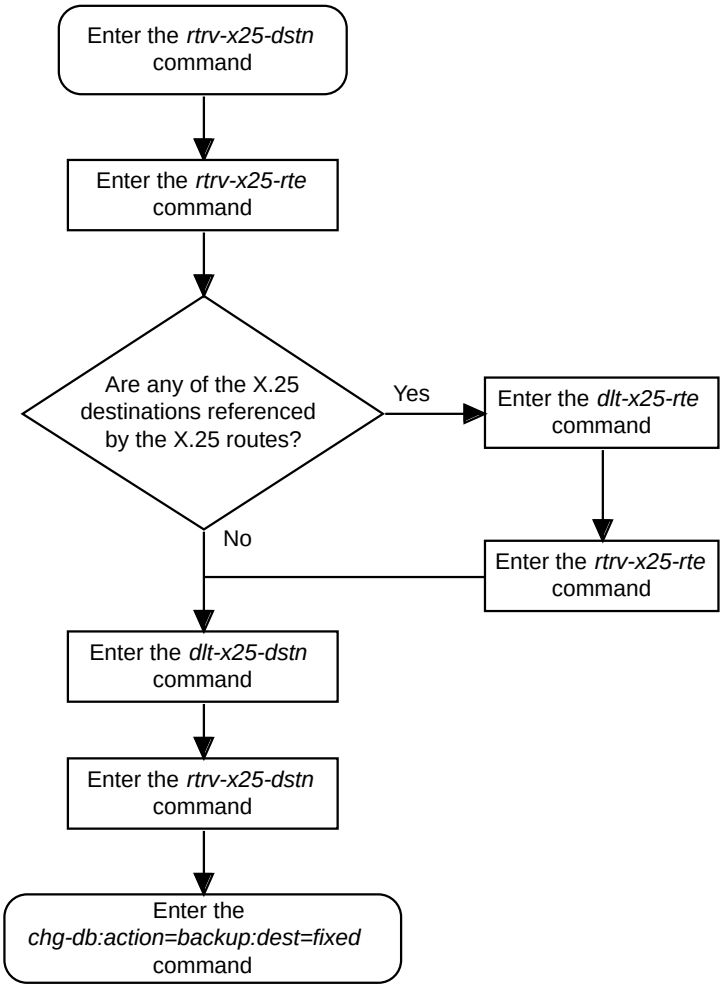
6. Verify the changes using the **rtrv-x25-dstn** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 21:16:37 GMT EAGLE5 31.4.0
X25 ADDR         SS7 DPC      SSN
11101            001-001-001  005
11102            001-001-001  005
22201            002-002-002  005
22202            002-002-002  010
220525586456772  240-012-004  002
234234231        240-012-005  113
23423422834      244-010-006  235
2342342325       244-010-006  236
23423423         244-010-007  112
33302            003-003-003  007
3450912          244-010-005  114
423423045656767  244-010-008  112
44401            004-004-004  005
55501            005-005-005  005
9342             244-010-006  234
X.25 DSTN TABLE IS  30 % FULL
```

7. Backup the new changes using the **chg-db:action=backup:dest=fixed** command. 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.
```

Flowchart 2-4. Removing an X.25 Gateway Destination



Changing an X.25 Gateway Destination

This procedure is used to change the attributes of an X.25 destination in the database using the **chg-x25-dstn** command.

The **chg-x25-dstn** command uses these parameters.

:xaddr – The X.25 network address of the X.25 destination entity or the SS7 node.

:dpc – The real SS7 point code assigned to a real SS7 node or the dummy point code for an X.25 destination entity. The value for this parameter is an ANSI point code.

:ssn – The subsystem number of the destination that is assigned to the X.25 address.

The examples in this procedure are used to change the DPC and SSN of the X.25 destination **33301** in the database to the DPC 011-011-011 and the SSN 230.

The X.25 gateway destination to be changed must be in the database and cannot have any X.25 routes assigned to it. This can be verified in steps 1 and 2.

If the destination point code (DPC) is changed, the new DPC must be in the database. This can be verified in step 5 with the **rtrv-dstn** command. If the new DPC is not in the database, go to the "Adding a ANSI Destination Point Code" procedure in the *Database Administration Manual – SS7*.

NOTE: The point code assigned to the X.25 address in the X.25 destination cannot be an ITU international or ITU national point code. The ent-dstn command does not allow an ITU international or ITU national point code to be assigned to the X.25 domain.

The destination point code specified with the **chg-x25-dstn** command must be a full point code. Cluster point codes and network routing point codes cannot be specified for X.25 destinations. For more information on cluster point codes, go to the "Cluster Routing and Management Diversity" section in the *Database Administration Manual – SS7*. For more information on network routing point codes, go to the "Network Routing" section in the *Database Administration Manual – SS7*.

Canceling the RTRV-DSTN Command

Because the **rtrv-dstn** command used in this procedure can output information for a long period of time, the **rtrv-dstn** command can be canceled and the output to the terminal stopped. There are three ways that the **rtrv-dstn** command can be canceled.

- Press the **F9** function key on the keyboard at the terminal where the **rtrv-dstn** command was entered.
- Enter the **canc-cmd** without the **trm** parameter at the terminal where the **rtrv-dstn** command was entered.
- Enter the **canc-cmd:trm=<xx>**, where **<xx>** is the terminal where the **rtrv-dstn** command was entered, from another terminal other that the terminal where the **rtrv-dstn** command was entered. To enter the **canc-cmd:trm=<xx>** command, the terminal must allow Security Administration commands to be entered from it and the user must be allowed to enter Security Administration commands. The terminal's permissions can be verified with the **rtrv-secu-trm** command. The user's permissions can be verified with the **rtrv-user** or **rtrv-secu-user** commands.

For more information about the **canc-cmd** command, go to the *Commands Manual*.

Procedure

1. Display the X.25 destinations in the database by entering the **rtrv-x25-dstn** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 21:16:37 GMT EAGLE5 31.4.0
X25 ADDR         SS7 DPC      SSN
11101            001-001-001  005
11102            001-001-001  005
22201            002-002-002  005
22202            002-002-002  010
220525586456772  240-012-004  002
234234231        240-012-005  113
23423422834      244-010-006  235
2342342325       244-010-006  236
23423423         244-010-007  112
33301            003-003-003  006
33302            003-003-003  007
3450912          244-010-005  114
423423045656767  244-010-008  112
44401            004-004-004  005
55501            005-005-005  005
9342             244-010-006  234
X.25 DSTN TABLE IS  30 % FULL
```

2. Verify that there are no X.25 routes assigned to the X.25 destination to be changed by entering the **rtrv-x25-rte** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 21:16:37 GMT EAGLE5 31.4.0
X25 ADDR          SS7 ADDR         TYPE  LOC   PORT  LC  RT   LC2NM
11101             44401            pvc   1205  a     01  xpc  no
11102             55501            pvc   1206  a     02  pc   no
22201             44401            pvc   1205  a     02  pc   no
22202             55501            pvc   1206  a     01  xpc  yes
33301             44401            svca  1207  a     --  pc   no
33302             55501            svca  1207  a     --  pc   no
X.25 ROUTE TABLE IS  30 % FULL
```

3. If the X.25 destination to be removed, shown in the **X25 ADDR** column in the output of step 1, is shown in either the **X25 ADDR** or **SS7 ADDR** columns in the output of step 2, then the X.25 destination has an X.25 route assigned to it. Remove these X.25 routes by using the **dlt-x25-rte** command. For this example, enter this command.

   dlt-x25-rte:xaddr=33301:saddr=44401

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

```
rlghncxa03w 04-03-28 11:43:04 GMT EAGLE5 31.4.0
DLT-X25-RTE: MASP A - X.25 Route table 45% full
DLT-X25-RTE: MASP A - COMPLTD
```

4. Verify the changes using the **rtrv-x25-rte** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 21:16:37 GMT EAGLE5 31.4.0
X25 ADDR          SS7 ADDR         TYPE  LOC   PORT  LC  RT   LC2NM
11101             44401            pvc   1205  a     01  xpc  no
11102             55501            pvc   1206  a     02  pc   no
22201             44401            pvc   1205  a     02  pc   no
22202             55501            pvc   1206  a     01  xpc  yes
33302             55501            svca  1207  a     --  pc   no
X.25 ROUTE TABLE IS  30 % FULL
```

5. If the DPC is being changed, display the DPCs in the database by entering the **rtrv-dstn** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 16:02:05 GMT  EAGLE5 31.4.0
DPCA        CLLI        BEI ELEI  ALIASI   ALIASN      DOMAIN
020-002-*   rlghncbb000 yes yes   -------  ----------  SS7
004-004-004 --------    yes ---   -------  ----------  SS7
005-005-005 --------    yes ---   -------  ----------  SS7
240-012-004 rlghncbb001 yes ---   1-111-1  11111       SS7
240-012-005 rlghncbb002 yes ---   1-112-2  11112       SS7
240-012-006 rlghncbb003 yes ---   1-112-3  11113       SS7
240-012-008 --------    yes ---   1-113-5  11114       SS7
001-001-001 --------    yes ---   -------  ----------  X25
002-002-002 --------    yes ---   -------  ----------  X25
003-003-003 --------    yes ---   -------  ----------  X25
011-011-011 --------    yes ---   -------  ----------  X25

DPCI        CLLI        BEI ELEI  ALIASA       ALIASN      DOMAIN
2-131-1     rlghncbb023 no  ---   222-210-000  12001       SS7
2-131-2     --------    no  ---   222-211-001  12002       SS7
2-131-3     --------    no  ---   222-211-002  12003       SS7

DPCN        CLLI        BEI ELEI  ALIASA       ALIASI  DOMAIN
11211       rlghncbb013 no  ---   222-200-200 2-121-1  SS7
11212       rlghncbb013 no  ---   222-200-201 2-121-2  SS7

DESTINATION ENTRIES ALLOCATED:   2000
    FULL DPC(s):                   15
    NETWORK DPC(s):                 0
    CLUSTER DPC(s):                 1
    TOTAL DPC(s):                  16
    CAPACITY (% FULL):             1%
X-LIST ENTRIES ALLOCATED:         500
```

If the required DPC is not in the database, go to the "Adding a Destination Point Code" procedure in the *Database Adminsitration Manual - SS7* and add the DPC to the database.

---

6. Change the attributes of the X.25 destination using the **chg-x25-dstn** command. For this example, enter this command.

chg-x25-dstn:xaddr=33301:dpc=011-011-011:ssn=230

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

```
rlghncxa03w 04-03-28 08:38:53 GMT  EAGLE5 31.4.0
X.25 DSTN TABLE  33 % FULL
CHG-X25-DSTN: MASP A - COMPLTD
```

---

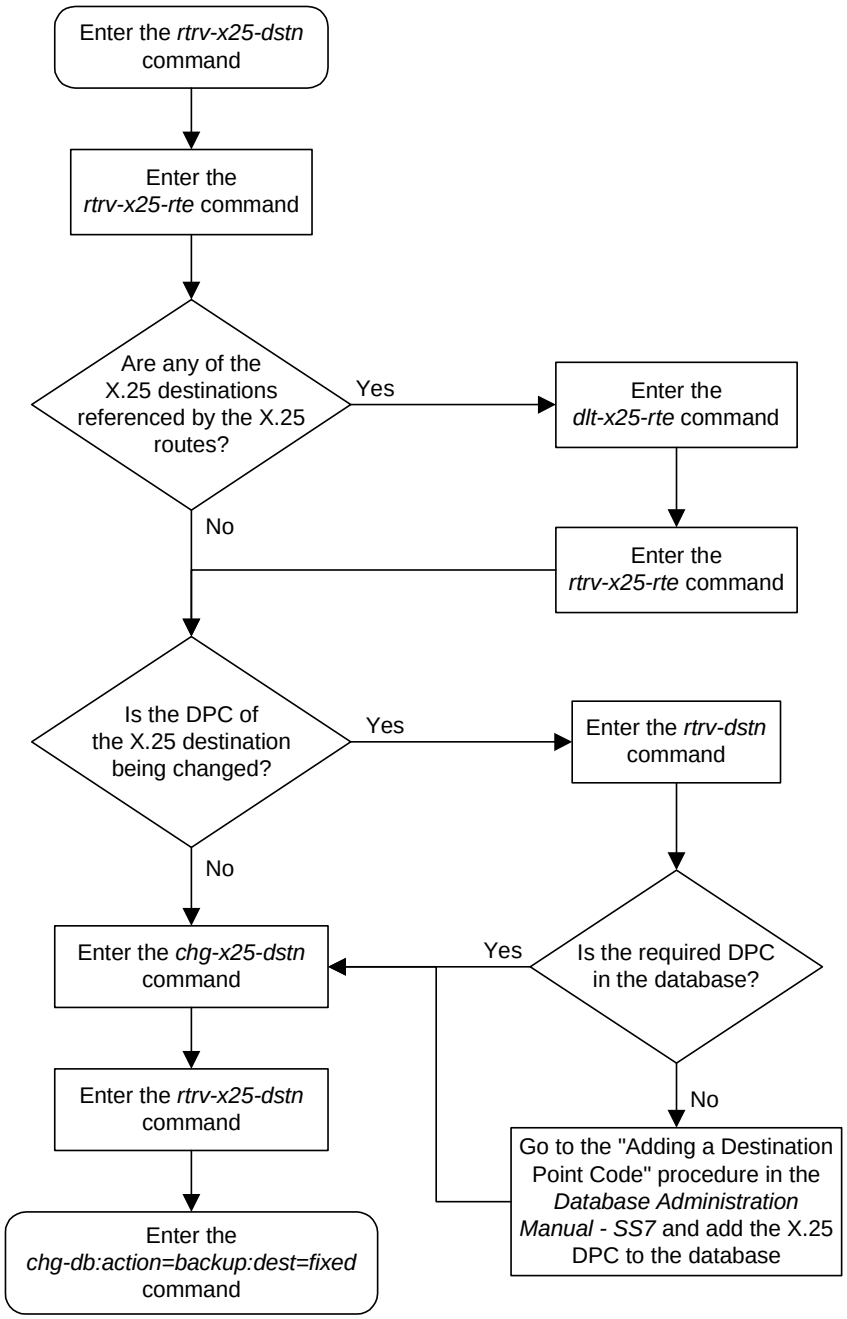
7. Verify the changes using the **rtrv-x25-dstn** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 21:16:37 GMT EAGLE5 31.4.0
X25 ADDR         SS7 DPC      SSN
11101            001-001-001  005
11102            001-001-001  005
22201            002-002-002  005
22202            002-002-002  010
220525586456772  240-012-004  002
234234231        240-012-005  113
23423422834      244-010-006  235
2342342325       244-010-006  236
23423423         244-010-007  112
33301            011-011-011  230
33302            003-003-003  007
3450912          244-010-005  114
423423045656767  244-010-008  112
44401            004-004-004  005
55501            005-005-005  005
9342             244-010-006  234
X.25 DSTN TABLE IS  30 % FULL
```

8. Backup the new changes using the **chg-db:action=backup:dest=fixed** command. 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.
```

Flowchart 2-5. Changing an X.25 Gateway Destination



Adding an X.25 Linkset

This procedure is used to add X.25 linksets to the Eagle using the **ent-ls** command. To add SS7 linksets, go to the "Adding an SS7 Linkset" procedure in the *Database Administration Manual – SS7*.

The **ent-ls** command uses these parameters.

:lsn – The name of the linkset. The linkset name can contain up to 10 characters, with the first character being a letter. However, the SEAS interface supports only eight characters. If this linkset is displayed on the SEAS interface and the linkset name contains more than eight characters, only the first eight characters in the linkset name are shown. If this linkset name contains more than eight characters, and is specified with the linkset commands on the SEAS interface, only the first eight characters can be specified.

:apc/apca – Adjacent point code – the point code identifying the node that is next to the Eagle.

NOTE: See Chapter 2, "Configuring Destination Tables," in the *Database Administration Manual - SS7* for a definition of the point code types that are used on the Eagle.

:lst – The linkset type of the specified linkset

:clli – The Common Language Location Identifier assigned to this point code. The value of the **clli** parameter is only displayed in the **rtrv-ls** command output when a specific linkset is being displayed with the **rtrv-ls:lsn=xxxxxxxx** command (where **xxxxxxxx** is the name of the specific linkset).

:sltset – The signaling link test message record to be associated with the linkset.

:l3tset – The level 3 timer set table. This parameter identifies which level three timer set is to be assigned to this linkset.

:scrn – The name of the screenset to be assigned to this linkset if gateway screening is to be used.

:**gwsa** – Gateway screening action determines whether gateway screening (GWS) is on or off for the specified link set.

:gwsm – Gateway screening messaging is used to turn on or off the display of messages generated for each screened message. When an MSU is rejected by gateway screening, a message is output to alert personnel of the event.

:gwsd – Gateway screening MSU discard is used to turn on or off the discarding of MSUs that bypass the gateway screening function due to load-shedding. Also use this parameter with the redirect function; MSUs that cannot be screened are discarded if you specify **gwsd=on**.

:bei – The broadcast exception indicator. This parameter indicates whether TFP (transfer prohibited) messages are allowed to be broadcast on the linkset. The **yes** parameter means TFPs are not broadcast. The **no** parameter means TFPs are broadcast.

:**slsci** – The **slsci** parameter indicates whether the 5 bit to 8 bit SLS conversion feature is used to select signaling links for outgoing messages on the specified link set. If the **slsci=yes** parameter is specified, the Eagle replaces any 5 bit SLS values contained in received messages with a random 8 bit value before they are used by the Eagle to select the outgoing signaling link in that linkset. The **slsci=yes** parameter can only be specified for linksets with ANSI SS7 adjacent point codes.

:asl8 – shows if the node adjacent to the Eagle is sending MSUs with 8-bit SLSs. This parameter does not apply to an X.25 linkset. The default value for the **asl8** parameter is **no**.

NOTE: For more information on the asl8 and slsci parameters, go to the asl8 and slsci parameter descriptions in the "Adding an SS7 Linkset" procedure in Chapter 3, "SS7 Configuration," of the *Database Administration Manual - SS7*.

:**mtprse** – shows if the node adjacent to the Eagle is equipped with the MTP restart capability.

NOTE: The mtprse parameter is used for the ANSI and ITU MTP restart features. For more information on the ANSI and ITU MTP restart features, go to the "Configuring an SS7 Linkset for the MTP Restart Feature" Chapter 3, "SS7 Configuration," of the *Database Administration Manual - SS7*.

:nis = specifies whether the National Spare for Network Indicator feature is on or off for the specific linkset. This parameter does not apply to an X.25 linkset. The default value for the **nis** parameter is **off**.

NOTE: For more information on the nis parameter, go to the nis parameter description in the "Adding an SS7 Linkset" procedure in Chapter 3, "SS7 Configuration," of the *Database Administration Manual - SS7*.

:slsocbit – specifies which of the bits, 5 through 16, serves as the most significant bit of the SLS of an ITU MSU, while bits 2 through 4 of the CIC serve as the three lower bits of the SLS.

:slsrsb – specifies which of the 4 bits of the SLS of an ITU MSU are rotated thus changing the least significant bit of the SLS.

NOTE: The slsocbit and slsrsb parameters are used for configuring the linkset for the ITU SLS Enhancement feature and can only be specified for linksets containing either ITU international or ITU national adjacent point codes. These parameters cannot be specified for X.25 linksets. For more information, see the "Configuring an SS7 Linkset for the ITU SLS Enhancement Feature" procedure in Chapter 3, "SS7 Configuration," of the *Database Administration Manual - SS7*.

The examples in this procedure are based on the example network shown in Figure 2-4 and Table 2-5 and are used to add X.25 linksets **ls03** and **ls04** to the database.

Table 2-5. X.25 Linkset Configuration Table

Linksets	Linkset APC	# LINKS	LST	GWSA	GWSD	SCRN
ls03	007-007-007	2	A	ON	OFF	SCR0
ls04	003-003-003	1	A	ON	ON	SCR2

The system can contain 1024 linksets, with a maximum of 255 of these linksets being gateway linksets. A gateway linkset is a linkset that contains routes to a different network.

The linkset to be added cannot be in the database. This can be verified in step 1 of this procedure.

The adjacent point code (APC) must be defined in the database, must be in the X.25 domain and cannot match the point code or capability point code of the Eagle. This can be verified in steps 2 and 3 of this procedure. The domain of the point code is shown in the **DOMAIN** field in the output of the **rtrv-dstn** command (step 3). The point code and capability point code of the Eagle are shown in the **PCA** and the **CPCA** fields in the output of the **rtrv-sid** command (step 2). The adjacent point code must be a full point code and cannot be a cluster point code.

If the APC is not in the destination point code table, go to the "Adding a ANSI Destination Point Code" procedure in the *Database Administration Manual – SS7*. and add the point code to the destination point code table.

NOTE: The adjacent point code for the X.25 linkset cannot be an ITU international or ITU national point code. An ITU international or ITU national point code cannot be assigned to the X.25 domain.

An X.25 APC cannot be referenced by an X.25 route that has the logical channel to network management function turned on (**lc2nm=yes**). Enter the **rtrv-x25-dstn** command to show the association of the point codes to X.25 addresses. Enter the **rtrv-x25-rte** command to show which X.25 routes have the logical channel to network management function turned on. This is shown by the entry **no** in the **LC2NM** field in the output of the **rtrv-x25-rte** command. The APC cannot be associated with an X.25 address that is assigned to an X.25 route that has the logical channel to network management function turned on (**lc2nm=yes**).

The **ent-ls** command has a parameter, **gwsd**, that can allow the discarding of messages that should have gone through the gateway screening process, but did not. The **gwsd** parameter is only intended to be used with the Database Transport Access (DTA) feature. If you are not using the DTA feature, the **gwsd** parameter should not be specified or should be set to no (**gwsd=no**).

The **gwsa**, **gwsm**, and **gwsd** parameters can only be specified if the **scrn** parameter is defined. Enter the **rtrv-ls** command to verify that the **scrn** parameter is defined for the specified linkset. If the **scrn** parameter is defined, a gateway screening screen set name is shown in the **SCRN** field of the output. This gateway screening screen set name must also be defined as a gateway screening screen set entity. This can be verified with the **rtrv-scrset** command.

CAUTION: When Gateway Screening is in the screen test mode, as defined by the linkset parameters gwsa=off and gwsm=on, the gateway screening action in the gateway screening stop action set specified by the actname parameter of the gateway screening screen set at the end of the gateway screening process will be performed.

If the domain of the linkset's APC is in the X.25 domain, the **bei=yes** parameter must be specified, or the **bei** parameter must be omitted.

If the **clli** parameter is specified with the **ent-ls** command, the value of the **clli** parameter must match the CLLI value of the adjacent point code of the linkset. The CLLI value of the adjacent point code is shown in the **CLLI** field of the **rtrv-dstn** command.

The **clli** parameter can only be specified with the **apc** or **apca** parameters.

Canceling the REPT-STAT-LS, RTRV-LS, and RTRV-DSTN Commands

Because the **rept-stat-ls**, **rtrv-ls**, and **rtrv-dstn** commands used in this procedure can output information for a long period of time, the **rept-stat-ls**, **rtrv-ls**, and **rtrv-dstn** commands can be canceled and the output to the terminal stopped. There are three ways that the **rept-stat-ls**, **rtrv-ls**, and **rtrv-dstn** commands can be canceled.

- Press the **F9** function key on the keyboard at the terminal where the **rept-stat-ls**, **rtrv-ls**, or **rtrv-dstn** commands were entered.
- Enter the **canc-cmd** without the **trm** parameter at the terminal where the **rept-stat-ls**, **rtrv-ls**, or **rtrv-dstn** commands were entered.
- Enter the **canc-cmd:trm=<xx>**, where **<xx>** is the terminal where the **rept-stat-ls**, **rtrv-ls**, or **rtrv-dstn** commands were entered, from another terminal other that the terminal where the **rept-stat-ls**, **rtrv-ls**, or **rtrv-dstn** commands were entered. To enter the **canc-cmd:trm=<xx>** command, the terminal must allow Security Administration commands to be entered from it and the user must be allowed to enter Security Administration commands. The terminal's permissions can be verified with the **rtrv-secu-trm** command. The user's permissions can be verified with the **rtrv-user** or **rtrv-secu-user** commands.

For more information about the **canc-cmd** command, go to the *Commands Manual*.

Procedure

1. Display the current linkset configuration using the **rtrv-ls** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 11:43:04 GMT EAGLE5 31.4.0

                                L3T SLT              GWS GWS GWS
LSN          APCA (SS7)   SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
lsa1         240-020-000  scr1  1   1   yes  a  1    off off off no    off
lsa2         240-030-000  scr2  1   2   no   c  3    on  on  on  yes   off
lsa3         240-040-000  scr3  1   3   yes  c  5    off off off yes   off
ls01         006-006-006  scr1  1   1   yes  a  1    on  off off no    off
ls02         008-008-008  scr1  1   1   yes  a  1    on  off off yes   off

                             L3T SLT              GWS GWS GWS
LSN          APCA (X25)   SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
ls6          244-010-004  scr4  1   4   no  a   6    off off off ---   off
ls7          244-012-005  scr5  1   5   no  c   3    on  on  on  ---   off
ls8          244-012-006  scr6  1   6   no  c   8    off off off ---   off

                                L3T SLT              GWS GWS GWS
LSN          APCI (SS7)   SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
lsi1         1-111-1      scr1  1   1   yes a   1    off off off ---   ---
lsi2         1-111-2      scr2  1   2   no  c   3    on  on  on  ---   ---
lsi3         1-111-3      scr3  1   3   yes c   5    off off off ---   ---

                                L3T SLT              GWS GWS GWS
LSN          APCN (SS7)   SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
lsn1         11111        scr1  1   1   yes a   1    off off off ---   off
lsn2         11112        scr2  1   2   no  c   3    on  on  on  ---   off
lsn3         11113        scr3  1   3   yes c   5    off off off ---   off

                                 L3T SLT              GWS GWS GWS
LSN          APCN24 (SS7)  SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS

Link set table is ( 14 of 1024)  1% full
```

2. Display the point code and capability point code of the Eagle by using the **rtrv-sid** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 11:43:04 GMT EAGLE5 31.4.0
PCA              PCI              PCN           CLLI            PCTYPE
010-010-010      0-123-1          11211         rlghncxa03w     OTHER

CPCA
002-002-002       002-002-003       002-002-004      002-002-005
002-002-006       002-002-007       002-002-008      002-002-009
004-002-001       004-003-003       144-212-003

CPCA (LNP)
005-005-002      005-005-004      005-005-005

SPC (Secondary Point Codes)
001-010-010      002-010-010      003-010-010

CPCI
1-001-1           1-001-2           1-001-3          1-001-4
1-002-1           1-002-2           1-002-3          1-002-4
2-001-1           7-222-7

CPCN
02091             02092             02094             02097
```

3. Display the point codes in the destination point code table by using the **rtrv-dstn** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 16:02:05 GMT  EAGLE5 31.4.0
DPCA        CLLI        BEI ELEI  ALIASI   ALIASN      DOMAIN
004-004-004 --------    yes ---   -------  ----------  SS7
005-005-005 --------    yes ---   -------  ----------  SS7
006-006-006 --------    no  ---   -------  ----------  SS7
008-008-008 --------    no  ---   -------  ----------  SS7
240-012-004 rlghncbb001 yes ---   1-111-1  11111       SS7
240-012-005 rlghncbb002 yes ---   1-112-2  11112       SS7
240-012-006 rlghncbb003 yes ---   1-112-3  11113       SS7
240-012-008 --------    yes ---   1-113-5  11114       SS7
001-001-001 --------    yes ---   -------  ----------  X25
002-002-002 --------    yes ---   -------  ----------  X25
003-003-003 --------    yes ---   -------  ----------  X25
007-007-007 --------    yes ---   -------  ----------  X25
244-010-004 ls06clli    no  ---   -------  ----------  X25
244-012-005 ls07clli    no  ---   -------  ----------  X25
244-012-006 ls08clli    no  ---   -------  ----------  X25
244-012-007 --------    no  ---   -------  ----------  X25
244-012-008 --------    no  ---   -------  ----------  X25

DPCI        CLLI        BEI ELEI  ALIASA       ALIASN      DOMAIN
2-131-1     rlghncbb023 no  ---   222-210-000  12001       SS7
2-131-2     --------    no  ---   222-211-001  12002       SS7
2-131-3     --------    no  ---   222-211-002  12003       SS7

DPCN        CLLI        BEI ELEI  ALIASA       ALIASI  DOMAIN
11211       rlghncbb013 no  ---   222-200-200 2-121-1  SS7
11212       rlghncbb013 no  ---   222-200-201 2-121-2  SS7

Destination table is (22 of 2000) 1% full
```

If the required DPC is not in the database, go to the "Adding a Destination Point Code" procedure in the *Database Adminsitration Manual - SS7* and add the DPC to the database.

4. Display the X.25 destinations in the database by entering the **rtrv-x25-dstn** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 21:16:37 GMT EAGLE5 31.4.0
X25 ADDR         SS7 DPC      SSN
11101            001-001-001  005
11102            001-001-001  005
22201            002-002-002  005
22202            002-002-002  010
220525586456772  240-012-004  002
234234231        240-012-005  113
23423422834      244-010-006  235
2342342325       244-010-006  236
23423423         244-010-007  112
33301            003-003-003  006
33302            003-003-003  007
3450912          244-010-005  114
423423045656767  244-010-008  112
44401            004-004-004  005
55501            005-005-005  005
9342             244-010-006  234
X.25 DSTN TABLE IS  30 % FULL
```

5. Display the X.25 routes in the database by entering the **rtrv-x25-rte** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 21:16:37 GMT EAGLE5 31.4.0
X25 ADDR          SS7 ADDR         TYPE  LOC   PORT  LC  RT   LC2NM
11101             44401            pvc   1205  a     01  xpc  no
11102             55501            pvc   1206  a     02  pc   no
22201             44401            pvc   1205  a     02  pc   no
22202             55501            pvc   1206  a     01  xpc  yes
33301             44401            svca  1207  a     --  pc   no
33302             55501            svca  1207  a     --  pc   no
X.25 ROUTE TABLE IS  30 % FULL
```

6. Using the outputs from steps 1 through 5 as a guide, add the new linkset using the **ent-ls** command. The new linkset must meet these conditions.

   - The new linkset cannot already be in the database – the linkset configuration is shown in the output of step 1.
   - The APC of the new linkset must be in the destination point code table, but cannot be either the Eagle's point code or the Eagle's capability point code – shown in the outputs of steps 2 and 3. The adjacent point code for the X.25 linkset cannot be an ITU international or ITU national point code.
   - The new linkset cannot use an APC assigned to an X.25 address that is assigned to an X.25 route that has the logical channel to network management function turned on (shown by the entry **yes** in the **LC2NM** field in the output of step 5). The output of step 4 shows which X.25 addresses are assigned to the point codes that can be used as APCs for linksets. The output of step 5 shows the X.25 addresses used by the X.25 routes.

For this example, enter these commands.

ent-ls:lsn=ls03:apca=007-007-007:lst=a:gwsa=on:scrn=scr1

ent-ls:lsn=ls04:apca=003-003-003:lst=a:gwsa=on:scrn=scr2

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

```
rlghncxa03w 04-03-28 16:23:21 GMT  EAGLE5 31.4.0
Link set table is ( 16 of 1024)  2% full
ENT-LS: MASP A - COMPLTD
```

7. Verify the changes using the **rtrv-ls** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 11:43:04 GMT EAGLE5 31.4.0

                              L3T SLT              GWS GWS GWS
LSN          APCA (SS7)   SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
lsa1         240-020-000  scr1  1   1   yes a   1    off off off no    off
lsa2         240-030-000  scr2  1   2   no  c   3    on  on  on  yes   off
lsa3         240-040-000  scr3  1   3   yes c   5    off off off yes   off
ls01         006-006-006  scr1  1   1   yes a   1    on  off off no    off
ls02         008-008-008  scr1  1   1   yes a   1    on  off off yes   off

                              L3T SLT              GWS GWS GWS
LSN          APCA (X25)   SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
ls03         007-007-007  scr1  1   1   yes a   0    on  off off ---   off
ls04         003-003-003  scr2  1   1   yes a   0    on  off off ---   off
ls6          244-010-004  scr4  1   4   no  a   6    off off off ---   off
ls7          244-012-005  scr5  1   5   no  c   3    on  on  on  ---   off
ls8          244-012-006  scr6  1   6   no  c   8    off off off ---   off

                              L3T SLT              GWS GWS GWS
LSN          APCI (SS7)   SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
lsi1         1-111-1      scr1  1   1   yes a   1    off off off ---   ---
lsi2         1-111-2      scr2  1   2   no  c   3    on  on  on  ---   ---
lsi3         1-111-3      scr3  1   3   yes c   5    off off off ---   ---

                              L3T SLT              GWS GWS GWS
LSN          APCN (SS7)   SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
lsn1         11111        scr1  1   1   yes a   1    off off off ---   off
lsn2         11112        scr2  1   2   no  c   3    on  on  on  ---   off
lsn3         11113        scr3  1   3   yes c   5    off off off ---   off

                               L3T SLT              GWS GWS GWS
LSN          APCN24 (SS7)  SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS

Link set table is ( 16 of 1024)  2% full
```

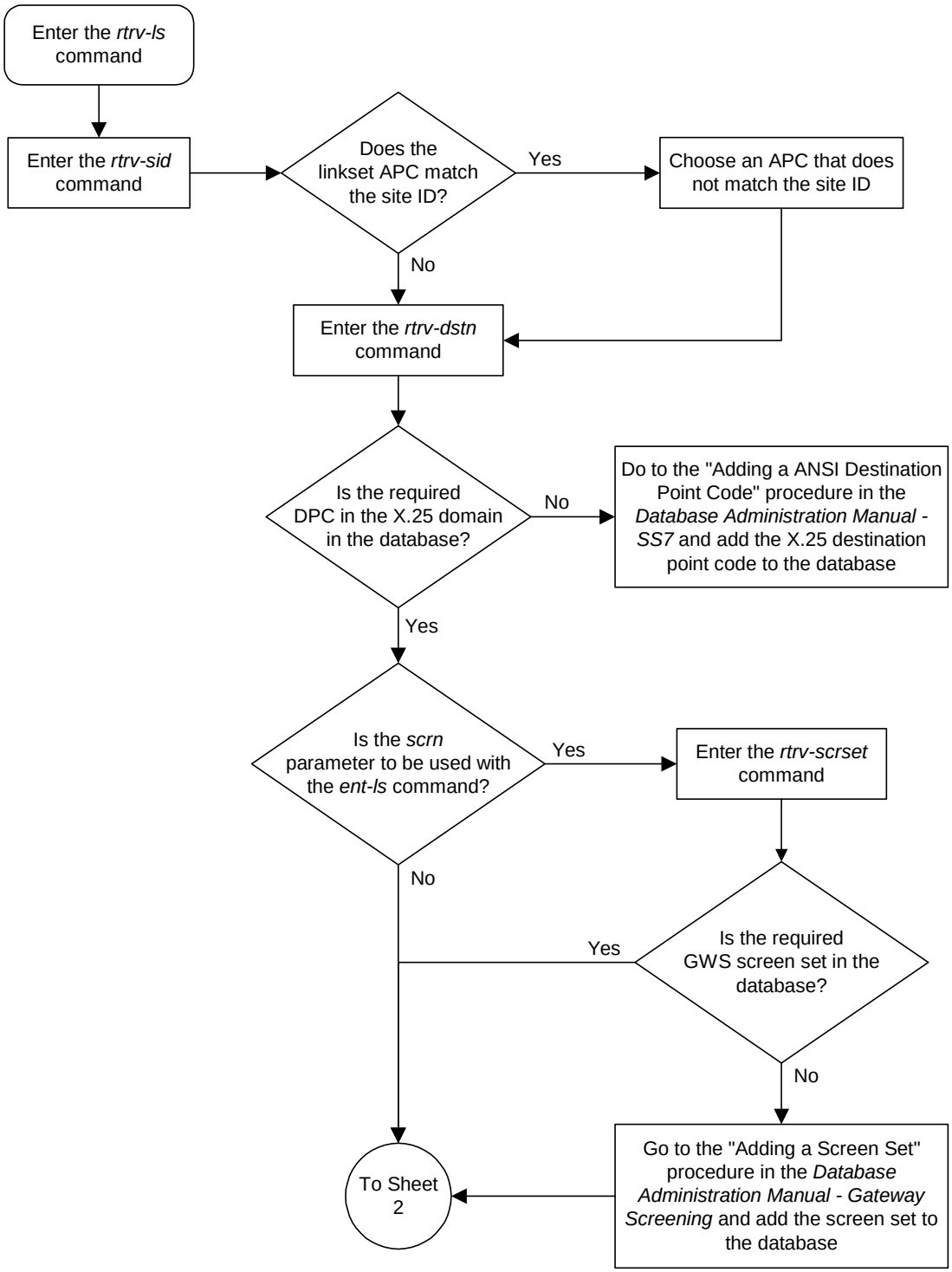
8. Check the status of the linkset using the **rept-stat-ls** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 08:40:38 GMT  EAGLE5 31.4.0
LSN       APCA           PST           SST       AST
lsa1      240-020-000    IS-NR         Allowed   -----
lsa2      240-030-000    IS-NR         Allowed   GWS
lsa3      240-040-000    IS-NR         Allowed   -----
ls01      006-006-006    IS-NR         Allowed   GWS
ls02      008-008-008    IS-NR         Allowed   GWS
ls03      007-007-007    IS-NR         Allowed   GWS
ls04      003-003-003    IS-NR         Allowed   GWS

LSN       APCI           PST           SST       AST
lsi1      1-111-1        IS-NR         Allowed   -----
lsi2      1-111-2        IS-NR         Allowed   -----
lsi3      1-111-3        IS-NR         Allowed   -----

LSN       APCN           PST           SST       AST
lsn1      11111          IS-NR         Allowed   -----
lsn2      11112          IS-NR         Allowed   -----
lsn3      11113          IS-NR         Allowed   -----
Command Completed.
```

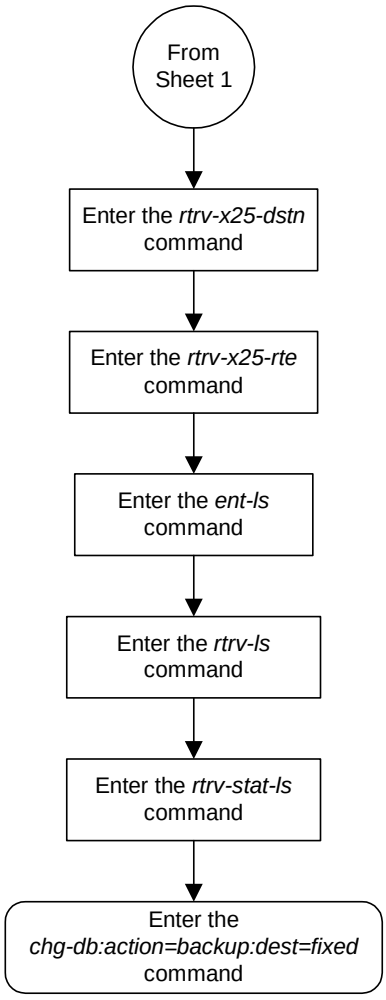
9. Backup the new changes using the **chg-db:action=backup:dest=fixed** command. These messages should appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
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.
```

Flowchart 2-6. Adding an X.25 Linkset (Sheet 1 of 2)



Flowchart 2-6. Adding an X.25 Linkset (Sheet 2 of 2)



Removing a Linkset Containing X.25 Signaling Links

This procedure is used to remove a linkset with X.25 signaling links from the database using the **dlt-ls** command. To remove linksets with SS7 signaling links, go to the "Removing a Linkset Containing SS7 Signaling Links" procedure in the *Database Administration Manual – SS7*.

The **dlt-ls** command has only one parameter, **lsn**, which is the name of the linkset to be removed from the database.

The examples in this procedure are used to remove linkset **ls04** from the database.

The linkset to be removed must exist in the database. This can be verified in step 1.

To remove a linkset, all links associated with the linkset must be removed. This can be verified in step 3.

All X.25 routes associated with the X.25 signaling links in the linkset must be removed. This can be verified in step 4.

The linkset to be removed cannot be referenced by a routeset. This can be verified in step 6.

Canceling the REPT-STAT-LS and RTRV-LS Commands

Because the **rept-stat-ls** and **rtrv-ls** commands used in this procedure can output information for a long period of time, the **rept-stat-ls** and **rtrv-ls** commands can be canceled and the output to the terminal stopped. There are three ways that the **rept-stat-ls** and **rtrv-ls** commands can be canceled.

- Press the **F9** function key on the keyboard at the terminal where the **rept-stat-ls** or **rtrv-ls** commands were entered.
- Enter the **canc-cmd** without the **trm** parameter at the terminal where the **rept-stat-ls** or **rtrv-ls** commands were entered.
- Enter the **canc-cmd:trm=<xx>**, where **<xx>** is the terminal where the **rept-stat-ls** or **rtrv-ls** commands were entered, from another terminal other that the terminal where the **rept-stat-ls** or **rtrv-ls** commands were entered. To enter the **canc-cmd:trm=<xx>** command, the terminal must allow Security Administration commands to be entered from it and the user must be allowed to enter Security Administration commands. The terminal's permissions can be verified with the **rtrv-secu-trm** command. The user's permissions can be verified with the **rtrv-user** or **rtrv-secu-user** commands.

For more information about the **canc-cmd** command, go to the *Commands Manual*.

Procedure

1. Display the current linkset configuration using the **rtrv-ls** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 11:43:04 GMT EAGLE5 31.4.0

                              L3T SLT             GWS GWS GWS
LSN          APCA (SS7)   SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
lsa1         240-020-000  scr1  1   1   yes a   1    off off off no    off
lsa2         240-030-000  scr2  1   2   no  c   3    on  on  on  yes   off
lsa3         240-040-000  scr3  1   3   yes c   5    off off off yes   off
ls01         006-006-006  scr1  1   1   yes a   1    on  off off no    off
ls02         008-008-008  scr1  1   1   yes a   1    on  off off yes   off

                              L3T SLT             GWS GWS GWS
LSN          APCA (X25)   SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
ls03         007-007-007  scr1  1   1   yes a   3    on  off off ---   off
ls04         003-003-003  scr2  1   1   yes a   1    on  off off ---   off
ls6          244-010-004  scr4  1   4   no  a   6    off off off ---   off
ls7          244-012-005  scr5  1   5   no  c   3    on  on  on  ---   off
ls8          244-012-006  scr6  1   6   no  c   8    off off off ---   off

                              L3T SLT             GWS GWS GWS
LSN          APCI (SS7)   SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
lsi1         1-111-1      scr1  1   1   yes a   1    off off off ---   ---
lsi2         1-111-2      scr2  1   2   no  c   3    on  on  on  ---   ---
lsi3         1-111-3      scr3  1   3   yes c   5    off off off ---   ---

                              L3T SLT             GWS GWS GWS
LSN          APCN (SS7)   SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
lsn1         11111        scr1  1   1   yes a   1    off off off ---   off
lsn2         11112        scr2  1   2   no  c   3    on  on  on  ---   off
lsn3         11113        scr3  1   3   yes c   5    off off off ---   off

                               L3T SLT             GWS GWS GWS
LSN          APCN24 (SS7)  SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS

Link set table is ( 16 of 1024)  2% full
```

2. Select a linkset whose APC is shown in the output of step 1 and is assigned to the X.25 domain. Display the signaling links in that linkset using the **rtrv-ls** command, specifying the linkset name of the linkset you wish to remove from the database. For this example, enter this command.

rtrv-ls:lsn=ls04

This is an example of the possible output.

```
rlghncxa03w 04-03-28 11:43:04 GMT EAGLE5 31.4.0

                              L3T SLT              GWS GWS GWS
LSN          APCA (X25)   SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
ls04         003-003-003  scr2  1   1   yes a   1    on  off off ---   off

             CLLI          TFATCABMLQ  MTPRSE  ASL8
             rlghncwd40z   --          ---     no
                                L2T           L1              PCR  PCR
          LOC   PORT SLC TYPE     SET  BPS    MODE TSET  ECM   N1   N2
          1207  a    0   LIMV35   1    56000  DTE  ---   BASIC ---  -----

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

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

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

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

Link set table is ( 16 of 1024)  2% full
```

3. Display the X.25 routes in the database by entering the **rtrv-x25-rte** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 21:16:37 GMT EAGLE5 31.4.0
X25 ADDR          SS7 ADDR         TYPE  LOC   PORT  LC  RT   LC2NM
11101             44401            pvc   1205  a     01  xpc  no
11102             55501            pvc   1206  a     02  pc   no
22201             44401            pvc   1205  a     02  pc   no
22202             55501            pvc   1206  a     01  xpc  yes
33301             44401            svca  1207  a     --  pc   no
33302             55501            svca  1207  a     --  pc   no
X.25 ROUTE TABLE IS  30 % FULL
```

4. If any X.25 routes shown in the output of step 3 are assigned to the X.25 signaling links shown in the output of step 2, remove those X.25 routes by using the **dlt-x25-rte** command. For this example, enter these commands.

   dlt-x25-rte:xaddr=33301:saddr=44401
   dlt-x25-rte:xaddr=33302:saddr=55501

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

   ```
   rlghncxa03w 04-03-28 11:45:17 GMT  EAGLE5 31.4.0
   DLT-X25-RTE: MASP A - X.25 Route table is 4
   DLT-X25-RTE: MASP A - COMPLTD
   ```

5. Display the routes in the database by using the **rtrv-rte** command, specifying the name of the linkset you wish to remove. For this example, enter this command.

   rtrv-rte:lsn=ls04

   This is an example of the possible output.

   ```
   rlghncxa03w 04-03-28 11:43:04 GMT EAGLE5 31.4.0
   LSN      DPCA        RC
   ls04     003-003-003 10
   ```

   If the X.25 linkset is shown in the **rtrv-rte** output, go to the "Removing a Route" procedure in the *Database Adminsitration Manual - SS7* and remove the routes from the database.

6. If any routes reference the linkset to be removed, remove that reference by using the **dlt-rte** command specifying the linkset to be removed. For this example, enter this command.

   dlt-rte:dpca=003-003-003:lsn=ls04

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

   ```
   rlghncxa03w 04-03-28 11:45:17 GMT  EAGLE5 31.4.0
   DLT-RTE: MASP A - COMPLTD
   ```

7. Deactivate the X.25 signaling links in the linkset using the **dact-slk** command. For this example, enter this command.

   dact-slk:loc=1207:port=a

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

   ```
   rlghncxa03w 04-03-28 08:41:12 GMT  EAGLE5 31.4.0
   Deactivate Link message sent to card
   ```

8. Verify that the signaling link status is out of service maintenance disabled (OOS-MT-DSBLD) using the **rept-stat-ls** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 08:40:38 GMT  EAGLE5 31.4.0
LSN       APCA           PST           SST       AST
lsa1      240-020-000    IS-NR         Allowed   -----
lsa2      240-030-000    IS-NR         Allowed   GWS
lsa3      240-040-000    IS-NR         Allowed   -----
ls01      006-006-006    IS-NR         Allowed   GWS
ls02      008-008-008    IS-NR         Allowed   GWS
ls03      007-007-007    IS-NR         Allowed   GWS
ls04      003-003-003    OOS-MT-DSBLD  Prohibit  GWS

LSN       APCI           PST           SST       AST
lsi1      1-111-1        IS-NR         Allowed   -----
lsi2      1-111-2        IS-NR         Allowed   -----
lsi3      1-111-3        IS-NR         Allowed   -----

LSN       APCN           PST           SST       AST
lsn1      11111          IS-NR         Allowed   -----
lsn2      11112          IS-NR         Allowed   -----
lsn3      11113          IS-NR         Allowed   -----
Command Completed.
```

9. If any signaling links in the linkset are the last signaling link on a card, the card must be placed out of service before that signaling link can be removed. Verify this by entering the **rtrv-slk** command and specifying each of the card locations shown in the output of step 2. Do not specify the **port** parameter. For this example, enter this command.

rtrv-slk:loc=1207

This is an example of the possible output.

```
rlghncxa03w 04-03-28 21:17:04 GMT EAGLE5 31.4.0
                                    L2T        L1              PCR  PCR
LOC   PORT LSN          SLC TYPE    SET BPS    MODE TSET  ECM   N1   N2
1207  A    LS04         0   LIMV35  1   56000  DTE  ---   BASIC ---  -----
```

10. If the output of step 9 shows that any of the signaling links in the specified linkset are the last signaling links on the card, place that card out of service by using the **rmv-card** command, specifying the card location to be taken out of service. For this example, enter this command.

rmv-card:loc=1207

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

```
rlghncxa03w  04-03-28  11:11:28 GMT  EAGLE5 31.4.0
Card has been inhibited.
```

11. Remove all X.25 signaling links in the linkset using the **dlt-slk** command. For this example, enter this command.

dlt-slk:loc=1207:port=a

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

```
rlghncxa03w 04-03-28 08:41:17 GMT  EAGLE5 31.4.0
DLT-SLK: MASP A - COMPLTD
```

12. Remove the linkset using the **dlt-ls** command. For this example, enter this command.

dlt-ls:lsn=ls04

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

```
rlghncxa03w 04-03-28 16:03:12 GMT  EAGLE5 31.4.0
Link set table is ( 15 of 1024)  1% full
DLT-LS: PSM A - COMPLTD
```

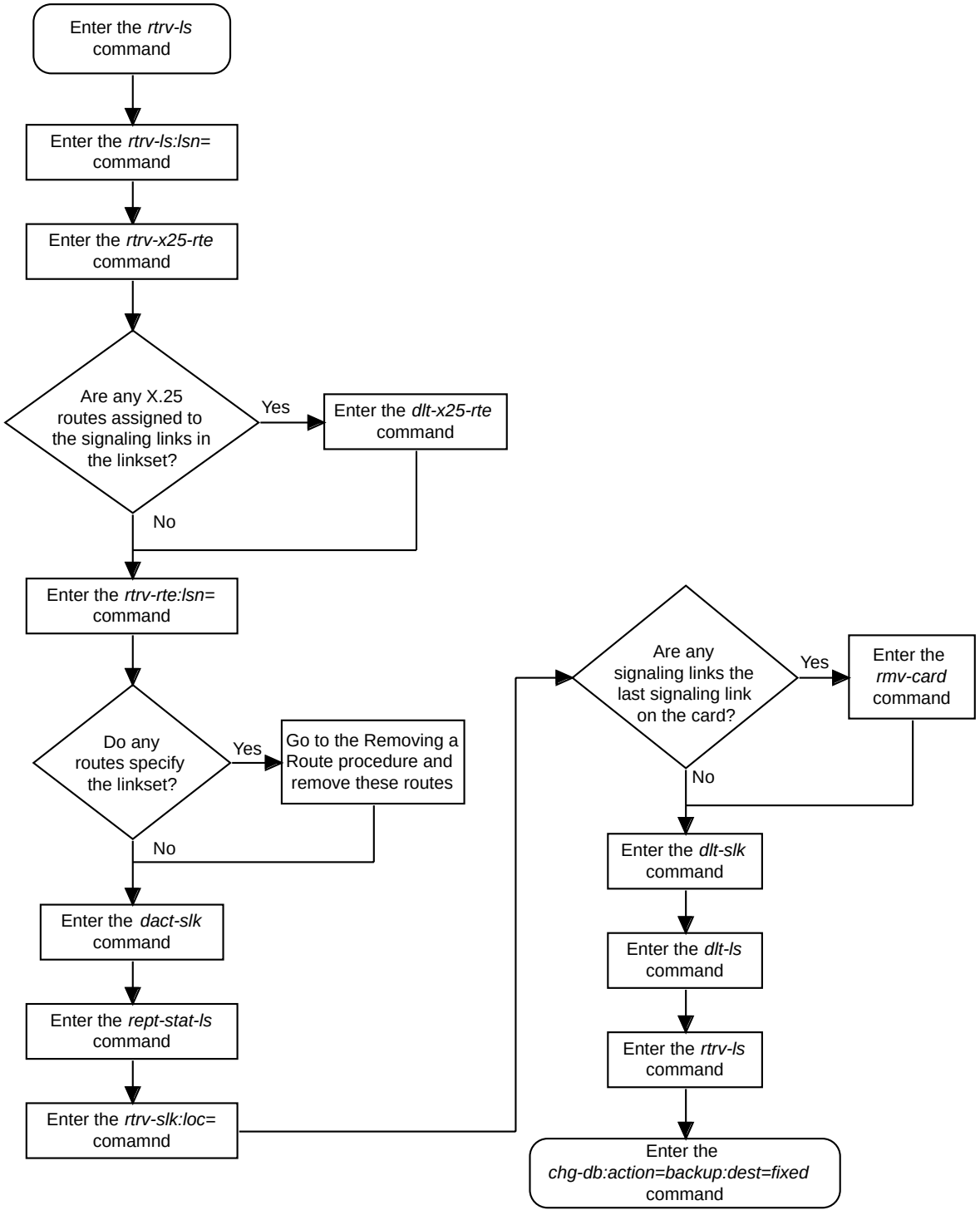
13. Verify the changes using the **rtrv-ls** command.

```
rlghncxa03w  04-03-28 11:43:04 GMT EAGLE5 31.4.0

                              L3T SLT             GWS GWS GWS
LSN          APCA (SS7)   SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
lsa1         240-020-000  scr1  1   1   yes a   1    off off off no    off
lsa2         240-030-000  scr2  1   2   no  c   3    on  on  on  yes   off
lsa3         240-040-000  scr3  1   3   yes c   5    off off off yes   off
ls01         006-006-006  scr1  1   1   yes a   1    on  off off no    off
ls02         008-008-008  scr1  1   1   yes a   1    on  off off yes   off

                              L3T SLT             GWS GWS GWS
LSN          APCA (X25)   SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
ls03         007-007-007  scr1  1   1   yes a   3    on  off off ---   off
ls6          244-010-004  scr4  1   4   no  a   6    off off off ---   off
ls7          244-012-005  scr5  1   5   no  c   3    on  on  on  ---   off
ls8          244-012-006  scr6  1   6   no  c   8    off off off ---   off

                              L3T SLT             GWS GWS GWS
LSN          APCI (SS7)   SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
lsi1         1-111-1      scr1  1   1   yes a   1    off off off ---   ---
lsi2         1-111-2      scr2  1   2   no  c   3    on  on  on  ---   ---
lsi3         1-111-3      scr3  1   3   yes c   5    off off off ---   ---

                              L3T SLT             GWS GWS GWS
LSN          APCN (SS7)   SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
lsn1         11111        scr1  1   1   yes a   1    off off off ---   off
lsn2         11112        scr2  1   2   no  c   3    on  on  on  ---   off
lsn3         11113        scr3  1   3   yes c   5    off off off ---   off

                               L3T SLT             GWS GWS GWS
LSN          APCN24 (SS7)  SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS

Link set table is ( 15 of 1024)  1% full
```

14. Backup the new changes using the **chg-db:action=backup:dest=fixed** command. 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.
```

Flowchart 2-7. Removing a Linkset Containing X.25 Signaling Links



Changing an X.25 Linkset

This procedure is used to change the definition of linksets that contain X.25 signaling links using the **chg-ls** command. To change SS7 linksets, go to the "Changing an SS7 Linkset" procedure in the *Database Administration Manual – SS7*. The **chg-ls** command uses these parameters.

:lsn – The name of the linkset. The linkset name can contain up to 10 characters, with the first character being a letter. However, the SEAS interface supports only eight characters. If this linkset is displayed on the SEAS interface and the linkset name contains more than eight characters, only the first eight characters in the linkset name are shown. If this linkset name contains more than eight characters, and is specified with the linkset commands on the SEAS interface, only the first eight characters can be specified.

:apc/apca/apci/apcn – Adjacent point code – the point code identifying the node that is next to the Eagle

NOTE: See Chapter 2, "Configuring Destination Tables," in the *Database Administration Manual - SS7* for a definition of the point code types that are used on the Eagle.

:lst – The linkset type of the specified linkset

:clli – The Common Language Location Identifier assigned to this point code. The value of the **clli** parameter is only displayed in the **rtrv-ls** command output when a specific linkset is being displayed with the **rtrv-ls:lsn=xxxxxxxx** command (where **xxxxxxxx** is the name of the specific linkset).

:sltset – The signaling link test message record to be associated with the linkset.

:l3tset – The level 3 timer set table. This parameter identifies which level three timer set is to be assigned to this linkset. Currently, only one is supported.

:scrn – The name of the screenset to be assigned to this linkset if gateway screening is to be used.

:gwsa – Gateway screening action determines whether gateway screening (GWS) is on or off for the specified link set.

:gwsm – Gateway screening messaging is used to turn on or off the display of messages generated for each screened message. When an MSU is rejected by gateway screening, a message is output to alert personnel of the event.

:gwsd – Gateway screening MSU discard is used to turn on or off the discarding of MSUs that bypass the gateway screening function due to load-shedding. Also use this parameter with the redirect function; MSUs that cannot be screened are discarded if you specify **gwsd=on**.

:bei – The broadcast exception indicator. This parameter indicates whether TFP (transfer prohibited) messages are allowed to be broadcast on the linkset. The **yes** parameter means TFPs are not broadcast. The **no** parameter means TFPs are broadcast.

:**slsci** – The **slsci** parameter indicates whether the 5 bit to 8 bit SLS conversion feature is used to select signaling links for outgoing messages on the specified link set. If the **slsci=yes** parameter is specified, the Eagle replaces any 5 bit SLS values contained in received messages with a random 8 bit value before they are used by the Eagle to select the outgoing signaling link in that linkset. The **slsci=yes** parameter can only be specified for linksets with ANSI SS7 adjacent point codes.

:asl8 – shows if the node adjacent to the Eagle is sending MSUs with 8-bit SLSs. This parameter does not apply to an X.25 linkset. The default value for the **asl8** parameter is **no**.

NOTE: For more information on the asl8 and slsci parameters, go to the asl8 and slsci parameter descriptions in the "Changing an SS7 Linkset" procedure in Chapter 3, "SS7 Configuration," of the *Database Administration Manual - SS7*.

:**tfatcabmlq** – the TFA/TCA broadcast minimum link quantity shows the minimum number of signaling links in the given link set (or in the combined link set in which it resides) that must be available for traffic. The value of the **tfatcabmlq** parameter is only displayed in the **rtrv-ls** command output when a specific linkset is being displayed with the **rtrv-ls:lsn=xxxxxxxx** command (where **xxxxxxxx** is the name of the specific linkset).

:**mtprse** – shows if the node adjacent to the Eagle is equipped with the MTP restart capability.

NOTE: The mtprse parameter is used for the ANSI and ITU MTP restart features. For more information on the ANSI and ITU MTP restart features, go to the "Configuring an SS7 Linkset for the MTP Restart Feature" Chapter 3, "SS7 Configuration," of the *Database Administration Manual - SS7*.

:nis = specifies whether the National Spare for Network Indicator feature is on or off for the specific linkset. This parameter does not apply to an X.25 linkset. The default value for the **nis** parameter is **off**.

NOTE: For more information on the nis parameter, go to the nis parameter description in the "Changing an SS7 Linkset" procedure in Chapter 3, "SS7 Configuration," of the *Database Administration Manual* - SS7.

:slsocbit – specifies which of the bits, 5 through 16, serves as the most significant bit of the SLS of an ITU MSU, while bits 2 through 4 of the CIC serve as the three lower bits of the SLS.

:slsrsb – specifies which of the 4 bits of the SLS of an ITU MSU are rotated thus changing the least significant bit of the SLS.

NOTE: The slsocbit and slsrsb parameters are used for configuring the linkset for the ITU SLS Enhancement feature and can only be specified for linksets containing either ITU international or ITU national adjacent point codes. These parameters cannot be specified for X.25 linksets. For more information, see the "Configuring an SS7 Linkset for the ITU SLS Enhancement Feature" procedure in Chapter 3, "SS7 Configuration," of the *Database Administration Manual - SS7*.

:nlsn – The new name of the linkset

The linkset to be changed must exist in the database.

If the adjacent point code (APC) is changed, the new APC must be in the destination point code table and must be defined as a true point code in the destination point code table and cannot be an alias point code. The domain of the new APC must be the same as the APC being changed. The new APC of the linkset cannot match the self ID of the Eagle. The new APC must be a full point code and cannot be a cluster point code.

The signaling link configuration of the linkset can be verified by entering the **rtrv-ls:lsn=** command specifying the linkset name as shown in step 3.

Use the **rtrv-dstn** command to verify that the new APC is in the destination point code table and to verify the domain of the new APC. If the new APC is not shown in the **rtrv-dstn** command output, go to the "Adding a ANSI Destination Point Code" in the *Database Administration Manual – SS7* and add the new APC to the destination point code table.

To change the APC of a linkset, all signaling links in the linkset must be in the OOS-MT-DSBLD state.

The domain of the linkset's APC cannot be changed using the **chg-ls** command. For example, if the current domain of the APC is X.25, the new APC must also be in the X.25 domain. To change the domain of the linkset's APC, the linkset must be removed from the database using the **dlt-ls** command and re-entered with the new APC in the different domain using the **ent-ls** command. To remove the X.25 linkset, go to the "Removing a Linkset Containing X.25 Signaling Links" procedure on page 2-58. To add the X.25 linkset, go to the "Adding an X.25 Linkset" procedure on page 2-47. To add an SS7 linkset, go to the "Adding an SS7 Linkset" procedure in the *Database Administration Manual – SS7*.

The **gwsa**, **gwsm**, and **gwsd** parameters can only be specified if the **scrn** parameter is defined. Enter the **rtrv-ls** command to verify that the **scrn** parameter is defined for the specified linkset. If the **scrn** parameter is defined, a gateway screening screen set name is shown in the **SCRN** field of the output. This gateway screening screen set name must also be defined as a gateway screening screen set entity. This can be verified with the **rtrv-scrset** command.

CAUTION: When Gateway Screening is in the screen test mode, as defined by the linkset parameters gwsa=off and gwsm=on, the gateway screening action in the gateway screening stop action set specified by the actname parameter of the gateway screening screen set at the end of the gateway screening process will be performed.

An X.25 APC cannot be referenced by an X.25 route that has the logical channel to network management function turned on (**lc2nm=yes**). Use the **rtrv-x25-dstn** command to verify which point codes are assigned to each X.25 address. Use the **rtrv-x25-rte** to verify which X.25 address is assigned to each X.25 route and to verify which X.25 route has the logical channel to network management function turned on, shown by the entry **yes** in the **LC2NM** field.

The **chg-ls** command has a parameter, **gwsd**, that can allow the discarding of messages that should have gone through the gateway screening process, but could not. The **gwsd** parameter is only intended to be used with the database transport access (DTA) feature. If you are not using the DTA feature, the **gwsd** parameter should not be specified or should be set to no (**gwsd=no**).

The **tfatcabmlq** parameter (TFA/TCA Broadcast Minimum Link Quantity) shows the minimum number of links in the given link set (or in the combined link set in which it resides) that must be available for traffic. When the number of signaling links in the specified linkset is equal to or greater than the value of the **tfatcabmlq** parameter, the status of the routes that use the specified linkset is set to allowed and can carry traffic. Otherwise, these routes are restricted. The value of the **tfatcabmlq** parameter cannot exceed the total number of signaling links contained in the linkset.

This parameter exists only in the **chg-ls** command and not the **ent-ls**, because no links are assigned to the linkset when the linkset is first created with the **ent-ls** command.

NOTE: If the tfatcabmlq=0 parameter is specified, the Eagle broadcasts TFAs/TCAs only when 1/2 of the links in the given link set (or in the combined link set in which it resides) become available.

If the **lst=c** parameter (the linkset contains C links) is specified, the **tfatcabmlq** parameter cannot be specified.

If the **gwsa=off** parameter is specified, then the **gwsd=off** parameter must be specified.

If the domain of the linkset's APC is in the X.25 domain, the **bei=yes** parameter must be specified, or the **bei** parameter must be omitted.

The word **SEAS** cannot be used as a value for the **scrn** parameter of the **chg-ls** command. The word **SEAS** is used in the **rtrv-ls** command output, in the **SCRN** field, to show gateway linksets created on the SEAS interface. A gateway linkset combines the functions of a gateway screening screen set and an SS7 linkset specifying the **gwsa=on** and **scrn** parameters. Like an Eagle gateway screening screen set, a gateway linkset defines the screening references that are to be used to screen the messages on the linkset. It also defines the linkset whose messages are to be screened. A gateway linkset can only be configured from a SEAS terminal and not from an Eagle terminal.

If the **clli** parameter is specified with the **chg-ls** command, the value of the **clli** parameter must match the CLLI value of the adjacent point code of the linkset. The CLLI value of the adjacent point code is shown in the **CLLI** field of the **rtrv-dstn** command.

The **clli** parameter can only be specified with the **apc** or **apca** parameters.

In this procedure, the examples are used to change the definition of a linkset named **ls7**. The attributes of linkset **ls7** that are changed in this example are the APC, the gateway screening screen set name, and to change the linkset type to A. For any optional parameters not specified with the **chg-ls** command, the values for those parameters are not changed.

Canceling the RTRV-DSTN and RTRV-LS Commands

Because the **rtrv-dstn** and **rtrv-ls** commands used in this procedure can output information for a long period of time, the **rtrv-dstn** and **rtrv-ls** commands can be canceled and the output to the terminal stopped. There are three ways that the **rtrv-dstn** and **rtrv-ls** commands can be canceled.

- Press the **F9** function key on the keyboard at the terminal where the **rtrv-dstn** or **rtrv-ls** commands were entered.
- Enter the **canc-cmd** without the **trm** parameter at the terminal where the **rtrv-dstn** or **rtrv-ls** commands were entered.
- Enter the **canc-cmd:trm=<xx>**, where **<xx>** is the terminal where the **rtrv-dstn** or **rtrv-ls** commands were entered, from another terminal other that the terminal where the **rtrv-dstn** or **rtrv-ls** commands were entered. To enter the **canc-cmd:trm=<xx>** command, the terminal must allow Security Administration commands to be entered from it and the user must be allowed to enter Security Administration commands. The terminal's permissions can be verified with the **rtrv-secu-trm** command. The user's permissions can be verified with the **rtrv-user** or **rtrv-secu-user** commands.

For more information about the **canc-cmd** command, go to the *Commands Manual*.

Procedure

1. Display the current linkset configuration using the **rtrv-ls** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 11:43:04 GMT EAGLE5 31.4.0
                              L3T SLT              GWS GWS GWS
LSN          APCA (SS7)   SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
lsa1         240-020-000  scr1  1   1   yes a   1    off off off no    off
lsa2         240-030-000  scr2  1   2   no  c   3    on  on  on  yes   off
lsa3         240-040-000  scr3  1   3   yes c   5    off off off yes   off
ls1          240-012-004  scr1  1   1   yes a   4    off off off yes   off
ls2          240-012-005  scr2  1   2   yes c   2    on  on  on  yes   off
ls3          240-012-006  scr3  1   3   yes c   5    off off off no    off
ls01         002-002-002  scr1  1   1   no  c   0    on  off off yes   off
ls02         004-004-004  scr1  1   1   no  b   0    on  off off no    off
ls03         003-003-003  scr1  1   1   no  d   0    on  off off no    off
ls04         001-002-003  scr2  1   1   no  a   0    on  off on  yes   off
ls06         002-007-008  scr4  1   1   no  a   0    on  off off yes   off

                              L3T SLT              GWS GWS GWS
LSN          APCA (X25)   SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
ls6          244-010-004  scr4  1   4   no  a   6    off off off ---   off
ls7          244-012-005  scr5  1   5   no  c   3    on  on  on  ---   off
ls8          244-012-006  scr6  1   6   no  c   8    off off off ---   off

                              L3T SLT              GWS GWS GWS
LSN          APCI (SS7)   SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
lsi1         1-111-1      scr1  1   1   yes a   1    off off off ---   ---
lsi2         1-111-2      scr2  1   2   no  c   3    on  on  on  ---   ---
lsi3         1-111-3      scr3  1   3   yes c   5    off off off ---   ---
lsi7         3-150-4      scr1  1   1   no  a   0    on  off off ---   ---

                              L3T SLT              GWS GWS GWS
LSN          APCN (SS7)   SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
lsn1         11111        scr1  1   1   yes a   1    off off off ---   off
lsn2         11112        scr2  1   2   no  c   3    on  on  on  ---   off
lsn3         11113        scr3  1   3   yes c   5    off off off ---   off
lsn5         10685        scr3  1   1   no  a   0    on  off off ---   off

                               L3T SLT              GWS GWS GWS
LSN          APCN24 (SS7)  SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS

Link set table is ( 22 of 1024)  2% full
```

If the adjacent point code (APC) of the linkset is being changed, go to step 2. If the APC is not being changed, go to step 3. In this example, the APC of the linkset is being changed, so proceed to step 2.

2. Display the point codes in the destination point code table by using the **rtrv-dstn** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 16:02:05 GMT  EAGLE5 31.4.0
DPCA        CLLI        BEI ELEI  ALIASI   ALIASN      DOMAIN
004-004-004 --------    yes ---   -------  ----------  SS7
005-005-005 --------    yes ---   -------  ----------  SS7
006-006-006 --------    no  ---   -------  ----------  SS7
008-008-008 --------    no  ---   -------  ----------  SS7
240-012-004 rlghncbb001 yes ---   1-111-1  11111       SS7
240-012-005 rlghncbb002 yes ---   1-112-2  11112       SS7
240-012-006 rlghncbb003 yes ---   1-112-3  11113       SS7
240-012-008 --------    yes ---   1-113-5  11114       SS7
001-001-001 --------    yes ---   -------  ----------  X25
002-002-002 --------    yes ---   -------  ----------  X25
003-003-003 --------    yes ---   -------  ----------  X25
007-007-007 --------    yes ---   -------  ----------  X25
244-010-004 ls06clli    no  ---   -------  ----------  X25
244-012-005 ls07clli    no  ---   -------  ----------  X25
244-012-006 ls08clli    no  ---   -------  ----------  X25
244-012-007 --------    no  ---   -------  ----------  X25
244-012-008 --------    no  ---   -------  ----------  X25

DPCI        CLLI        BEI ELEI  ALIASA       ALIASN      DOMAIN
2-131-1     rlghncbb023 no  ---   222-210-000  12001       SS7
2-131-2     --------    no  ---   222-211-001  12002       SS7
2-131-3     --------    no  ---   222-211-002  12003       SS7

DPCN        CLLI        BEI ELEI  ALIASA       ALIASI  DOMAIN
11211       rlghncbb013 no  ---   222-200-200 2-121-1  SS7
11212       rlghncbb013 no  ---   222-200-201 2-121-2  SS7

Destination table is (22 of 2000) 1% full
```

3. Display the current linkset configuration of the linkset to be changed using the **rtrv-ls** command with the linkset name. This is an example of the possible output.

```
rlghncxa03w 04-03-28 11:43:04 GMT EAGLE5 31.4.0
                           L3T SLT              GWS GWS GWS
LSN       APCA (X25)   SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
ls7       244-012-005  scr5  1   5   no  c   3    on  on  on  ---   off

          CLLI         TFATCABMLQ  MTPRSE  ASL8
          ls07clli     2           no      no
                                  L2T          L1              PCR  PCR
          LOC   PORT SLC TYPE     SET  BPS    MODE TSET  ECM   N1   N2
          1205  A    0   LIMV35   -    56000  DTE  --    BASIC ---  -----
          1206  A    1   LIMV35   -    56000  DTE  --    BASIC ---  -----
          1207  A    2   LIMV35   -    64000  DTE  --    BASIC ---  -----

Link set table is ( 22 of 1024)  2% full
```

4. Deactivate the signaling links in the linkset using the **dact-slk** command. For this example, enter these commands.

   dact-slk:loc=1205:port=a

   dact-slk:loc=1206:port=a

   dact-slk:loc=1207:port=a

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

```
rlghncxa03w 04-03-28 08:41:12 GMT  EAGLE5 31.4.0
Deactivate Link message sent to card
```

5. Change the linkset configuration using the **chg-ls** command. For this example, enter this command.

   chg-ls:lsn=ls7:apca=244-012-008:scrn=scr7:lst=a

   This command example changes the APC of the linkset to **244-012-008**, changes the gateway screening screen set name to **scr7** and changes the linkset type to A.

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

```
rlghncxa03w  04-03-28  08:38:45 GMT  EAGLE5 31.4.0
Link set table is ( 22 of 1024)  2% full
CHG-LS:  MASP A - COMPLTD
```

6. Verify the changes using the **rtrv-ls** command, specifying the linkset name that was changed in step 5. For this example, enter this command.

   rtrv-ls:lsn=ls1

   This is an example of the possible output.

```
rlghncxa03w 04-03-28 11:43:04 GMT EAGLE5 31.4.0
                              L3T SLT             GWS GWS GWS
LSN          APCA (X25)   SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
ls7          244-012-008  scr7  1   5   no  a   3    on  on  on  ---   off

          CLLI         TFATCABMLQ  MTPRSE  ASL8
          -----------  2           no      no
                                L2T          L1              PCR  PCR
          LOC   PORT SLC TYPE     SET  BPS    MODE TSET  ECM   N1   N2
          1205  A    0   LIMV35   -    56000  DTE  --    BASIC ---  -----
          1206  A    1   LIMV35   -    56000  DTE  --    BASIC ---  -----
          1207  A    2   LIMV35   -    64000  DTE  --    BASIC ---  -----

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

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

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

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

Link set table is ( 22 of 1024)  2% full
```

7. Activate the signaling links that were deactivated in step 4 using the **act-slk** command. For this example, enter these commands.

   act-slk:loc=1205:port=a

   act-slk:loc=1206:port=a

   act-slk:loc=1207:port=a

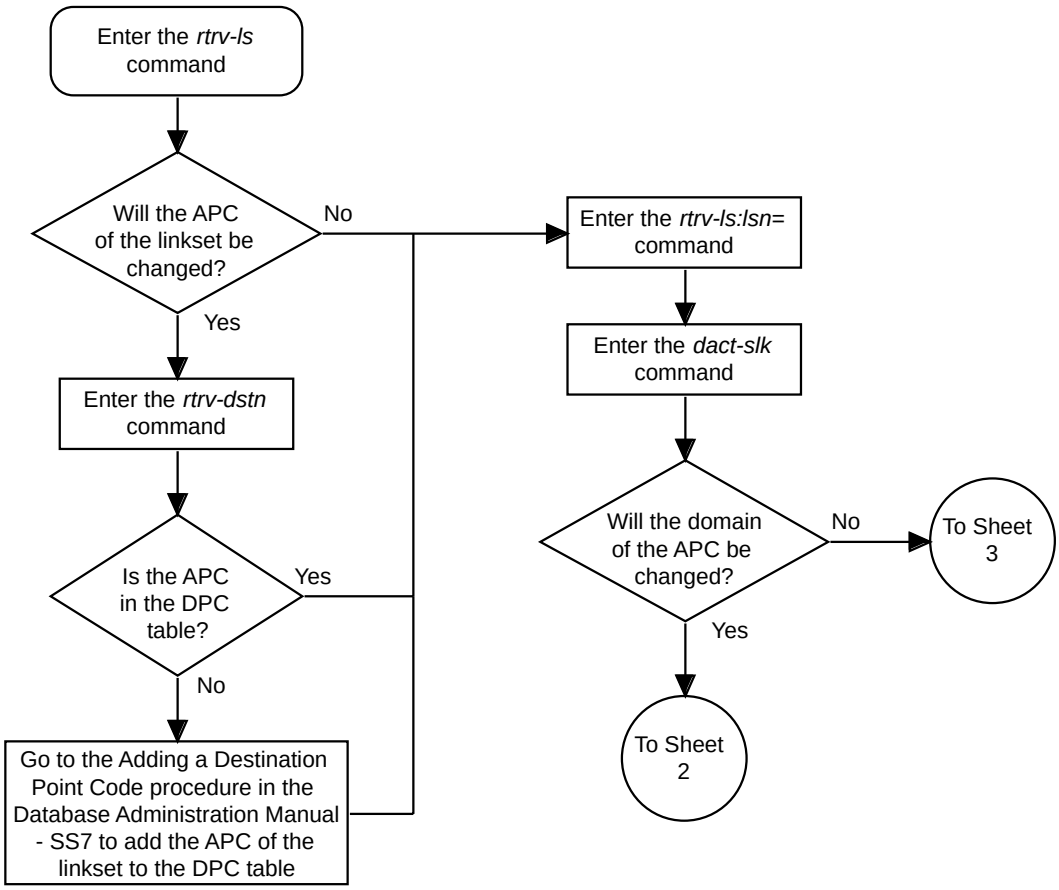
   When each of these commands have successfully completed, this message should appear.

```
rlghncxa03w 04-03-28 08:41:12 GMT  EAGLE5 31.4.0
Activate Link message sent to card
```

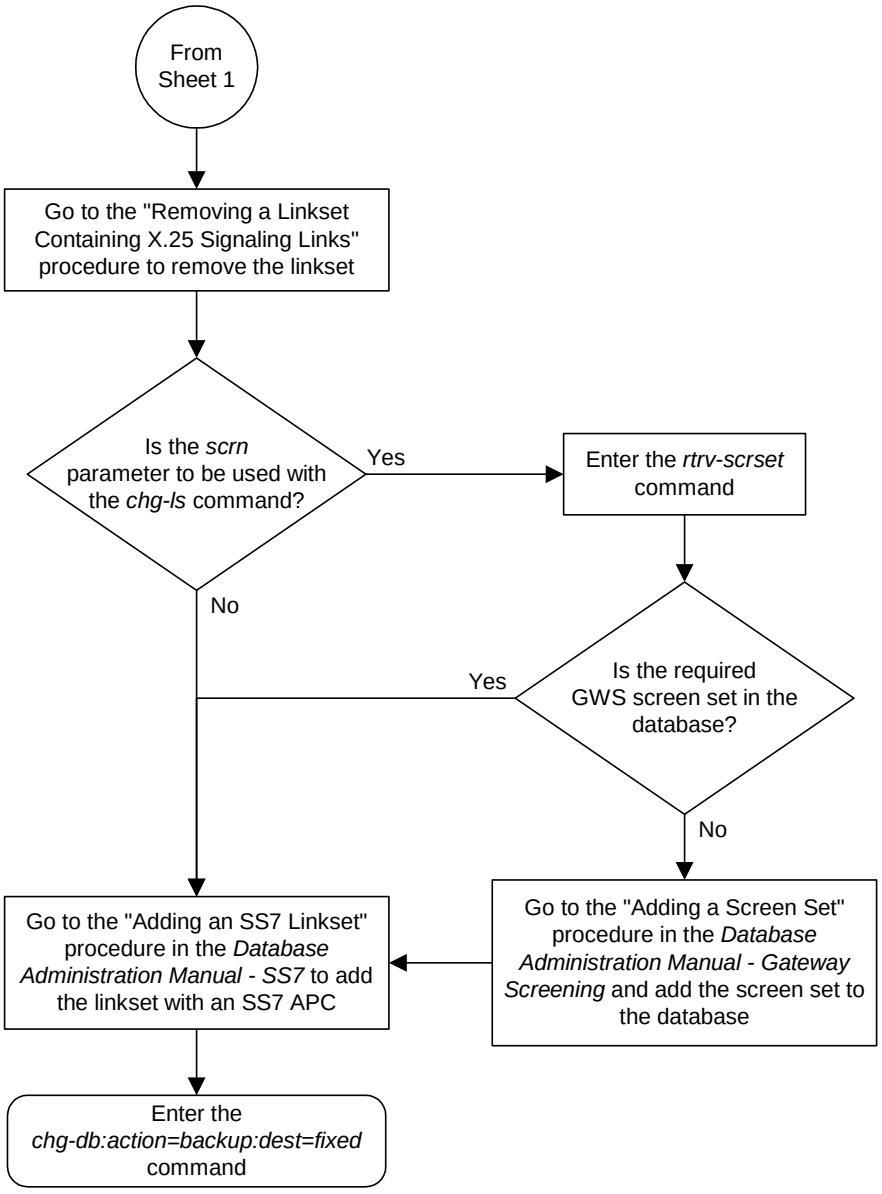
8. Backup the new changes using the **chg-db:action=backup:dest=fixed** command. These messages should appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
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.
```

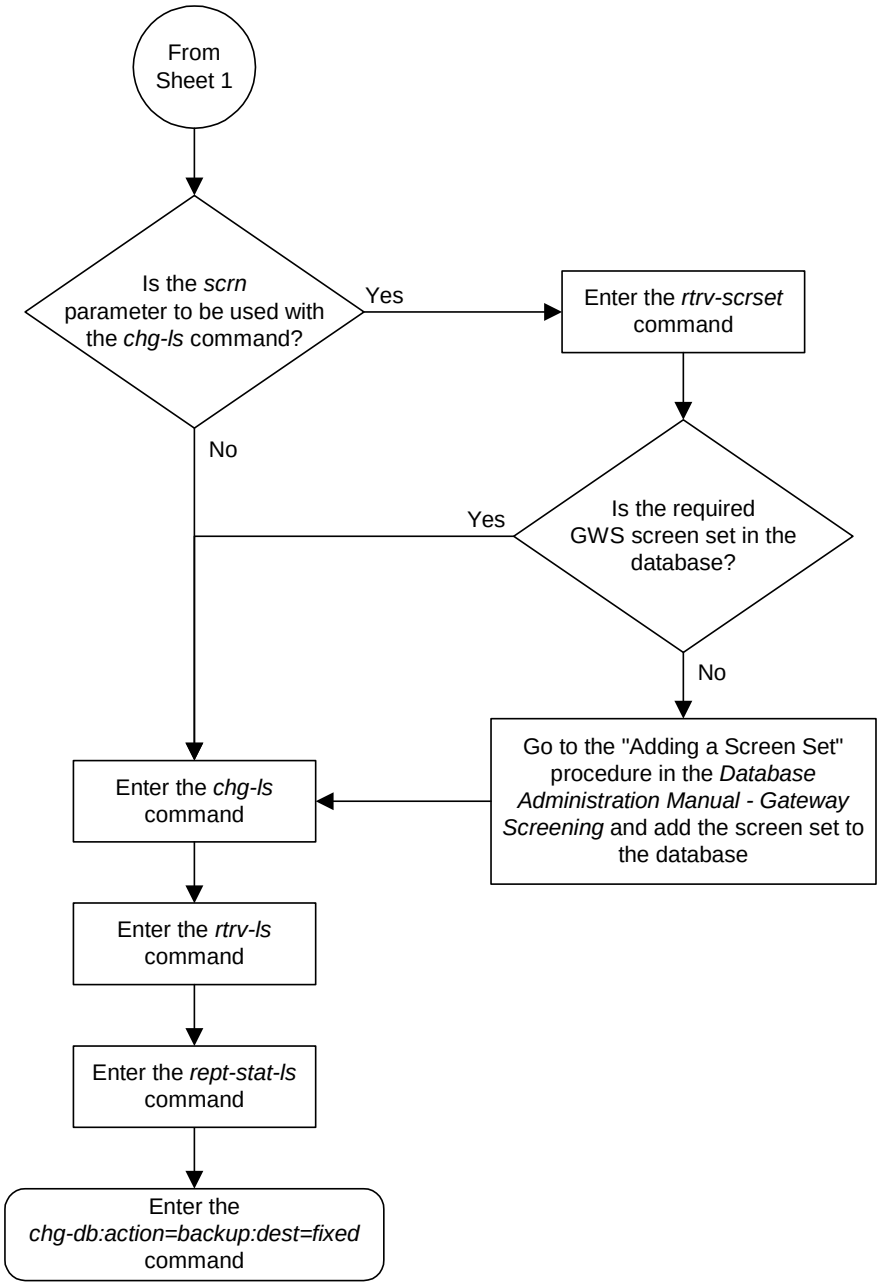
Flowchart 2-8. Changing an X.25 Linkset (Sheet 1 of 3)



Flowchart 2-8. Changing an X.25 Linkset (Sheet 2 of 3)



Flowchart 2-8. Changing an X.25 Linkset (Sheet 3 of 3)



Adding an X.25 Signaling Link

This procedure is used to add an X.25 signaling link to the database using the **ent-slk** command. To add SS7 signaling links to the database, go to the "Adding an SS7 Signaling Link" procedure in the *Database Administration Manual – SS7*.

The **ent-slk** command uses these parameters to configure an X.25 signaling link.

:loc – The card location of the LIM that the X.25 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 Eagle system location and the distant node.

:l1mode – The mode of operation used to select the link clocking source at layer 1. One end of a V.35 link must be DTE and the other end must be DCE.

:bps – The transmission rate for the link in bits per second.

:tset – Transmitter signal element timing.

:ecm – Error correction method.

:pcrn1 – The threshold of the number of MSUs available for retransmission. If the error correction method being used is PCR, and this threshold is reached, no new MSUs or FISUs are sent. The retransmission cycle is continued up to the last MSU entered into the retransmission buffer in the order in which they were originally transmitted.

:pcrn2 – The threshold of the number of MSU octets available for retransmission. If the error correction method being used is PCR, and this threshold is reached, no new MSUs or FISUs are sent. The retransmission cycle is continued up to the last MSU entered into the retransmission buffer in the order in which they were originally transmitted.

These parameters of the **ent-slk** command cannot be used to configure an X.25 signaling link: **bps=1544000**, **bps=2048000**, **l2tset**, **lpset**, **atmtsel**, **vci**, **vpi**, **ll**, **ts**, **e1port**, **e1loc**, **t1port**, **ipliml2**, **e1atmcrc4**, **e1atmsi**, **e1atmsn**. For more information on using these parameters, go to the "Adding an SS7 Signaling Link" procedure in the *Database Administration Manual – SS7*

The examples in this procedure are based on the example network shown in Figure 2-4on page 2-12 and Table 2-6 on page 2-77 and are used to add X.25 signaling links to cards 1205, 1206, and 1207.

Table 2-6. X.25 Signaling Link Configuration Table

SLK		LSN	SLC	TYPE	BPS
LOC	PORT				
1205	A	LS03	0	LIMV35	56000
1206	A	LS03	1	LIMV35	56000
1207	A	LS04	0	LIMV35	64000

These items must be provisioned in the database before an X.25 signaling link can be added:

- A shelf – see the "Adding a Shelf" procedure in the *Database Administration Manual – System Management*.
- An LIM (card type **limocu**, **limds0**, or **limv35**) assigned to the **ss7gx25** application – see the "Adding an X.25 LIM" procedure on page 2-14.
- A destination point code (DPC) assigned to the X.25 domain – see the "Adding a ANSI Destination Point Code" procedure in the *Database Administration Manual – SS7*.
- A linkset whose adjacent point code (APC) is in the X.25 domain – see the "Adding an X.25 Linkset" procedure on page 2-47

Verify that the X.25 signaling link has been physically installed (all cable connections have been made).

If the **l1mode** or **tset** parameters are specified, the card type must be **limv35**.

The **tset** parameter can only be specified with the **l1mode=dce** parameter. When **l1mode=dce** is specified and the **tset** parameter is not specified, the value of the **tset** parameter is set to **off**, and dashes are shown in the **TSET** column in the **rtrv-slk** output. The default value for the **l1mode** parameter is **dte**.

The transmission rate of the X.25 signaling link can be either 4800 (**bps=4800**), 9600 (**bps=9600**), 19200 (**bps=19200**), 56000 (**bps=56000**), or 64000 (**bps=64000**) bits per second. If the card type is either **limds0** or **limocu**, the transmission rate of the X.25 signaling link can be either 56000 or 64000. The transmission rates 4800, 9600, or 19200 can be specified only if the card type is **limv35**. The default value for the X.25 signaling link transmission rate is 56000.

The signaling link can only be assigned to port A on the card (**port=a**).

The **l2tset** parameter cannot be specified for an X.25 signaling link, but its value is defaulted to **11** and is shown in the **L2TSET** column in the **rtrv-slk** output.

The linkset must be in the database. The number of signaling links in a linkset cannot exceed 16. The **rtrv-ls:lsn=<xxxxxxxx>** command can be used to verify the number of signaling links that are in the linkset. The signaling links are shown in the **LOC** and **PORT** fields of the **rtrv-ls:lsn=<xxxxxxxx>** command output.

The APC of the linkset assigned to the signaling link must be in the X.25 domain. Use the **rtrv-dstn** command to verify the domain of the APC of the linkset.

System Requirements for Systems Containing more than 500 Signaling Links

To provision a system with more than 500 signaling links (currently the system can have capacities of 700, 1200, or 1500 signaling links), the following requirements must be met:

- TDM, P/N 870-0774-10 or later, installed in card locations 1114 and 1116.
- Control Shelf Backplane, P/N 850-0330-06 or later
- Enough Multiport LIMs (MPL), P/N 870-1826-XX, or E1/T1 MIMs, P/N 870-2198-XX to bring the number of signaling links to the desired quantity above 500 signaling links, installed according to the provisioning rules for the increased capacity in the "Determining the Number of High-Speed and Low-Speed Signaling Links" section on page 2-79. The system can contain a mixture of 2-port LIMs, Multiport LIMs, and E1/T1 MIMs.

For more information on these hardware components, go to the *Installation Manual*.

Additional System Requirements for Systems Containing more than 700 Signaling Links

To provision a system with more than 700 signaling links (currently the system can have capacities of 1200 or 1500 signaling links), the following additional requirements must be met:

- The Measurements Platform feature must be enabled. Perform these procedures in the *Database Administration Manual - System Management* to enable the Measurements Platform Feature:
  - "Adding an MCPM"
  - "Configuring the IP Communications Link for the Measurements Platform Feature"
  - "Adding an FTP Server"
- To provision more than 1200 signaling links, the Large System # Links controlled feature must be enabled for 1500 signaling links. For more information on enabling this feature, go to "Enabling the Large System # Links Controlled Feature" procedure on page 2-138.

NOTE: An X.25 signaling link cannot be assigned to a Multiport LIM.

For more information on these hardware components, go to the *Installation Manual*.

Determining the Number of High-Speed and Low-Speed Signaling Links

The system contain either a maximum of 1500, 1200, 700, or 500 signaling links, depending the hardware that is installed. The method of determining the number of high-speed and low-speed signaling links that can be in the system is shown in the next three sections.

1500 or 1200 Signaling Link System

A 1500 or 1200 signaling link system can contain the following quantities of signaling links:

- 1200 low-speed signaling links
- 115 high-speed ATM signaling links (signaling links assigned to either ATMANSI or ATMITU applications)
- 100 IP signaling links (signaling links assigned to either the IPLIM or IPLIMI applications).
- 2 signaling links assigned to the SS7IPGW application
- 2 signaling links assigned to the IPGWI application

Table 2-7 shows the combinations of high-speed signaling links and low-speed signaling links allowed in the system.

Table 2-7. Number of High-Speed and Low-Speed Links Supported at 100% Traffic

Number of High-Speed ATM Signaling Links	Number of Low-Speed Signaling Links	Number of IP Signaling Links	Number of Low-Speed Signaling Links
0	1500	0	1500
0	1200	0	1200
1	1199	1	1199
5	1195	5	1195
15	1185	15	1185
20	1180	20	1180
30	1165	30	1165
40	1150	40	1040
60	1110	60	880
80	1025	80	720
90	950	90	560

Table 2-7. Number of High-Speed and Low-Speed Links Supported at 100% Traffic (Continued)

Number of High-Speed ATM Signaling Links	Number of Low-Speed Signaling Links	Number of IP Signaling Links	Number of Low-Speed Signaling Links
100	875	100	400
115	800		

700 Signaling Link System

If a 700 signaling link system contains a mixture of high-speed and low-speed signaling links, the system can contain a maximum number of 100 high-speed signaling links. If the system contains 100 high-speed signaling links, there can be a maximum of 600 low-speed signaling links, and 41 of these high-speed signaling links can be IP LIMs. The rest of the high-speed signaling links (up to 59) must be LIMATMs. For every high-speed signaling link provisioned in the database, up to 100, the maximum number of low-speed signaling links allowed in the system decreases by one. For every low-speed signaling link that is provisioned in the database over the quantity of 600, the maximum number of high-speed signaling links allowed in the system decreases by one. For example, if the system contains 29 high-speed signaling links, the system can contain a maximum of 671 low-speed signaling links.

500 Signaling Link System

The total number of high-speed and low speed signaling links that can coexist in a system is based only on the size of the system, for example, how many cards and card types versus how many slots there are available.

The bandwidth that the system can handle is based on:

- the speed of the IMT and
- the traffic mix
  - number and average size of through-switched MSUs
  - number and average size of MSUs that require global title translation

The system allows a mixture of high-speed and low-speed signaling links. The addition of a high-speed signaling link in the system decreases the number of low-speed signaling links the system can support.

The system supports a maximum of 41 LIMATM/IPLIM/IPLIMI high-speed signaling links.

To determine the number of low-speed signaling links a system can contain, based on the number of high-speed signaling links the system has, use the lesser number (rounded down to the nearest whole number) from one of these two formulas.

a. L = 500 - H (for multi-port LIMs) or L = 500 - (H x 2) (for 2-port LIMs)

L = the number of low-speed signaling links allowed in the system

500 = the maximum number of signaling links allowed in the system

H = the number of high-speed signaling links in the system

b. L = 32,768,000 - (H x 786,432)/45,875

L = the number of low-speed signaling links

H = the number of high-speed signaling links

32,768,000 = 500 signaling links x 64 kbps

786,432 = 12 DS0 channels x 64 kbps

45,875 = 56 kbits x 0.80

To determine the number of high-speed signaling links a system can contain, based on the number of low-speed signaling links the system has, use the lesser number (rounded down to the nearest whole number) from one of these two formulas.

a. H = 500 - L (for multi-port LIMs) or H = (500 - L) / 2 (for 2-port LIMs)

L = the number of low-speed signaling links allowed in the system

500 = the maximum number of signaling links allowed in the system

H = the number of high-speed signaling links in the system

b. H = 32,768,000 - (45,875 x L)/786,432

L = the number of low-speed signaling links

H = the number of high-speed signaling links

32,768,000 = 500 signaling links x 64 kbps

786,432 = 12 DS0 channels x 64 kbps

45,875 = 56 kbits x 0.80

Table 2-8 on page 2-82 shows the number of high-speed signaling links and low-speed signaling links allowed in the system.

Table 2-8. Number of High-Speed and Low-Speed Links Supported at 80% Traffic

Number of High-Speed Links	Number of Low-Speed Links Supported		Number of High-Speed Links	Number of Low-Speed Links Supported	
	Multi-Port LIMs	2-Port LIMs		Multi-Port LIMs	2-Port LIMs
0	500	500	21	354	354
1	499	498	22	337	337
2	498	496	23	320	320
3	497	494	24	302	302
4	496	492	25	285	285
5	495	490	26	268	268
6	494	488	27	251	251
7	493	486	28	234	234
8	492	484	29	217	217
9	491	482	30	200	200
10	490	480	31	182	182
11	489	478	32	165	165
12	488	476	33	148	148
13	487	474	34	131	131
14	474	472	35	114	114
15	457	457	36	97	97
16	440	440	37	80	80
17	422	422	38	62	62
18	405	405	39	45	45
19	388	388	40	28	28
20	371	371	41	11	11

Canceling the `REPT-STAT-SLK` and `RTRV-SLK` Commands

Because the **`rept-stat-slk`** and **`rtrv-slk`** commands used in this procedure can output information for a long period of time, the **`rept-stat-slk`** and **`rtrv-slk`** commands can be canceled and the output to the terminal stopped.

There are three ways that the **`rept-stat-slk`** and **`rtrv-slk`** commands can be canceled.

- Press the **F9** function key on the keyboard at the terminal where the **rept-stat-slk** or **rtrv-slk** commands were entered.
- Enter the **canc-cmd** without the **trm** parameter at the terminal where the **rept-stat-slk** or **rtrv-slk** commands were entered.
- Enter the **canc-cmd:trm=<xx>**, where **<xx>** is the terminal where the **rept-stat-slk** or **rtrv-slk** commands were entered, from another terminal other that the terminal where the **rept-stat-slk** or **rtrv-slk** commands were entered. To enter the **canc-cmd:trm=<xx>** command, the terminal must allow Security Administration commands to be entered from it and the user must be allowed to enter Security Administration commands. The terminal's permissions can be verified with the **rtrv-secu-trm** command. The user's permissions can be verified with the **rtrv-user** or **rtrv-secu-user** commands.

For more information about the **canc-cmd** command, go to the *Commands Manual*.

Procedure

1. Display the cards in the database using the **rtrv-card** command. The X.25 LIMs are shown by the entry **SS7GX25** in the **APPL** field. This is an example of the possible output.

```
rlghncxa03w 04-03-28 09:12:36 GMT EAGLE5 31.4.0
CARD   TYPE      APPL      LSET NAME     PORT SLC LSET NAME     PORT SLC
1101   ASM       SCCP      ------------  --   --  ------------  --   --
1102   ASM       GLS       ------------  --   --  ------------  --   --
1113   GPSM      EOAM
1114   TDM-A
1115   GPSM      EOAM
1116   TDM-B
1117   MDAL
1118   RESERVED
1201   LIMDS0    SS7ANSI   sp2           A    0   sp1           B    0
1202   LIMV35    SS7GX25   ------------  --   --  ------------  --   --
1203   LIMDS0    SS7ANSI   sp3           A    0   ------------  --   --
1204   LIMDS0    SS7ANSI   sp3           A    1   ------------  --   --
1206   LIMDS0    SS7ANSI   nsp3          A    1   nsp4          B    1
1207   LIMV35    SS7GX25   nsp1          A    0   ------------  --   --
1208   LIMV35    SS7GX25   nsp1          A    1   ------------  --   --
1216   ACMENET   STPLAN    ------------  --   --  ------------  --   --
1301   ASM       SCCP      ------------  --   --  ------------  --   --
1308   LIMDS0    SS7ANSI   sp6           A    1   sp7           B    0
1314   LIMDS0    SS7ANSI   sp7           A    1   sp5           B    1
1317   ACMENET   STPLAN    ------------  --   --  ------------  --   --
```

If the required card is not in the database, go to the "Adding an X.25 LIM" procedure on page 2-14 and add the card to the database.

2. Display the current linkset configuration using the **rtrv-ls** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 11:43:04 GMT EAGLE5 31.4.0

                              L3T SLT             GWS GWS GWS
LSN          APCA (SS7)   SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
lsa1         240-020-000  scr1  1   1   yes  a  1    off off off no    off
lsa2         240-030-000  scr2  1   2   no   c  3    on  on  on  yes   off
lsa3         240-040-000  scr3  1   3   yes  c  5    off off off yes   off
ls01         006-006-006  scr1  1   1   yes  a  1    on  off off no    off
ls02         008-008-008  scr1  1   1   yes  a  1    on  off off yes   off

                              L3T SLT             GWS GWS GWS
LSN          APCA (X25)   SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
ls6          244-010-004  scr4  1   4   no  a   6    off off off ---   off
ls7          244-012-005  scr5  1   5   no  c   3    on  on  on  ---   off
ls8          244-012-006  scr6  1   6   no  c   8    off off off ---   off

                              L3T SLT             GWS GWS GWS
LSN          APCI (SS7)   SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
lsi1         1-111-1      scr1  1   1   yes a   1    off off off ---   ---
lsi2         1-111-2      scr2  1   2   no  c   3    on  on  on  ---   ---
lsi3         1-111-3      scr3  1   3   yes c   5    off off off ---   ---

                              L3T SLT             GWS GWS GWS
LSN          APCN (SS7)   SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
lsn1         11111        scr1  1   1   yes a   1    off off off ---   off
lsn2         11112        scr2  1   2   no  c   3    on  on  on  ---   off
lsn3         11113        scr3  1   3   yes c   5    off off off ---   off

                               L3T SLT             GWS GWS GWS
LSN          APCN24 (SS7)  SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS

Link set table is ( 14 of 1024)  1% full
```

If the required linkset is not in the database, go to the "Adding an X.25 Linkset" procedure on page 2-47 and add the linkset to the database.

3. Display the current signaling link configuration using the **rtrv-slk** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 21:16:37 GMT EAGLE5 31.4.0
                                   L2T         L1                PCR  PCR
LOC  PORT LSN         SLC TYPE     SET  BPS    MODE TSET  ECM    N1   N2
1201  A    lsn1201a     0   LIMDS0  1   56000  ---  ---   BASIC  ---  -----
1201  B    lsn1201b     0   LIMDS0  1   56000  ---  ---   PCR    76   3800
1202  A    lsn1202a     0   LIMV35  -   64000  DTE  ---   BASIC  ---  -----
1202  B    lsn1202b     1   LIMV35  3   64000  DCE  ON    BASIC  ---  -----
1203  A    lsn1203a     0   LIMV35  1   56000  DCE  ON    BASIC  76   3800
1203  B    lsn1203b     0   LIMV35  1   56000  DCE  OFF   PCR    120  5034
1204  A    lsn1204a     1   LIMV35  3   64000  DCE  ON    PCR    76   3800
1204  B    lsn1204b     1   LIMV35  3   64000  DCE  ON    PCR    76   3800
1301  A    lsn1301a     0   LIMDS0  -   56000  ---  --    BASIC  ---  -----

                                   LP            ATM
LOC  PORT LSN         SLC TYPE     SET  BPS      TSEL      VCI    VPI   LL
1302  A    atmansi0     0   LIMATM  3   1544000  INTERNAL  35   15    0
1305  A    atmansi1     0   LIMATM  4   1544000  INTERNAL  100  20    2
1318  A    atmansi0     1   LIMATM  9   1544000  LINE      150  25    4

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

No Links Set up.

LOC  PORT LSN         SLC TYPE     IPLIML2

No Links Set up.

LOC  PORT LSN         SLC TYPE

No Links Set up.

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

No Links Set up.

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

No Links Set up.

SLK table is (12 of 500) 2% full.
```

NOTE: If the `rtrv-slk` output in step 3 shows that the maximum number of signaling links is 1500, skip step 4 and go to step 5.

NOTE: If the `rtrv-slk` output in step 3 shows that the maximum number of signaling links is 1200, and the signaling link being added increases the number beyond 1200, do not perform step 4, but go to "Enabling the Large System # Links Controlled Feature" procedure on page 2-138 and enable the Large System # Links controlled feature for 1500 signaling links. Then go to step 5.

NOTE: If the `rtrv-slk` output in step 3 shows that the maximum number of signaling links is either 500, 700, or 1200, and the signaling link being added will not increase the number beyond the quantity shown in the `rtrv-slk` output in step 3, skip step 4 and go to step 5.

4. Display the status of the Large System # Links controlled feature by entering the **`rtrv-ctrl-feat`** command. The following is an example of the possible output.

```
rlghncxa03w 04-03-28 21:15:37 GMT EAGLE5 31.4.0
The following features have been permanently enabled:
Feature Name              Partnum    Status  Quantity
TPS                       893000110  on      1000
ISUP Normalization        893000201  on      ----
Command Class Management  893005801  on      ----
LNP Short Message Service 893006601  on      ----
Intermed GTT Load Sharing 893006901  on      ----
XGTT Table Expansion      893006101  off     ----
XMAP Table Expansion      893007701  off     ----

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:
Zero entries found.
```

If the Large System # Links controlled feature is not enabled or on, go to "Enabling the Large System # Links Controlled Feature" procedure on page 2-138 and enable Large System # Links controlled feature for 1500 signaling links. Then go to step 5.

---

5. Add the X.25 signaling link using the **`ent-slk`** command. For this example, enter these commands.

`ent-slk:loc=1205:port=a:lsn=ls03:slc=0`

`ent-slk:loc=1206:port=a:lsn=ls03:slc=1`

`ent-slk:loc=1207:port=a:lsn=ls04:slc=0:bps=64000`

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

```
rlghncxa03w 04-03-28 08:29:03 GMT  EAGLE5 31.4.0
ENT-SLK: MASP A - COMPLTD
```

---

6. Verify the changes using the **rtrv-slk** command with the card location specified in step 5. For this example, enter these commands.

   rtrv-slk:loc=1205

   This is an example of the possible output.

```
rlghncxa03w 04-03-28 21:16:37 GMT EAGLE5 31.4.0
                                    L2T        L1              PCR  PCR
LOC   PORT LSN          SLC TYPE    SET BPS    MODE TSET  ECM   N1   N2
1205  A    ls03         0   LIMV35  11  56000  DTE  ---   BASIC ---  -----
```

   rtrv-slk:loc=1206

   This is an example of the possible output.

```
rlghncxa03w 04-03-28 21:16:37 GMT EAGLE5 31.4.0
                                    L2T        L1              PCR  PCR
LOC   PORT LSN          SLC TYPE    SET BPS    MODE TSET  ECM   N1   N2
1206  A    ls03         1   LIMV35  11  56000  DTE  ---   BASIC ---  -----
```

   rtrv-slk:loc=1207

   This is an example of the possible output.

```
rlghncxa03w 04-03-28 21:16:37 GMT EAGLE5 31.4.0
                                    L2T        L1              PCR  PCR
LOC   PORT LSN          SLC TYPE    SET BPS    MODE TSET  ECM   N1   N2
1207  A    ls04         0   LIMV35  11  64000  DtE  ---   BASIC ---  -----
```

NOTE: If the X.25 signaling link parameters for the newly added X.25 signaling link are not being changed, skip steps 7 through 9 and go to step 10.

7. Display the values of the X.25 signaling link you wish to change using the **rtrv-x25-slk** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 21:16:37 GMT EAGLE5 31.4.0
LOC   PORT  T1  N1    N2  K  L3MODE  PVC  SVC  WIN  MPS
1202  A     9   1080  13  6  DTE     255  0    2    128
1205  A     5   2104  10  7  DTE     0    1    3    256
1206  A     5   2104  10  7  DTE     0    1    3    256
1207  A     5   2104  10  7  DTE     0    1    3    256
1301  A     5   1080  10  7  DTE     0    255  3    128
```

8. Change the X.25 signaling link parameter values using the **chg-x25-slk** command. For this example, enter these commands.

   chg-x25-slk:loc=1205:port=a:t1=2:n1=1080:n2=5:k=1:l3mode=dte :pvc=2:svc=0:win=6:mps=128

   chg-x25-slk:loc=1206:port=a:t1=4:n1=2104:n2=12:k=3:l3mode=dce :pvc=2:svc=0:win=3:mps=256

   chg-x25-slk:loc=1207:port=a:t1=8:n1=2104:n2=7:k=6:l3mode=dce :pvc=0:svc=2:win=2:mps=256

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

```
rlghncxa03w 04-03-28 11:43:04 GMT EAGLE5 31.4.0
CHG-X25-SLK: MASP A - COMPLTD
```

9. Verify the changes using the **rtrv-x25-slk** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 21:16:37 GMT EAGLE5 31.4.0
LOC   PORT  T1  N1    N2  K  L3MODE  PVC  SVC  WIN  MPS
1202  A     9   1080  13  6  DTE     255  0    2    128
1205  A     2   1080   5  1  DTE     2    0    6    128
1206  A     4   2104  12  3  DCE     2    0    3    256
1207  A     8   2104   7  6  DCE     0    2    2    256
1301  A     5   1080  10  7  DTE     0    255  3    128
```

10. Put the X.25 LIMs in service using the **rst-card** command with the card location specified in step 5. For this example, enter these commands.

rst-card:loc=1205

rst-card:loc=1206

rst-card:loc=1207

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

```
rlghncxa03w 04-03-28 08:21:07 GMT  EAGLE5 31.4.0
Card has been allowed.
```

11. Activate the X.25 signaling links using the **act-slk** command with the card location and signaling link port value specified in step 5. For this example, enter these commands.

act-slk:loc=1205:port=a

act-slk:loc=1206:port=a

act-slk:loc=1207:port=a

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

```
rlghncxa03w 04-03-28 08:31:24 GMT  EAGLE5 31.4.0
Activate Link message sent to card
```

12. Check the status of the X.25 signaling link using the **rept-stat-slk** command with the card location and signaling link port value specified in step 5 for each X.25 signaling link added in step 5 . The state of the X.25 signaling link should be in service normal (IS-NR) after the link has completed alignment (shown in the **PST** field). For this example, enter these commands.

rept-stat-slk:loc=1205:port=a

This is an example of the possible output.

```
rlghncxa03w 04-03-28 17:00:36 GMT  EAGLE5 31.4.0
SLK      LSN      CLLI         PST           SST        AST
1205,A   ls03     -----------  IS-NR         Avail      ----
  ALARM STATUS       = No alarm
  UNAVAIL REASON     =
Command Completed.
```

rept-stat-slk:loc=1206:port=a

This is an example of the possible output.

```
rlghncxa03w 04-03-28 17:00:36 GMT  EAGLE5 31.4.0
SLK      LSN      CLLI         PST           SST        AST
1206,A   ls03     -----------  IS-NR         Avail      ----
  ALARM STATUS       = No alarm
  UNAVAIL REASON     =
Command Completed.
```

rept-stat-slk:loc=1207:port=a

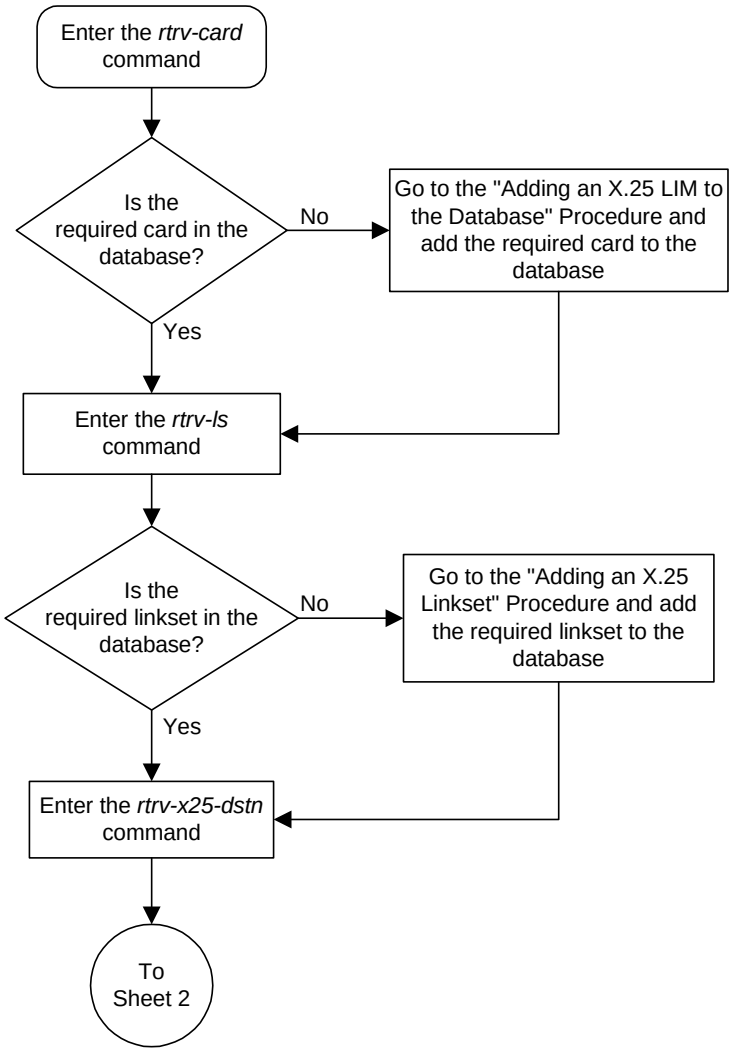
This is an example of the possible output.

```
rlghncxa03w 04-03-28 17:00:36 GMT  EAGLE5 31.4.0
SLK      LSN      CLLI         PST           SST        AST
1207,A   ls04     -----------  IS-NR         Avail      ----
  ALARM STATUS       = No alarm
  UNAVAIL REASON     =
Command Completed.
```

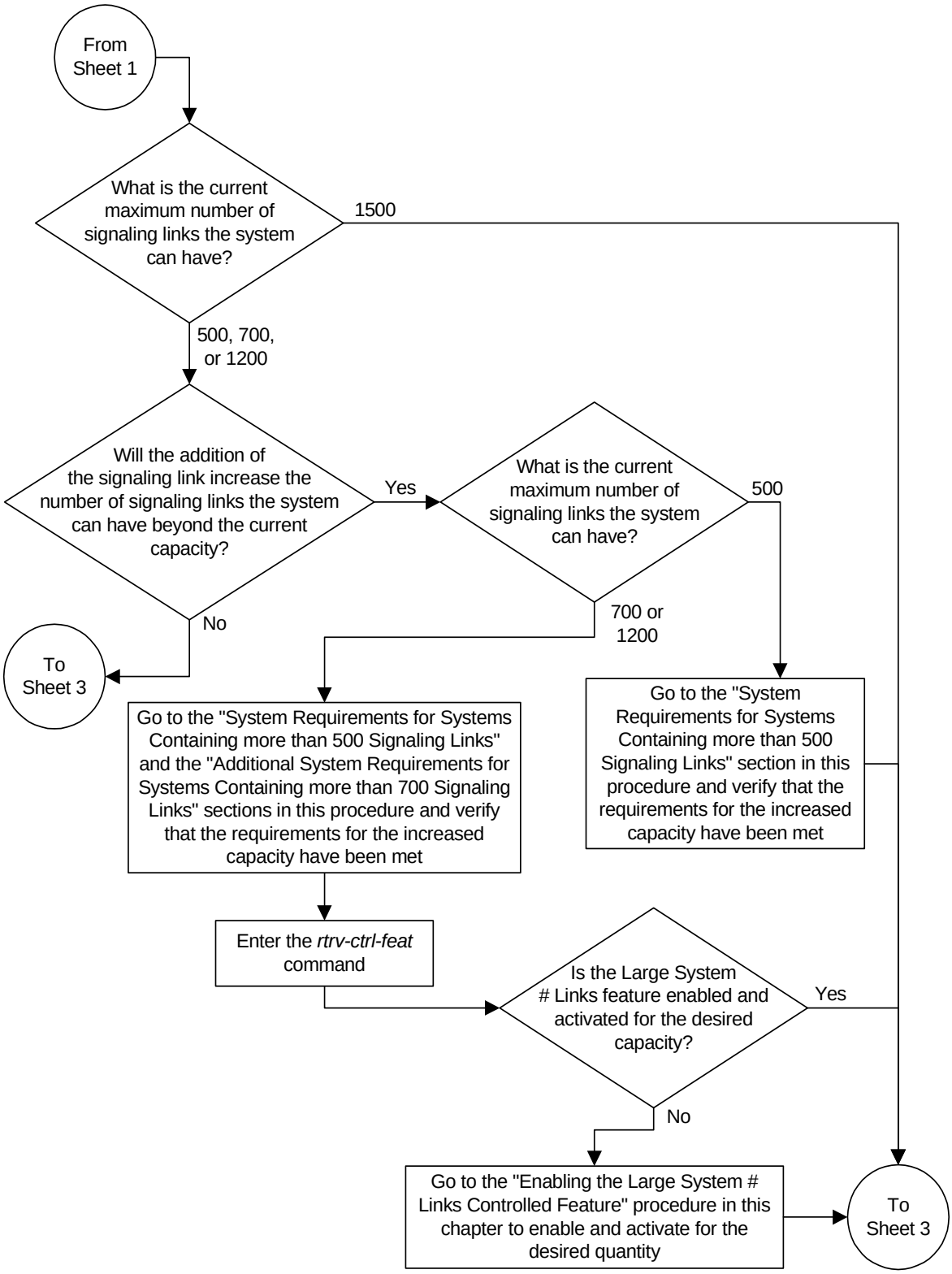
13. Backup the new changes using the **chg-db:action=backup:dest=fixed** command. These messages should appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
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.
```

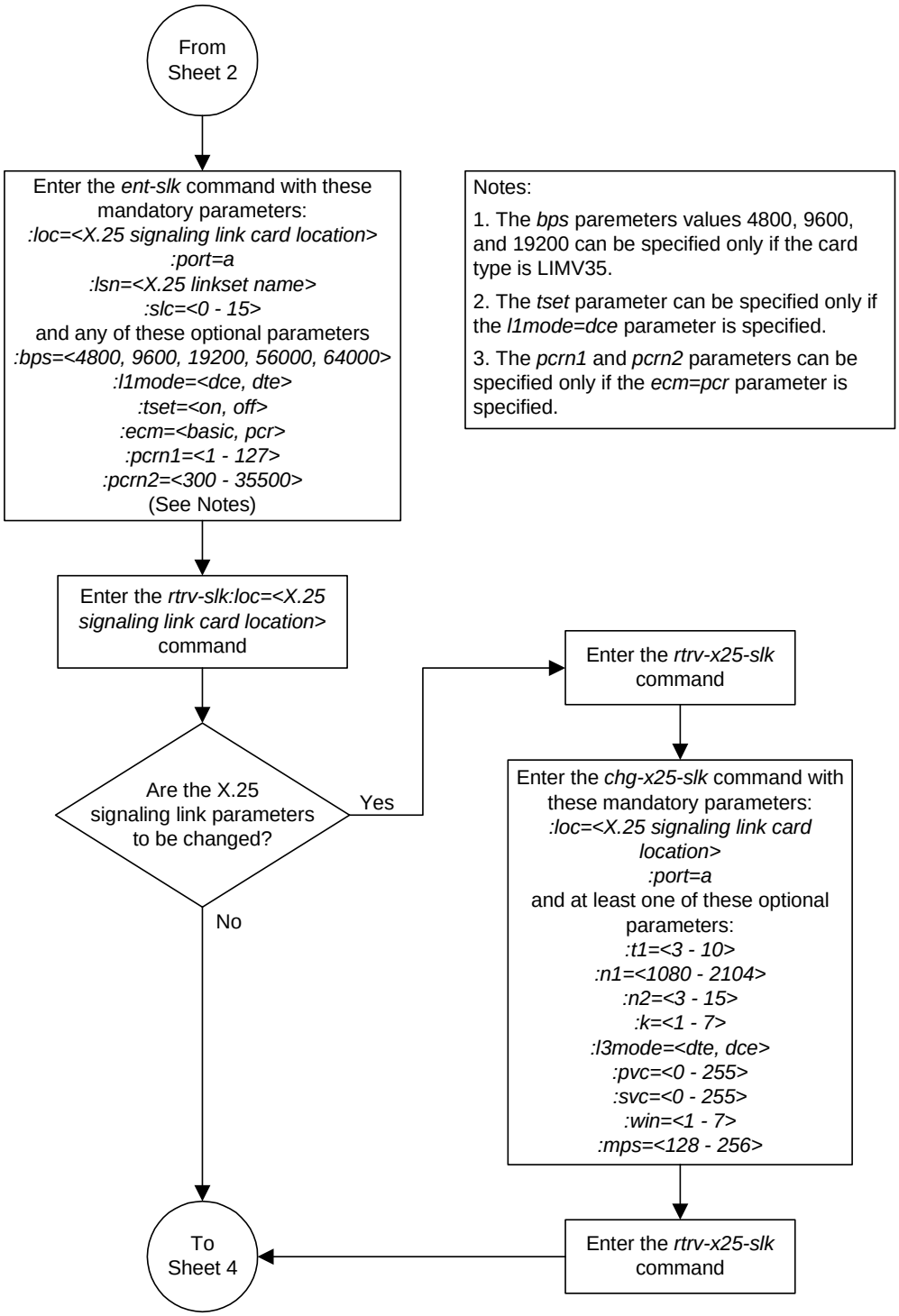
Flowchart 2-9. Adding an X.25 Signaling Link (Sheet 1 of 4)



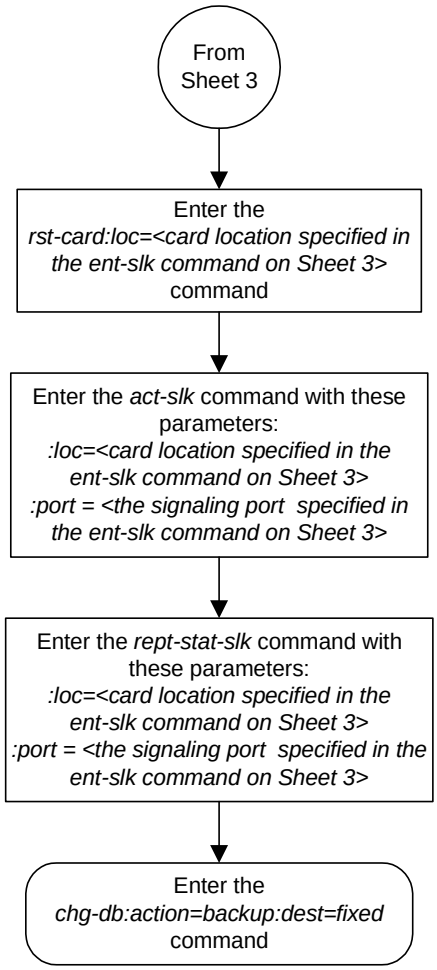
Flowchart 2-9. Adding an X.25 Signaling Link (Sheet 2 of 4)



Flowchart 2-9. Adding an X.25 Signaling Link (Sheet 3 of 4)



Flowchart 2-9. Adding an X.25 Signaling Link (Sheet 4 of 4)



Removing an X.25 Signaling Link

This procedure is used to remove an X.25 signaling link from the database using the **dlt-slk** command. To remove SS7 signaling links from the database, go to the "Removing an SS7 Signaling Link" procedure in the *Database Administration Manual – SS7*.

The **dlt-slk** command uses these parameters.

:loc – The card location of the LIM that the X.25 signaling link is assigned to.

:port – The port on the card location specified in the **loc** parameter.

:force – This parameter must be used to remove the last link in a linkset without having to remove all of the routes that referenced the linkset.

The **tfatcabmlq** parameter (TFA/TCA Broadcast Minimum Link Quantity), assigned to linksets, shows the minimum number of links in the given linkset (or in the combined link set in which it resides) that must be available for traffic. When the number of signaling links in the specified linkset is equal to or greater than the value of the **tfatcabmlq** parameter, the status of the routes that use the specified linkset is set to allowed and can carry traffic. Otherwise, these routes are restricted. The value of the **tfatcabmlq** parameter cannot exceed the total number of signaling links contained in the linkset.

The **dlt-slk** command makes sure that the number of signaling links assigned to a linkset is greater than or equal to the value of the **tfatcabmlq** parameter. If the number of signaling links associated with a linkset drops below the value of the **tfatcabmlq** parameter for that linkset, the **tfatcabmlq** value for that linkset is automatically decremented. The value of the **tfatcabmlq** parameter for a specified linkset can be verified using the **rtrv-ls:lsn=** command specifying the name of the linkset. The **tfatcabmlq** parameter value is shown in the **TFATCABMLQ** field of the **rtrv-ls** command output.

The examples in this procedure are used to remove the X.25 signaling link assigned to card 1207 from the database.

The X.25 signaling link to be removed must exist in the database.

All X.25 routes associated with this link must be removed before the X.25 signaling link can be removed. See the "Removing an X.25 Route" procedure on page 2-117.

Canceling the RTRV-SLK Command

Because the **rtrv-slk** command used in this procedure can output information for a long period of time, the **rtrv-slk** command can be canceled and the output to the terminal stopped. There are three ways that the **rtrv-slk** command can be canceled.

- Press the **F9** function key on the keyboard at the terminal where the **rtrv-slk** command was entered.
- Enter the **canc-cmd** without the **trm** parameter at the terminal where the **rtrv-slk** command was entered.
- Enter the **canc-cmd:trm=<xx>**, where **<xx>** is the terminal where the **rtrv-slk** command was entered, from another terminal other that the terminal where the **rtrv-slk** command was entered. To enter the **canc-cmd:trm=<xx>** command, the terminal must allow Security Administration commands to be entered from it and the user must be allowed to enter Security Administration commands. The terminal's permissions can be verified with the **rtrv-secu-trm** command. The user's permissions can be verified with the **rtrv-user** or **rtrv-secu-user** commands.

For more information about the **canc-cmd** command, go to the *Commands Manual*.

Procedure

1. Display the current link configuration using the **rtrv-slk** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 21:16:37 GMT EAGLE5 31.4.0
                                    L2T        L1              PCR  PCR
LOC   PORT LSN          SLC TYPE    SET BPS    MODE TSET  ECM   N1   N2
1201  A    lsn1201a     0   LIMDS0  1   56000  ---  ---   BASIC ---  -----
1201  B    lsn1201b     0   LIMDS0  1   56000  ---  ---   PCR   76   3800
1202  A    lsn1202a     0   LIMV35  -   64000  DTE  ---   BASIC ---  -----
1202  B    lsn1202b     1   LIMV35  3   64000  DCE  ON    BASIC ---  -----
1203  A    lsn1203a     0   LIMV35  1   56000  DTE  ---   PCR   76   3800
1203  B    lsn1203b     0   LIMV35  1   56000  DCE  OFF   PCR   120  5034
1204  A    lsn1204a     1   LIMV35  3   64000  DCE  ON    PCR   76   3800
1204  B    lsn1204b     1   LIMV35  3   64000  DCE  ON    PCR   76   3800
1205  A    ls03         0   LIMV35  -   56000  DTE  --    BASIC ---  -----
1206  A    ls03         1   LIMV35  -   56000  DTE  --    BASIC ---  -----
1207  A    ls04         0   LIMV35  -   64000  DTE  --    BASIC ---  -----
1301  A    lsn1301a     0   LIMDS0  -   56000  ---  --    BASIC ---  -----

                                    LP          ATM
LOC   PORT LSN          SLC TYPE    SET BPS     TSEL      VCI  VPI   LL
1302  A    atmansi0     0   LIMATM  3   1544000 INTERNAL  35   15    0
1305  A    atmansi1     0   LIMATM  4   1544000 INTERNAL  100  20    2
1318  A    atmansi0     1   LIMATM  9   1544000 LINE      150  25    4

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

No Links Set up.

LOC   PORT LSN          SLC TYPE    IPLIML2

No Links Set up.

LOC   PORT LSN          SLC TYPE

No Links Set up.

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

No Links Set up.

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

No Links Set up.

SLK table is (15 of 500) 3% full.
```

2. Deactivate the X.25 signaling link to be removed using the **dact-slk** command, using the output from step 1 to obtain the card location and port information of the signaling link to be removed. For this example, enter this command.

   dact-slk:loc=1207:port=a

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

```
rlghncxa03w 04-03-28 08:41:12 GMT  EAGLE5 31.4.0
Deactivate Link message sent to card
```

3. Verify that the X.25 signaling link is out of service - maintenance (OOS-MT) using the **rept-stat-slk** command, using the card location and port of the X.25 signaling link. For this example, enter this command.

   rept-stat-slk:loc=1207:port=a

   This is an example of the possible output.

```
rlghncxa03w 04-03-28 17:00:36 GMT  EAGLE5 31.4.0
SLK      LSN      CLLI         PST           SST        AST
1207,A   ls04     ---------    OOS-MT        Unavail    ----
  ALARM STATUS       = *   0221 REPT-LKF: X25 link unavailable
  UNAVAIL REASON     = X25FL
Command Completed.
```

4. Before the X.25 signaling link can be removed from the database, any X.25 routes associated with the X.25 signaling link must be removed from the database. Enter the **rtrv-x25-rte** command to display the X.25 routes in the database. This is an example if the possible output.

```
rlghncxa03w 04-03-28 21:16:37 GMT EAGLE5 31.4.0
X25 ADDR          SS7 ADDR         TYPE  LOC   PORT  LC  RT   LC2NM
11101             44401            pvc   1205  a     01  xpc  no
11102             55501            pvc   1206  a     02  pc   no
22201             44401            pvc   1205  a     02  pc   no
22202             55501            pvc   1206  a     01  xpc  yes
33301             44401            svca  1207  a     --  pc   no
33302             55501            svca  1207  a     --  pc   no
X.25 ROUTE TABLE IS  30 % FULL
```

5. If any X.25 routes shown in the output of step 5 are assigned to the X.25 signaling links shown in the output of step 4, remove those X.25 routes by using the **dlt-x25-rte** command. For this example, enter these commands.

   dlt-x25-rte:xaddr=33301:saddr=44401
   dlt-x25-rte:xaddr=33302:saddr=55501

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

```
rlghncxa03w 04-03-28 11:43:04 GMT EAGLE5 31.4.0
DLT-X25-RTE: MASP A - X.25 Route table 30% full
DLT-X25-RTE: MASP A - COMPLTD
```

6. Verify the changes using the **rtrv-x25-rte** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 21:16:37 GMT EAGLE5 31.4.0
X25 ADDR          SS7 ADDR         TYPE  LOC   PORT  LC  RT   LC2NM
11101             44401            pvc   1205  a     01  xpc  no
11102             55501            pvc   1206  a     02  pc   no
22201             44401            pvc   1205  a     02  pc   no
22202             55501            pvc   1206  a     01  xpc  yes
X.25 ROUTE TABLE IS  30 % FULL
```

7. Because there can only be one X.25 signaling link assigned to a LIM, that card must be inhibited. Enter the **rmv-card** command and specify the location of the card to be inhibited. The card location is shown in the output of **rept-stat-slk** command executed in step 4. For this example, enter this command.

   rmv-card:loc=1207

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

```
rlghncxa03w 04-03-28 08:41:12 GMT  EAGLE5 31.4.0
Card has been inhibited.
```

8. Remove the X.25 signaling link from the database using the **dlt-slk** command. If this X.25 signaling link is the last link in a linkset, the **force=yes** parameter must be specified. For this example, enter this command.

   dlt-slk:loc=1207:port=a:force=yes

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

```
rlghncxa03w 04-03-28 08:41:17 GMT  EAGLE5 31.4.0
DLT-SLK: MASP A - COMPLTD
```

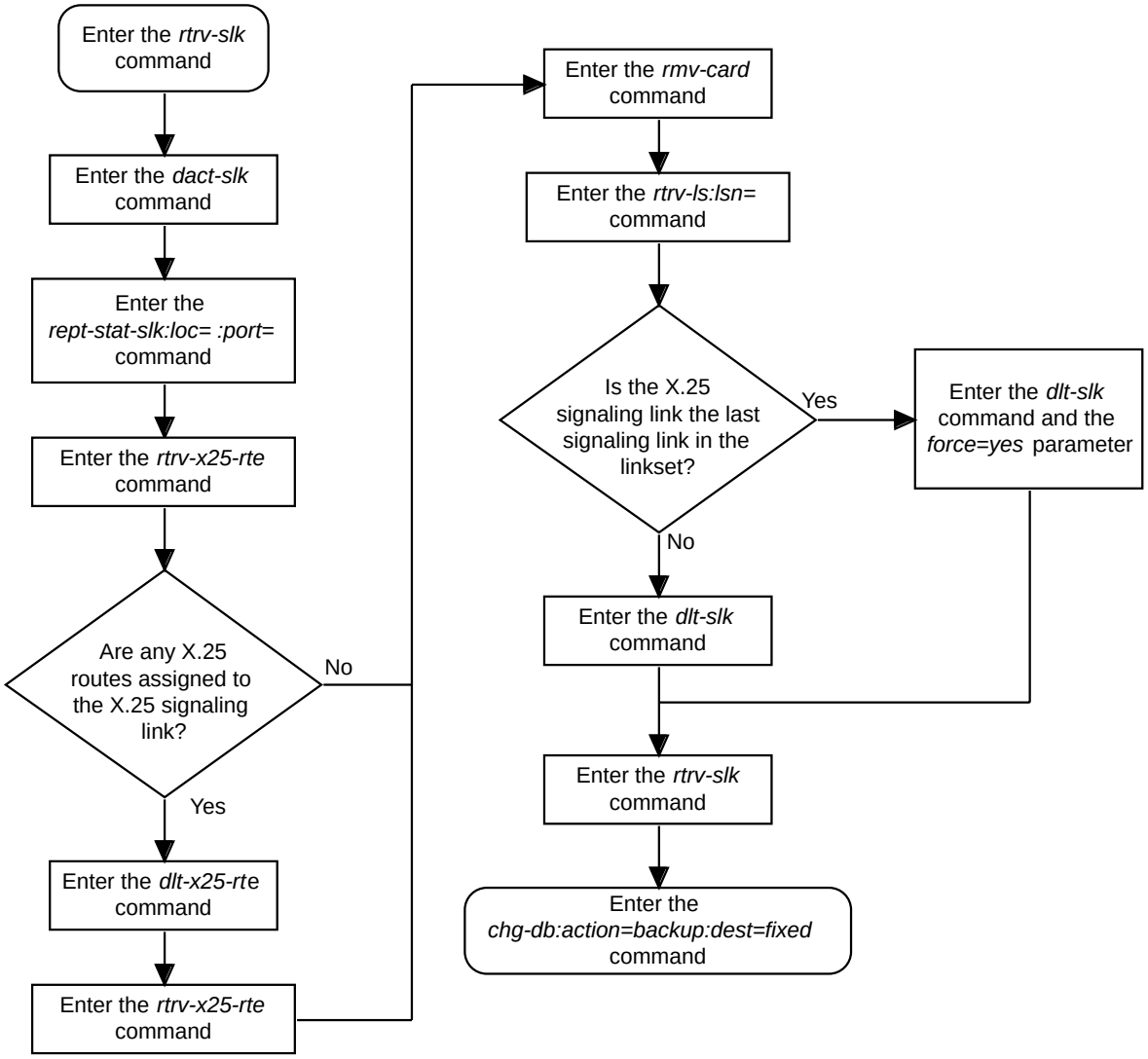
9. Verify the changes using the **rtrv-slk** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 21:16:37 GMT EAGLE5 31.4.0
                                    L2T        L1              PCR  PCR
LOC   PORT LSN          SLC TYPE    SET BPS    MODE TSET  ECM   N1   N2
1201  A    lsn1201a     0   LIMDS0  1   56000  ---  ---   BASIC ---  -----
1201  B    lsn1201b     0   LIMDS0  1   56000  ---  ---   PCR   76   3800
1202  A    lsn1202a     0   LIMV35  -   64000  DTE  ---   BASIC ---  -----
1202  B    lsn1202b     1   LIMV35  3   64000  DCE  ON    BASIC ---  -----
1203  A    lsn1203a     0   LIMV35  1   56000  DTE  ---   PCR   76   3800
1203  B    lsn1203b     0   LIMV35  1   56000  DCE  OFF   PCR   120  5034
1204  A    lsn1204a     1   LIMV35  3   64000  DCE  ON    PCR   76   3800
1204  B    lsn1204b     1   LIMV35  3   64000  DCE  ON    PCR   76   3800
1205  A    ls03         0   LIMV35  -   56000  DTE  --    BASIC ---  -----
1206  A    ls03         1   LIMV35  -   56000  DTE  --    BASIC ---  -----
1301  A    lsn1301a     0   LIMDS0  -   56000  ---  --    BASIC ---  -----

                                    LP           ATM
LOC   PORT LSN          SLC TYPE    SET BPS      TSEL      VCI  VPI   LL
1302  A    atmansi0     0   LIMATM  3   1544000  INTERNAL  35   15    0
1305  A    atmansi1     0   LIMATM  4   1544000  INTERNAL  100  20    2
1318  A    atmansi0     1   LIMATM  9   1544000  LINE      150  25    4

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

No Links Set up.

LOC   PORT LSN          SLC TYPE    IPLIML2

No Links Set up.

LOC   PORT LSN          SLC TYPE

No Links Set up.

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

No Links Set up.

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

No Links Set up.

SLK table is (14 of 500) 3% full.
```

10. Backup the new changes using the **chg-db:action=backup:dest=fixed** command. 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.
```

Flowchart 2-10. Removing an X.25 Signaling Link



Adding an X.25 Route

This procedure is used to add an X.25 route to the database using the **ent-x25-rte** command.

The **ent-x25-rte** command uses these parameters.

:xaddr – The X.25 address assigned to the X.25 destination entity on the X.25 side of the circuit.

:saddr – The dummy X.25 address assigned to the SS7 destination entity on the SS7 side of the circuit.

:type – The type of X.25 connection that the link is expected to maintain.

:loc – The card location of the LIM containing the X.25 signaling link that will maintain the connection. For an automatic virtual circuit, this link is the link on which the Eagle initially attempts the connection. However, if this attempt fails, the connection may be established by the X.25 destination entity on any other link in this link's linkset.

:port – The port on the card specified in the **loc** parameter.

:lc – The number of the logical channel on the X.25 signaling link to which the PVC connection is assigned. This parameter is mandatory if the **type=pvc** parameter is specified. If the **type=svca** or **type=svcr** parameters are specified, the logical channel number is arbitrary and cannot be specified.

:rt – The type of routing to perform for messages originating in the SS7 domain and destined for the X.25 domain. Two types of routing are available: (1) Route on X.25 destination point code (XPC) and (2) Route using X.25 origination and destination point code combinations (PC).

:lc2nm – Invokes network management for failures and recoveries of logical channels. When the logical channel being used to carry data fails, network management reroutes traffic to an alternate route. The logical channel to network management mapping (LC2NM) feature handles this process.

The examples in this procedure are based on the example network shown in Figure 2-4 and Table 2-9 and are used to add X.25 signaling links to cards 1205, 1206, and 1207.

Table 2-9. X.25/SS7 Gateway Route Configuration

Conn #	X.25 Address	SS7 Address	X.25 Point Code/ SSN	SS7 Point Code/ SSN	Connection Type	Location	Port	Logical Channel
1	11101	44401	1-1-1/5	4-4-4/5	PVC	1205	A	1
2	11102	55501	1-1-1/5	5-5-5/5	PVC	1206	A	2
3	22201	44401	2-2-2/5	4-4-4/5	PVC	1205	A	2
4	22202	55501	2-2-2/10	5-5-5/10	PVC	1206	A	1
5	33301	44401	3-3-3/6	4-4-4/6	Auto-SVC	1207	A	--
6	33302	55501	3-3-3/7	5-5-5/7	Auto-SVC	1207	A	--

These items must be provisioned in the database before an X.25 route can be added:

- A LIM assigned to the **`ss7gx25`** application – see the "Adding an X.25 LIM" procedure on page 2-14.
- An destination point code (DPC) assigned to the X.25 domain and a DPC assigned to the SS7 domain – see the "Adding a ANSI Destination Point Code" procedure in the *Database Administration Manual – SS7*.

  NOTE: ITU international or ITU national point codes cannot be assigned to the X.25 domain.
- An X.25 destination – see the "Adding an X.25 Gateway Destination" procedure on page 2-32
- A linkset whose adjacent point code (APC) is in the X.25 domain – see the "Adding an X.25 Linkset" procedure on page 2-47
- A signaling link assigned to a linkset containing an X.25 APC – see the "Adding an X.25 Signaling Link" procedure on page 2-76
- A route assigned to the linkset containing the X.25 APC – see the "Adding a Route" procedure in the *Database Administration Manual – SS7*.

The X.25 gateway route to be added cannot already be in the database. The combination of the two X.25 addresses must be unique in the X.25 route table. The combination of point code/SSNs assigned to the two X.25 addresses must be unique in the X.25 route table. This can be verified with the **`rtrv-x25-rte`** command.

The point codes assigned to each of the X.25 destinations must also be assigned to a route. This can be verified with the **`rtrv-rte`** command.

The point codes assigned to each of the X.25 destinations must be a full point code. Cluster point codes and network routing point codes cannot be specified for X.25 destinations. For more information on cluster point codes, go to the "Cluster Routing and Management Diversity" section in the *Database Administration Manual – SS7*. For more information on network routing point codes, go to the "Network Routing" section in the *Database Administration Manual – SS7*.

Two new parameters have been added to the **ent-x25-rte** command, **rt** and **lc2nm**. The **rt** parameter defines the type of routing to perform on messages originating in the SS7 domain and destined for the X.25 domain. This parameter has two values, **xpc** and **pc**. The **rt=xpc** parameter routes the message based on the X.25 destination point code. The **rt=pc** parameter routes the message based on the X.25 origination and destination point code combination.

If the **rt=xpc** parameter is specified, the point code associated with the X.25 address used for this X.25 route cannot be in the X.25 route table. This can be verified with the **rtrv-x25-rte** command.

The X.25 network is connection oriented. All traffic from one node to another node uses one and only one logical channel. Once a logical channel is mapped to a pair of nodes, it cannot be used by any other pair of nodes.

When a logical channel on a particular X.25 route can no longer carry traffic between two nodes, the traffic between those two nodes can be rerouted to alternate routes with the logical channel to network management function and is specified by the **lc2nm** parameter. This function maps logical channel failures and recoveries to SS7 network management messages so that the alternate routing for the X.25 routes can be managed.

If the **lc2nm=yes** parameter is specified, then network management for logical channel failures and recoveries is performed. If the **lc2nm=no** parameter is specified, there is no network management for logical channel failures and recoveries.

If the X.25 route has the **lc2nm** parameter set to **yes**, and this X.25 route contains an X.25 destination whose X.25 destination point code is a member of a cluster, make sure that the **bei** parameter of the cluster containing the X.25 destination point code is set to **no**. Enter the **rtrv-x25-dstn** command to verify the destination point code that is assigned to the X.25 destination. Enter the **rtrv-dstn** command to verify that the X.25 destination point code is a member of a cluster and to verify the value of the **bei** parameter of the cluster. If the X.25 destination point code is not a member of a cluster, and you wish to use the **lc2nm=yes** parameter with the X.25 route, enter the **rtrv-dstn** command to verify that the value of the **bei** parameter for that X.25 destination point code is set to **no**. To change the existing value the **bei** parameter, go to the "Changing a Destination Point Code" procedure in the *Database Administration Manual – SS7*. For more information on the interaction of X.25 destination point codes and clusters, go to the "Adding a ANSI Destination Point Code" procedure in the *Database Administration Manual – SS7*.

To specify the **lc2nm=yes** parameter, the **rt=xpc** parameter must be specified, and the point code that the message is to be routed on (**xpc**) cannot be an adjacent point code. This can be verified by first entering the **rtrv-x25-dstn** command to find the point code and X.25 address association, then the **rtrv-ls** command to display the linksets and the adjacent point codes they are assigned to. Any X.25 address that is associated with an adjacent point code, comparing the outputs of the **rtrv-x25-dstn** and **rtrv-ls** commands, cannot be used if the **ent-x25-rte** command specifies the **lc2nm=yes** parameter.

If the **lc2nm=yes** parameter is specified for the X.25 route in the linkset and the linkset has gateway screening associated with it, gateway screening must be configured to allow TFA and TFP network management messages on this linkset to pass through the Eagle. Go to the *Database Administration Manual - Gateway Screening* for details on how to create a screen that allows network management messages.

To allow TFA messages to pass through the Eagle on this linkset, the allowed SIO screen must contain these parameters: si=0, h0=4, h1=5. To allow TFP messages to pass through the Eagle on this linkset, the allowed SIO screen must contain these parameters: si=0, h0=4, h1=1. This can be verified with the **rtrv-scr-sio** command. If the allowed SIO screen that allows TFA and TFP messages is not in the database, go to the "Adding an Allowed SIO Screen" procedure in the *Database Administration Manual - Gateway Screening* to add the allowed SIO screen with these parameters. If the required allowed SIO screen does not contain the parameters to allow the TFA and TFP messages, go to the "Changing an Allowed SIO Screen" procedure in the *Database Administration Manual - Gateway Screening* to change the parameters of this allowed SIO screen.

Procedure

1. Display the current X.25 route configuration using the **rtrv-x25-rte** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 21:16:37 GMT EAGLE5 31.4.0
X25 ADDR          SS7 ADDR         TYPE  LOC   PORT  LC  RT   LC2NM
2510010011234567  342342341234567  pvc   1201  a     02  xpc  yes
251001002         234234231        pvc   1201  a     04  pc   no
51200105          34223422845      svca  1202  a     --  pc   no
2510103           232330           pvc   1201  a     06  xpc  yes
2510103           232330           svcr  ----  -     --  pc   no
2516019002        24247235         svca  3205  a     --  pc   no
345454            4545434          svca  1201  a     --  pc   no
X.25 ROUTE TABLE IS  30 % FULL
```

2. Add the X.25 route using the **ent-x25-rte** command. For this example, enter these commands.

```
ent-x25-rte:xaddr=11101:saddr=44401:type=pvc:loc=1205:port=a:lc=1
ent-x25-rte:xaddr=11102:saddr=55501:type=pvc:loc=1206:port=a:lc=2
ent-x25-rte:xaddr=22201:saddr=44401:type=pvc:loc=1205:port=a:lc=2
ent-x25-rte:xaddr=22201:saddr=55501:type=pvc:loc=1206:port=a:lc=1
ent-x25-rte:xaddr=33301:saddr=44401:type=svca:loc=1207:port=a
ent-x25-rte:xaddr=33302:saddr=55502:type=svca:loc=1207:port=a
```

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

```
rlghncxa03w 04-03-28 11:43:04 GMT EAGLE5 31.4.0
ENT-X25-RTE: MASP A - X.25 Route table 32% full
ENT-X25-RTE: MASP A - COMPLTD
```

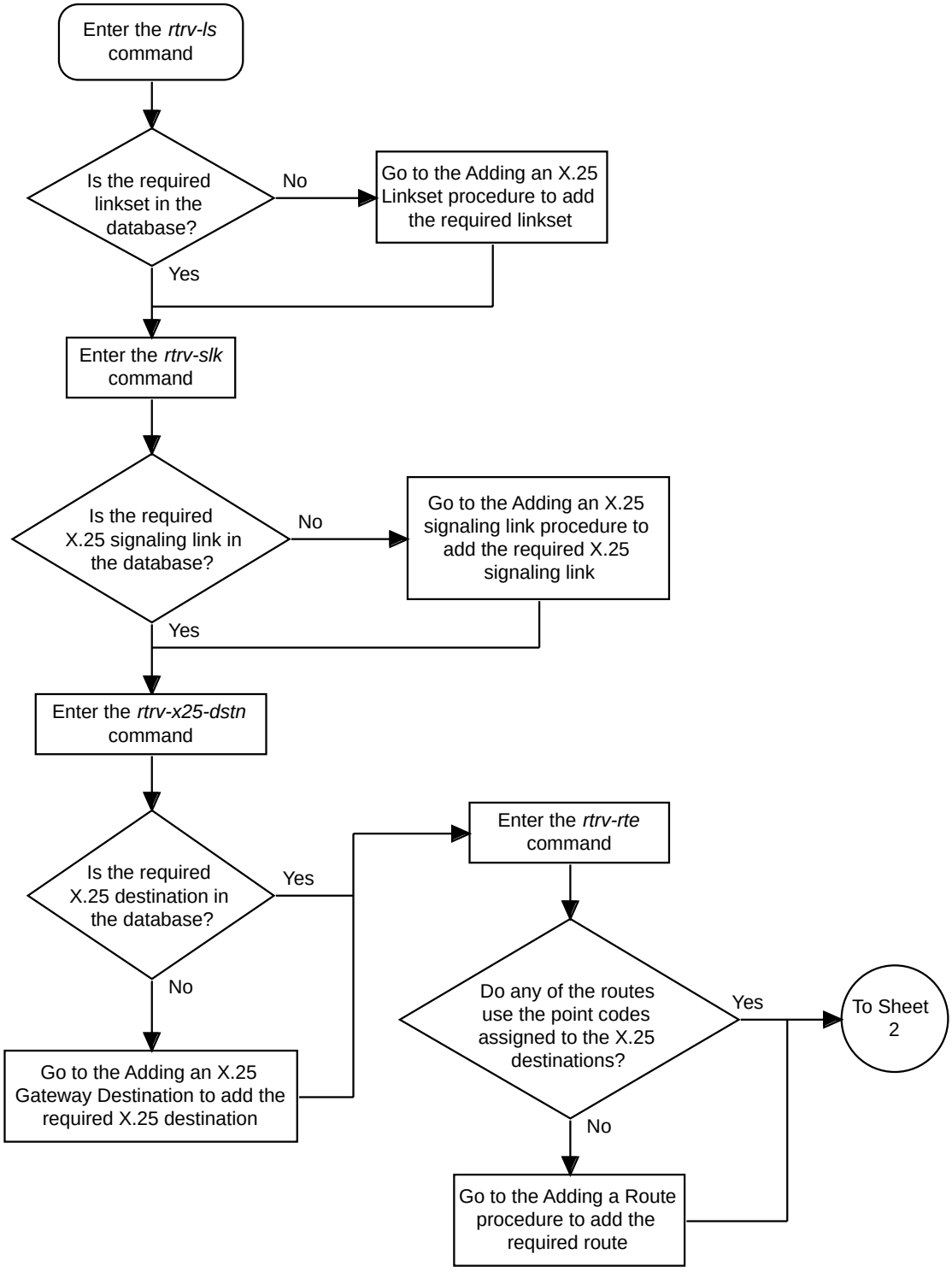
3. Verify the changes using the **rtrv-x25-rte** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 21:16:37 GMT EAGLE5 31.4.0
X25 ADDR          SS7 ADDR         TYPE  LOC   PORT  LC  RT   LC2NM
11101             44401            pvc   1205  a     01  pc   no
11102             55501            pvc   1206  a     02  pc   no
22201             44401            pvc   1205  a     02  pc   no
22202             55501            pvc   1206  a     01  pc   no
2510010011234567  342342341234567  pvc   1201  a     02  xpc  yes
251001002         234234231        pvc   1201  a     04  pc   no
2510103           232330           pvc   1201  a     06  xpc  yes
2510103           232330           svcr  ----  -     --  pc   no
2516019002        24247235         svca  3205  a     --  pc   no
33301             44401            svca  1207  a     --  pc   no
33302             55501            svca  1207  a     --  pc   no
345454            4545434          svca  1201  a     --  pc   no
51200105          34223422845      svca  1202  a     --  pc   no
6389012           57982            pvc   1301  a     01  xpc  yes
X.25 ROUTE TABLE IS  30 % FULL
```

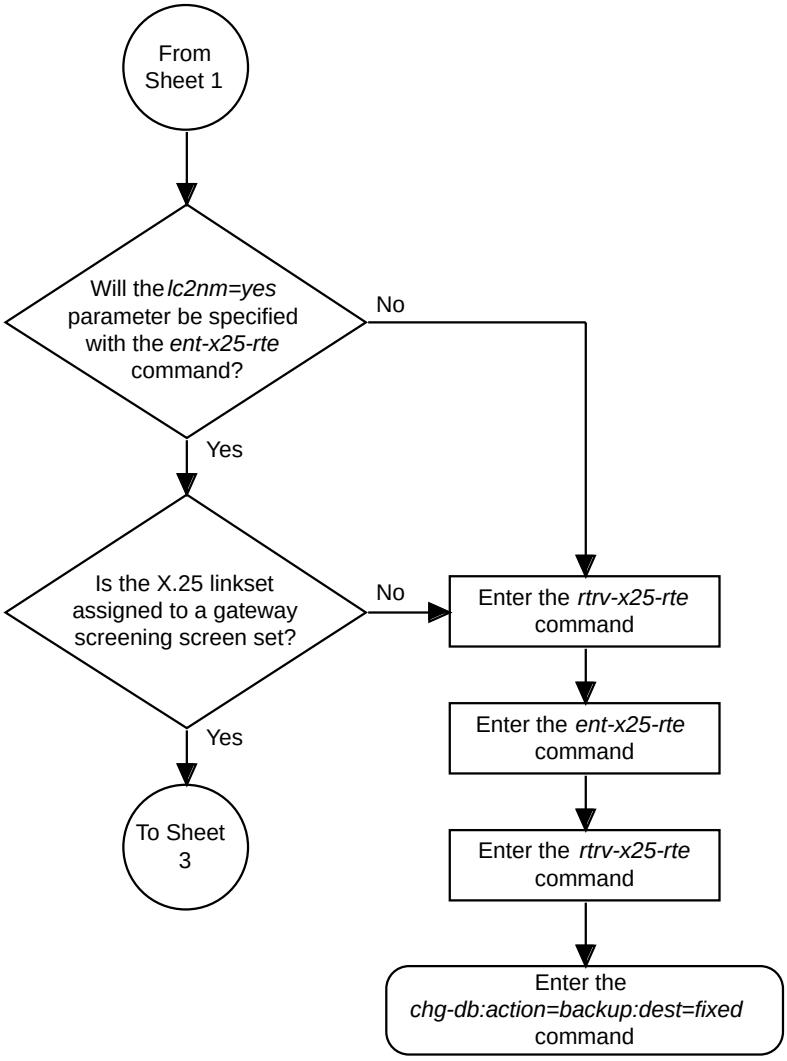
4. Backup the new changes using the **chg-db:action=backup:dest=fixed** command. These messages should appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
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.
```

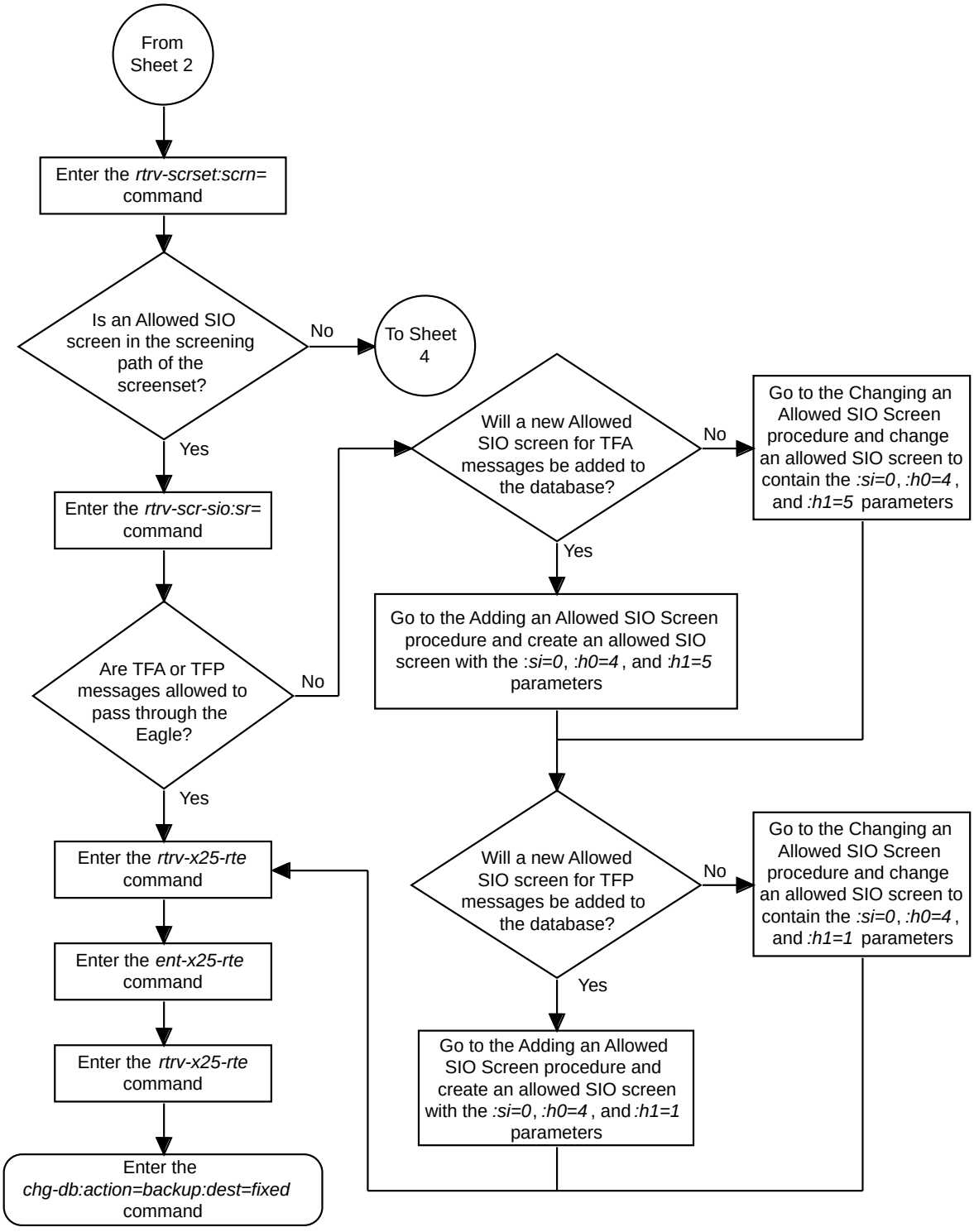
Flowchart 2-11. Adding an X.25 Route (Sheet 1 of 11)



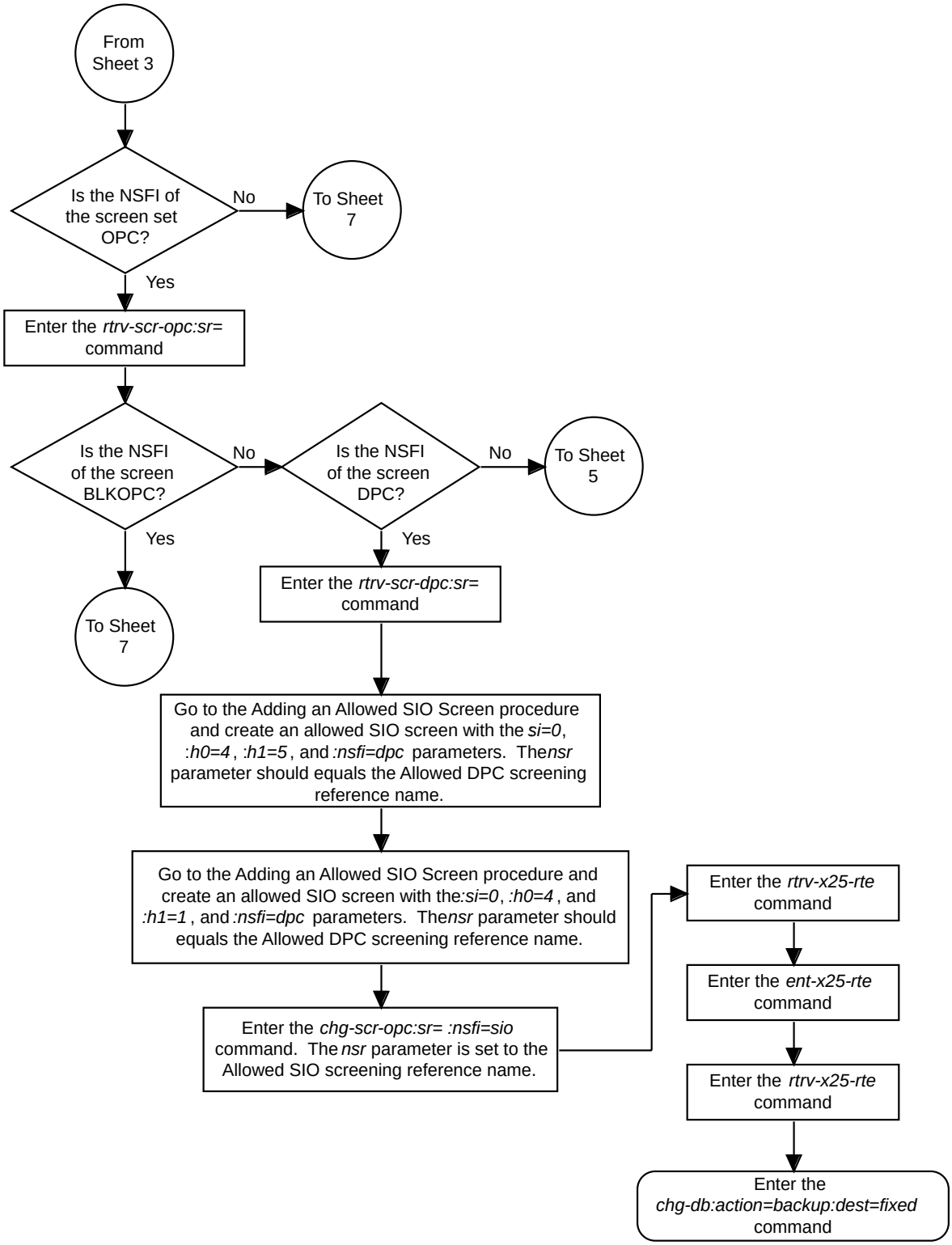
Flowchart 2-11. Adding an X.25 Route (Sheet 2 of 11)



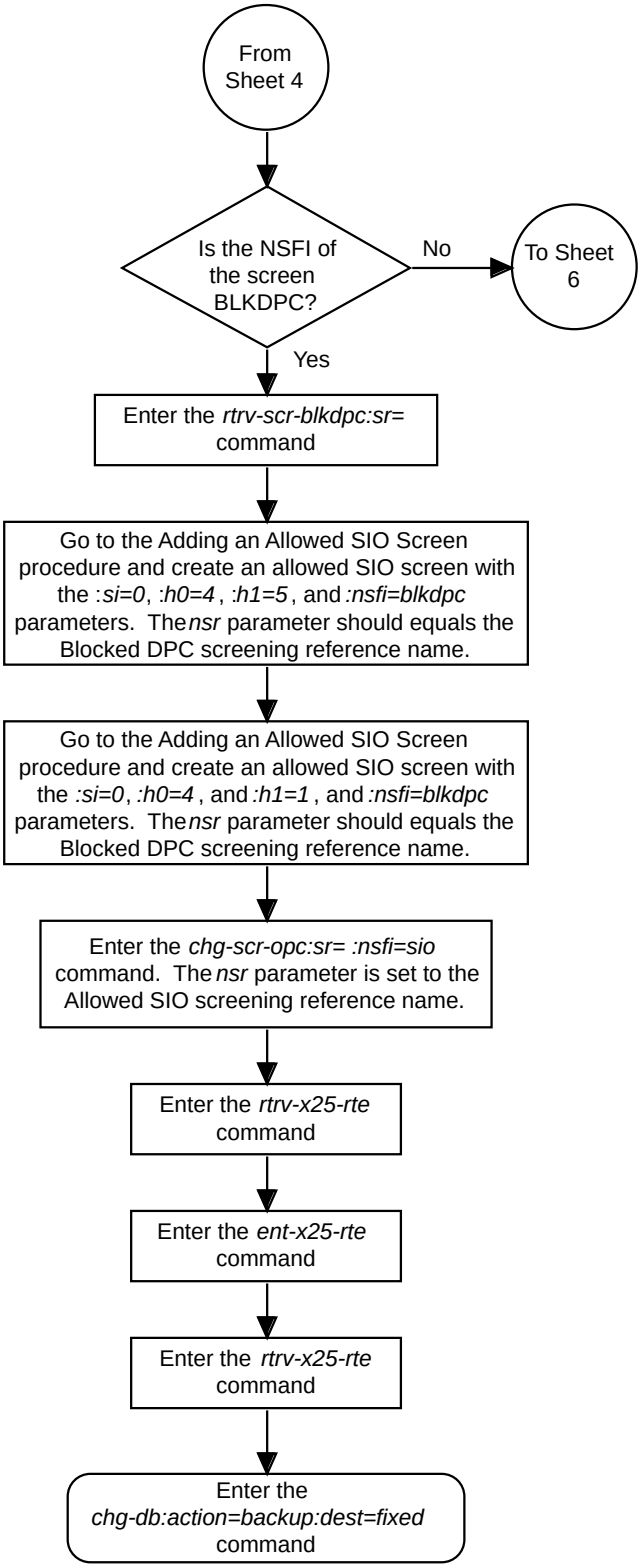
Flowchart 2-11. Adding an X.25 Route (Sheet 3 of 11)



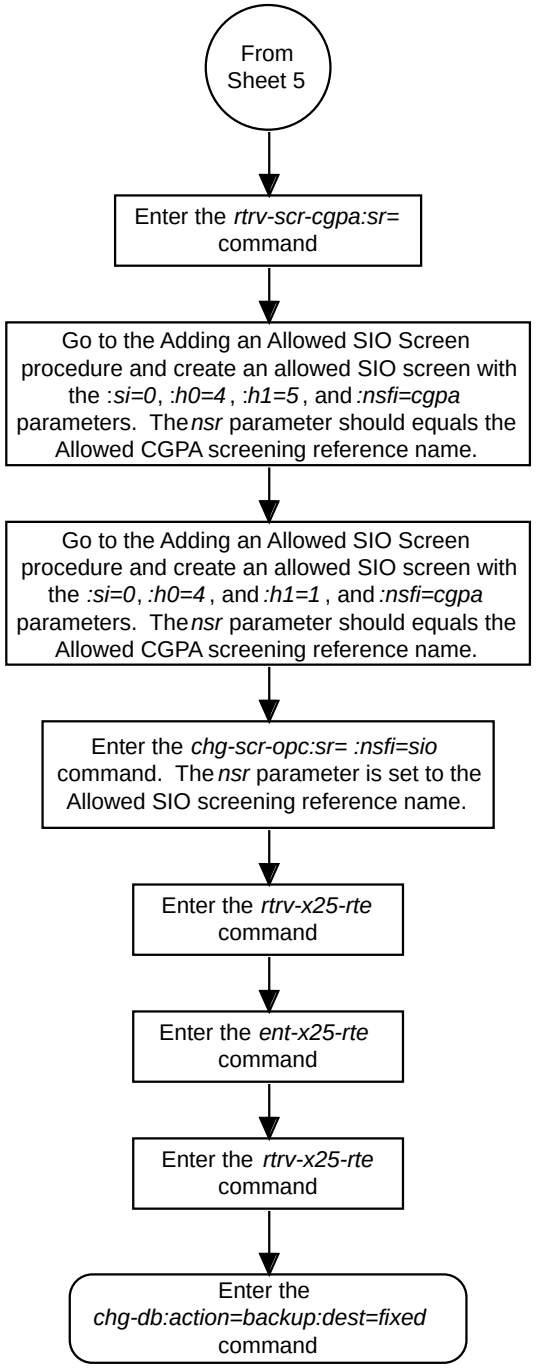
Flowchart 2-11. Adding an X.25 Route (Sheet 4 of 11)



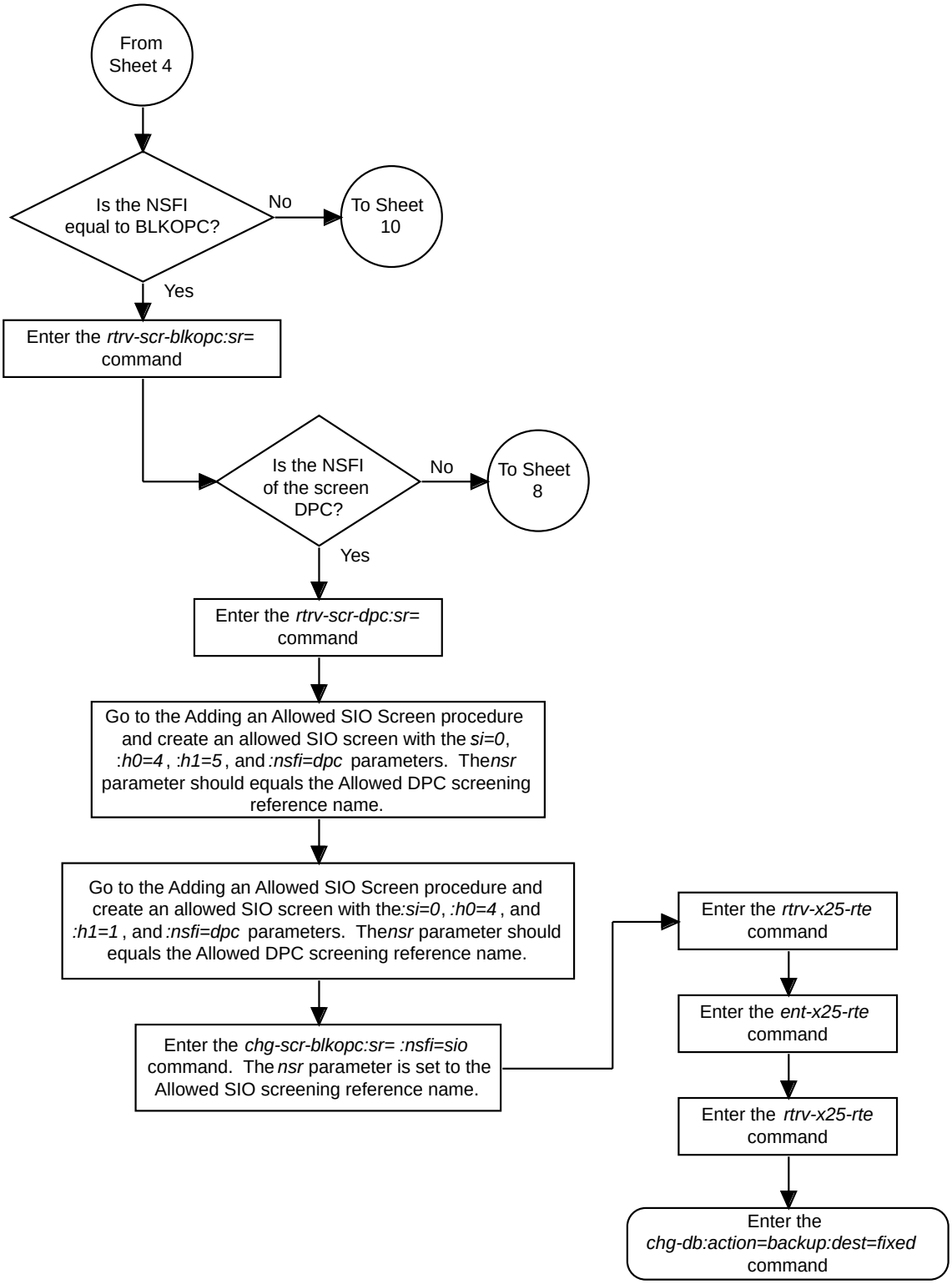
Flowchart 2-11. Adding an X.25 Route (Sheet 5 of 11)



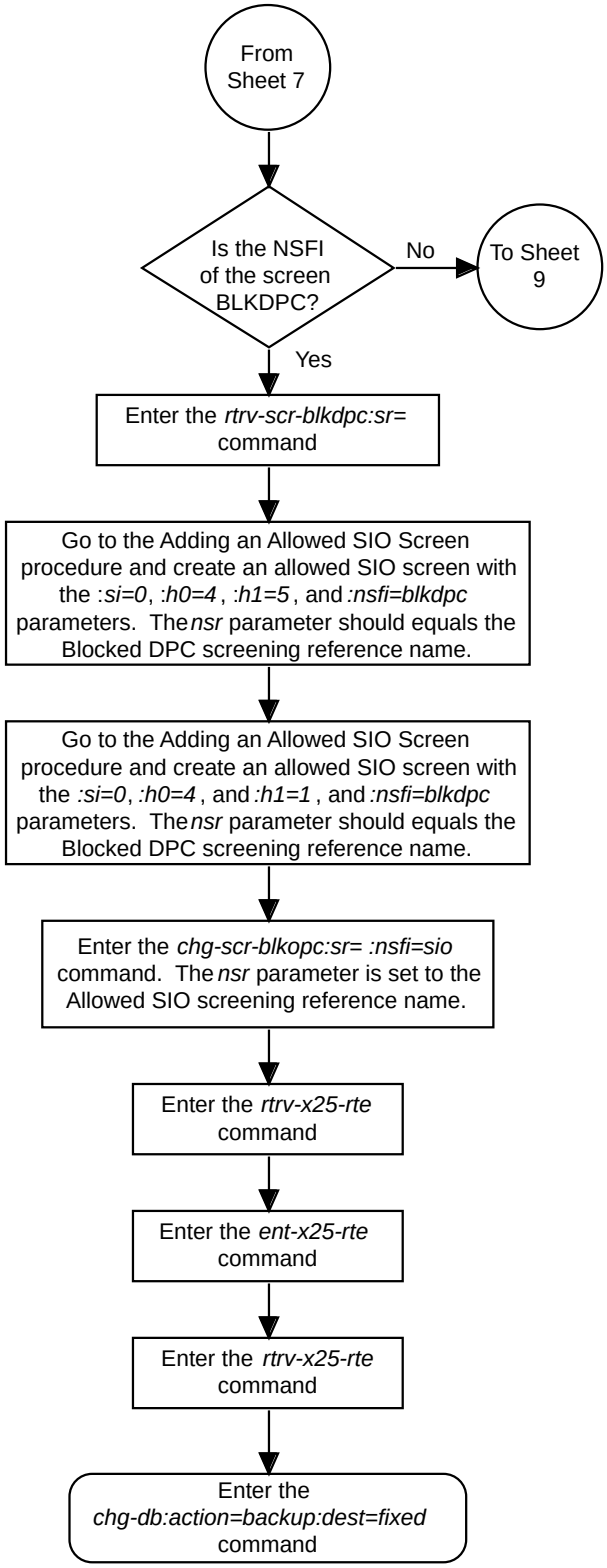
Flowchart 2-11. Adding an X.25 Route (Sheet 6 of 11)



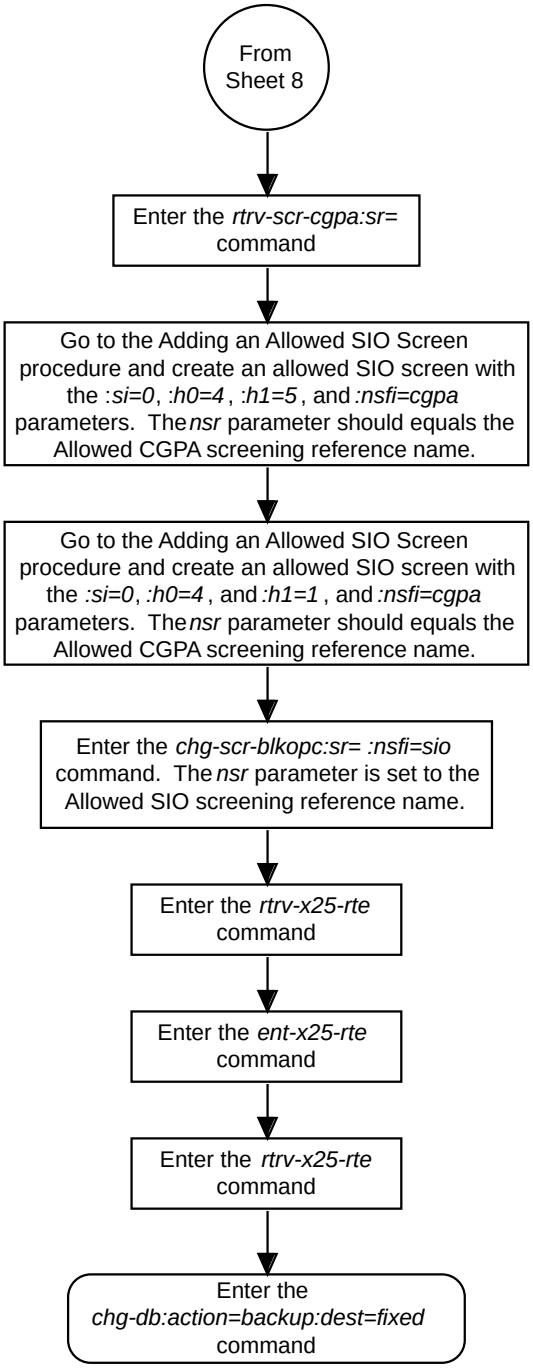
Flowchart 2-11. Adding an X.25 Route (Sheet 7 of 11)



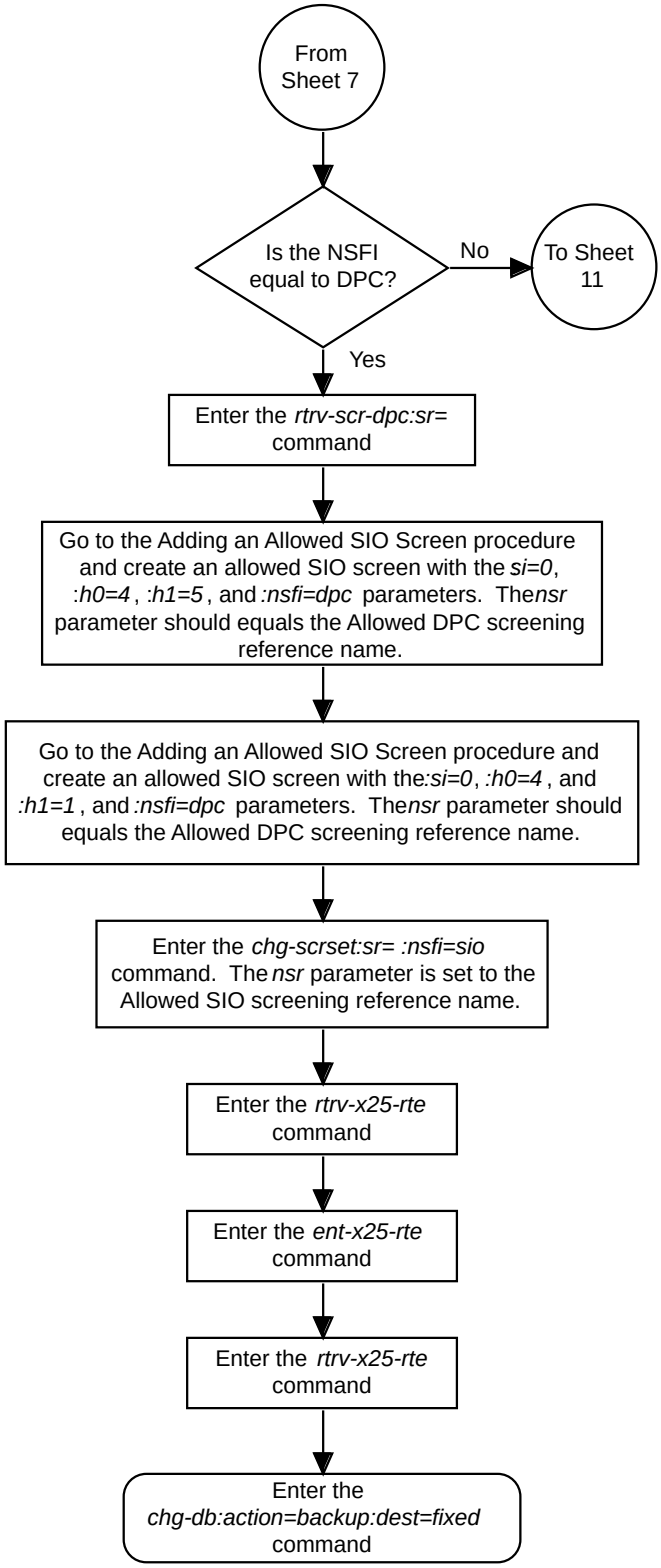
Flowchart 2-11. Adding an X.25 Route (Sheet 8 of 11)



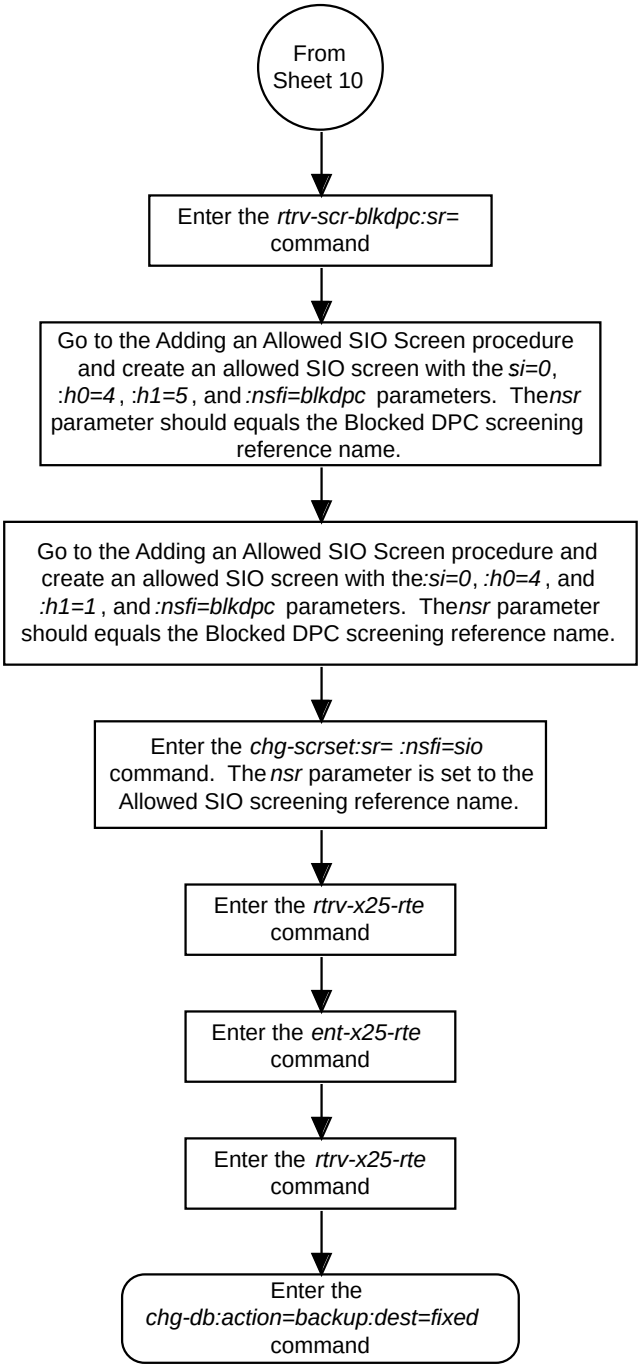
Flowchart 2-11. Adding an X.25 Route (Sheet 9 of 11)



Flowchart 2-11. Adding an X.25 Route (Sheet 10 of 11)



Flowchart 2-11. Adding an X.25 Route (Sheet 11 of 11)



Removing an X.25 Route

This procedure is used to remove an X.25 route from the database using the **dlt-x25-rte** command.

The **dlt-x25-rte** command uses these parameters.

:xaddr – The X.25 address assigned to the X.25 destination entity on the X.25 side of the circuit.

:saddr – The dummy X.25 address assigned to the SS7 destination entity on the SS7 side of the circuit.

The examples in this procedure are used to remove the X.25 route with the X.25 address (**xaddr**) of 22202 and an SS7 address (**saddr**) of 55501.

The X.25 route to be removed must be in the database. This can be verified in step 1.

Procedure

1. Display the current X.25 route configuration using the **rtrv-x25-rte** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 21:16:37 GMT EAGLE5 31.4.0
X25 ADDR          SS7 ADDR         TYPE  LOC   PORT  LC  RT   LC2NM
11101             44401            pvc   1205  a     01  pc   no
11102             55501            pvc   1206  a     02  pc   no
22201             44401            pvc   1205  a     02  pc   no
22202             55501            pvc   1206  a     01  pc   no
2510010011234567  342342341234567  pvc   1201  a     02  xpc  yes
251001002         234234231        pvc   1201  a     04  pc   no
2510103           232330           pvc   1201  a     06  xpc  yes
2510103           232330           svcr  ----  -     --  pc   no
2516019002        24247235         svca  3205  a     --  pc   no
33301             44401            svca  1207  a     --  pc   no
33302             55501            svca  1207  a     --  pc   no
345454            4545434          svca  1201  a     --  pc   no
51200105          34223422845      svca  1202  a     --  pc   no
6389012           57982            pvc   1301  a     01  xpc  yes
X.25 ROUTE TABLE IS  30 % FULL
```

2. Remove the X.25 route using the **dlt-x25-rte** command. For this example, enter this command.

dlt-x25-rte:xaddr=22202:saddr=55501

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

```
rlghncxa03w 04-03-28 11:43:04 GMT EAGLE5 31.4.0
DLT-X25-RTE: MASP A - X.25 Route table 30% full
DLT-X25-RTE: MASP A - COMPLTD
```

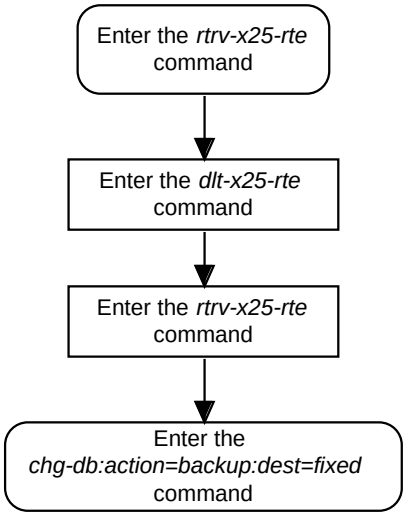
3. Verify the changes using the **rtrv-x25-rte** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 21:16:37 GMT EAGLE5 31.4.0
X25 ADDR          SS7 ADDR         TYPE  LOC   PORT  LC  RT   LC2NM
11101             44401            pvc   1205  a     01  pc   no
11102             55501            pvc   1206  a     02  pc   no
22201             44401            pvc   1205  a     02  pc   no
2510010011234567  342342341234567  pvc   1201  a     02  xpc  yes
251001002         234234231        pvc   1201  a     04  pc   no
2510103           232330           pvc   1201  a     06  xpc  yes
2510103           232330           svcr  ----  -     --  pc   no
2516019002        24247235         svca  3205  a     --  pc   no
33301             44401            svca  1207  a     --  pc   no
33302             55501            svca  1207  a     --  pc   no
345454            4545434          svca  1201  a     --  pc   no
51200105          34223422845      svca  1202  a     --  pc   no
6389012           57982            pvc   1301  a     01  xpc  yes
X.25 ROUTE TABLE IS  30 % FULL
```

4. Backup the new changes using the **chg-db:action=backup:dest=fixed** command. 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.
```

Flowchart 2-12. Removing an X.25 Route



Changing an X.25 Route

This procedure is used to change the attributes of an X.25 route in the database using the **chg-x25-rte** command.

The **chg-x25-rte** command uses these parameters.

:xaddr – The X.25 address assigned to the X.25 destination entity on the X.25 side of the circuit.

:saddr – The alias X.25 address assigned to the SS7 destination entity on the SS7 side of the circuit.

:type – The type of X.25 connection that the link is expected to maintain.

:loc – The card location of the LIM containing the X.25 signaling link that maintains the connection.

:port – The port on the card specified in the *loc* parameter.

:rt – The type of routing to perform for messages originating in the SS7 domain and destined for the X.25 domain. Two types of routing are available: (1) route on X.25 destination point code (XPC) and (2) route using X.25 origination and destination point code combinations (PC).

:lc2nm – Invokes SS7 MTP network management for failures and recoveries of logical channels.

The examples in this procedure are used to change the attributes of the X.25 route with the X.25 address (**xaddr**) of 11102 and an SS7 address (**saddr**) of 55501. The new configuration of this X.25 route has a connection type of **svca**, no logical channel assignment, and is assigned to the X.25 signaling link on card 1215.

The X.25 route to be changed must be in the database. This can be verified in step 1.

The card location assigned to the X.25 route must be an X.25 card (card type **ss7x25g**). This can be verified with the **rtrv-card** command.

The signaling link assigned to the X.25 route must be in the database and must be assigned to a linkset. The linkset must be assigned to a route associated with an X.25 destination and must contain an APC in the X.25 domain. This can be verified by entering these commands:

- **rtrv-slk** – to display the signaling links
- **rtrv-ls** – to display the linksets
- **rtrv-rte** – to display the routes
- **rtrv-x25-dstn** – to display the X.25 destinations
- **rtrv-dstn** – to display the destination point codes.

If the **lc2nm=yes** parameter is specified with the **chg-x25-rte** command, the SS7 point code assigned to the X.25 address used by the **xaddr** parameter must be unique in the X.25 routing table.

The **rt=xpc** parameter must be specified with the **chg-x25-rte** command if the **lc2nm=yes** is specified.

If the X.25 destination is an adjacent entity, the **lc2nm=no** parameter must be specified with the **chg-x25-rte** command.

If the X.25 route has the **lc2nm** parameter set to **yes**, and this X.25 route contains an X.25 destination whose X.25 destination point code is a member of a cluster, make sure that the **bei** parameter of the cluster containing the X.25 destination point code is set to **no**. Enter the **rtrv-x25-dstn** command to verify the destination point code that is assigned to the X.25 destination. Enter the **rtrv-dstn** command to verify that the X.25 destination point code is a member of a cluster and to verify the value of the **bei** parameter of the cluster. If the X.25 destination point code is not a member of a cluster, and you wish to use the **lc2nm=yes** parameter with the X.25 route, enter the **rtrv-dstn** command to verify that the value of the **bei** parameter for that X.25 destination point code is set to **no**. To change the existing value the **bei** parameter, go to the "Changing a Destination Point Code" procedure in the *Database Administration Manual – SS7*. For more information on the interaction of X.25 destination point codes and clusters, go to the "Adding a ANSI Destination Point Code" procedure in the *Database Administration Manual – SS7*.

If the **lc2nm=yes** parameter is specified for the X.25 route in the linkset and the linkset has gateway screening associated with it, gateway screening must be configured to allow TFA and TFP network management messages on this linkset to pass through the Eagle. Refer to the *Database Administration Manual - Gateway Screening* for details on how to create a screen that allows network management messages.

To allow TFA messages to pass through the Eagle on this linkset, the allowed SIO screen must contain these parameters: si=0, h0=4, h1=5. To allow TFP messages to pass through the Eagle on this linkset, the allowed SIO screen must contain these parameters: si=0, h0=4, h1=1. This can be verified with the **rtrv-scr-sio** command. If the allowed SIO screen that allows TFA and TFP messages is not in the database, go to the "Adding an Allowed SIO Screen" procedure in the *Database Administration Manual - Gateway Screening* to add the allowed SIO screen with these parameters. If the required allowed SIO screen does not contain the parameters to allow the TFA and TFP messages, go to the "Changing an Allowed SIO Screen" procedure in the *Database Administration Manual - Gateway Screening* to change the parameters of this allowed SIO screen.

Procedure

1. Display the current X.25 route configuration using the **rtrv-x25-rte** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 21:16:37 GMT EAGLE5 31.4.0
X25 ADDR          SS7 ADDR         TYPE  LOC   PORT  LC  RT   LC2NM
11101             44401            pvc   1205  a     01  pc   no
11102             55501            pvc   1206  a     02  pc   no
22201             44401            pvc   1205  a     02  pc   no
22202             55501            pvc   1206  a     01  pc   no
2510010011234567  342342341234567  pvc   1201  a     02  xpc  yes
251001002         234234231        pvc   1201  a     04  pc   no
2510103           232330           pvc   1201  a     06  xpc  yes
2510103           232330           svcr  ----  -     --  pc   no
2516019002        24247235         svca  3205  a     --  pc   no
33301             44401            svca  1207  a     --  pc   no
33302             55501            svca  1207  a     --  pc   no
345454            4545434          svca  1201  a     --  pc   no
51200105          34223422845      svca  1202  a     --  pc   no
6389012           57982            pvc   1301  a     01  xpc  yes
X.25 ROUTE TABLE IS  30 % FULL
```

2. Change the attributes of the X.25 route using the **chg-x25-rte** command. For this example, enter this command.

chg-x25-rte:xaddr=11102:saddr=55501:type=svca:loc=1215:port=a

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

```
rlghncxa03w 04-03-28 11:43:04 GMT EAGLE5 31.4.0
CHG-X25-RTE: MASP A - X.25 Route table 30% full
CHG-X25-RTE: MASP A - COMPLTD
```

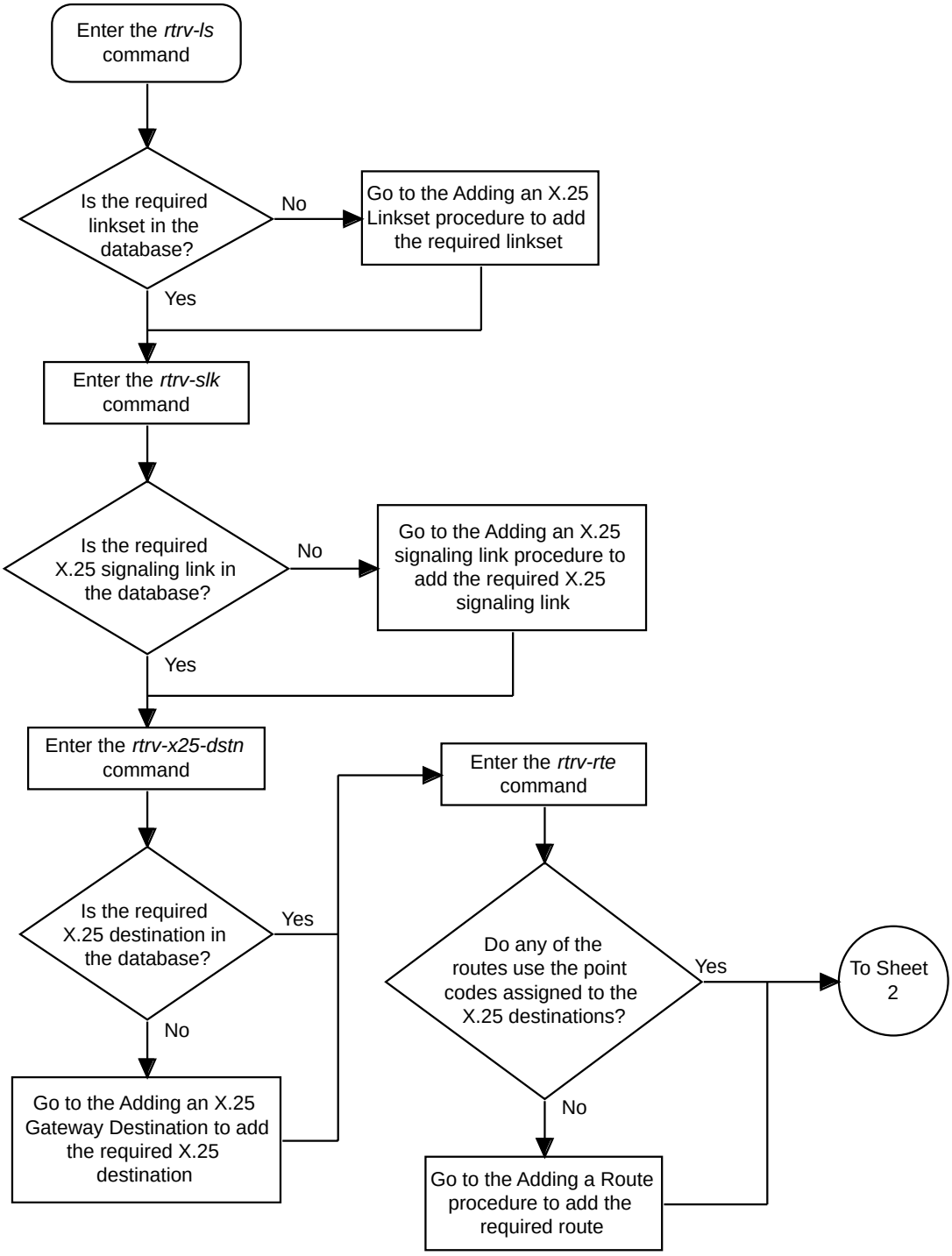
3. Verify the changes using the **rtrv-x25-rte** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 21:16:37 GMT EAGLE5 31.4.0
X25 ADDR          SS7 ADDR         TYPE  LOC   PORT  LC  RT   LC2NM
11101             44401            pvc   1205  a     01  pc   no
11102             55501            svca  1215  a     --  pc   no
22201             44401            pvc   1205  a     02  pc   no
22202             55501            pvc   1206  a     01  pc   no
2510010011234567  342342341234567  pvc   1201  a     02  xpc  yes
251001002         234234231        pvc   1201  a     04  pc   no
2510103           232330           pvc   1201  a     06  xpc  yes
2510103           232330           svcr  ----  -     --  pc   no
2516019002        24247235         svca  3205  a     --  pc   no
33301             44401            svca  1207  a     --  pc   no
33302             55501            svca  1207  a     --  pc   no
345454            4545434          svca  1201  a     --  pc   no
51200105          34223422845      svca  1202  a     --  pc   no
6389012           57982            pvc   1301  a     01  xpc  yes
X.25 ROUTE TABLE IS  30 % FULL
```

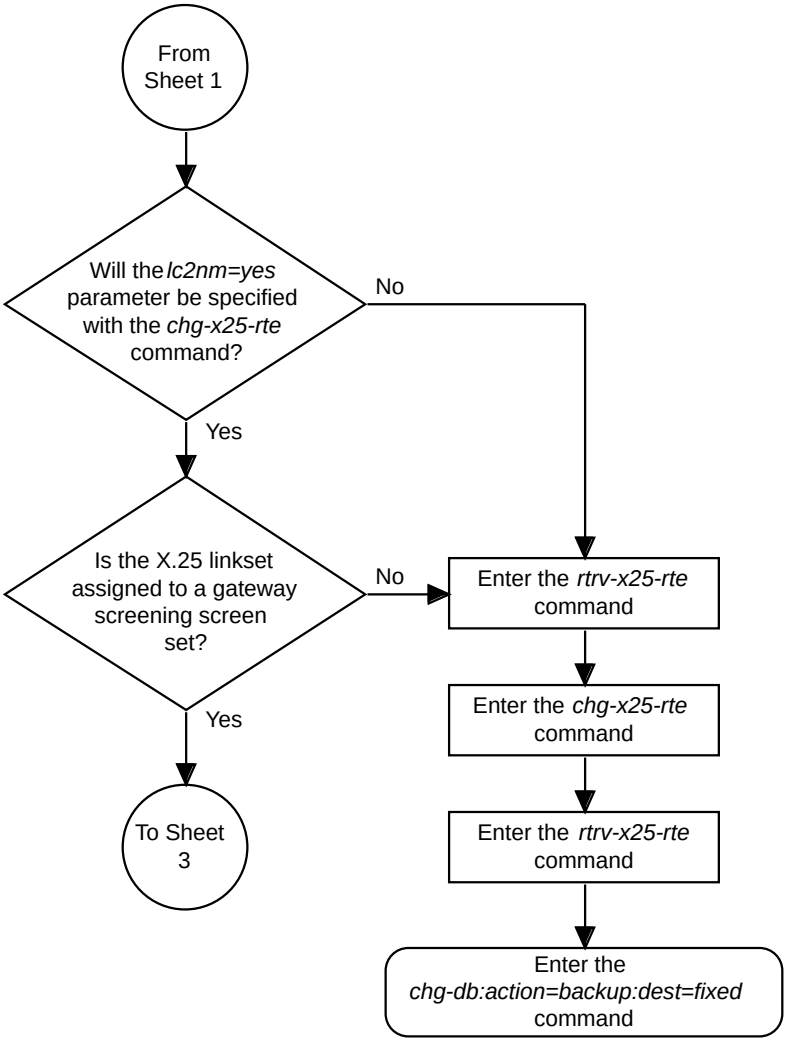
4. Backup the new changes using the **chg-db:action=backup:dest=fixed** command. These messages should appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
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.
```

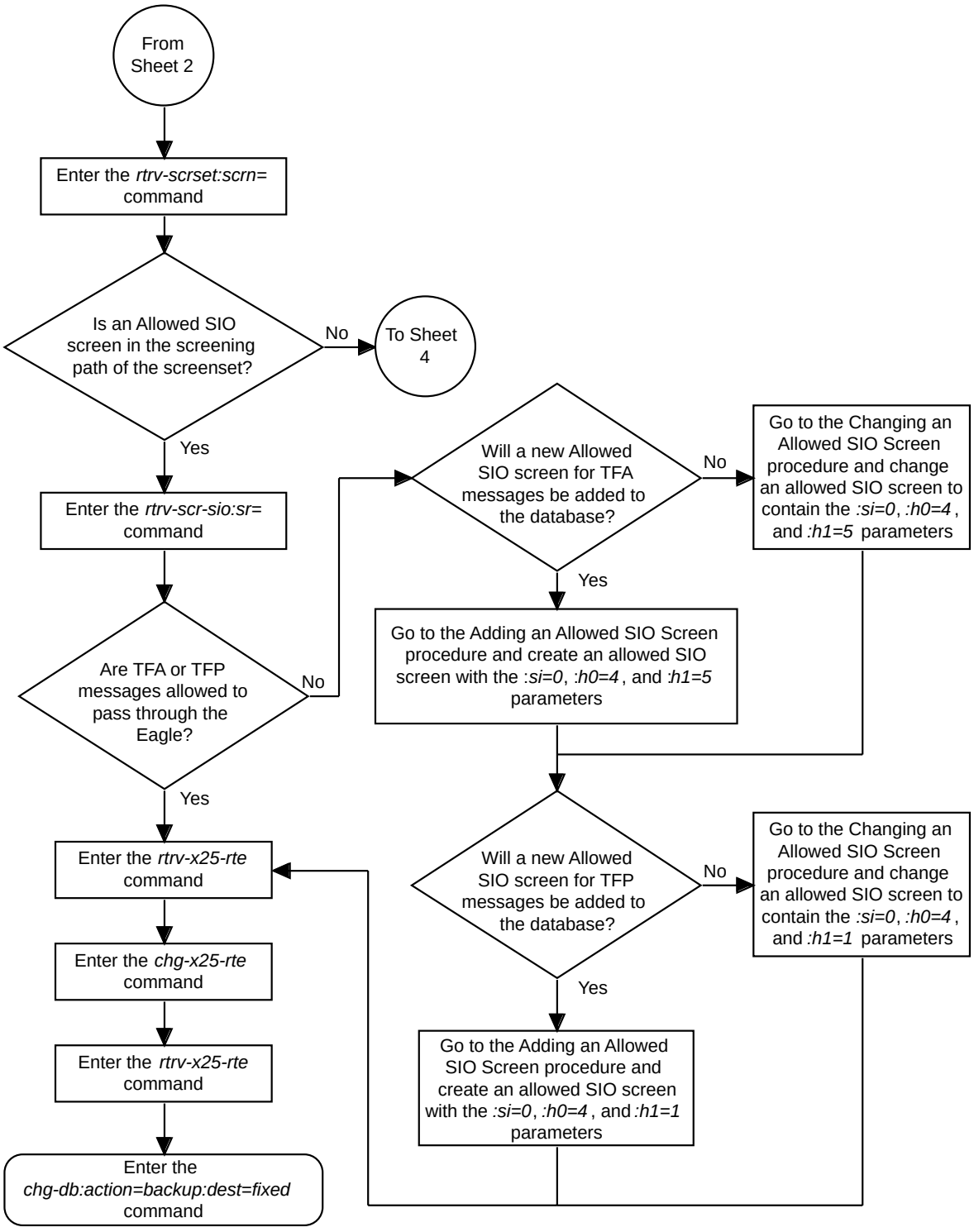
Flowchart 2-13. Changing an X.25 Route (Sheet 1 of 11)



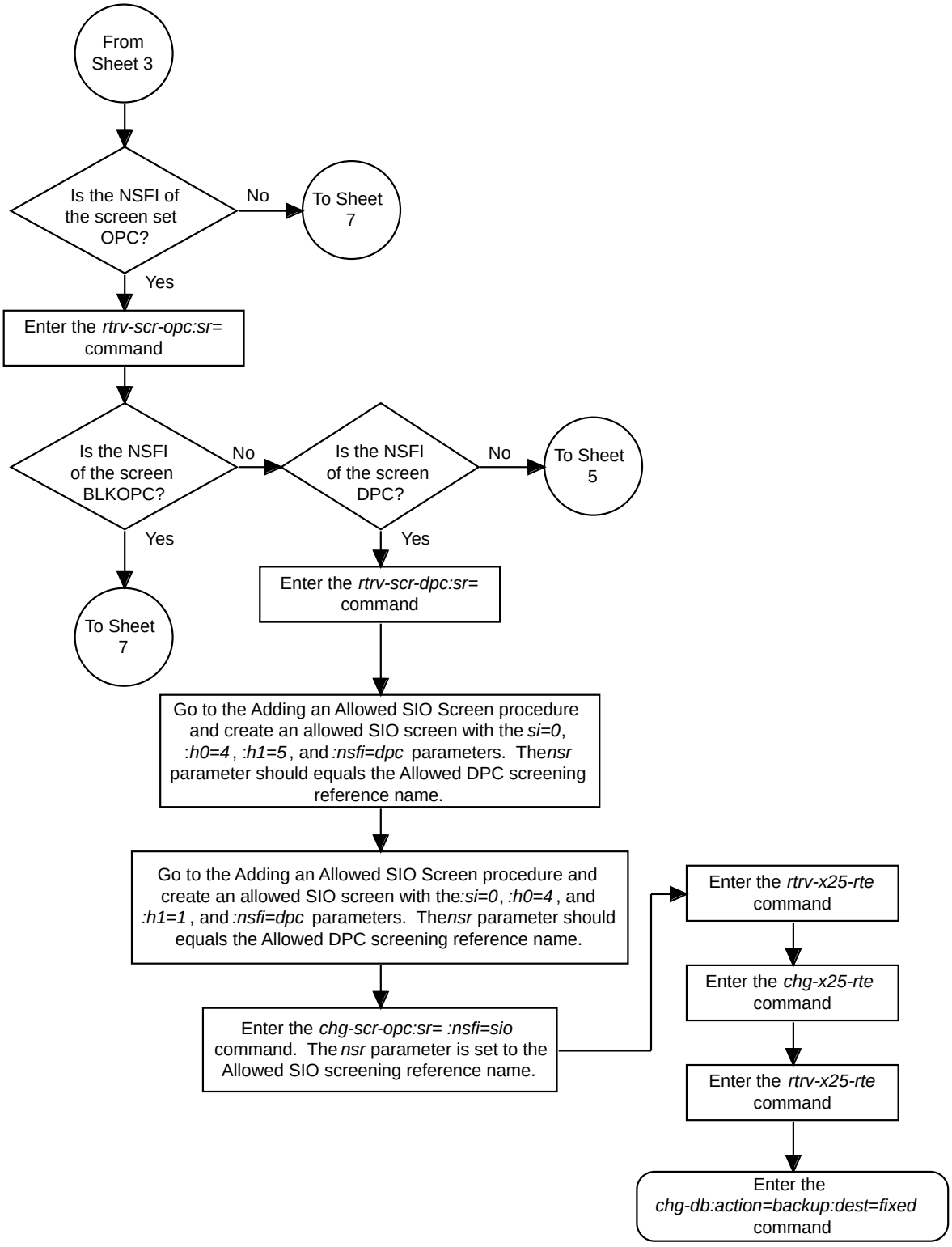
Flowchart 2-13. Changing an X.25 Route (Sheet 2 of 11)



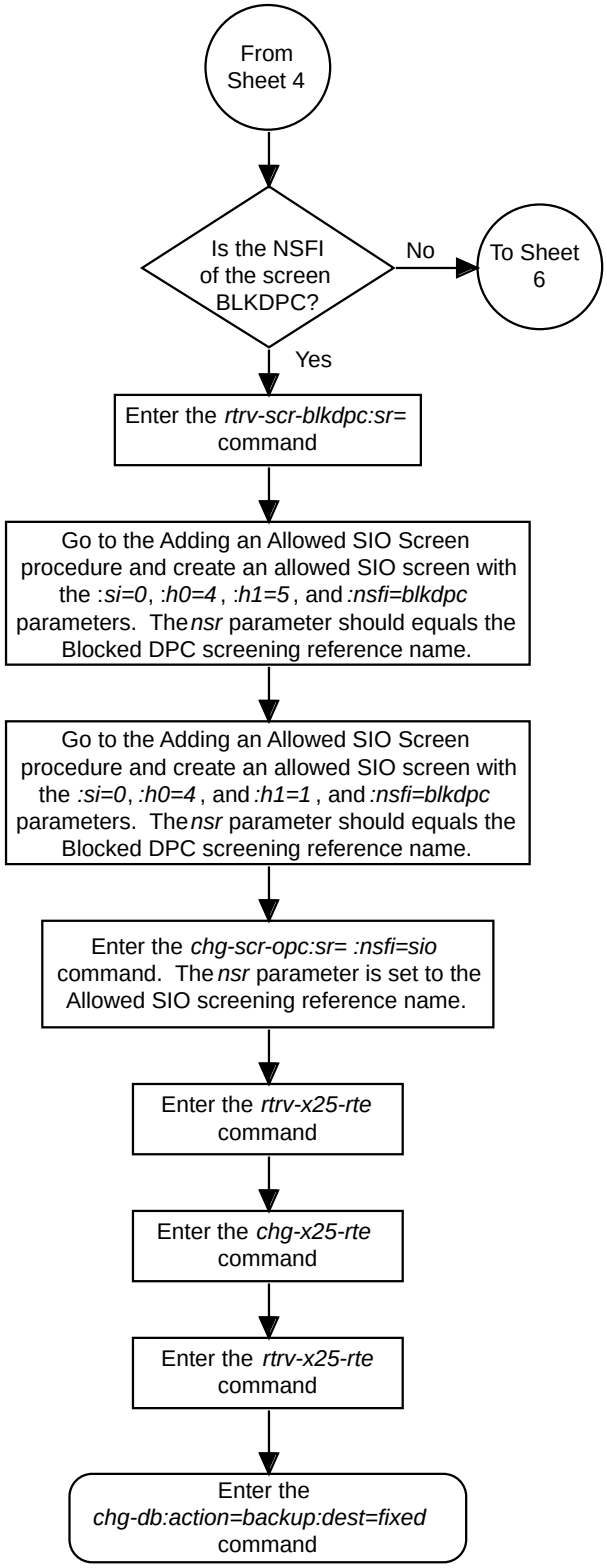
Flowchart 2-13. Changing an X.25 Route (Sheet 3 of 11)



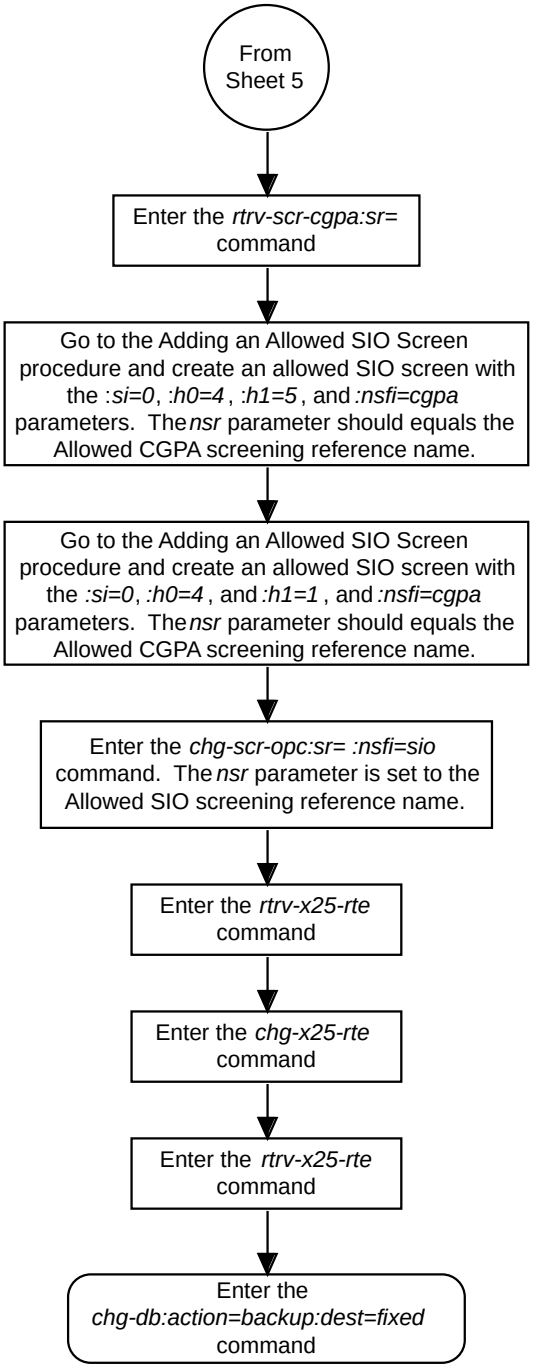
Flowchart 2-13. Changing an X.25 Route (Sheet 4 of 11)



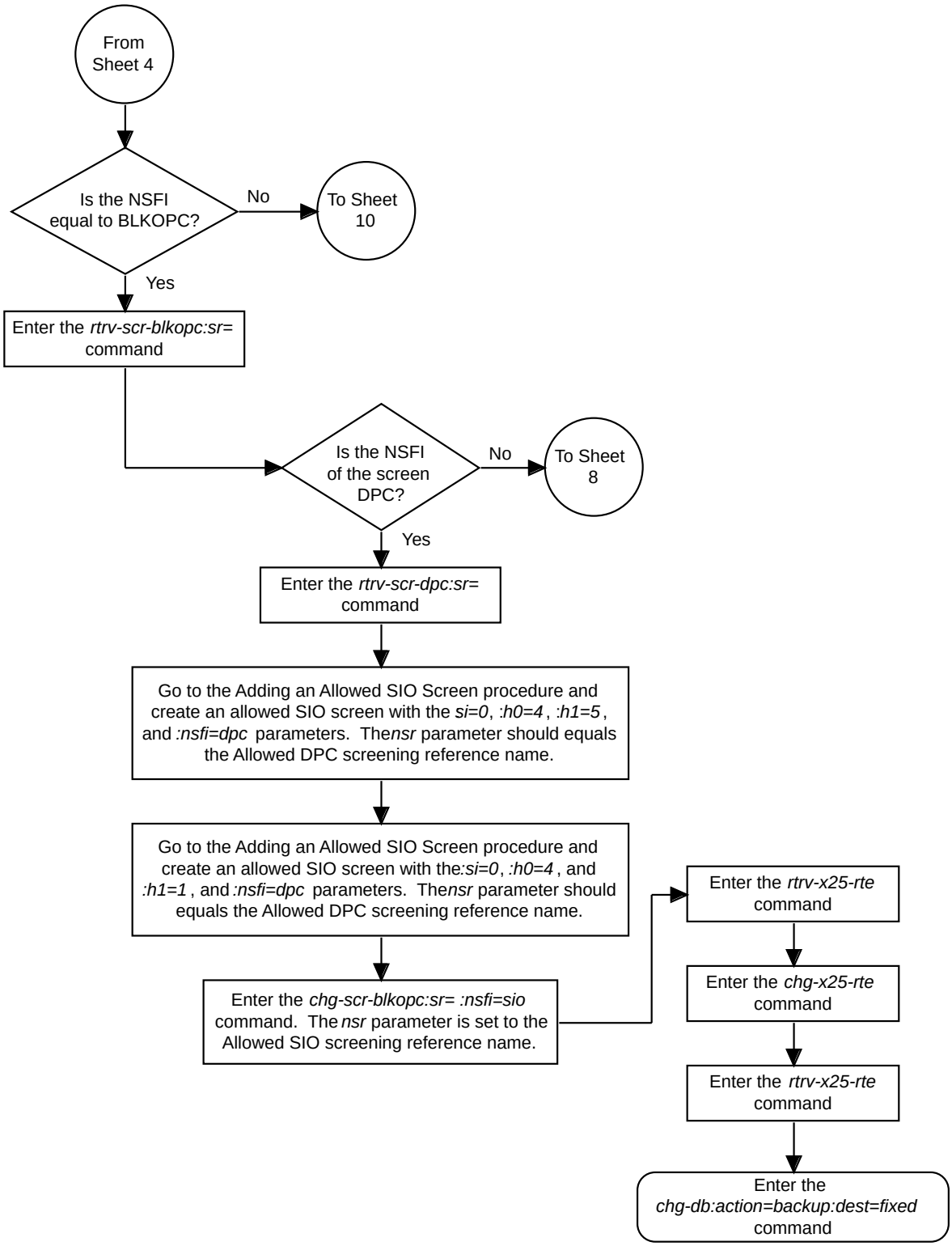
Flowchart 2-13. Changing an X.25 Route (Sheet 5 of 11)



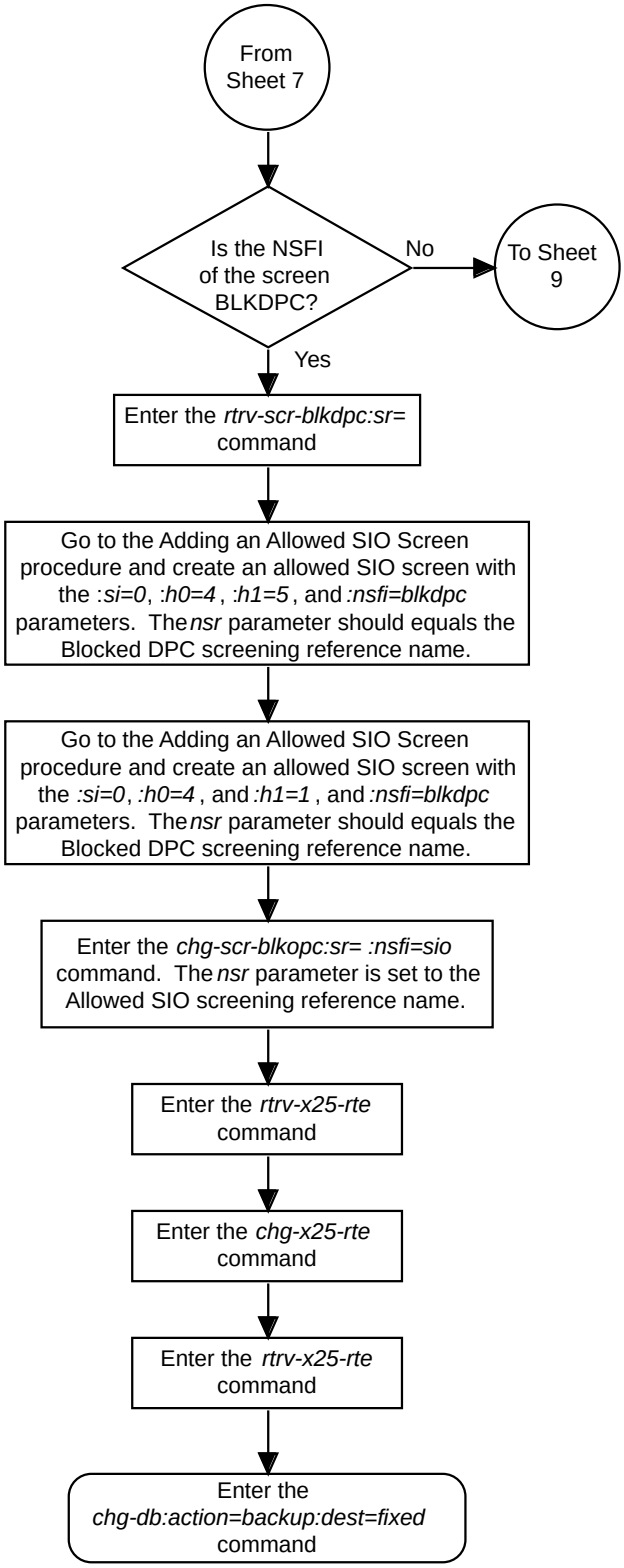
Flowchart 2-13. Changing an X.25 Route (Sheet 6 of 11)



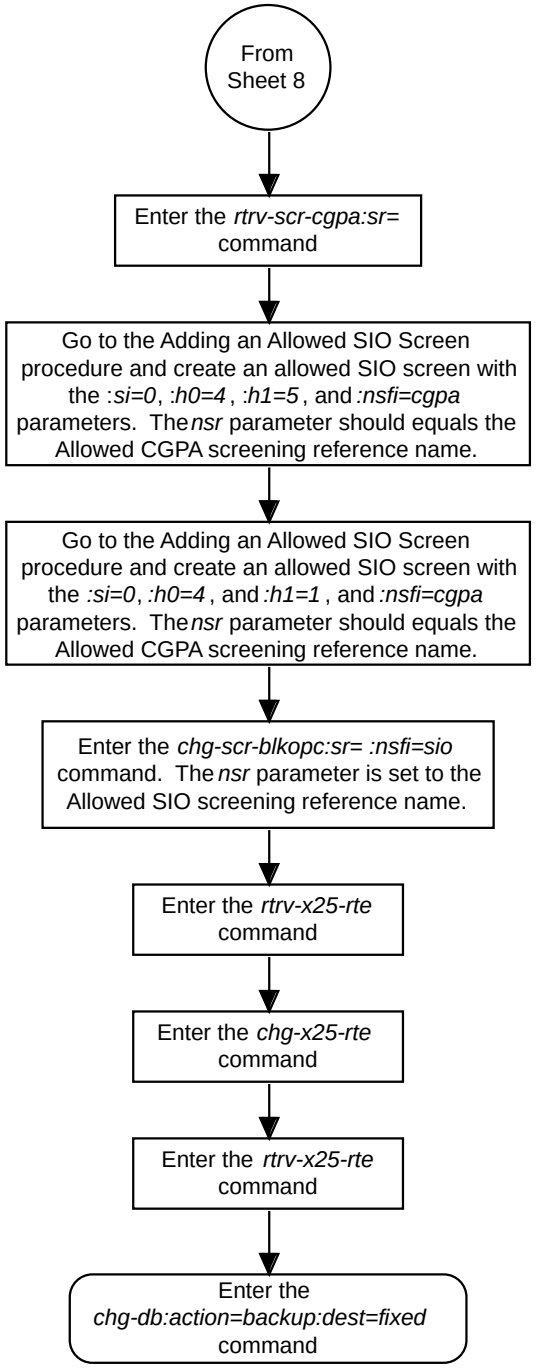
Flowchart 2-13. Changing an X.25 Route (Sheet 7 of 11)



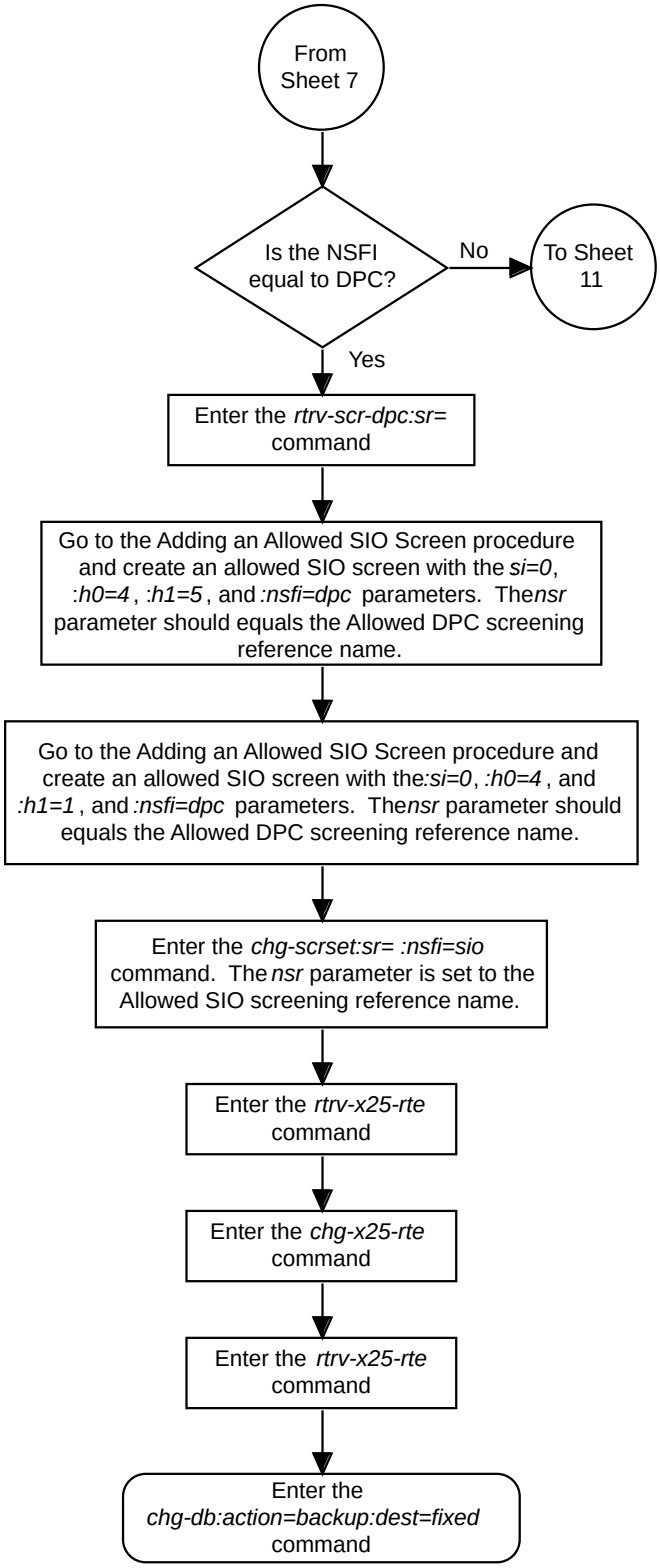
Flowchart 2-13. Changing an X.25 Route (Sheet 8 of 11)



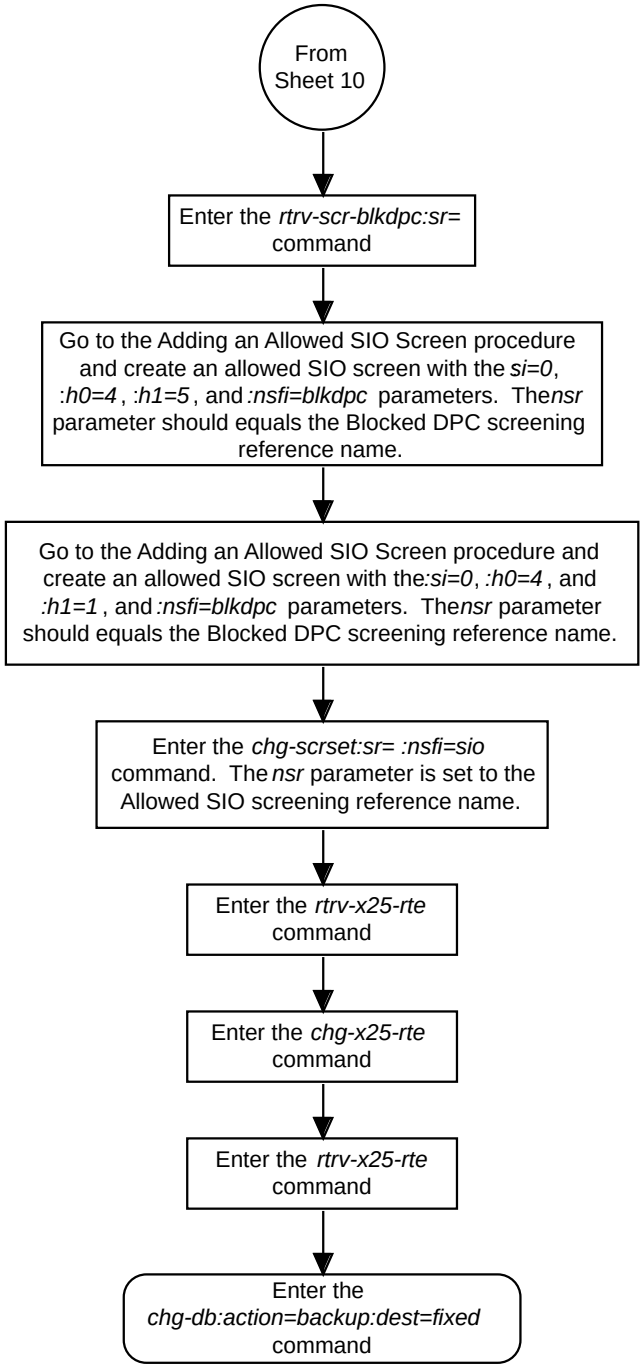
Flowchart 2-13. Changing an X.25 Route (Sheet 9 of 11)



Flowchart 2-13. Changing an X.25 Route (Sheet 10 of 11)



Flowchart 2-13. Changing an X.25 Route (Sheet 11 of 11)



Changing the X.25 Signaling Link Parameters

This procedure is used to change any of the X.25 signaling link parameters using the **chg-x25-slk** command.

The **chg-x25-slk** command uses these parameters.

:loc – The card location of the LIM containing the X.25 signaling link

:port – The port on the card specified in the *loc* parameter.

:t1 – The amount of time to wait before retransmitting a frame.

:n1 – The maximum number of bits in a frame.

:n2 – The maximum number of retransmission attempts to complete a transmission.

:k – The maximum number of outstanding I frames.

:l3mode – The logical layer 3 address of the connection

:pvc – The total number of the permanent virtual circuits (PVCs) available on this X.25 signaling link.

:svc – The total number of the switched virtual circuits (SVCs) available on this X.25 signaling link.

:win – The number of packets allowed for a window on this X.25 signaling link.

:mps – The maximum packet size (in bytes) allowed on this X.25 signaling link.

The examples in this procedure are used to change the attributes of the X.25 signaling link assigned to card 1204.

The X.25 signaling link whose parameters are being changed must be in the database. This can be verified by entering the **rtrv-slk** command. The X.25 signaling links are shown by the dashes in the **L2TSET** column in the output.

Procedure

1. Display the values of the X.25 signaling link you wish to change using the **rtrv-x25-slk** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 21:16:37 GMT EAGLE5 31.4.0
LOC   PORT  T1  N1    N2  K  L3MODE  PVC  SVC  WIN  MPS
1201  A     10  2104  15  7  DCE     25   205  1    256
1202  A     9   2104  13  6  DTE     255  0    2    256
1203  A     8   1080  11  5  DCE     10   10   3    128
1204  A     7   1080  9   4  DTE     0    255  4    128
1205  A     6   2104  7   3  DCE     100  0    5    256
1206  A     5   2104  5   2  DTE     0    100  6    256
1207  A     4   1080  3   1  DCE     100  100  7    128
1208  A     5   2104  10  7  DTE     0    255  3    256
```

2. Deactivate the X.25 signaling link using the **dact-slk** command, using the card location and port of the X.25 signaling link. For this example, enter this command.

   dact-slk:loc=1204:port=a

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

```
rlghncxa03w 04-03-28 08:41:12 GMT  EAGLE5 31.4.0
Deactivate SLK message sent to card
```

3. Verify that the X.25 signaling link is out of service - maintenance (OOS-MT) using the **rept-stat-slk** command, using the card location and port of the X.25 signaling link. For this example, enter this command.

   rept-stat-slk:loc=1204:port=a

   This is an example of the possible output.

```
rlghncxa03w 04-03-28 17:00:36 GMT  EAGLE5 31.4.0
SLK      LSN      CLLI         PST           SST        AST
1204,A   nsp1     ---------    OOS-MT        Unavail    ----
  ALARM STATUS       = *   0221 REPT-LKF: X25 link unavailable
  UNAVAIL REASON     = X25FL
Command Completed.
```

4. Place the card assigned to the X.25 signaling link out of service using the **rmv-card** command, specifying the location of the card. For this example, enter this command.

   rmv-card:loc=1204

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

```
rlghncxa03w 04-03-28 08:41:12 GMT  EAGLE5 31.4.0
Card has been inhibited.
```

5. Change the X.25 signaling link parameter values using the **chg-x25-slk** command. For this example, enter this command.

   chg-x25-slk:loc=1204:port=a:t1=10:n1=2104:n2=4:k=7:l3mode=dce :pvc=5:svc=10:win=2:mps=256

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

```
rlghncxa03w 04-03-28 11:43:04 GMT EAGLE5 31.4.0
CHG-X25-SLK: MASP A - COMPLTD
```

6. Verify the changes using the **rtrv-x25-slk** command, specifying the card location. This is an example of the possible output.

```
rlghncxa03w 04-03-28 21:16:37 GMT EAGLE5 31.4.0
LOC   PORT  T1  N1    N2  K  L3MODE  PVC  SVC  WIN  MPS
1201  A     10  2104  15  7  DCE     25   205  1    256
1202  A     9   2104  13  6  DTE     255  0    2    256
1203  A     8   1080  11  5  DCE     10   10   3    128
1204  A     10  2104  4   7  DCE     5    10   2    256
1205  A     6   2104  7   3  DCE     100  0    5    256
1206  A     5   2104  5   2  DTE     0    100  6    256
1207  A     4   1080  3   1  DCE     100  100  7    128
1208  A     3   1080  5   2  DTE     1    1    6    128
```

7. Place the card back into service using the **rst-card** command, specifying the location of the card. For this example, enter this command.

   rst-card:loc=1204

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

```
rlghncxa03w 04-03-28 08:41:12 GMT  EAGLE5 31.4.0
Card has been allowed.
```

8. Activate the X.25 signaling link using the **act-slk** command, specifying the card location and port of the X.25 signaling link. For this example, enter this command.

   act-slk:loc=1204:port=a

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

```
rlghncxa03w 04-03-28 08:31:24 GMT  EAGLE5 31.4.0
Activate SLK message sent to card
```

9. Check the status of the X.25 signaling link using the **rept-stat-slk** command, specifying the card location and port of the X.25 signaling link. The state of the X.25 signaling link should be in service normal (IS-NR) after the link has completed alignment (shown in the **PST** field). For this example, enter this command.

   rept-stat-slk:loc=1204:port=a

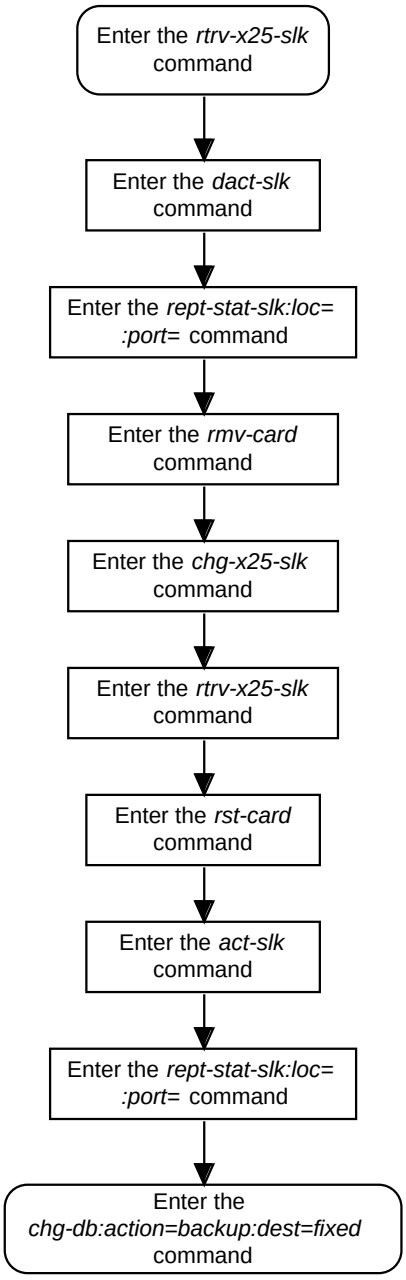
   This is an example of the possible output.

```
rlghncxa03w 04-03-28 17:00:36 GMT  EAGLE5 31.4.0
SLK      LSN      CLLI         PST           SST        AST
1204,A   nsp1     ---------    IS-NR         Avail      ----
  ALARM STATUS       =  No alarm
  UNAVAIL REASON:
Command Completed.
```

10. Backup the new changes using the **chg-db:action=backup:dest=fixed** command. 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.
```

Flowchart 2-14. Changing the X.25 Signaling Link Parameters



Enabling the Large System # Links Controlled Feature

This procedure is used to enable the the Large System # Links controlled feature using the feature's part number and a feature access key.

The feature access key for the Large System # Links controlled feature is based on the feature's part number and the serial number of the system, making the feature access key site-specific.

This feature allows the system to contain up to 1500 signaling links.

The **enable-ctrl-feat** command enables the controlled feature by inputting the controlled feature's access key and the controlled feature's part number with these parameters:

:fak – The feature access key generated by the feature access key generator. The feature access key contains 13 alphanumeric characters and is not case sensitive.

:partnum – The Tekelec-issued part number of the Large System # Links controlled feature, 893005901.

The **enable-ctrl-feat** command requires that the database contain a valid serial number for the system, and that this serial number is locked. This can be verified with the **rtrv-serial-num** command. The system 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 system is on-site, with the **ent-serial-num** command. The **ent-serial-num** command uses these parameters.

:serial – The serial number assigned to the system. 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 system'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. You should 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).

This feature cannot be temporarily enabled (with the temporary feature access key).

Once this feature is enabled with the **enable-ctrl-feat** command, the feature is also activated. The **chg-ctrl-feat** command is not necessary to activate the feature.

This feature cannot be disabled with the **chg-ctrl-feat** command and the **status=off** parameter.

Procedure

1. Display the status of the Large System # Links controlled feature by entering the **rtrv-ctrl-feat** command. The following is an example of the possible output.

```
rlghncxa03w 04-03-28 21:15:37 GMT EAGLE5 31.4.0
The following features have been permanently enabled:
Feature Name              Partnum    Status  Quantity
TPS                       893000110  on      1000
ISUP Normalization        893000201  on      ----
Command Class Management  893005801  on      ----
LNP Short Message Service 893006601  on      ----
Intermed GTT Load Sharing 893006901  on      ----
XGTT Table Expansion      893006101  on      400000
XMAP Table Expansion      893007710  off     ----
Routesets                 893006401  on      6000

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
Zero entries found.
```

   If the **rtrv-ctrl-feat** output shows that the controlled feature is permanently enabled for the desired quantity or for a quantity that is greater than the desired quantity, no further action is necessary. This procedure does not need to be performed.

   NOTE: If the rtrv-ctrl-feat output in step 1 shows any controlled features, or if the Large System # Links controlled feature is enabled for a quantity that is less than the desired quantity, skip steps 2 through 5, and go to step 6.

2. Display the serial number in the database with the **rtrv-serial-num** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 21:15:37 GMT EAGLE5 31.4.0
System serial number = nt00001231

System serial number is not locked.

rlghncxa03w 04-03-28 21:15:37 GMT EAGLE5 31.4.0
Command Completed
```

NOTE: If the serial number is correct and locked, skip steps 3, 4, and 5, and go to step 6. If the serial number is correct but not locked, skip steps 3 and 4, and go to step 5. 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 Tekelec Technical Services to get an incorrect and locked serial number changed. See "Tekelec Technical Services" on page 1-9. The serial number can be found on a label affixed to the control shelf (shelf 1100).

3. 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=<system's correct serial number>

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

   ```
   rlghncxa03w 04-03-28 21:15:37 GMT EAGLE5 31.4.0
   ENT-SERIAL-NUM:  MASP A - COMPLTD
   ```

4. Verify that the serial number entered into step 3 was entered correctly using the **rtrv-serial-num** command. This is an example of the possible output.

   ```
   rlghncxa03w 04-03-28 21:15:37 GMT EAGLE5 31.4.0
   System serial number = nt00001231

   System serial number is not locked.

   rlghncxa03w 04-03-28 21:15:37 GMT EAGLE5 31.4.0
   Command Completed
   ```

   If the serial number was not entered correctly, repeat steps 5 and 6 and re-enter the correct serial number.

5. Lock the serial number in the database by entering the **ent-serial-num** command with the serial number shown in step 2, if the serial number shown in step 2 is correct, or with the serial number shown in step 4, if the serial number was changed in step 3, and with the **lock=yes** parameter.

   For this example, enter this command.

   ent-serial-num:serial=<system's serial number>:lock=yes

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

   ```
   rlghncxa03w 04-03-28 21:15:37 GMT EAGLE5 31.4.0
   ENT-SERIAL-NUM:  MASP A - COMPLTD
   ```

6. Enable the Large System # Links controlled feature for the desired quantity with the **enable-ctrl-feat** command specifying the part number corresponding to the new quantity of signaling links and the feature access key. To increase the number of signaling links the system can contain to 1500, enter this command.

   enable-ctrl-feat:partnum=893005901:fak=<Large System # Links feature access key>

   NOTE: A temporary feature access key cannot be specified to enable this feature.

   NOTE: The values for the feature access key (the fak parameter) are provided by Tekelec. If you do not have the controlled feature part number or the feature access key for the feature you wish to enable, contact your Tekelec Sales Representative or Account Representative.

   When the **enable-crtl-feat** command has successfully completed, this message should appear.

```
rlghncxa03w 04-03-28 21:15:37 GMT EAGLE5 31.4.0
ENABLE-CTRL-FEAT: MASP B - COMPLTD
```

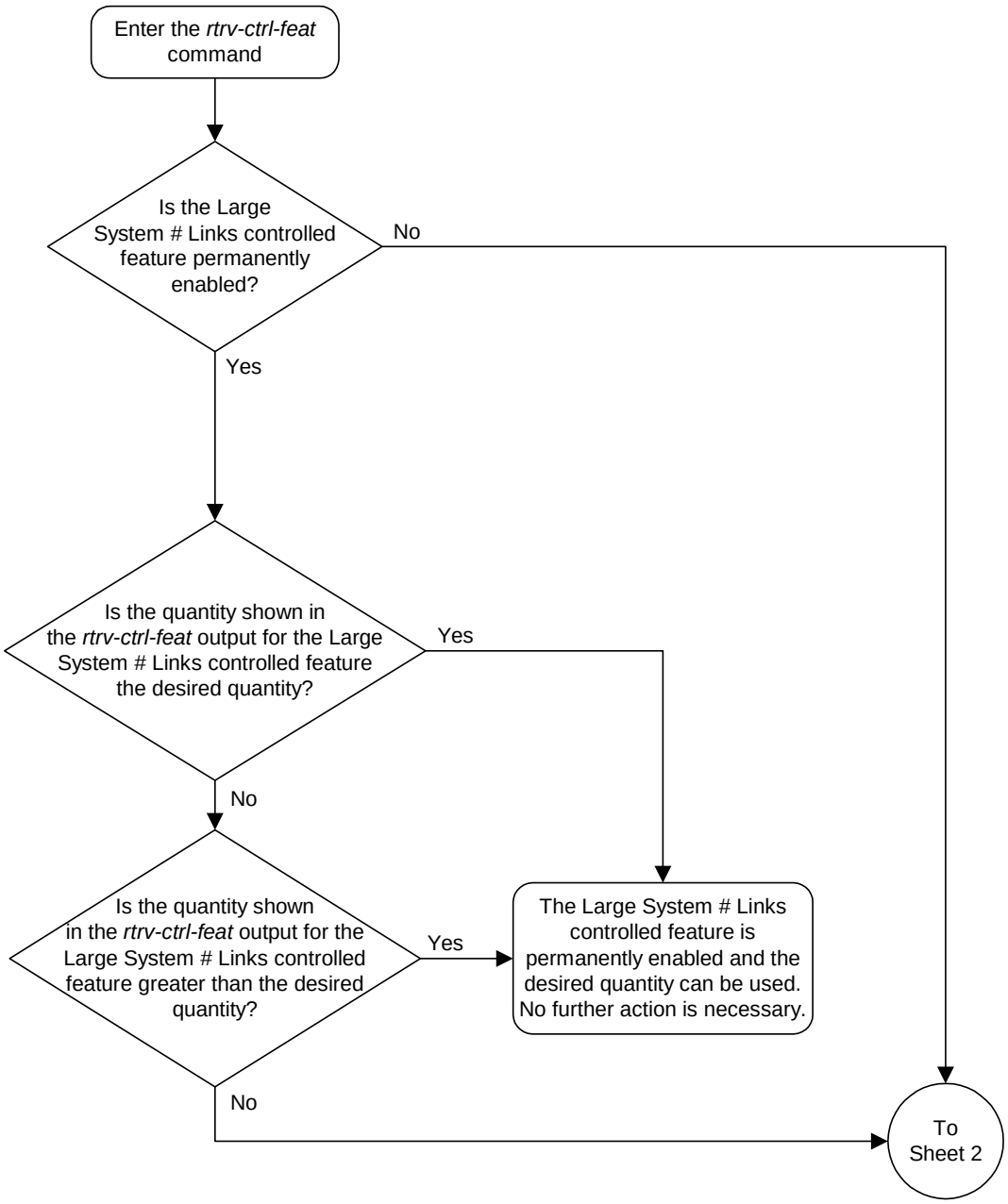
7. Verify the changes by entering the **rtrv-ctrl-feat** command. The following is an example of the possible output.

```
rlghncxa03w 04-03-28 21:15:37 GMT EAGLE5 31.4.0
The following features have been permanently enabled:
Feature Name              Partnum    Status  Quantity
TPS                       893000110  on      1000
ISUP Normalization        893000201  on      ----
Command Class Management  893005801  on      ----
LNP Short Message Service 893006601  on      ----
Intermed GTT Load Sharing 893006901  on      ----
XGTT Table Expansion      893006101  on      4000000
XMAP Table Expansion      893007710  on      3000
Large System # Links      893005901  on      1500
Routesets                 893006401  on      6000

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
Zero entries found.
```

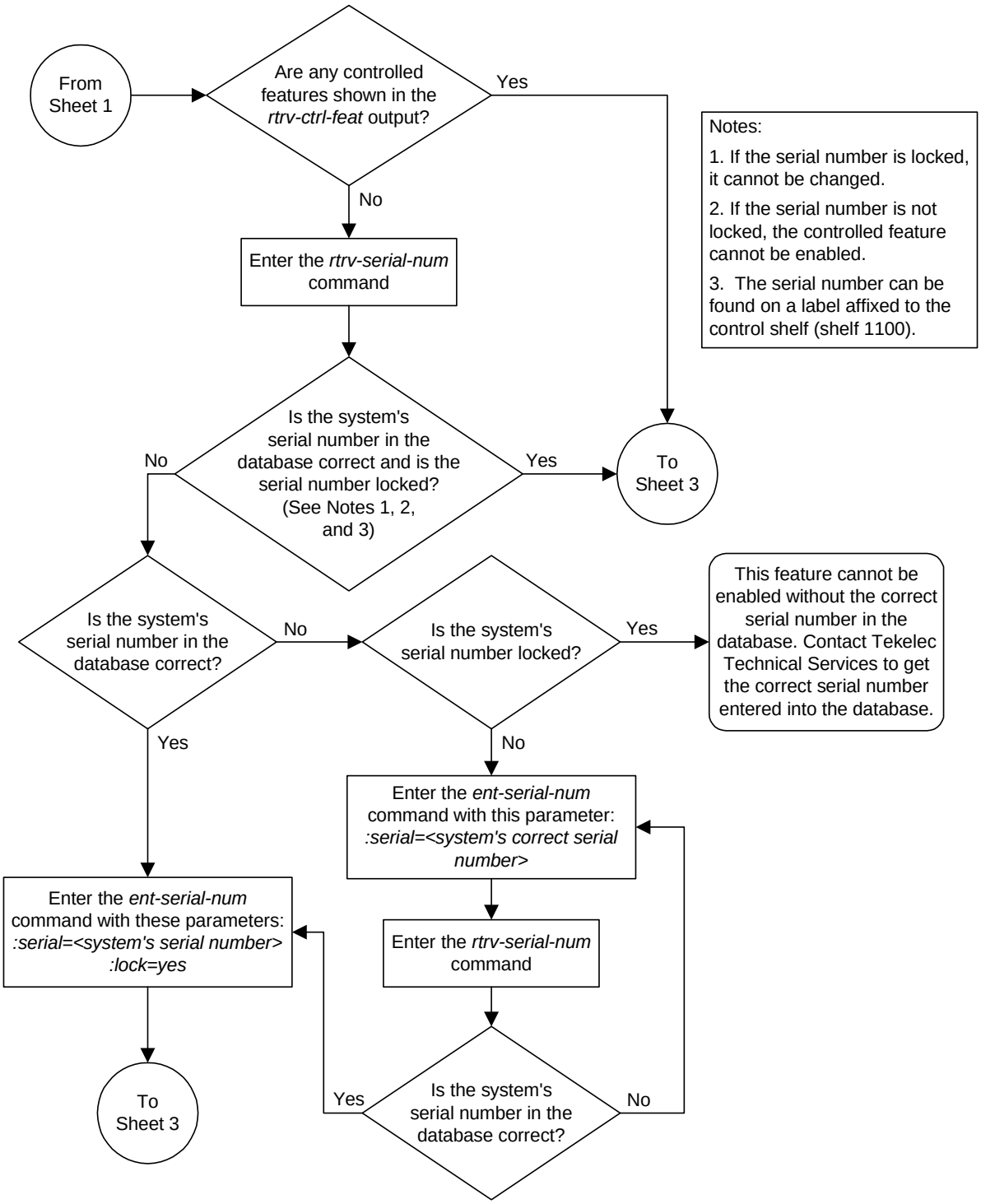
8. Backup the new changes using the **chg-db:action=backup:dest=fixed** command. These messages should appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
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.
```

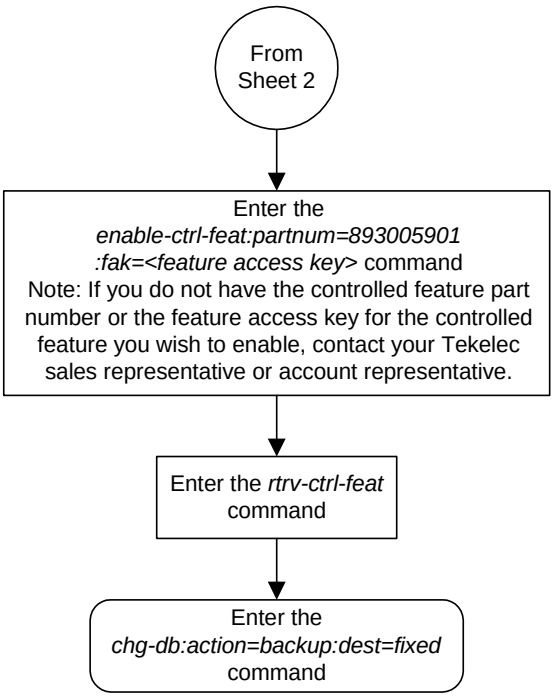
Flowchart 2-15. Enabling the Large System # Links Controlled Feature (Sheet 1 of 3)



Flowchart 2-15. Enabling the Large System # Links Controlled Feature (Sheet 2 of 3)



Flowchart 2-15. Enabling the Large System # Links Controlled Feature (Sheet 3 of 3)



3

STP LAN Configuration

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STP LAN Feature Overview

The STP LAN feature provides a TCP/IP connection from any interface shelf to support external applications. Message signal units (MSUs) that are processed by the Eagle can be copied and directed through the LAN interface to an external server or microcomputer application such as a usage measurements system. The gateway screening feature must be available on the STP in order to use the STP LAN feature.

The feature requires an STPLAN card, either the application communications module (ACM) running the **stplan** application, or database communications module (DCM) running the **vxwslan** application, which provides an ethernet interface at the backplane, as well as the processing power required to support TCP/IP message encapsulation.

The STPLAN card receives SS7 MSUs from the Interprocessor Message Transport (IMT) bus and copies the MSUs into memory resident on the STPLAN card. The system encapsulates the copied MSU into TCP/IP packets and sends the encapsulated message over the ethernet to the host computer or to a TCP/IP router. The host computer is responsible for assembling and processing the packets it receives. The TCP/IP router routes the messages to a host computer on another network.

Each STPLAN card has one ethernet port. The Transmission Control Protocol (TCP) and User Datagram Protocol (UDP) are supported at the transport layer. Internet Protocol (IP), Internet Control Message Protocol (ICMP) and Address Resolution Protocol (ARP) are supported at the network layer.

If the ACM is used as the STPLAN card, the system uses a special cable assembly for the ethernet connection, which is connected to an external media access unit (MAU). From the MAU, the customer can attach any compatible host system. The host system must be using TCP/IP as the higher layer protocol, and must support either 10base2 ethernet or 10baseT ethernet as the transmission method.

If the DCM is used as the STPLAN card, only 10baseT ethernet is supported by the Eagle. The ethernet connection is made directly to the Eagle backplane and no external media access unit (MAU) is used. The MAU is incorporated in the DCM.

This implementation does not support standard TCP/IP protocols such as TELNET and FTP. However, it supports Eagle applications that are built on TCP/IP using the Socket Application Programming Interface (API). The protocol stack is not biased toward any particular application.

Message Sequencing

The STPLAN card adds a time stamp to the message before sending it to the LAN. The time stamp maintains a one second granularity and is synchronized with the host computer. This synchronization requires the host computer to be capable of responding to the time and date queries on the UDP port 37. The receiver can use the time stamp to provide sequencing within an application. The STP LAN application does not use sequence numbers for messages.

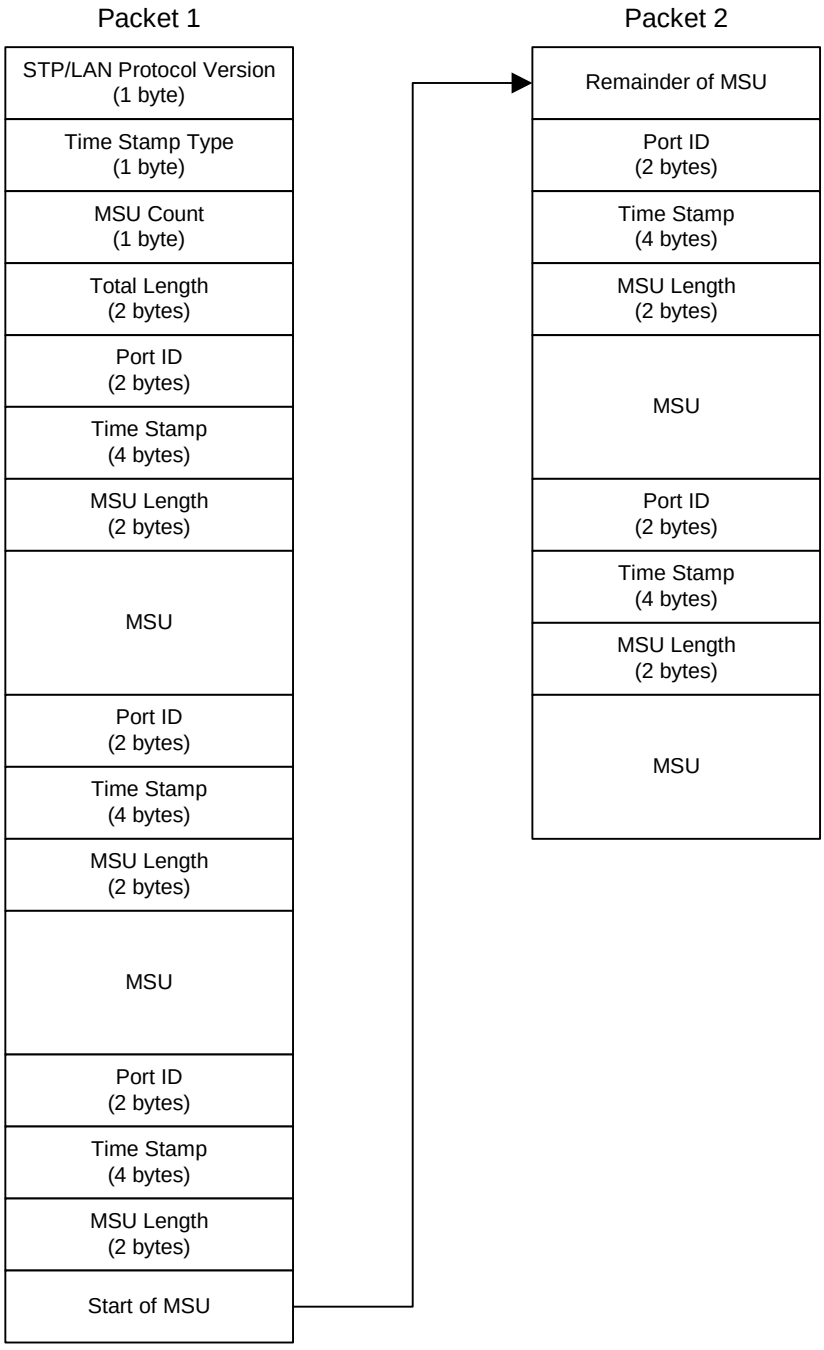
Message Format

Because TCP/IP is a stream-oriented protocol, the host computer can receive multiple messages in a single packet, or the message can be divided among different packets. Figure 3-1 on page 3-4 shows an example of both. There are multiple MSUs in the first packet with one of the MSUs divided between the first packet and the second packet.

This list describes the fields used in these packets:

- STP/LAN Protocol Version (a 1-byte value) – The type of Eagle message being carried from the LIMs to the STPLAN card. The only valid value for this field is 1.
- Time Stamp Type (a 1-byte value) – The type of timestamp that is being used in the message. The only valid value for this field is 1, indicating that the supported timestamp type is the UNIX style timestamp (a 32-bit number containing the time elapsed since 00:00:00 hour, January 1, 1970).
- MSU Count (a 1-byte value) – How many MSUs are actually contained in the packet.
- Total Length (a 2-byte value) – The total length, in bytes, of the data plus the MSU headers embedded inside the packet. This length should not be greater than 485 bytes.
- Port ID (a 2-byte value) – The ID of the port on the LIM which copied the data to the STPLAN card. The valid range for this field is 0–511.
- Timestamp (a 4-byte value) – The actual timestamp at which the message is sent out to the host.
- MSU Length (a 2-byte value) – The length of the actual MSU in bytes. The sum of the MSU lengths of all the MSUs in the packet plus the sum of the sizes of the single MSU headers should be equal to the number contained in the Total Length field.
- MSU – The MSU that is contained in the packet.

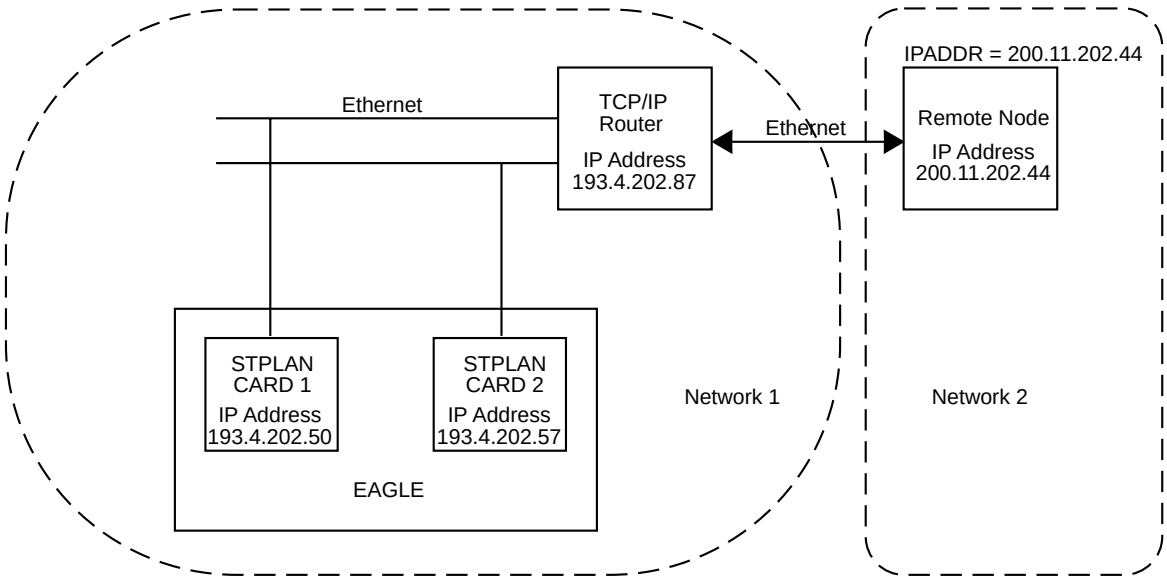
Figure 3-1. STP LAN Messages Embedded in TCP/IP Packets



TCP/IP Router

A TCP/IP router is used to route STPLAN messages from the Eagle to a remote host in another network or subnetwork. Figure 3-2 on page 3-5 shows an example of the STPLAN feature using a TCP/IP router.

Figure 3-2. STPLAN Network with a TCP/IP Router

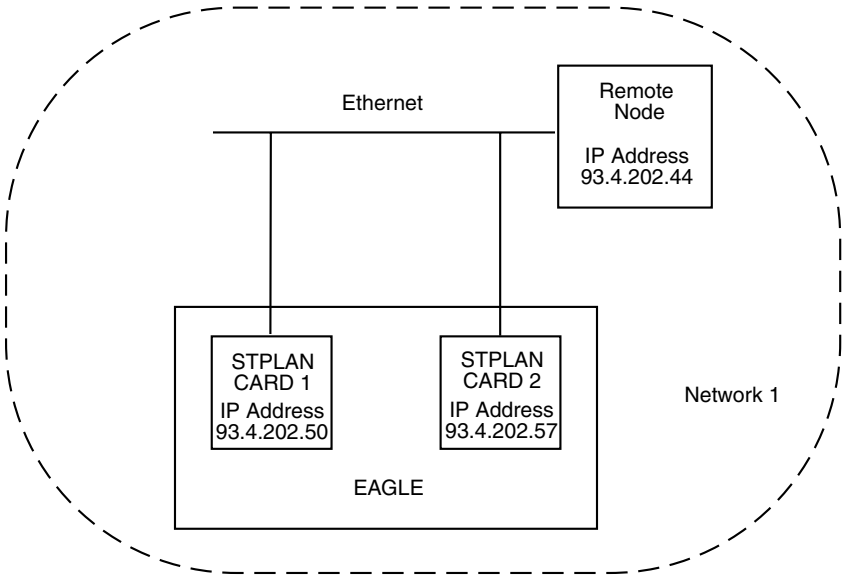


NOTE: The term "STPLAN Card" used in Figure 3-2 on page 3-5 refers to either an ACM running the `stplan` application or a DCM running the `vxwslan` application.

In this example, STPLAN cards 1 and 2, with IP addresses 193.4.202.50 and 193.4.202.57, need to route their traffic to the remote host at IP address 200.11.202.44. The STPLAN cards and the remote host are in two different networks; the network ID of the STPLAN cards is 193.4.202 and the network ID of the remote host is 200.11.202. The Eagle can connect only to TCP/IP nodes that are in the same network as the Eagle. To permit communication between the STPLAN cards and an external network, a TCP/IP router is placed in between the Eagle and the remote host. The TCP/IP router is located in the same network as the Eagle, with the IP address of 193.4.202.87. The messages can now be sent to the remote host through the TCP/IP router.

A TCP/IP default router must be entered into the database when the class and network ID of the data link's IP address and host's IP address do not match or when subnet routing is used. The TCP/IP router is entered into the database with the **`ent-ip-node`** command. The Eagle cannot distinguish between a large network and the use of subnet routing, and cannot detect the omission of a TCP/IP router. In a large network, no TCP/IP routers are required because all the nodes are directly connected to a single ethernet. See Figure 3-3 on page 3-6.

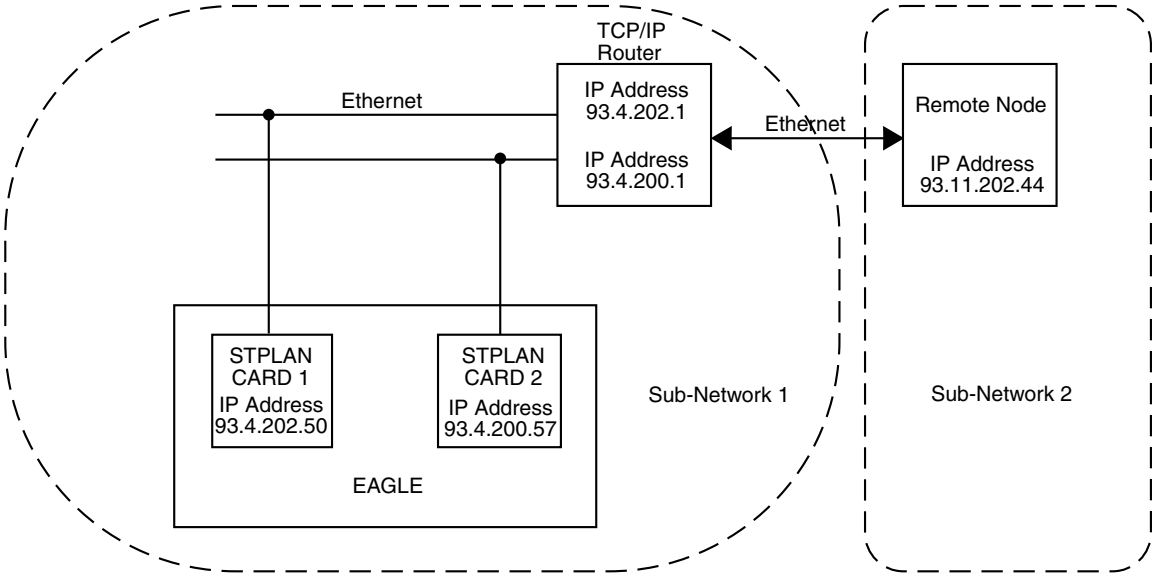
Figure 3-3. STPLAN in a Large Network



NOTE: The term "STPLAN Card" used in Figure 3-3 on page 3-6 refers to either an ACM running the `stplan` application or a DCM running the `vxwslan` application.

If a user is using subnet routing and as a result, multiple ethernets, TCP/IP routers are required and must be configured in the Eagle. See Figure 3-4 on page 3-7.

Figure 3-4. STPLAN Network with Subnet Routing



NOTE: The term "STPLAN Card" used in Figure 3-4 on page 3-7 refers to either an ACM running the `stplan` application or a DCM running the `vxwslan` application.

For the examples shown in Figures 3-3 and 3-4, the IP addresses of the TCP/IP data links and the remote node are the same. In Figure 3-3 on page 3-6, the remote node is in the same network as the TCP/IP data links, so no TCP/IP router is needed. In Figure 3-4 on page 3-7, the user is using subnet routing. The remote node is in one subnetwork, and the TCP/IP data links are in another subnetwork. Even though the network portion of the IP addresses of the TCP/IP data links and the remote node are the same (93, a class A IP address), a TCP/IP router is required because the user is using subnet routing.

If, when configuring STPLAN according to the network in Figure 3-4 on page 3-7, the TCP/IP router is not configured with the **`ent-ip-node`** command, the Eagle does not detect that the TCP/IP router has been omitted, and no warnings are given in this case. The Eagle sees the remote node as a TCP/IP node in the same network as the TCP/IP data links, because of the class of the IP addresses, and does not require the user to specify the **`iprte`** parameter of the **`ent-ip-node`** command.

Hardware Requirements

The hardware requirements and configuration include these items:

- A maximum of 10 ACMs or DCMs are necessary to support the Eagle traffic. However, if the node capacity is less than the Eagle capacity, the system may need more ACMs or DCMs. The Eagle supports up to 32 ACMs or DCMs.
- One ACM or DCM is required for each host. The assignment of the LIMs is done automatically by the system.
- For the ACM, the ethernet cable from the node terminates to an adapter (part number 830-0425-01) and a media access unit (P/N 804-0059-01 for 10base2 ethernet or P/N 804-0144-01 for 10baseT ethernet). Only the A port (the top port) of the ACM is used.
- For the DCM using 10baseT ethernet only, one of two cables can be used to connect the DCM to the node, a straight-thru cable (P/N 830-0704-XX) or a transmit/receive cross-over cable (P/N 830-0728-XX). The cable from the node terminates directly to the backplane and does not use any adapters. The cable connects to port A (the top port) on the DCM.

Refer to the *Installation Manual* for more information about the ACM and DCM.

Node Requirements

In order for a node to communicate with the ACM or DCM, you must configure the node system to perform or include these items:

- The node system must include an ethernet driver, TCP/IP protocol interface, and application software to process the incoming messages.
- The node TCP/IP protocol must be able to accept connections and supply an accurate time/date stamp over UDP port 37. (See RFC 868.)
- If multiple nodes are receiving data, the node application must be able to correlate related messages that are received on different nodes. Because of the load-balancing feature, the system cannot guarantee a constant LIM-to-node path.

Gateway Screening

Gateway screening tables can be configured to screen messages for certain attributes. The screening process results in a message being accepted or rejected into the network. The criteria for message screening depends on the type of message received by the system, and the contents of the gateway screening tables.

You can send a copy of the message that has passed all of the screening criteria to a node. To stop the screening process and, at the same time, send a copy of the message to the STP LAN application, the next screening function identifier (**NSFI**) of the screen where the gateway screening process stops must be set to **stop**, and a gateway screening stop action set containing the **copy** gateway screening stop action must be assigned to that screen. The linkset containing the SS7 messages copied to the STP LAN application must have a gateway screening screenset assigned to it and the **gwsa** or **gwsm** parameter must be set to **on**.

CAUTION: When Gateway Screening is in the screen test mode, as defined by the linkset parameters gwsa=off and gwsm=on, the gateway screening action in the gateway screening stop action set specified by the actname parameter of the gateway screening screen set at the end of the gateway screening process will be performed.

Gateway screening functions are defined using screening tables or screensets which contain a set of rules. Each screenset is uniquely identified by a screenset name. A screenset is a collection of screening references or rules, each assigned a unique screening reference name. Each screening reference belongs to a specific category, which indicates the criteria that is used to either accept or reject an incoming MSU. For example, the category "blkopc" rejects all MSUs with the OPCs specified in the screening reference.

The screening parameters (point codes, routing indicator, subsystem number, and so forth) are used to match information in the SS7 message.

Each group of screening references is referred to as a screen set and is identified by a particular screen set name (**SCRN**). The screen set can then be applied to a particular linkset. This allows, for example, for specific OPCs with particular SIOs and DPCs to be allowed into the network.

There are two basic functions, allow and block. In an allowed screen (for example, allowed DPC), if a match is found and the next screening function identifier (**nsfi**) is equal to anything but **stop**, the next screening reference (**nsr**) is identified and the screening process continues. If the next screening function identifier is **stop**, the message is processed and no further screening takes place. If no match is found, the message is rejected. If the next screening function identifier is **stop** and a gateway screening stop action set that contains the **copy** gateway screening stop action is assigned to the screen, the system sends a copy of the message to the STP LAN application.

In a blocked screen (for example, blocked DPC):

If...	then...
a match is found and the next screening function identifier is **fail**,	the message is rejected and no further screening takes place.
no match is found and the next screening function identifier is equal to anything but **stop**,	the next screening reference is identified and the screening process continues.
the next screening function identifier is equal to **stop**,	the message is processed and no further screening takes place.
the next screening function identifier is equal to **stop** and a gateway screening stop action containing the copy gateway screening stop action is assigned to the screen	the message is processed and the system sends a copy of the message to the STP LAN application.

The allowed OPC and DPC screens are useful in the gateway screening process when specifying particular sets of point codes that are allowed to send or receive messages to or from another network. The blocked OPC and DPC screens are useful in the gateway screening process to specify particular sets of point codes that are not allowed to send or receive messages to or from another network.

Congestion Management

If a message reaches the outbound "stop and copy" phase of the gateway screening process, and the LIM that is designated to transmit a copy of the message to the node is congested, the copy of the message is not transmitted to the node. The STP disables the application only on the particular LIM that is experiencing congestion.

Conversely, a message may arrive on an inbound LIM that is in danger of congestion while the outbound LIM is not in danger of congestion. As the message was not screened on the inbound LIM, it is not marked to be copied to the ACM or DCM.

Go to the *Database Administration Manual - Gateway Screening* for information on configuring gateway screening entities.

STPLAN Provisioning

The STPLAN application allows the user to selectively copy outbound messages to a remote node for further processing. The messages that are copied to the remote node are actually selected for copying on the inbound linkset by the Gateway Screening feature. The messages that pass the screening criteria set for that linkset are processed by the system, and are copied prior to being transmitted on the outbound link.

The external connection to the remote node consists of several ACMs or DCMs equipped with Ethernet interfaces using the TCP/IP protocol to communicate to an external processing device running software that receives and processes the messages. Each ACM or DCM card (or STPLAN card) supports a single remote destination node. Each STPLAN card may also support a single default router.

On the system, the LAN interface is implemented through a pool of STPLAN cards. For reliability, STPLAN cards are provisioned on an "N+1" redundancy basis so that in case of failure of one such card, performance can be maintained during the time required to replace it.

STPLAN cards are provisioned per site based on two factors:

1. The total number of cards in the system which require STPLAN service.

2. The expected number of messages per second to be transferred by the system.

An ACM card and a DCM card are capable of supporting different traffic loads. Systems which are ACM-based, or which contain both ACM- and DCM-based STPLAN cards, must use one set of provisioning rules. Systems which are purely DCM-based must use a second set of provisioning rules.

ACM-based or Mixed ACM- and DCM-Based Systems

In order to determine the number of STPLAN cards required in a particular site, the following two numbers should be calculated. One number is based on the number of cards in the system (equation number 1) and the other number is based on the amount of traffic the system is handling (equation number 2). The larger number should be used. These variables are used in these equations.

LSL = The number of low-speed LIMs in the system

HSL = The number of high-speed ATM LIMs or DCMs (running either the **`iplim`** or **`iplimi`** applications) in the system

SCCP = The number of ASM-SCCP cards in the system

1. [(LSL + HSL + SCCP)/30, with the answer rounded up to the next whole number] + 1 = Number of STPLAN cards

2. (HSL/2) + [(LSL @ 0.4 Erlang)/20, with the answer rounded up to the next whole number] + 1 = Number of STPLAN cards

For example, if a system were equipped with 200 low-speed LIMs, 13 high-speed ATM LIMs or DCMs, and 10 ASM-SCCP cards, the following calculations would be used to determine "N+1."

1. Based on the number of cards in the system:

   [(200 LSL LIMs + 13 HSL LIMs or DCMs + 10 ASM-SCCP cards)/30 = 7.4, rounded-up to 8] + 1 = 9 STPLAN cards.

2. Based on the amount of traffic the system is handling:

   [(13 HSL LIMs or DCMs/2) = 6.5, rounded-up to 7] + [(200 LSL LIMs @ .4 Erlang/20) = 10] + 1 = 18 STPLAN cards

This system would require 18 STPLAN cards.

If the rate of low-speed LIM traffic per second to be transferred to the STPLAN application is some value other than .4 Erlang, than that portion of the equation may be scaled accordingly.

For example, one card's worth of traffic @ 0.4 Erlang equals two cards worth of traffic @ 0.2 Erlang.

Pure DCM-Based Systems

In order to determine the number of STPLAN cards required in a particular site, the following two numbers should be calculated. One number is based on the number of cards in the system (equation number 1) and the other number is based on the amount of traffic the system is handling (equation number 2). The larger number should be used. These variables are used in these equations.

LSL = The number of low-speed LIMs in the system

HSL = The number of high-speed ATM LIMs or DCMs (running either the **`iplim`** or **`iplimi`** applications) in the system

SCCP = The number of ASM-SCCP cards in the system

1. [(LSL + HSL + SCCP)/30, with the answer rounded up to the next whole number] + 1 = Number of STPLAN cards

2. (HSL/2) + [(LSL @ 0.4 Erlang)/30, with the answer rounded up to the next whole number] + 1 = Number of STPLAN cards

For example, if a system were equipped with 200 low-speed LIMs, 13 high-speed ATM LIMs, and 10 ASM-SCCP cards, the following calculations would be used to determine "N+1."

1. Based on the number of cards in the system:

   [(200 LSL LIMs + 13 HSL LIMs or DCMs + 10 ASM-SCCP cards)/30 = 7.4, rounded-up to 8] + 1 = 9 STPLAN cards.

2. Based on the amount of traffic the system is handling:

   [(13 HSL LIMs or DCMs/2) = 6.5, rounded-up to 7] +
   [(200 LSL LIMs @ .4 Erlang/30) = 10] + 1 = 15 STPLAN cards

This system would require 15 STPLAN cards.

If the rate of low-speed LIM traffic per second to be transferred to the STPLAN application is some value other than .4 Erlang, than that portion of the equation may be scaled accordingly.

For example, one card's worth of traffic @ 0.4 Erlang equals two cards worth of traffic @ 0.2 Erlang.

Understanding Firewall and Router Filtering

Firewall protocol filtering for the interface between the system's DCM and the host computer is defined in Table 3-1.

Table 3-1. VXWSLAN External Ports and Their Use

Interface	TCP/IP Port	Use	Inbound	Outbound
10BASE-TX	1024 to 5000[1]	STP LAN Traffic	Yes	Yes
	7	UDP Echo (ping)	Yes	Yes
	37	Time/Date	Yes	Yes
	N/A	ARP (Address Resolution Protocol)[2]	Yes	Yes

1. The TCP/IP port is the port number configured with the **`ipport`** parameter of the **`ent-ip-node`** command. The value of the **`ipport`** parameter is shown in the **`IPPORT`** field of the **`rtrv-ip-node`** command output. The values for this parameter are in the range 1024–5000.

2. ARP is used to provide TCP communication. The customer network will provide this information as appropriate.

The VXWSLAN application requires a data pipe of up to 10 Mb. The actual percentage of this pipe that is used (the maximum) is defined by the **`cap`** parameter of the **`ent-ip-node`** command. There can be more than one connection from the system to the node defined by the **`ipaddr`** (the node's IP address) parameter of the **`ent-ip-node`** command. The total capacity of all connections to a specific node cannot exceed 100%.

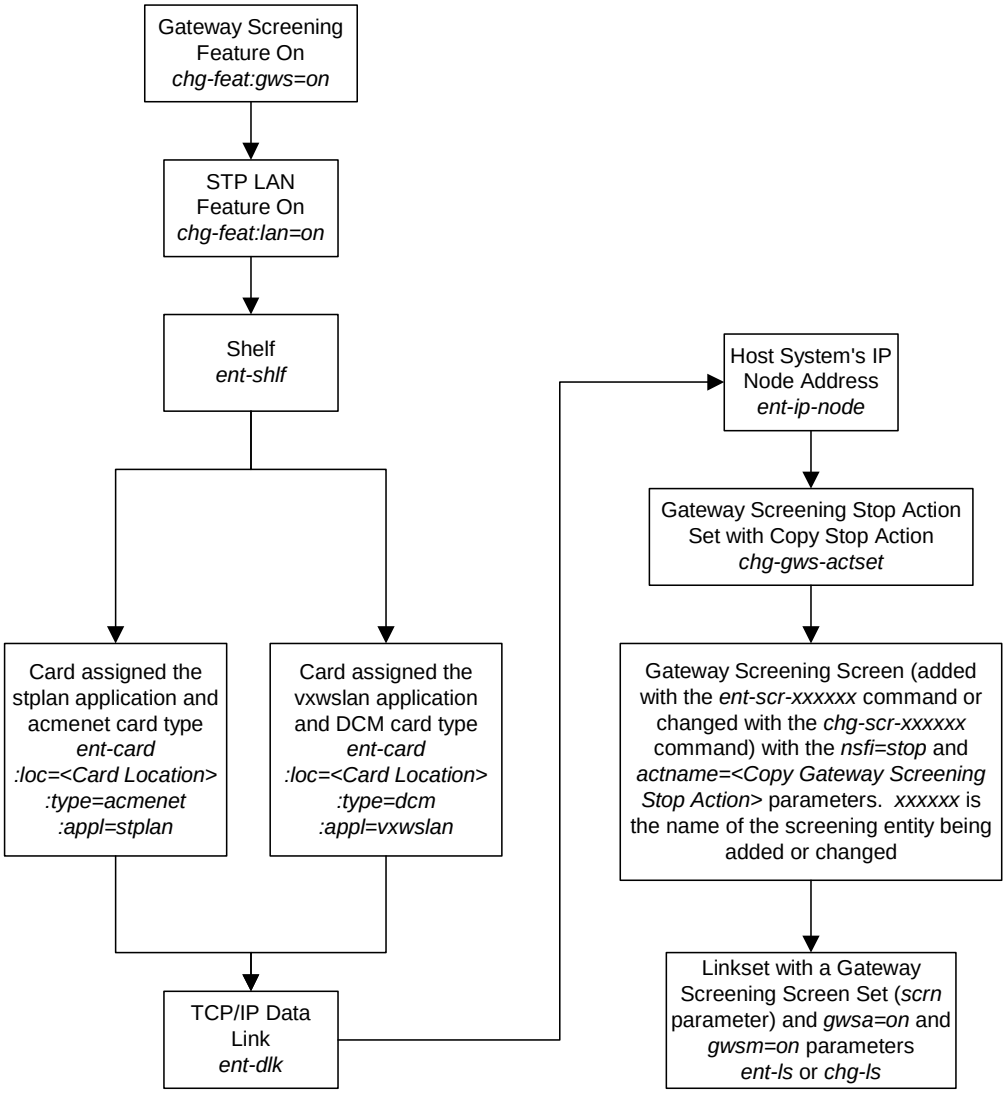
Network Configuration Procedures

To support the STP LAN feature, you must configure these database elements that are specific to the STP LAN feature.

- ACM or DCM
- TCP/IP Data Link
- IP Node

When the system is booted, each module gets the configuration information from the database. Figure 3-5 on page 3-15 shows the database elements that must be configured, and the order in which they should be configured.

Figure 3-5. STP LAN Database Relationships



These procedures use a variety of commands. If you need more information on these commands, refer to the *Commands Manual* to find the required information.

This list describes the database entities (shown in Figure 3-5 on page 3-15) that must be configured for the STP LAN feature.

1. The STP LAN and gateway screening features must be turned on. Verify that these features are turned on with the **rtrv-feat** command. If either of these the features are not on, shown with the entries **GWS = off** (if the gateway screening feature is off), and **LAN = off** (if the STP LAN feature is off), in the **rtrv-feat** command output, enter the **chg-feat:gws=on** command to turn on the gateway screening feature, and the **chg-feat:lan=on** command to turn on the STP LAN feature.

   NOTE: Once the gateway screening and STP LAN features are turned on with the chg-feat command, they cannot be turned off.

2. Make sure that the required shelf is in the database with the **rtrv-shlf** command. If it is not in the database, add it with the **ent-shlf** command.

3. Make sure the cards that the TCP/IP data links will be assigned to are in the database with the **rtrv-card** command. These cards can be either ACMs (card type **acmenet**) or DCMs (card type **dcm**). The ACM must have the **stplan** application assigned to it. The DCM must have the **vxwslan** application assigned to it. If these cards are not in the database, add them with the **ent-card** command, specifying an ACM with the **type=acmenet** and **appl=stplan** parameters, or a DCM with the **type=dcm** and **appl=vxwslan** parameters.

4. The TCP/IP data links needed by the STP LAN feature must be in the database. Verify this by entering the **rtrv-dlk** command. If the necessary TCP/IP data links are not in the database, add them with the **ent-dlk** command. Make sure that the card location specified in the **ent-dlk** command is an ACM or DCM shown in step 3.

5. The TCP/IP nodes used by the STP LAN feature must be in the database. Verify this by entering the **rtrv-ip-node** command. If the necessary TCP/IP nodes are not in the database, add them with the **ent-ip-node** command with a card location assigned to a TCP/IP data link shown in step 4.

6. The STP LAN feature uses gateway screening to select the messages that are copied and sent to the STP LAN application on an ACM or DCM. A gateway screening stop action set containing the **COPY** gateway screening stop action must be assigned to the gateway screening entity where the gateway screening process stops (the NSFI of the screen is STOP). Enter the **rtrv-gws-actset** command to display the gateway screening stop action sets in the database. The database contains at least two gateway screening stop actions sets that contain the **COPY** gateway screening stop action as

shown in bold in the example output. These gateway screening stop actions are always in the database and cannot be changed or removed.

```
rlghncxa03w 04-03-20 21:16:37 GMT EAGLE5 31.4.0
ACT  ACT    ACT  ACT  ACT  ACT  ACT  ACT  ACT  ACT  ACT  ACT
ID   NAME   1    2    3    4    5    6    7    8    9    10
--   ------ ---- ---- ---- ---- ---- ---- ---- ---- ---- ----
1    copy   copy
2    rdct   rdct
3    cr     copy rdct

GWS action set table is (3 of 16) 19% full
```

7. Verify that the necessary gateway screening entities have been configured with the required gateway screening stop action set, by entering the appropriate gateway screening retrieve command specifying the **actname** parameter with the gateway screening stop action name shown in the **rtrv-gws-actset** command output.

   rtrv-scrset:actname=copy

   rtrv-scr-opc:actname=copy

   rtrv-scr-blkopc:actname=copy

   rtrv-scr-sio:actname=copy

   rtrv-scr-dpc:actname=copy

   rtrv-scr-blkdpc:actname=copy

   rtrv-scr-destfld:actname=copy

   rtrv-scr-cgpa:actname=copy

   rtrv-scr-tt:actname=copy

   rtrv-scr-cdpa:actname=copy

   rtrv-scr-aftpc:actname=copy

   rtrv-scr-isup:actname=copy

   If a gateway screening entity is configured to copy messages to an STP LAN application, the entry **STOP** appears in the **NSFI** field and the **NSR/ACT** field contains the name of the gateway screening stop action set specified in the gateway screening retrieve command (see the following example).

   ```
   rlghncxa03w 04-03-20 21:17:37 GMT EAGLE5 31.4.0
   SCREEN = ALLOWED OPC
   SR    NI       NC       NCM      NSFI    NSR/ACT
   opc1  010      010      010      STOP    COPY
   opc1  010      010      012      STOP    COPY
   ```

   If the desired gateway screening entity is not configured to copy messages to the STP LAN application, configure these entities to copy messages to the STP LAN application. Go to the *Database Administration Manual - Gateway Screening* for information on configuring gateway screening entities.

8. The linkset containing the messages copied for the STP LAN application must have a gateway screening assigned to it. Either the **gwsa** or **gwsm** parameters of the linkset must be set to **on**. Verify this with the **rtrv-ls** command. If the desired linkset does not have a gateway screening assigned to it, shown in the **SCRN** field of the **rtrv-ls** output, or the **GWSA** or **GWSM** field is set to **off**, refer to either the "Changing an X.25 Linkset" procedure on page 2-65 or to the "Changing an SS7 Linkset" procedure in the *Database Administration Manual - SS7* and change the **scrn**, **gwsa**, and **gwsm** parameters of the desired linkset.

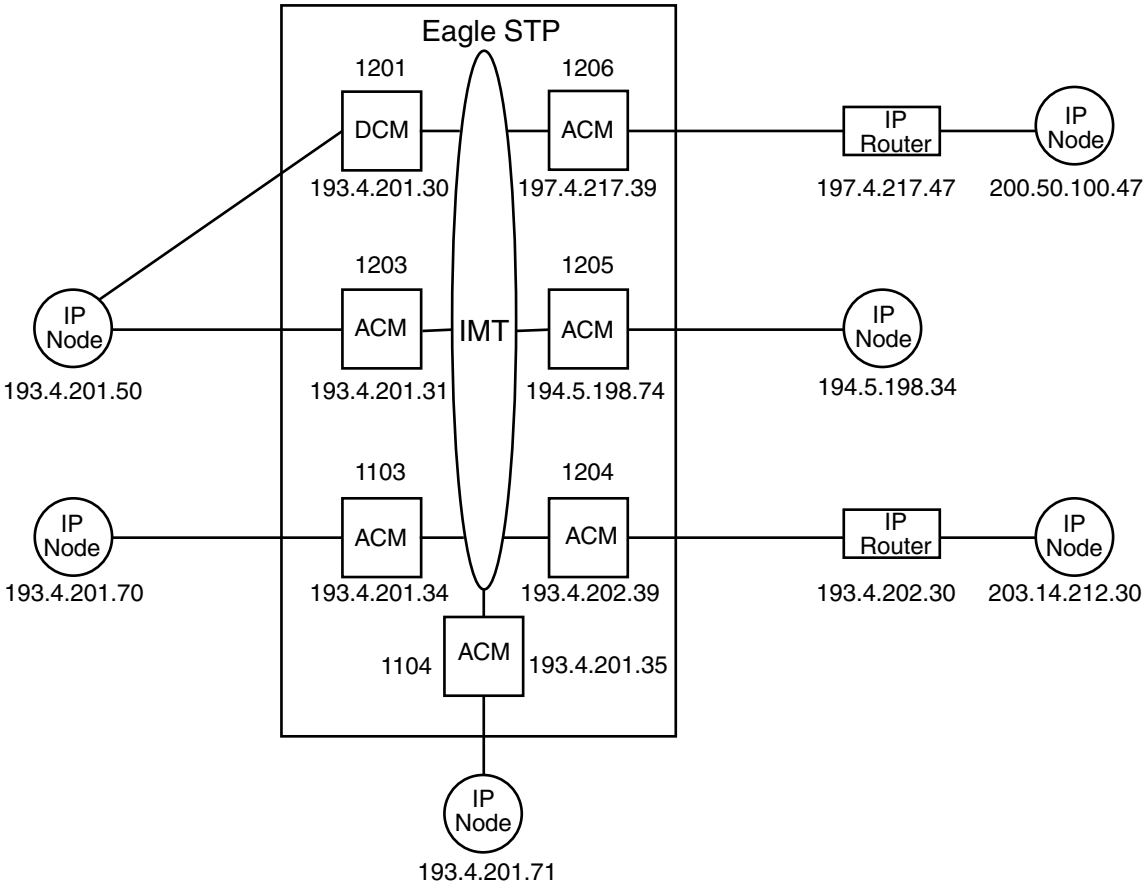
CAUTION: When Gateway Screening is in the screen test mode, as defined by the linkset parameters gwsa=off and gwsm=on, the gateway screening action in the gateway screening stop action set specified by the actname parameter of the gateway screening screen set at the end of the gateway screening process will be performed.

The STP LAN configuration procedures in this chapter use the sample network information shown in Table 3-2. Figure 3-6 on page 3-19 shows a diagram of this sample network.

Table 3-2. STP LAN Configuration Example Database

Card Location	Interface Address	TCP/IP Router Address	STP LAN Node Address	STP LAN Port ID
1103	193.4.201.34	—	193.4.201.70	1024
1104	193.4.201.35	—	193.4.201.71	1024
1201	193.4.201.30	—	193.4.201.50	1024
1203	193.4.201.31	—	193.4.201.50	1024
1204	193.4.202.39	193.4.202.30	200.50.100.47	2000
1205	194.5.198.74	—	194.5.198.34	3000
1206	197.4.217.39	197.4.217.47	203.14.212.30	4000

Figure 3-6. STP LAN Configuration Example



Adding an STP LAN Card

This procedure is used to add a card supporting the STP LAN feature, either a DCM running the **vwxslan** GPL or an ACM running the **stplan**, to the database using the **ent-card** command. The **ent-card** command uses these parameters:

:loc – The location of the card being added to the database.

:type – The type of card being added to the database. For this procedure, the value of this parameter is either **dcm** (for the DCM) or **acmenet** (for the ACM).

:appl – The application software or GPL that is assigned to the card. For this procedure, the value of this parameter is **vwxslan** (for the GPL assigned to the DCM) or **stplan** (for the GPL assigned to the ACM).

:force – Allow the LIM to be added to the database even if there are not enough cards running the SCCP GPL (either ASM or TSM) to support the number of LIMs. This parameter does not apply to configuring STP LAN cards and should not be used.

The DCM can be inserted only in the odd numbered card slots of the extension shelf. Slot 09 of each shelf contains the HMUX card, thus the DCM cannot be inserted in slot 09. The DCM can be inserted in the control shelf, but only in slots 01, 03, 05, and 07. The DCM occupies two card slots, so the even numbered card slot adjacent to the odd numbered slot where the DCM has been inserted must be empty, as shown in Table 3-3. The DCM is connected to the network through the odd numbered card slot connector.

Table 3-3. DCM Card Locations

Location of the DCM	Empty Card Location	Location of the DCM	Empty Card Location
Slot 01	Slot 02	Slot 11	Slot 12
Slot 03	Slot 04	Slot 13	Slot 14
Slot 05	Slot 06	Slot 15	Slot 16
Slot 07	Slot 08	Slot 17	Slot 18

Before the card can be configured in the database for the STP LAN feature, the STP LAN and gateway screening features must be turned on with the **chg-feat** command. The gateway screening feature must be on before the STP LAN feature can be turned on. The **rtrv-feat** command can verify that the STP LAN, and gateway screening features are on.

NOTE: Once the gateway screening and STP LAN features are turned on with the chg-feat command, they cannot be turned off.

The shelf to which the card is to be added must already be in the database. This can be verified with the **rtrv-shlf** command. If the shelf is not in the database, see the "Adding a Shelf" procedure in the *Database Administration Manual – System Management*.

The card cannot be added to the database if the specified card location already has a card assigned to it.

The system can contain a maximum of 32 cards running either the STPLAN or VXWSLAN applications.

The examples in this procedure are used to add a DCM in card slot 1201 and an ACM in card slot 1204 to the database.

Procedure

1. Display the cards in the system using the **rtrv-card** command. Cards should be distributed throughout the system for proper power distribution. Refer to the *Installation Manual* for the shelf power distribution. This is an example of the possible output.

```
rlghncxa03w 04-03-25 09:58:31 GMT EAGLE5 31.4.0
CARD   TYPE      APPL      LSET NAME     PORT SLC LSET NAME     PORT SLC
1101   ASM       SCCP      ------------  --   --  ------------  --   --
1102   ASM       GLS       ------------  --   --  ------------  --   --
1103   ACMENET   STPLAN    ------------  --   --  ------------  --   --
1104   ACMENET   STPLAN    ------------  --   --  ------------  --   --
1113   GPSM      EOAM
1114   TDM-A
1115   GPSM      EOAM
1116   TDM-B
1117   MDAL
1118   RESERVED
1203   ACMENET   STPLAN    ------------  --   --  ------------  --   --
1205   ACMENET   STPLAN    ------------  --   --  ------------  --   --
1206   ACMENET   STPLAN    ------------  --   --  ------------  --   --
1211   LIMDS0    SS7ANSI   lsn1          A    0   lsn2          B    1
1212   LIMV35    SS7GX25   lsngwy        A    0   ------------  --   --
1213   LIMV35    SS7ANSI   lsn2          A    0   lsn1          B    1
1216   LIMDS0    SS7ANSI   sp2           A    0   sp1           B    0
1303   LIMDS0    SS7ANSI   sp3           A    0   ------------  --   --
1304   LIMDS0    SS7ANSI   sp3           A    1   ------------  --   --
1306   LIMDS0    SS7ANSI   nsp3          A    1   nsp4          B    1
1307   LIMV35    SS7GX25   nsp1          A    0   ------------  --   --
1308   LIMV35    SS7GX25   nsp1          A    1   ------------  --   --
```

If the **APPL** field of the **rtrv-card** command output shows cards assigned to either the **STPLAN** or **VWXSLAN** GPLs, skip steps 2, 3, and 4, and go to step 5.

2. Verify that the STP LAN and the gateway screening features are on, by entering the **rtrv-feat** command. If the STP LAN feature is on, the **LAN** field should be set to **on**. If the gateway screening feature is on, the **GWS** field should be set to **on**. For this example, the STP LAN and gateway screening features are off.

   NOTE: The rtrv-feat command output contains other fields that are not used by this procedure. If you wish to see all the fields displayed by the rtrv-feat command, see the rtrv-feat command description in the *Commands Manual*.

   If the gateway screening and STP LAN features are on, skip steps 3 and 4 and go to step 5. If the gateway screening feature is not on, go to step 3. If the gateway screening feature is on, but the STP LAN feature is off, skip step 3 and go to step 4.

---

3. If the gateway screening feature is not on, shown by the **GWS = off** entry in the **rtrv-feat** command output in step 2, turn the gateway screening feature on by entering this command.

   chg-feat:gws=on

   NOTE: Once the gateway screening feature is turned on with the chg-feat command, it cannot be turned off.

   When the **chg-feat** has successfully completed, this message should appear.

   ```
   rlghncxa03w 04-03-20 21:18:37 GMT EAGLE5 31.4.0
   CHG-FEAT: MASP A - COMPLTD
   ```

---

4. Turn the STP LAN feature on by entering this command.

   chg-feat:lan=on

   NOTE: Once the STP LAN feature is turned on with the chg-feat command, it cannot be turned off.

   When the **chg-feat** has successfully completed, this message should appear.

   ```
   rlghncxa03w 04-03-20 21:19:37 GMT EAGLE5 31.4.0
   CHG-FEAT: MASP A - COMPLTD
   ```

---

5. Verify that the card has been physically installed into the proper location.

CAUTION: If the version of the BPDCM GPL on the DCM card does not match the BPDCM GPL version in the database when the DCM is inserted into the card slot, UAM 0002 is generated indicating that these GPL versions do not match. If UAM 0002 has been generated, perform the alarm clearing procedure for UAM 0002 in the *Maintenance Manual* before proceeding with this procedure.

6. Add the card to the database using the **ent-card** command. For this example, enter these commands.

ent-card:loc=1201:type=dcm:appl=vwxslan

ent-card:loc=1204:type=acmenet:appl=stplan

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

```
rlghncxa03w 04-03-20 21:21:37 GMT EAGLE5 31.4.0
ENT-CARD: MASP A - COMPLTD
```

7. Verify the changes using the **rtrv-card** command with the card location specified. For this example, enter these commands.

rtrv-card:loc=1201

This is an example of the possible output.

```
rlghncxa03w 04-03-20 21:22:37 GMT EAGLE5 31.4.0
CARD   TYPE      APPL      LSET NAME     PORT SLC LSET NAME     PORT SLC
1201   DCM       VWXSLAN   ------------  --   --  ------------  --   --
```

rtrv-card:loc=1204

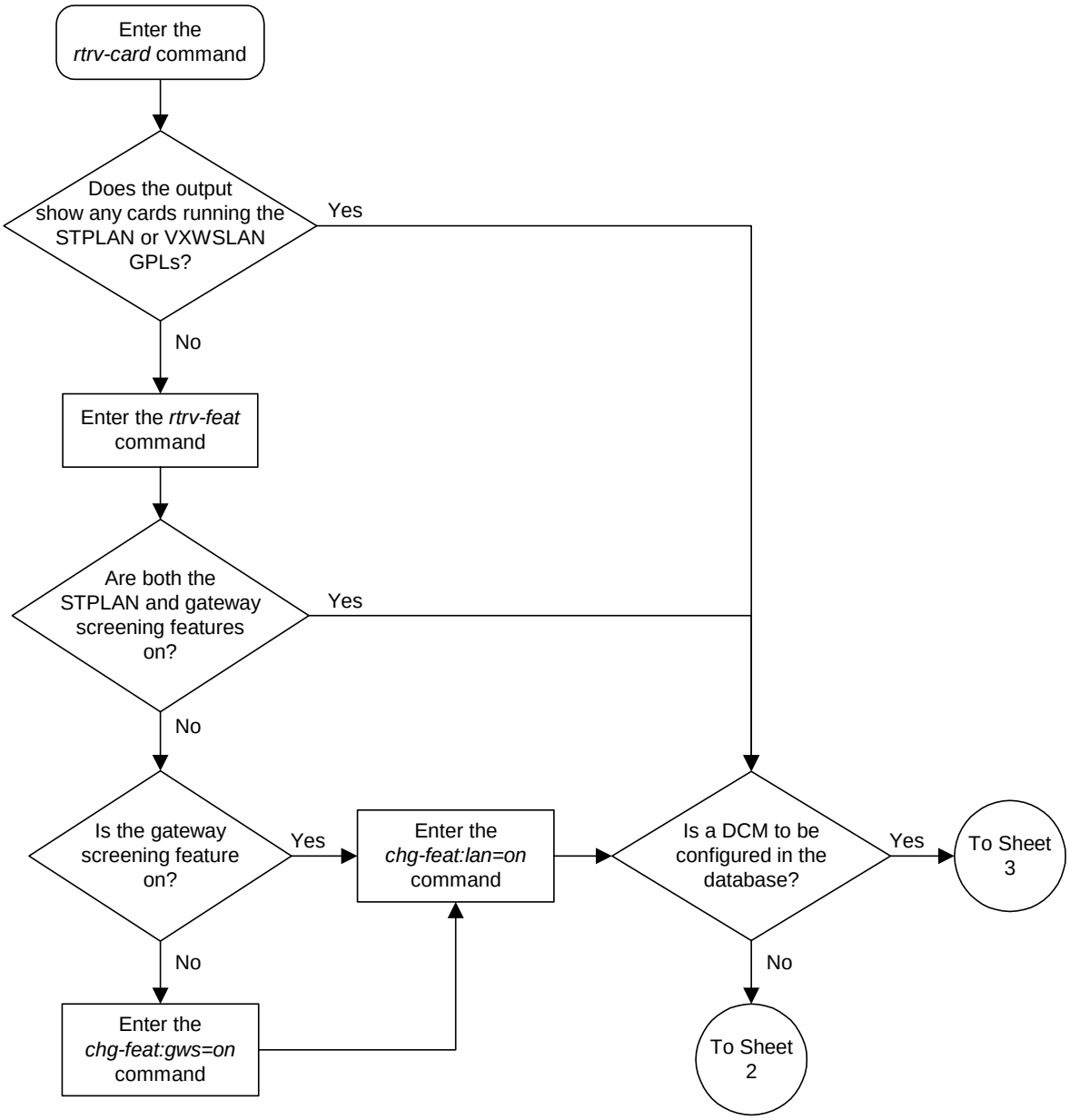
This is an example of the possible output.

```
rlghncxa03w 04-03-20 21:23:37 GMT EAGLE5 31.4.0
CARD   TYPE      APPL      LSET NAME     PORT SLC LSET NAME     PORT SLC
1204   ACMENET   STPLAN    ------------  --   --  ------------  --   --
```

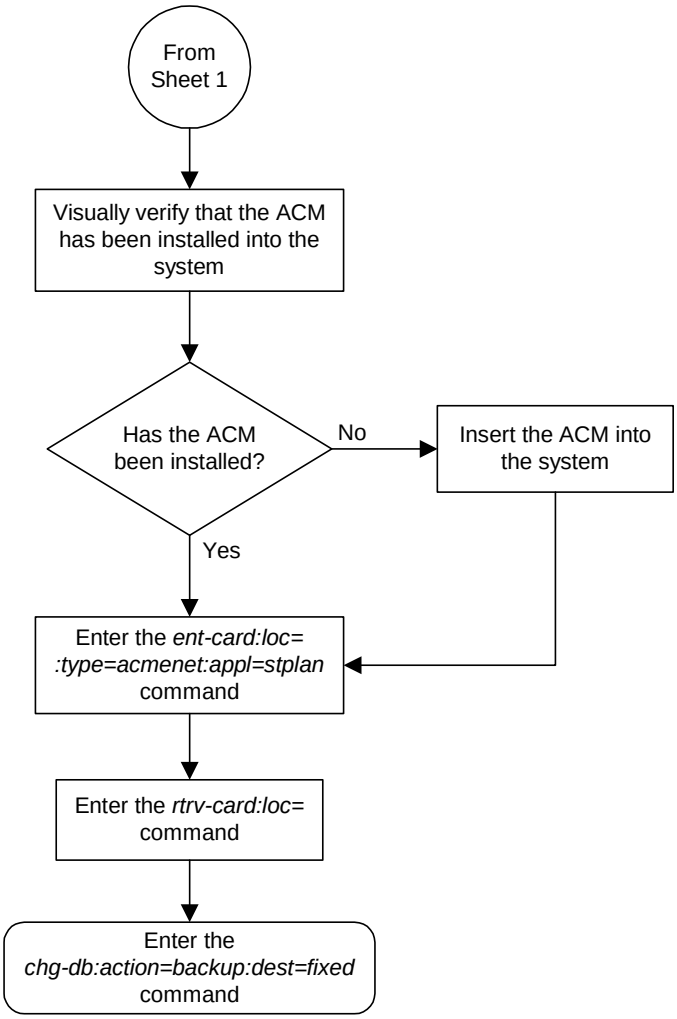
8. Backup the new changes, using the **chg-db:action=backup:dest=fixed** command. These messages should appear; the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
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.
```

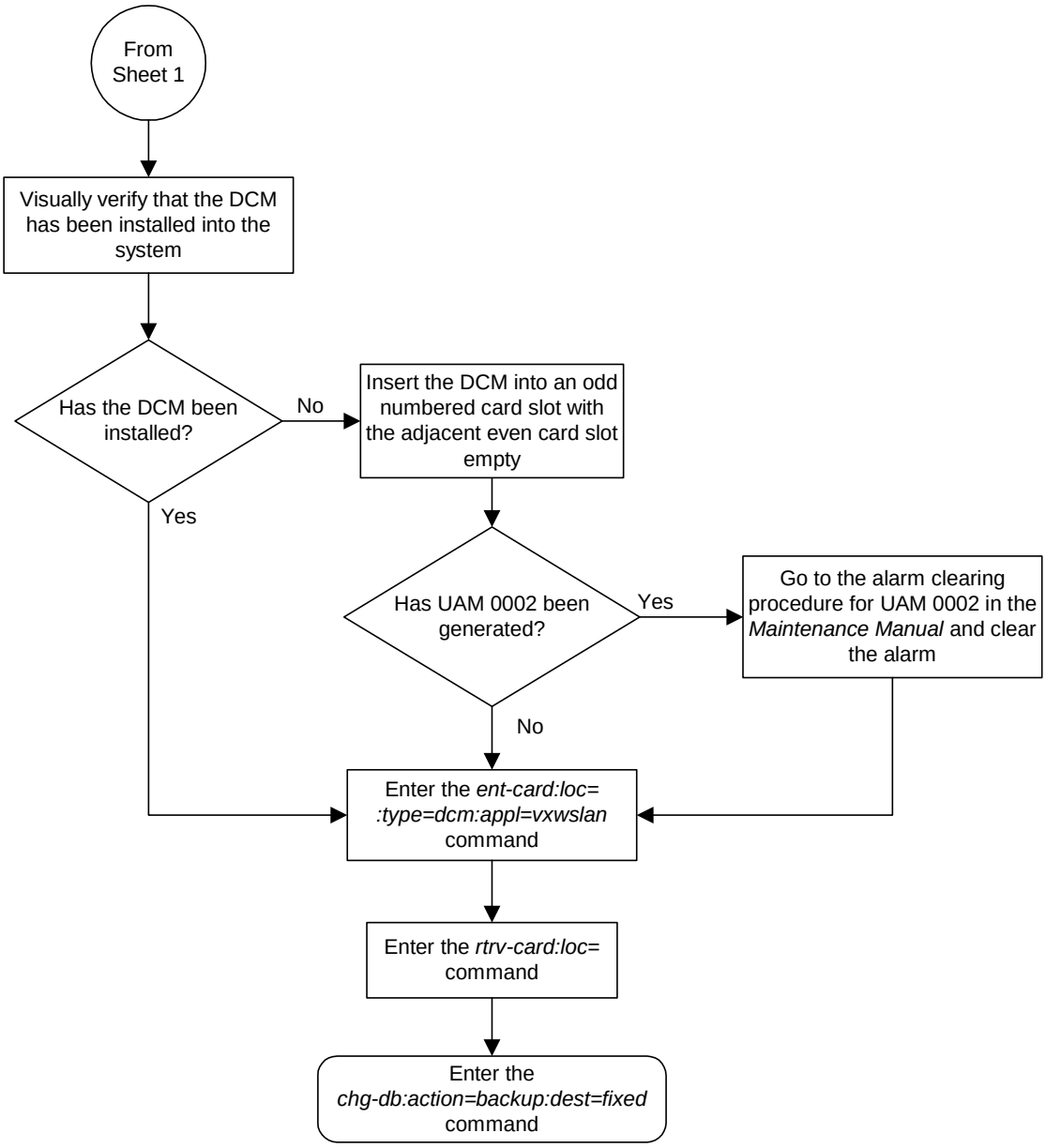
Flowchart 3-1. Adding an STPLAN Card (Sheet 1 of 3)



Flowchart 3-1. Adding an STPLAN Card (Sheet 2 of 3)



Flowchart 3-1. Adding an STPLAN Card (Sheet 3 of 3)



Removing an STP LAN Card

This procedure is used to remove a card supporting the STP LAN feature, either a DCM running the **vwxslan** GPL or an ACM running the **stplan** GPL, from the database using the **dlt-card** command.

The card cannot be removed if it does not exist in the database.

No TCP/IP data links can be assigned to the card you wish to remove from the database.

CAUTION: If the card being removed from the database is the last in-service card supporting the STP LAN feature (either DCM or ACM), removing this card from the database will disable the STP LAN feature.

The examples in this procedure are used to remove the DCM in card location 1201 from the database.

Procedure

1. Display the cards in the database using the **rtrv-card** command. This is an example of the possible output.

```
rlghncxa03w 04-03-25 09:58:31 GMT EAGLE5 31.4.0
CARD   TYPE      APPL      LSET NAME     PORT SLC LSET NAME     PORT SLC
1101   ASM       SCCP      ------------  --   --  ------------  --   --
1102   ASM       GLS       ------------  --   --  ------------  --   --
1103   ACMENET   STPLAN    ------------  --   --  ------------  --   --
1104   ACMENET   STPLAN    ------------  --   --  ------------  --   --
1113   GPSM      EOAM
1114   TDM-A
1115   GPSM      EOAM
1116   TDM-B
1117   MDAL
1118   RESERVED
1201   DCM       VXWSLAN   ------------  --   --  ------------  --   --
1203   ACMENET   STPLAN    ------------  --   --  ------------  --   --
1204   ACMENET   STPLAN    ------------  --   --  ------------  --   --
1205   ACMENET   STPLAN    ------------  --   --  ------------  --   --
1206   ACMENET   STPLAN    ------------  --   --  ------------  --   --
1211   LIMDS0    SS7ANSI   lsn1          A    0   lsn2          B    1
1212   LIMV35    SS7GX25   lsngwy        A    0   ------------  --   --
1213   LIMV35    SS7ANSI   lsn2          A    0   lsn1          B    1
1216   LIMDS0    SS7ANSI   sp2           A    0   sp1           B    0
1303   LIMDS0    SS7ANSI   sp3           A    0   ------------  --   --
1304   LIMDS0    SS7ANSI   sp3           A    1   ------------  --   --
1306   LIMDS0    SS7ANSI   nsp3          A    1   nsp4          B    1
1307   LIMV35    SS7GX25   nsp1          A    0   ------------  --   --
1308   LIMV35    SS7GX25   nsp1          A    1   ------------  --   --
```

2. The ACMs are shown by the entry **STPLAN** in the **APPL** field. Display the status of the TCP/IP data link assigned to the card you wish to remove by entering the **rept-stat-dlk** command. For this example, enter this command.

   rept-stat-dlk:loc=1201

   This is an example of the possible output.

```
rlghncxa03w 04-03-20 21:17:37 GMT EAGLE5 31.4.0
DLK    PST           SST        AST
1201   IS-NR         Avail      ---
  ALARM STATUS    = No Alarms.
Command Completed.
```

3. If the TCP/IP data link is not in an OOS-MT-DSBLD state, deactivate the TCP/IP data link assigned to the card using the **canc-dlk** command. For this example, enter this command.

   canc-dlk:loc=1201

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

```
rlghncxa03w 04-03-20 21:18:37 GMT EAGLE5 31.4.0
Deactivate Link message sent to card.
```

4. Inhibit the card using the **rmv-card** command, specifying the card location. For this example, enter this command.

   rmv-card:loc=1201

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

```
rlghncxa03w 04-03-20 21:19:37 GMT EAGLE5 31.4.0
Card has been inhibited.
```

5. Display the TCP/IP nodes in the database by entering the **rtrv-ip-node** command. This is an example of the possible output.

```
rlghncxa03w 04-03-20 21:20:37 GMT EAGLE5 31.4.0
IPADDR           IPPORT  IPAPPL  LOC   CAP
193.4.201.50     1024    stplan  1216  10%
193.4.201.50     1024    stplan  1304  10%
193.4.201.70     1024    stplan  1103  10%
193.4.201.71     1024    stplan  1104  10%
193.4.202.30     2000    stplan  1317  40%
193.4.201.98     4000    stplan  1201  10%
```

6. Remove the TCP/IP node assigned to the card location containing the TCP/IP data link to be removed from the database using the **dlt-ip-node** command. For this example, enter this command.

   dlt-ip-node:ipaddr=193.4.201.98:ipappl=stplan:ipport=4000 :loc=1201

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

```
rlghncxa03w 04-03-20 21:21:37 GMT EAGLE5 31.4.0
DLT-IP-NODE: MASP A - COMPLTD
```

7. Remove the data link from the specified card by using the **dlt-dlk** command. For this example, enter this command.

   dlt-dlk:loc=1201

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

   ```
   rlghncxa03w 04-03-20 21:22:37 GMT EAGLE5 31.4.0
   DLT-DLK: MASP A - COMPLTD
   ```

8. Remove the card using the **dlt-card** command with the card location of the card to be removed. The **dlt-card** command has only one parameter, **loc**, which is the location of the card. For this example, enter this command.

   dlt-card:loc=1201

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

   ```
   rlghncxa03w 04-03-20 21:23:37 GMT EAGLE5 31.4.0
   DLT-CARD: MASP A - COMPLTD
   ```

9. Verify the changes using the **rtrv-card** command specifying the card that was removed in step 8. For this example, enter this command.

   rtrv-card:loc=1201

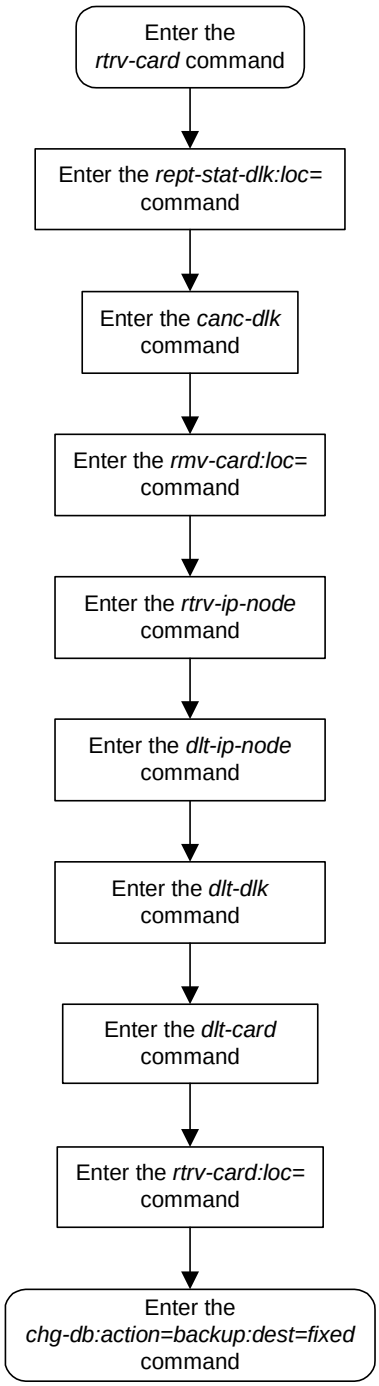
   When this command has successfully completed, this message should appear.

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

10. Backup the new changes using the **chg-db:action=backup:dest=fixed** command. 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.
    ```

Flowchart 3-2. Removing an STP LAN Card



Adding a TCP/IP Data Link

This procedure is used to add a TCP/IP data link to the database using the **ent-dlk** command.

The **ent-dlk** command uses these parameters:

:loc – The card location of the ACM or DCM that the TCP/IP data link will be assigned to.

:ipaddr – The TCP/IP data link's IP address

This examples used in this procedure are based on the example network shown in Figure 3-6 on page 3-19 and Table 3-2 on page 3-18.

The STP LAN and gateway screening features must be turned on. Verify this by entering the **rtrv-feat** command. If either the STP LAN feature or gateway screening feature is off, they can be turned on by entering the **chg-feat:lan=on** command for the STP LAN feature and the **chg-feat:gws=on** command for the gateway screening feature.

NOTE: Once the gateway screening and STP LAN features are turned on with the chg-feat command, they cannot be turned off.

The card that the TCP/IP data link is assigned to must be an ACM running the **stplan** application or a DCM running the **vxwslan** application. This can be verified in step 2 with the **rtrv-card** command. The ACM is shown by the entries **ACMENET** in the **TYPE** field and **STPLAN** in the **APPL** field of the **rtrv-card** command output. The DCM is shown by the entries **DCM** in the **TYPE** field and **VXWSLAN** in the **APPL** field of the **rtrv-card** command output. If the ACM or DCM is not shown in the **rtrv-card** command output, go to the "Adding an STP LAN Card" procedure on page 3-20 and add the required card to the database.

The specified card cannot have a TCP/IP data link assigned to it, nor can the TCP/IP data link be in the database. This can be verified in step 1.

The IP address to be assigned to the TCP/IP data link cannot be assigned to a TCP/IP node or to a TCP/IP router. Enter the **rtrv-ip-node** command to display the IP addresses of the TCP/IP nodes and the TCP/IP routers. This can be verified in step 2.

Procedure

1. Display the data links in the database by entering the **rtrv-dlk** command. This is an example of the possible output.

```
rlghncxa03w 04-03-20 21:16:37 GMT EAGLE5 31.4.0
LOC   IPADDR
1103  193.4.201.34
1104  193.4.201.35
```

2. Display the TCP/IP nodes and TCP/IP routers by entering the **rtrv-ip-node** command. This is an example of the possible output.

```
rlghncxa03w 04-03-20 21:17:37 GMT EAGLE5 31.4.0
IPADDR           IPPORT  IPAPPL  LOC   CAP  IPRTE
193.4.201.70     1024    stplan  1103  10%  --
193.4.201.71     1024    stplan  1104  10%  --
```

3. Display the cards in the database by entering the **rtrv-card** command. This is an example of the possible output.

```
rlghncxa03w 04-03-25 09:58:31 GMT EAGLE5 31.4.0
CARD   TYPE      APPL      LSET NAME     PORT SLC LSET NAME     PORT SLC
1101   ASM       SCCP      ------------  --   --  ------------  --   --
1102   ASM       GLS       ------------  --   --  ------------  --   --
1103   ACMENET   STPLAN    ------------  --   --  ------------  --   --
1104   ACMENET   STPLAN    ------------  --   --  ------------  --   --
1113   GPSM      EOAM
1114   TDM-A
1115   GPSM      EOAM
1116   TDM-B
1117   MDAL
1118   RESERVED
1201   DCM       VXWSLAN   ------------  --   --  ------------  --   --
1203   ACMENET   STPLAN    ------------  --   --  ------------  --   --
1204   ACMENET   STPLAN    ------------  --   --  ------------  --   --
1205   ACMENET   STPLAN    ------------  --   --  ------------  --   --
1206   ACMENET   STPLAN    ------------  --   --  ------------  --   --
1211   LIMDS0    SS7ANSI   lsn1          A    0   lsn2          B    1
1212   LIMV35    SS7GX25   lsngwy        A    0   ------------  --   --
1213   LIMV35    SS7ANSI   lsn2          A    0   lsn1          B    1
1216   LIMDS0    SS7ANSI   sp2           A    0   sp1           B    0
1303   LIMDS0    SS7ANSI   sp3           A    0   ------------  --   --
1304   LIMDS0    SS7ANSI   sp3           A    1   ------------  --   --
1306   LIMDS0    SS7ANSI   nsp3          A    1   nsp4          B    1
1307   LIMV35    SS7GX25   nsp1          A    0   ------------  --   --
1308   LIMV35    SS7GX25   nsp1          A    1   ------------  --   --
```

4. Add the data link to the database by entering the **ent-dlk** command. For this example, enter these commands.

   ent-dlk:loc=1201:ipaddr=193.4.201.30

   ent-dlk:loc=1203:ipaddr=193.4.201.31

   ent-dlk:loc=1204:ipaddr=193.4.202.39

   ent-dlk:loc=1205:ipaddr=194.5.198.74

   ent-dlk:loc=1206:ipaddr=197.4.217.39

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

   ```
   rlghncxa03w 04-03-20 21:19:37 GMT EAGLE5 31.4.0
   ENT-DLK: MASP A - COMPLTD
   ```

   The **ent-dlk** command assigns the IP address (**ipaddr**) to the STPLAN card (ACM or DCM). If the network is a private network (not on the Internet), you can assign any unique address. If the STPLAN card is on the Internet, you must obtain an IP address from the Internet Network Information Center (NIC).

   IP addresses represent unique 32-bit integer identifiers for all nodes on a TCP/IP Internet. IP addresses are divided into five classes lettered A through E. Eagle TCP/IP implementation supports classes A through C. The IP address is a mandatory parameter. Table 3-4 shows valid parameters for the IP address.

Table 3-4. Values for IP Addresses

IP Address Classes	Valid IP Addresses
IP Address - Class A	1.1.1.1 through 127.254.254.254 Note: You should not use the IP addresses 127.x.x.x, where x is a number from 1 to 254. They are reserved for loopback.
IP Address - Class B	128.1.1.1 through 191.254.254.254
IP Address - Class C	192.1.1.1 through 223.254.254.254

5. Verify the changes using the **rtrv-dlk** command. This is an example of the possible output.

   ```
   rlghncxa03w 04-03-20 21:20:37 GMT EAGLE5 31.4.0
   LOC   IPADDR
   1103  193.4.201.34
   1104  193.4.201.35
   1201  193.4.201.30
   1203  193.4.201.31
   1204  193.4.202.39
   1205  194.5.198.74
   1206  197.4.217.39
   ```

6. Place the cards into service by entering the **rst-card** command. For this example, enter these commands.

   rst-card:loc=1201

   rst-card:loc=1203

   rst-card:loc=1204

   rst-card:loc=1205

   rst-card:loc=1206

   This message should appear when each command has successfully completed.

```
rlghncxa03w 04-03-20 21:21:37 GMT EAGLE5 31.4.0
Card has been allowed.
```

7. Place the data links into service by entering the **act-dlk** command. For this example, enter these commands.

   act-dlk:loc=1201

   act-dlk:loc=1203

   act-dlk:loc=1204

   act-dlk:loc=1205

   act-dlk:loc=1206

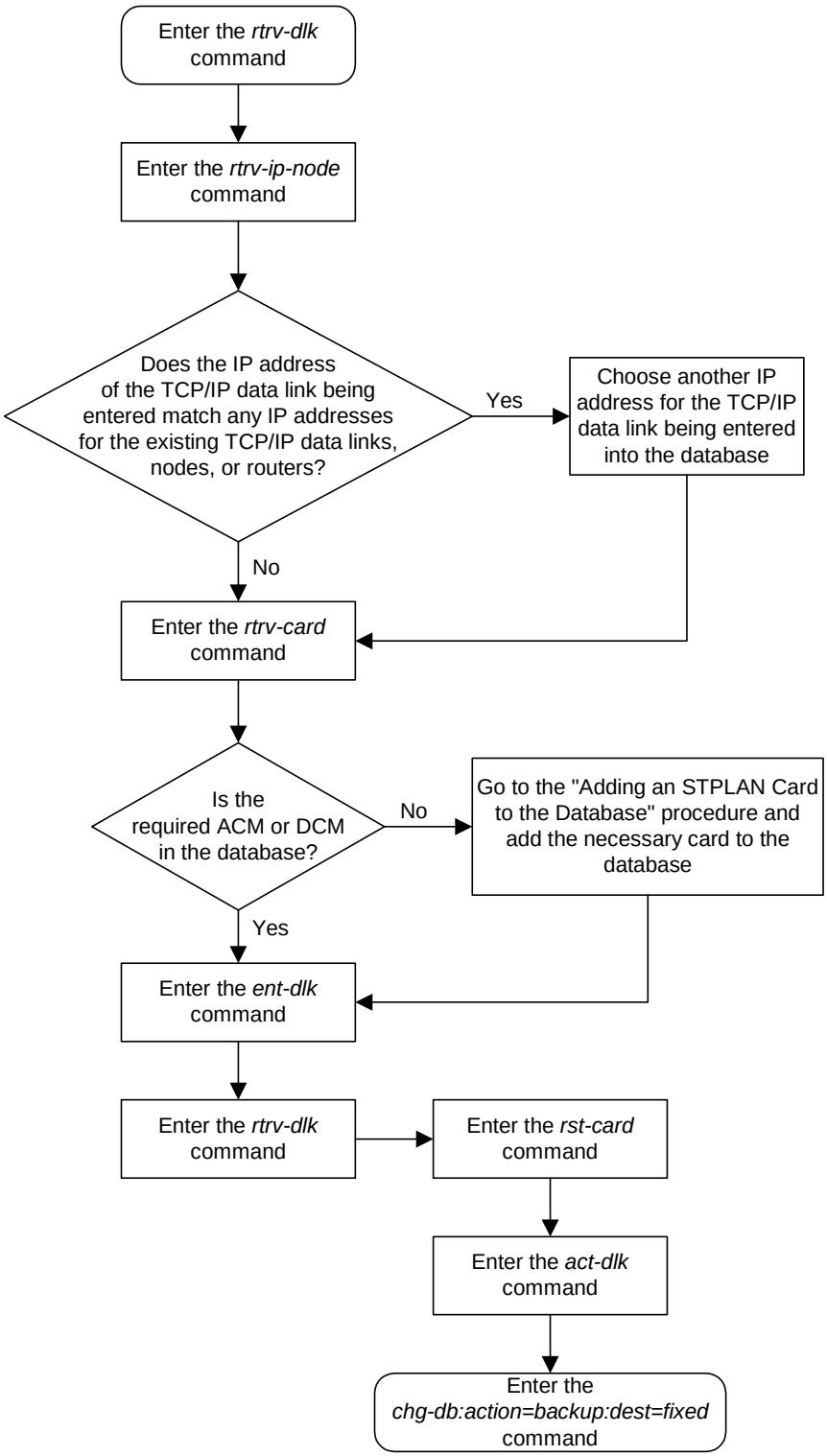
   This message should appear when each command has successfully completed.

```
rlghncxa03w 04-03-20 21:22:37 GMT EAGLE5 31.4.0
Activate Link message sent to card
```

8. Backup the new changes using the **chg-db:action=backup:dest=fixed** command. 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.
```

Flowchart 3-3. Adding a TCP/IP Data Link



Removing a TCP/IP Data Link

This procedure is used to remove a TCP/IP data link from the database using the **dlt-dlk** command.

The examples used in this procedure are used to remove the TCP/IP data link on card 1204 from the database.

The card that the TCP/IP data link is assigned to must be an ACM running the **stplan** application or a DCM running the **vxwslan** application. This can be verified with the **rtrv-card** command. The ACM is shown by the entries **ACMENET** in the **TYPE** field and **STPLAN** in the **APPL** field of the **rtrv-card** command output. The DCM is shown by the entries **DCM** in the **TYPE** field and **VXWSLAN** in the **APPL** field of the **rtrv-card** command output.

The specified card must have a TCP/IP data link assigned to it and the TCP/IP data link must be in the database. This can be verified in step 1.

Procedure

1. Display the data links in the database by entering the **rtrv-dlk** command. This is an example of the possible output.

```
rlghncxa03w 04-03-20 21:16:37 GMT EAGLE5 31.4.0
LOC   IPADDR
1103  193.4.201.34
1104  193.4.201.35
1201  193.4.201.30
1203  193.4.201.31
1204  193.4.202.39
1205  194.5.198.74
1206  197.4.217.39
```

2. Place the TCP/IP data link to be removed out of service using the **canc-dlk** command, using the output from step 1 to obtain the card location of the TCP/IP data link to be removed. For this example, the TCP/IP data link to be removed is assigned to card 1204. Enter this command.

canc-dlk:loc=1204

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

```
rlghncxa03w 04-03-20 21:17:37 GMT EAGLE5 31.4.0
Deactivate Link message sent to card.
```

3. Verify that the TCP/IP data link is out of service - maintenance disabled (OOS-MT-DSBLD) using the **rept-stat-dlk** command. For this example, enter this command.

   rept-stat-dlk:loc=1204

   This is an example of the possible output.

```
Rrlghncxa03w 04-03-20 21:18:37 GMT EAGLE5 31.4.0
DLK    PST           SST        AST
1204   OOS-MT-DSBLD  Unavail    ---
  ALARM STATUS    =
Command Completed.
```

4. Place the card specified in step 3 out of service by using the **rmv-card** command. For this example, enter this command.

   rmv-card:loc=1204

   This message should appear.

```
rlghncxa03w 04-03-20 21:19:37 GMT EAGLE5 31.4.0
Card has been inhibited.
```

5. Display the TCP/IP nodes in the database by entering the **rtrv-ip-node** command. This is an example of the possible output.

```
rlghncxa03w 04-03-20 21:20:37 GMT EAGLE5 31.4.0
IPADDR           IPPORT  IPAPPL  LOC   CAP  IPRTE
193.4.201.50     1024    stplan  1201  10%  --
193.4.201.50     1024    stplan  1203  10%  --
193.4.201.70     1024    stplan  1103  10%  --
193.4.201.71     1024    stplan  1104  10%  --
194.5.198.34     3000    stplan  1205  40%  --
200.50.100.47    4000    stplan  1206  40%  197.4.217.47
203.14.212.30    2000    stplan  1204  40%  193.4.202.30
```

6. Remove the TCP/IP node assigned to the card location containing the TCP/IP data link to be removed from the database using the **dlt-ip-node** command. For this example, enter this command.

   dlt-ip-node:ipaddr=193.4.202.30:ipappl=stplan:ipport=2000 :loc=1204

   This message should appear.

```
rlghncxa03w 04-03-20 21:21:37 GMT EAGLE5 31.4.0
DLT-IP-NODE: MASP A - COMPLTD
```

7. Remove the data link from the database using the **dlt-dlk** command. The **dlt-dlk** command has only one parameter, **loc**, which is the location of the ACM or DCM containing the TCP/IP data link. For this example, enter this command.

   dlt-dlk:loc=1204

   This message should appear.

```
rlghncxa03w 04-03-20 21:22:37 GMT EAGLE5 31.4.0
DLT-DLK: MASP A - COMPLTD
```

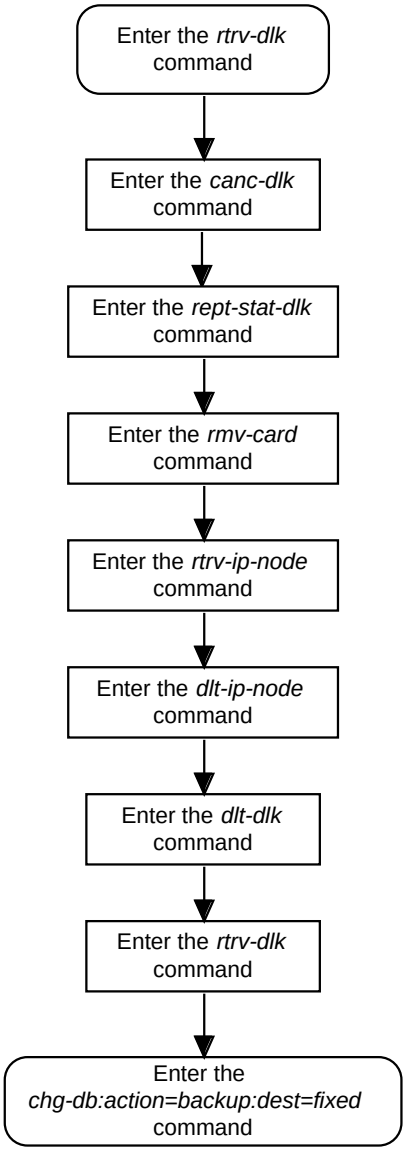
8. Verify the changes using the **rtrv-dlk** command. This is an example of the possible output.

```
rlghncxa03w 04-03-20 21:23:37 GMT EAGLE5 31.4.0
LOC   IPADDR
1103  193.4.201.34
1104  193.4.201.35
1201  193.4.201.30
1203  193.4.201.31
1205  194.5.198.74
1206  197.4.217.39
```

9. Backup the new changes using the **chg-db:action=backup:dest=fixed** command. 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.
```

Flowchart 3-4. Removing a TCP/IP Data Link



Adding a TCP/IP Node

This procedure is used to add a TCP/IP node to the database using the **ent-ip-node** command.

The **ent-ip-node** command uses these parameters:

:ipaddr – The node's IP address.

:ipappl – The IP application supported by the node.

:ipport – The logical IP port to address the application on the node.

:loc – The card location of the ACM or DCM that contains the TCP/IP link that will be directly connected to the node.

:cap – The maximum percentage of ethernet capacity for this node connection. This capacity is added to other connections to this node for the total capacity of the node.

:iprte – The IP address of the TCP/IP router.

This examples used in this procedure are based on the example network shown in Figure 3-6 on page 3-19 and Table 3-2 on page 3-18.

The TCP/IP node cannot already be in the database. This can be verified in step 1.

The specified card must have a TCP/IP data link assigned to it. This can be verified in step 2.

The IP address assigned to the TCP/IP node cannot be assigned to any other TCP/IP nodes, TCP/IP routers, or TCP/IP data links.

The class of the IP address (**ipaddr**) must match the class of the assigned TCP/IP data link's IP address only if the **iprte** parameter is not specified with the **ent-ip-node** command. The Eagle supports three classes of IP addresses, Class A, Class B, and Class C. Class A IP addresses can contain only the values 1 to 127 in the first field of the IP address. Class B IP addresses can contain only the values 128 to 191 in the first field of the IP address. Class C IP addresses can contain only the values 192 to 223 in the first field of the IP address. No IP address can contain the value 127 in the first field of the IP address. These IP addresses are reserved for loopback.

The network portion of the IP address (**ipaddr**) must match the network portion of the IP address assigned to the TCP/IP data link only if the **iprte** parameter is not specified with the **ent-ip-node** command. The network portion of the IP address is based on the class of the IP address. If the IP address is a Class A IP address, the first field is the network portion of the IP address. If the IP address is a Class B IP address, the first two fields are the network portion of the IP address. If the IP address is a Class C IP address, the first three fields are the network portion of the IP address. For example, if the IP address of the TCP/IP data link is 193.5.207.150, a Class C IP address, the network portion of the IP address for the TCP/IP node must be 193.5.207.

If the **iprte** parameter is specified with the **ent-ip-node** command, the class and network portion of the TCP/IP router's IP address must match the class and network portion of the TCP/IP data link and cannot match the IP address of the TCP/IP node being added to the database. If subnet routing is being used, the **iprte** parameter must be specified with the **ent-ip-node** command. For more information of the TCP/IP router, go to the "TCP/IP Router" section on page 3-5.

The capacity of all connections to the IP address cannot be greater than 100%. This is shown in the **CAP** field of the **rtrv-ip-node** command output.

Procedure

1. Display the TCP/IP nodes in the database by entering the **rtrv-ip-node** command. This is an example of the possible output.

```
rlghncxa03w 04-03-20 21:16:37 GMT EAGLE5 31.4.0
IPADDR           IPPORT  IPAPPL  LOC   CAP  IPRTE
193.4.201.70     1024    stplan  1103  10%  --
193.4.201.71     1024    stplan  1104  10%  --
```

2. Display the TCP/IP data links in the database by entering the **rtrv-dlk** command. This is an example of the possible output.

```
rlghncxa03w 04-03-20 21:17:37 GMT EAGLE5 31.4.0
LOC   IPADDR
1103  193.4.201.34
1104  193.4.201.35
1201  193.4.201.30
1203  193.4.201.31
1204  193.4.202.39
1205  194.5.198.74
1206  197.4.217.39
```

3. Add the TCP/IP nodes to the database by entering the **ent-ip-node** command. For this example, enter these commands.

```
ent-ip-node:loc=1201:ipaddr=193.4.201.50:ipappl=stplan
:ipport=1024:cap=10

ent-ip-node:loc=1203:ipaddr=193.4.201.50:ipappl=stplan
:ipport=1024:cap=10

ent-ip-node:loc=1204:ipaddr=203.14.212.30:ipappl=stplan
:ipport=2000 :cap=40:iprte=193.4.202.30

ent-ip-node:loc=1205:ipaddr=194.5.198.34:ipappl=stplan
:ipport=3000:cap=40

ent-ip-node:loc=1206:ipaddr=200.50.100.47:ipappl=stplan
:ipport=4000:cap=40:iprte=197.4.217.47
```

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

```
rlghncxa03w 04-03-20 21:18:37 GMT EAGLE5 31.4.0
ENT-IP-NODE: MASP A - COMPLTD
```

4. Verify the changes using the **rtrv-ip-node** command. This is an example of the possible output.

```
rlghncxa03w 04-03-20 21:19:37 GMT EAGLE5 31.4.0
IPADDR           IPPORT  IPAPPL  LOC   CAP  IPRTE
193.4.201.50     1024    stplan  1201  10%  --
193.4.201.50     1024    stplan  1203  10%  --
193.4.201.70     1024    stplan  1103  10%  --
193.4.201.71     1024    stplan  1104  10%  --
194.5.198.34     3000    stplan  1205  40%  --
200.50.100.47    4000    stplan  1206  40%  197.4.217.47
203.14.212.30    2000    stplan  1204  40%  193.4.202.30
```

5. Place the data links into service by entering the **act-dlk** command. For this example, enter these commands.

act-dlk:loc=1201

act-dlk:loc=1203

act-dlk:loc=1204

act-dlk:loc=1205

act-dlk:loc=1206

This message should appear when each command has successfully completed.

```
rlghncxa03w 04-03-20 21:20:37 GMT EAGLE5 31.4.0
Activate Link message sent to card
```

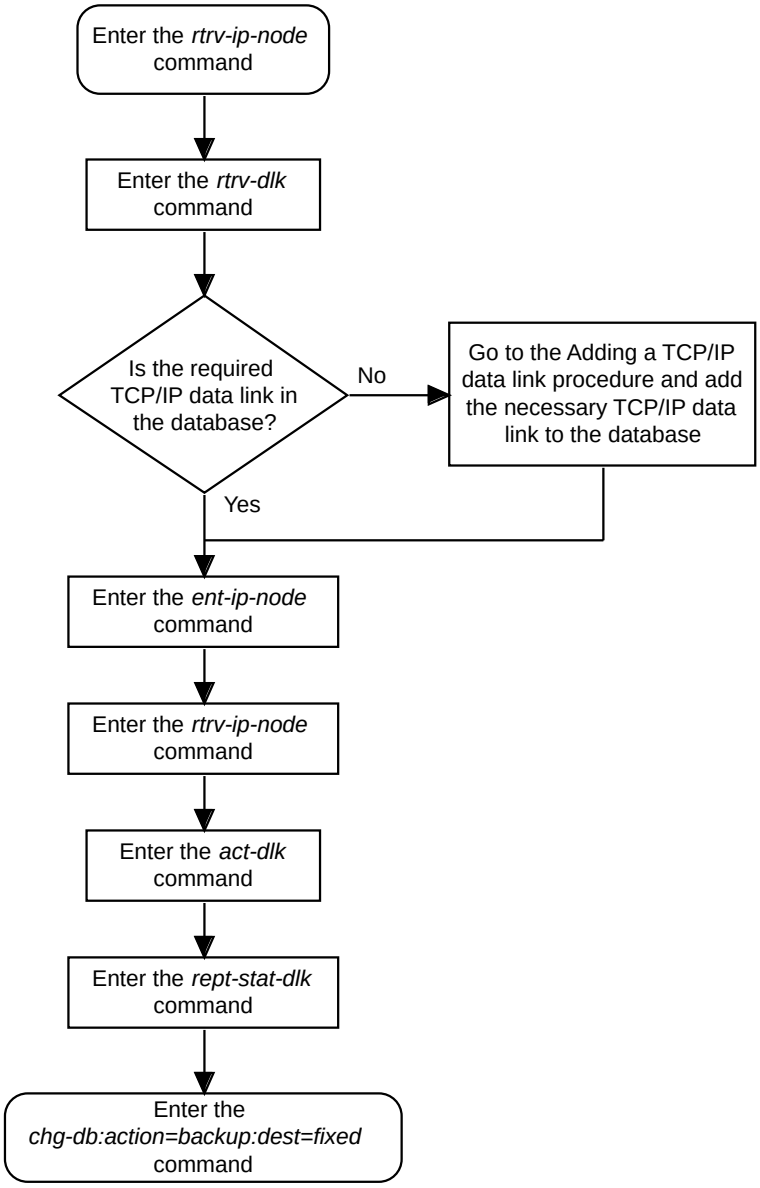
6. Check the status of the data links using the **rept-stat-dlk** command, specifying the card locations of the data links entered in step 5. The link should be in service-normal (IS-NR) after the link has been activated. This is an example of the possible output.

```
rlghncxa03w 04-03-20 21:21:37 GMT EAGLE5 31.4.0
DLK             PST          SST       AST
1103            IS-NR        Avail     ----
1104            IS-NR        Avail     ----
1201            IS-NR        Avail     ----
1203            IS-NR        Avail     ----
1204            IS-NR        Avail     ----
1205            IS-NR        Avail     ----
1206            IS-NR        Avail     ----
Command Completed.
```

7. Backup the new changes using the **chg-db:action=backup:dest=fixed** command. 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.
```

Flowchart 3-5. Adding a TCP/IP Node



Removing a TCP/IP Node

This procedure is used to remove a TCP/IP node from the database using the **dlt-ip-node** command.

The **dlt-ip-node** command uses these parameters:

:ipaddr – The node's IP address.

:ipappl – The IP application supported by the node.

:ipport – The logical IP port that addresses the application on the node.

:loc – The card location of the ACM or DCM that contains the TCP/IP link that is directly connected to the node.

:force – Whether or not to remove all applications associated with the node, thus removing the entire node from the database.

The examples used in this procedure are used to remove the TCP/IP node with the IP address 193.4.201.71 from the database.

The TCP/IP node must be in the database. This can be verified in step 1.

The specified card must have a TCP/IP data link assigned to it. This can be verified in step 2.

The card that the TCP/IP data link is assigned to must be an ACM running the **stplan** application or a DCM running the **vxwslan** application. This can be verified with the **rtrv-card** command. The ACM is shown by the entries **ACMENET** in the **TYPE** field and **STPLAN** in the **APPL** field of the **rtrv-card** command output. The DCM is shown by the entries **DCM** in the **TYPE** field and **VXWSLAN** in the **APPL** field of the **rtrv-card** command output.

Procedure

1. Display the TCP/IP nodes in the database by entering the **rtrv-ip-node** command. This is an example of the possible output.

```
rlghncxa03w 04-03-20 21:16:37 GMT EAGLE5 31.4.0
IPADDR          IPPORT  IPAPPL  LOC   CAP  IPRTE
193.4.201.50    1024    stplan  1201  10%  --
193.4.201.50    1024    stplan  1203  10%  --
193.4.201.70    1024    stplan  1103  10%  --
193.4.201.71    1024    stplan  1104  10%  --
194.5.198.34    3000    stplan  1205  40%  --
200.50.100.47   4000    stplan  1206  40%  197.4.217.47
203.14.212.30   2000    stplan  1204  40%  193.4.202.30
```

2. Display the TCP/IP data links in the database by entering the **rtrv-dlk** command. This is an example of the possible output.

```
rlghncxa03w 04-03-20 21:17:37 GMT EAGLE5 31.4.0
LOC   IPADDR
1103  193.4.201.34
1104  193.4.201.35
1201  193.4.201.30
1203  193.4.201.31
1204  193.4.202.39
1205  194.5.198.74
1206  197.4.217.39
```

3. Place the TCP/IP data link assigned to the TCP/IP node to be removed from the database out of service using the **canc-dlk** command, using the outputs from steps 1 and 2 to obtain the card location (shown in the **LOC** field of both outputs) of the TCP/IP data link to be placed out of service. For this example, the TCP/IP data link to be placed out of service is assigned to card 1104. Enter this command.

   canc-dlk:loc=1104

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

```
rlghncxa03w 04-03-20 21:18:37 GMT EAGLE5 31.4.0
Deactivate Link message sent to card.
```

4. Verify that the TCP/IP data link is out of service - maintenance disabled (OOS-MT-DSBLD) using the **rept-stat-dlk** command. For this example, enter this command.

   rept-stat-dlk:loc=1104

   This is an example of the possible output.

```
Rrlghncxa03w 04-03-20 21:19:37 GMT EAGLE5 31.4.0
DLK    PST           SST        AST
1104   OOS-MT-DSBLD  Unavail    ---
  ALARM STATUS    =
Command Completed.
```

5. Place the card assigned to the TCP/IP node to be removed out of service by using the **rmv-card** command, specifying the card location used in step 3. For this example, enter this command.

   rmv-card:loc=1104

   This message should appear.

```
rlghncxa03w 04-03-20 21:20:37 GMT EAGLE5 31.4.0
Card has been inhibited.
```

6. Remove the TCP/IP node to the database using the **dlt-ip-node** command. For this example, enter this command.

   dlt-ip-node:ipaddr=193.4.201.71:ipappl=stplan:ipport=1024 :loc=1104

   This message should appear.

```
rlghncxa03w 04-03-20 21:21:37 GMT EAGLE5 31.4.0
DLT-IP-NODE: MASP A - COMPLTD
```

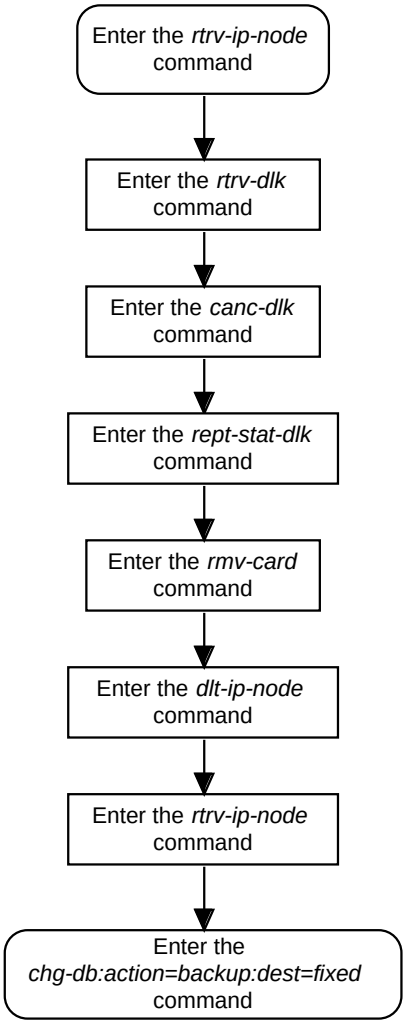
7. Verify the changes using the **rtrv-ip-node** command. This is an example of the possible output.

```
rlghncxa03w 04-03-20 21:22:37 GMT EAGLE5 31.4.0
IPADDR           IPPORT  IPAPPL  LOC   CAP  IPRTE
193.4.201.50     1024    stplan  1201  10%  --
193.4.201.50     1024    stplan  1203  10%  --
193.4.201.70     1024    stplan  1103  10%  --
194.5.198.34     3000    stplan  1205  40%  --
200.50.100.47    4000    stplan  1206  40%  197.4.217.47
203.14.212.30    2000    stplan  1204  40%  193.4.202.30
```

8. Backup the new changes using the **chg-db:action=backup:dest=fixed** command. 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.
```

Flowchart 3-6. Removing a TCP/IP Node



4

Database Transport Access (DTA) Configuration

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This section shows how to configure the Eagle to implement the database transport access (DTA) feature. It also shows how to change the configuration as the requirements of the DTA feature change, and how to disable the DTA feature and the configuration changes that need to be made as a result of disabling the DTA feature.

The procedures shown in this chapter use a variety of commands. If more information on these commands is needed, go to the *Commands Manual* to find the required information.

DTA Feature Overview

This feature allows data to be routed through the SS7 network using the SCCP protocol without relying on TCAP as the upper level protocol.

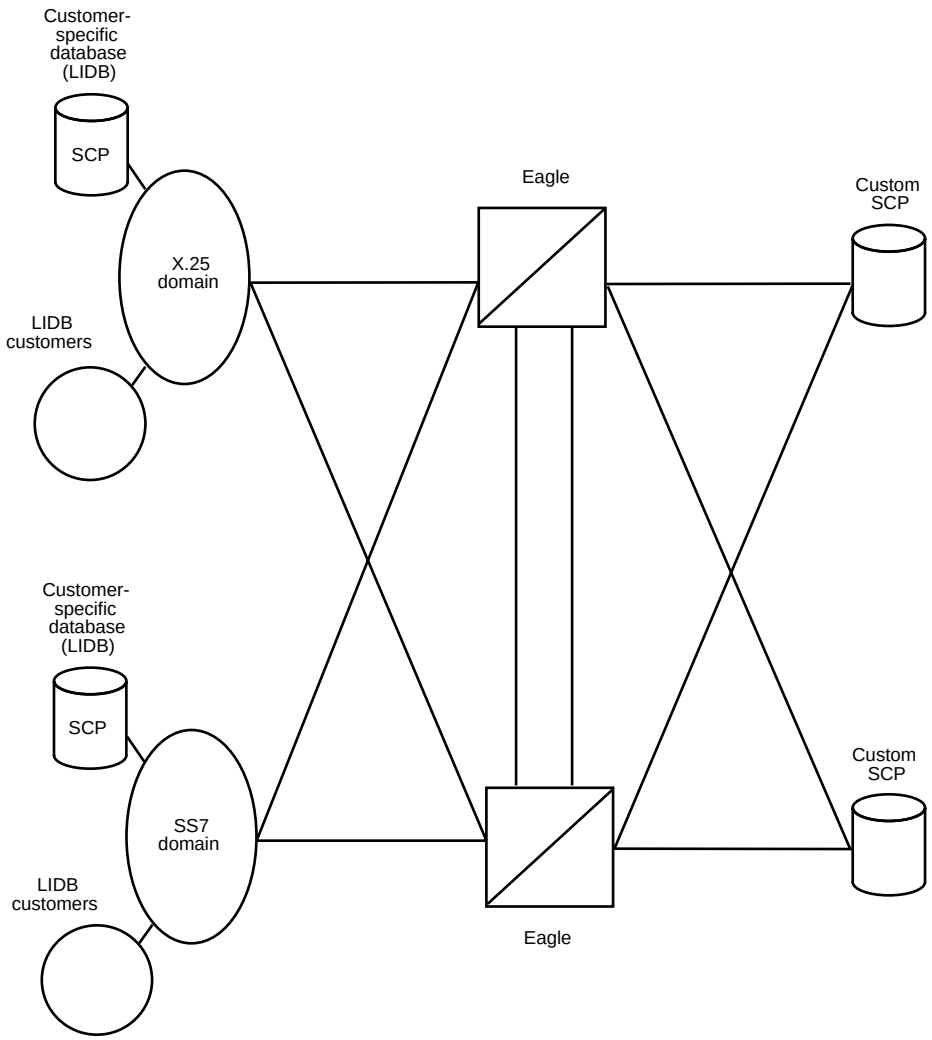
In the case of specialized applications, MSUs containing SCCP and proprietary data must be sent through the network to customer-specific databases. However, these MSUs may need additional processing before being routed to their final destination.

The DTA feature provides a mechanism for the redirection of specific MSUs to a customized database. The Eagle uses gateway screening to qualify incoming MSUs for redirection.

Once gateway screening is passed, the original MSU is encapsulated into a new MSU and routed to its new destination.

Figure 4-1 shows a typical configuration for the DTA feature.

Figure 4-1. Example of Configuration for the DTA Feature



The new routing is specified by a redirection table that specifies the destination point code (DPC) and a new called party address. The routing indicator and the subsystem number are defined within the called party address.

The MSU is then passed to the SCP on the specified linkset where the application data is processed for a customized application.

Once the SCP has processed the user data, the SCP sends the MSU back to the Eagle. At the Eagle, the MSU is routed to its final destination either in the SS7 network or in the X.25 network. The SCP determines the routing for the MSU, providing it in the routing label of the MTP portion of the MSU and in the SCCP called party address.

The SCP also provides new calling party address information to support billing applications. The SCP is considered as the originator (OPC) and the calling party.

If the original destination is located within an X.25 network, the Eagle uses its X.25 gateway feature to route the MSU to the X.25 network. The Eagle selects a logical channel according to an X.25 routing table and sends the MSU on that logical channel.

If the selected logical channel fails, the Eagle uses enhanced network management to reroute the MSU to a new X.25 logical channel. There are up to 1024 logical channels supported on the X.25/SS7 gateway.

As an optional feature, MSUs that are redirected to an SCP can also be copied using the STP LAN feature. This provides a copy of the redirected MSU to be routed over a TCP/IP interface to an adjunct processor. The copied MSU can then be processed for a variety of applications such as usage measurements.

The system does not provide any conversion of the copied MSU; it merely provides a copy of the redirected MSU after encapsulation of the original MSU. The copy is conducted by the LIM transmitting the redirected MSU.

If this feature is used, the Applications Communications Module (ACM) is required. This card provides an ethernet interface supporting TCP/IP applications. For more information regarding the STP LAN feature, see Chapter 3, "STP LAN Configuration."

Functional Description

The principal function within the Eagle for this feature is gateway screening. This feature allows the system to examine all incoming MSUs and determine whether or not they should be allowed into the network. Gateway screening looks at the routing label of the incoming MSU and matches this information with the system's gateway screening tables.

To support the DTA feature, a gateway screening stop action set containing the **`rdct`** (redirect) gateway screening stop action is assigned to the last screen in the screening process. The redirect gateway screening stop action selects the MSU that is redirected for the DTA feature. The screening table for the DTA feature examines the routing label (OPC, DPC) and the SIO fields of the MSU.

Once the MSU has been qualified for redirection by the gateway screening function, the original MSU is encapsulated into the data portion of SCCP within a new SS7 MSU, including all level two and level three headers. A redirect routing table identifies the DPC to be inserted into the routing label of the redirected MSU.

In addition, the called party address in the SCCP portion of the MSU is modified according to the parameters set in the redirect routing table.

The global title function is used to determine which of the SCPs the MSU is routed to. In the event of subsystem failures, SCCP subsystem management determines which of the SCPs is available. The global title function provides the routing information and routes the MSU to the available SCP.

The global title function requires an additional card type, the Application Services Module (ASM), which contains the global title translation tables.

Once the MSU has received its routing information, the MSU can be sent to the appropriate SCP (specified by the Eagle's redirection table and global title). The SCP then processes the user data contained within the encapsulated MSU. Once processing has been completed, the MSU is sent back to the system for final routing.

Discarding MSUs

MSUs can be discarded for these reasons:

- Gateway screening is not available or the MSU does not pass gateway screening.
- The gateway screening redirect function is disabled.
- The MSU is too large to be encapsulated
- The DPC for the gateway screening redirect function is prohibited or congested.
- The Eagle's SCCP subsystem is prohibited.

The discarding of MSUs is controlled by **gwsd** linkset parameter. If the **gwsd=on** parameter is specified for the linkset, and one or more of the conditions in the previous list are encountered, MSUs on the linkset are discarded. If the **gwsd=off** parameter is specified for the linkset, and one or more of the conditions in the previous list are encountered, MSUs on the linkset are routed to its original destination. Each of the MSU discard conditions are discussed in the following paragraphs.

If gateway screening is not available or the MSU does not pass gateway screening, the MSU is discarded. An unsolicited alarm message (UAM) is not generated. This condition is not dependent on the linkset **gwsd** parameter value. The MSGWSDSLIM measurement is pegged.

If the redirect mode is set to 'off' in the redirect function, either with the **chg-gws-redirect:enabled=off** or **dlt-gws-redirect** commands, and the linkset **gwsd=on** parameter is specified for the linkset, the MSU is discarded, MRN 1084 is generated, and the DTAMSULOST measurement is pegged. If the linkset **gwsd=off** parameter is specified for the linkset, the MSU is routed to its original destination, MRN 1084 is not generated, and the DTAMSULOST measurement is not pegged.

If an MSU is too large to be encapsulated, the MSU may be discarded, depending on the linkset's gwsd parameter value. The maximum length of the MSU is dependent on the number of digits contained in the global title address. If the number of digits in the global title address is 1, the maximum number of bytes that can be in the MSU is 250 bytes. If the number of digits in the global title address is 21, the maximum number of bytes that can be in the MSU is 240 bytes. MSUs that are too long are discarded based on the linkset **gwsd** parameter value. If the linkset **gwsd=on** parameter is specified for the linkset, the MSU is discarded, MRN 1084 is generated, and the DTAMSULOST measurement is pegged. If the linkset **gwsd=off** parameter is specified for the linkset, the MSU is routed to its original destination, MRN 1085 is generated, but the DTAMSULOST measurement is not pegged.

If the DPC of the gateway screening redirect function is the DPC of an external node, and if the route to this DPC is prohibited, or if this DPC is available, but the congestion level is above the priority of the MSU (for DTA, this priority is always 0), the MSU will not be encapsulated and will be discarded or routed according to the linkset's **gwsd** parameter value. If the linkset's **gwsd** value is **on**, the MSU is discarded, MRN 1084 is generated, and the DTAMSULOST measurement is pegged. If the linkset's **gwsd** value is **off**, the MSU is routed to its original destination, MRN 1084 is not generated, and the DTAMSULOST measurement is not pegged.

If the DPC for the gateway screening redirect function is the Eagle's point code, the MSU is sent to the Eagle's SCCP subsystem for GTT processing. If the Eagle's SCCP subsystem is prohibited, the MSU will not be encapsulated and will be discarded or routed according to the linkset's **gwsd** parameter value. If the linkset's **gwsd** value is **on**, the MSU is discarded, MRN 1084 is generated, and the DTAMSULOST measurement is pegged. If the linkset's **gwsd** value is **off**, the MSU is routed to its original destination, MRN 1084 is not generated, and the DTAMSULOST measurement is not pegged.

MRNs 1084 and 1085 are discussed in greater detail in the *Maintenance Manual*.

Measurements

Two measurements are provided to indicate the number of MSUs discarded: DTAMSULOST and MSGWSDSLIM.

The DTAMSULOST measurement counts the number of MSUs discarded because gateway screening is not available. This can be caused by a number of events, including congestion in the system.

The MSGWSDSLIM counts the number of MSUs discarded because the received MSU was too large to be encapsulated or because the redirect function was disabled.

DTAMSULOST and MSGWSDSLIM are explained in greater detail in the *Maintenance Manual*.

Messages Containing ITU Point Codes

MSUs containing ITU point codes can be redirected by encapsulating the unmodified ITU MSU and applying the ANSI DPC and GTT data contained in the **rtrv-gws-redirect** output, thus creating an ANSI MSU. This ANSI MSU is routed to its final destination, most likely an SCP. When this MSU reaches its final destination, it is decoded. The subsystem number in the calling party address is examined. The subsystem number in the called party address determines whether the MSU is processed as an ANSI MSU or an ITU MSU. If the subsystem number is 0, the MSU is an ANSI MSU. If the subsystem number is 250, the MSU is an ITU MSU (an MSU containing either a ITU-I or 14-bit ITU-N point code). If the subsystem number is 251, the MSU is an ITU-N24 MSU (an MSU containing a 24-bit ITU-N point code).

Summary of the Gateway Screening Redirect Table Commands

The following set of commands is used to administer the gateway screening redirect table.

Table 4-1. Commands for the Gateway Screening Redirect Table

Command	Explanation and action
ent-gws-redirect	The **ent-gws-redirect** command is used to enter the routing table for redirected MSUs.
chg-gws-redirect	The **chg-gws-redirect** command is used to modify the existing redirect routing table.
dlt-gws-redirect	The **dlt-gws-redirect** command is used to delete the redirect table from the database.
rtrv-gws-redirect	The **rtrv-gws-redirect** command is used to display the parameters of an existing redirect routing table.

X.25/SS7 Gateway Description

The X.25/SS7 gateway feature allows SCCP traffic to be routed over X.25 networks. X.25 protocol data units (PDUs) received over X.25 links are converted to SS7 MSUs for routing over the SS7 networks.

This protocol conversion does not affect the level four data. SCCP remains intact, with no conversion. This feature can be used for a variety of applications using the SCCP protocol over X.25 networks.

In addition to protocol conversion, the Eagle also provides route management of X.25 logical channels. Traffic destined to a failed logical channel is diverted to an alternate route without loss of data. The Eagle uses SS7 network management procedures to divert traffic and maintain data integrity.

The Eagle supports 1024 logical channels. All X.25 entities are assigned an SS7 point code and SCCP subsystem number. The individual X.25 connections are assigned X.25 addresses, as well as alias point codes.

These are then mapped in the routing table to logical channels. This allows X.25 messages (which use connection-oriented procedures) to be routed and maintained in the SS7 network (which uses connectionless procedures).

Messages originating from the SS7 network destined for the X.25 network can be routed by the DPC assigned to the X.25 entity in the X.25 routing table (called Xpc). This allows SS7 entities to address the X.25 network without knowing X.25 addresses.

The X.25 routing table provides the X.25 address of each X.25 entity, an SS7 point code for each of the X.25 entities, the connection type used by the X.25 route, a subsystem number for SCCP routing, the method of routing to be used (Xpc or normal SS7 routing) and the logical channel to be used between each of the specified X.25 entities and the SS7 entities.

Routing by the X.25 point code assignment allows many SS7 entities to communicate to one X.25 entity without each SS7 entity having to know the X.25 address, and allows all SS7 entities to connect to the X.25 entity over one logical channel.

This provides for easier routing table administration. Without this capability, every possible connection between X.25 and SS7 entities would have to be defined in the X.25 routing table.

For more information on the X.25/SS7 gateway feature, see Chapter 2, “X.25 Gateway Configuration.”

X.25/SS7 Gateway Routing

To support the gateway function, the entities within the X.25 network must be assigned an SS7 point code. This point code is assigned in the X.25 routing table using administration commands.

The routing table specifies the X.25 address, the SS7 point code assigned to both the X.25 entities and any SS7 entities that need to connect to X.25, a subsystem number for the X.25 entities, and the logical channel to be used on the X.25 link for connections between the specified entities.

Each Eagle connection to the X.25 network is assigned an X.25 address as well. This allows routing of data from the X.25 network to the SS7 network. An SCCP subsystem number is assigned to the X.25 destination to enable global title translation to the X.25 entity.

Logical channels are also assigned in the X.25 routing table. Each X.25 entity must be assigned an SS7 destination to allow logical channel assignments to be made for the connection.

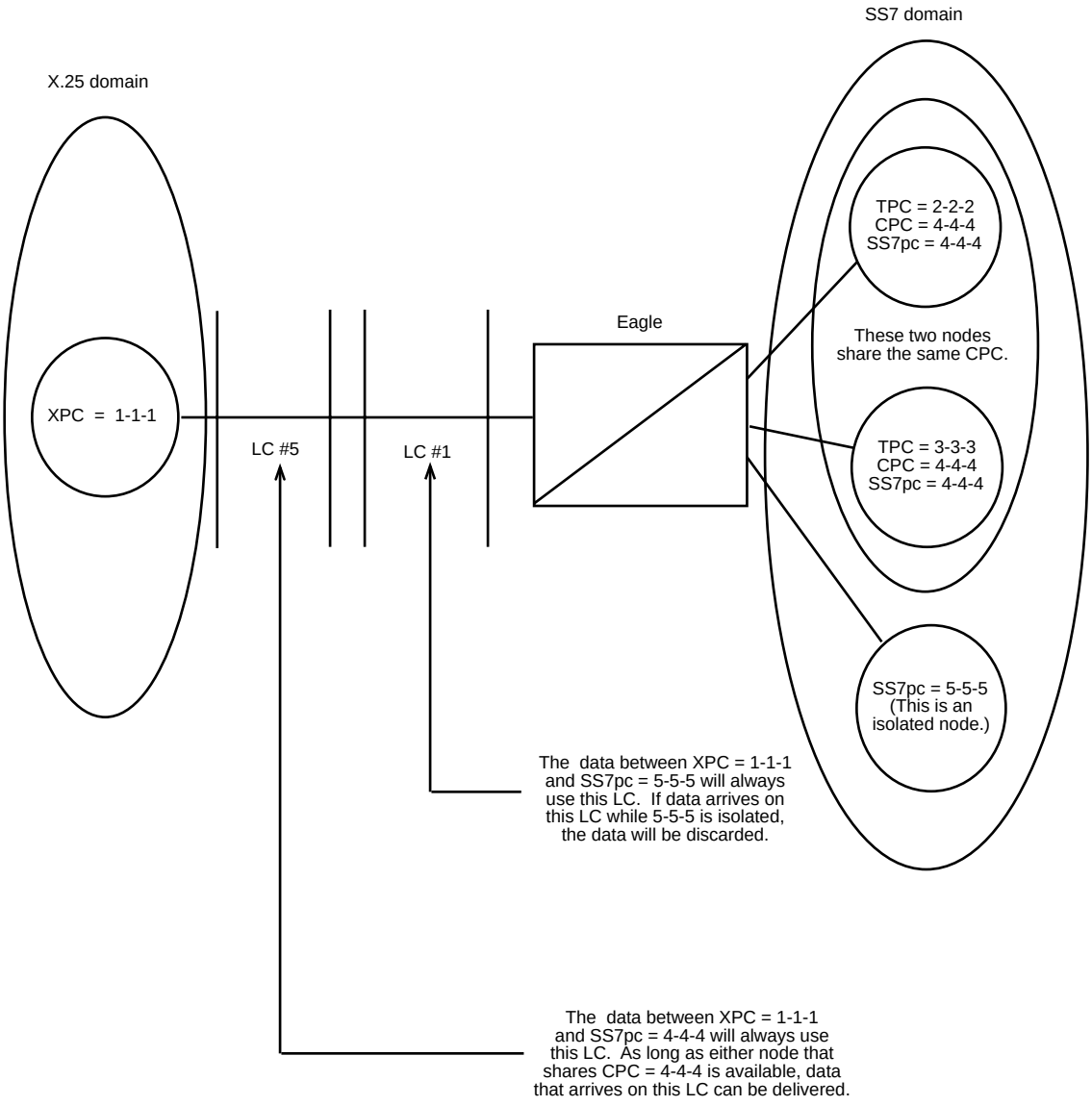
If there are to be several SS7 entities connecting to the X.25 entity over the same logical channel, a 'wild card' entry can be made in the routing table. This allows any SS7 entity to establish a connection over the specified logical channel, but only one connection can be made at any one time.

When data arrives on a LC destined for a node in the SS7 domain, the current X.25 gateway layer checks to see if the node is isolated. If so, the data is discarded.

This is shown in Figure 4-2. This figure also shows that it is possible to connect an Xpc to an SS7 point code (SS7pc) through an LC, where the SS7pc is a capability point code (CPC). This technique provides a higher availability of service to the Xpc.

NOTE: A CPC is a group of individual nodes, where each node is identified by an individual point code. Collectively, when these nodes are grouped by point codes into a CPC, this group of nodes provides a capability. In this case, the capability is global titling.

Figure 4-2. X.25 Routing to a CPC



Routing Management Mapping

The X.25/SS7 gateway also provides management procedures for failed X.25 logical channels. This feature allows traffic destined for failed logical channels to be rerouted to an alternate route.

When configuring route management mapping, called logical channel to network management mapping, or LC2NM, it must be determined if the X.25 entity will be expecting associated queries and responses to use the same logical channel or if they may be assigned to different logical channels.

If associated queries and responses can be received over different logical channels, then failure recovery through alternate routing can be supported.

If route management mapping is enabled, and the X.25 entity can receive associated queries and responses on different logical channels, data destined to a failed logical channel is diverted by forced rerouting procedures in the Eagle to the alternate route. All other associated traffic is diverted as well, and the logical channels to which associated traffic is assigned are made unavailable.

If the X.25 entity expects all associated queries and responses to be received on the same logical channel, traffic is still diverted to the alternate route if the logical channel fails. Forced rerouting procedures are not needed in this case.

If the alternate route is not available, the Eagle uses level three network management procedures. For example, an X.25 Link Interface Module (LIM) determines a logical channel has failed. Network management diverts traffic away from the failed logical channel to a defined terminate route.

No network management messages are sent outside the Eagle, and therefore should have no adverse effects on the SS7 network. The Eagle uses SS7 network management procedures in software to divert traffic from the failed X.25 signaling link to another X.25 signaling link.

If route management mapping is not enabled on the X.25 linkset, there is no indication of logical channel failures. An unsolicited alarm message (UAM) output is created, which provides a textual message to indicate failure of an X.25 logical channel. All traffic destined to the failed logical channel is discarded.

If X.25 level 2 should fail within the X.25 LIM, all X.25 routes associated with the LIM are considered unavailable and forced rerouting procedures are used.

In either of the above cases, when the logical channel is restored to service, network management will divert traffic back to the newly restored logical channel.

SCCP Subsystem Management

The Eagle provides SCCP subsystem management for all transactions sent to an SCP. In the case of the DTA feature, subsystem management is provided for the customized SCP. The customized SCP is deployed in a quad configuration adjacent to the Eagle. The links connecting the Eagle and the SCP must be configured in such a way to support SCCP subsystem management.

The application supported by the dual SCPs is duplicated in both entities. The applications can be configured in one of the following two modes: dominant or load-shared.

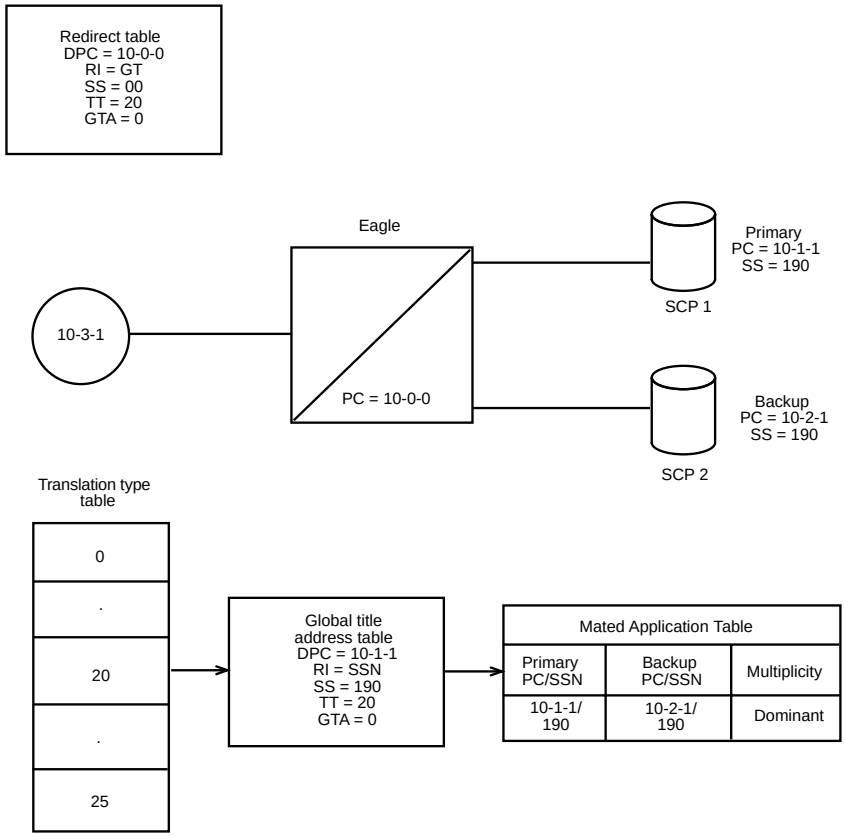
When configured as dominant, one SCP is configured to receive all queries. This assignment is made in system routing tables. In the event the dominant SCP fails, traffic is diverted by SCCP subsystem management to the mate application.

If load sharing is configured, both SCPs will receive queries. SCCP ensures that all associated transactions are sent to the same SCP. Load sharing allows traffic to be distributed to both SCPs evenly, preventing congestion at one SCP.

If there is a failure in a load sharing configuration, all traffic is diverted by SCCP subsystem management to the mate SCP. When the failed SCP is restored, the system resumes load sharing.

Figure 4-3 shows a system configured with primary and backup SCPs.

Figure 4-3. Configuration of GTT for Routing Management



System Requirements

There are no specific hardware requirements to support the DTA feature. However, if the following specific situations exist, the following cards are required.

Table 4-2. Cards Required in Specific Situations

If	Required Card
Interworking with an X.25 network with the OCU interface	LIM-OCU*
Interworking with an X.25 network with the DSOA interface	LIM-DS0*
Interworking with an X.25 network with the V.35 interface	LIM-V.35*
STPLAN feature is used	Application Communication Module
	DCM
Subsystem management is used	Application Service Module
	TSM-256
	TSM-512
	TSM-768
	TSM-1024
	DSM
* A Link Interface Module with the AINF interface (labeled as either LIM or EILA) can also be used. The AINF interface can be configured as either an OCU, DS0, or V.35 interface.	

Configuring the Eagle for the DTA Feature

This procedure is used to add all the items to the Eagle's database that are necessary to implement the DTA feature.

The following features must be turned on:

Gateway screening

Global title translation

X.25/SS7 gateway feature

Verify that these features are turned on by entering the **rtrv-feat** command. If any of these features are turned off, they can be turned on by entering one of the following commands:

chg-feat:gws=on – if the gateway screening feature is off (**GWS = off** in the **rtrv-feat** command output)

chg-feat:gtt=on – if the global title translation feature is off (**GTT = off** in the **rtrv-feat** command output)

chg-feat:x25g=on – if the X.25 gateway feature is off (**X25G = off** in the **rtrv-feat** command output)

NOTE: Once the gateway screening, X.25 gateway, and global title translation features are turned on with the chg-feat command, they cannot be turned off.

The following items must be provisioned in the database before the system can be provisioned for the DTA feature:

- LIMs assigned to the **ss7gx25** application and LIMs assigned to the **ss7ansi** application that are necessary to implement the DTA feature – "Adding an X.25 LIM" on page 2-14 and "Adding an SS7 LIM" procedure in the *Database Administration Manual – System Management*. The LIMs can be verified by entering the **rtrv-card** command.
- SCCP cards assigned to either the **sccp** or **vsccp** applications that are necessary to implement the DTA feature - Adding an SCCP Card procedure in the *Database Administration Manual – Global Title Translation*. The SCCP cards can be verified by entering the **rtrv-card** command.
- If you wish to redirect MSUs on IP cards (cards running the **iplim**, **iplimi**, **ss7ipgw**, or **ipgwi** applications), then IP cards assigned to the **iplim**, **iplimi**, **ss7ipgw**, or **ipgwi** applications must be in the database - see the Adding an IP Card procedure in the *Database Administration Manual - IP^7 Secure Gateway*. The IP cards can be verified by entering the **rtrv-card** command. If MSUs on IP cards are being redirected, the IP cards must be assigned to TALI sockets or SCTP associations, and application routing keys, according to the application assigned to the IP card. The IP configuration can be verified by entering these commands, as appropriate: **rtrv-appl-rtkey**, **rtrv-appl-sock**, **rtrv-as**, **rtrv-asp**, **rtrv-assoc**, **rtrv-ip-lnk**. Perform

the procedures in Chapter 3, "IP^7 Secure Gateway Configuration Procedures" of the *Database Administration Manual - IP^7 Secure Gateway* to update the IP^7 Secure Gateway Configuration as necessary.

- ANSI destination point codes (DPCs) assigned to the X.25 domain and DPCs assigned to the SS7 domain that are necessary to implement the DTA feature - " Adding a Destination Point Code" procedure in the *Database Administration Manual – SS7*. The DPCs can be verified by entering the **rtrv-dstn** command.
- X.25 destinations that are necessary to implement the DTA feature – see "Adding an X.25 Gateway Destination" on page 2-32. The X.25 destinations can be verified by entering the **rtrv-x25-dstn** command.
- Linksets whose adjacent point codes (APCs) are in the X.25 domain and linksets whose APCs are in the SS7 domain that are necessary to implement the DTA feature – see one of these procedures: " Adding an SS7 Linkset" procedure in the *Database Administration Manual – SS7*, "Adding an X.25 Linkset" on page 2-47, " Changing an SS7 Linkset" procedure in the *Database Administration Manual – SS7*, or "Changing an X.25 Linkset" on page 2-65. The APCs of these linksets must be ANSI point codes. The linksets can be verified by entering the **rtrv-ls** command. The linksets whose traffic is to be redirected by the DTA feature, must have gateway screening allowed (specify the **gwsa=on** parameter) and must reference a gateway screening screen set. The name of the screen set is shown in the **SCRN** field of the **rtrv-ls** command output. The name of the screen set is specified by the **scrn** parameter in either the **ent-ls** or **chg-ls** commands. The screen set referenced by the linkset must be in the database. All gateway screening entities must be in the database before the necessary linkset can be added to the database or changed to reference the necessary screen set. See the "Gateway Screening Configuration" section on page 4-16 to make sure that the necessary gateway screening entities are in the database for this feature. To enhance the reliability of the DTA feature, the gateway screening message discard function should be turned on with the **gwsd=on** parameter.
- Signaling links assigned to linksets containing X.25 APCs and signaling links assigned to linksets containing SS7 APCs that are necessary to implement the DTA feature – " Adding an SS7 Signaling Link" procedure in the *Database Administration Manual – SS7* and "Adding an X.25 Signaling Link" on page 2-76. The APCs of the linksets must be ANSI point codes. The signaling links can be verified by entering the **rtrv-slk** command.
- Routes assigned to linksets containing X.25 APCs and routes assigned to linksets containing SS7 APCs that are necessary to implement the DTA feature - "Adding a Route" procedure in the *Database Administration Manual – SS7*. The DPCs of the routes and the APCs of the linksets must be ANSI point codes. The routes can be verified by entering the **rtrv-rte** command.
- X.25 routes that are necessary to implement the DTA feature – see "Adding an X.25 Route" on page 2-101. The X.25 routes can be verified by entering the **rtrv-x25-rte** command.

Gateway Screening Configuration

The DTA feature uses gateway screening to select the messages that are redirected. A gateway screening stop action set containing the **rdct** (redirect) gateway screening stop action must be assigned to one of these gateway screening entities where the gateway screening process stops (the NSFI of the screen is STOP).

- Allowed OPC
- Blocked OPC
- Allowed SIO
- Allowed DPC
- Blocked DPC
- Allowed Destination Field
- Allowed ISUP Message Type

Enter the **rtrv-gws-actset** command to display the gateway screening stop action sets in the database. The database contains one gateway screening stop action set that contain the **rdct** gateway screening stop action as shown in bold in the example output. This gateway screening stop action is always in the database and cannot be changed or removed.

```
rlghncxa03w 04-03-07 00:17:31 GMT Rel 31.4.0
ACT  ACT    ACT  ACT  ACT  ACT  ACT  ACT  ACT  ACT  ACT  ACT
ID   NAME   1    2    3    4    5    6    7    8    9    10
--   ------ ---- ---- ---- ---- ---- ---- ---- ---- ---- ----
1    copy   copy
2    rdct   rdct
3    cr     copy rdct

GWS action set table is (3 of 16) 19% full
```

For more information on configuring gateway screening stop action sets, see the "Configuring Gateway Screening Stop Action Sets" procedure in the *Database Administration Manual - Gateway Screening*.

To verify that the screen set being used with the gateway screening redirect function, enter the **rtrv-scrset:scrn=<screen set name assigned to the linkset being used>** command. If the last screen in the screen set is OPC, BLKOPC, SIO, DPC, BLKDPC, DESTFLD, or ISUP, enter the gateway screening retrieve command corresponding to the last screen in the screen set, with the screening reference name shown in the **rtrv-scrset** output. For example, if the last screen in the screen set is ISUP, enter the **rtrv-scr-isup** command with the **sr** parameter. If the NSR/ACT value shown in the retrieve output is a gateway

screening stop action set name that contains the **rdct** stop action, shown in the **rtrv-gws-actset** output, this screen set can be used for the gateway screening redirect function. If you wish to use this screen set, but the **rdct** gateway screening stop action is not assigned to the last screen in the screen set, go to the *Database Administration Manual - Gateway Screening* and perform one of these procedures, as appropriate, to assign the **rdct** gateway screening stop action to the last screen in the screen set.

- "Changing an Allowed ISUP Message Type Screen"
- "Changing an Allowed Affected Destination Field Screen"
- "Changing a Blocked DPC Screen"
- "Changing an Allowed DPC Screen"
- "Changing an Allowed SIO Screen"
- "Changing a Blocked OPC Screen"
- "Changing an Allowed OPC Screen"

If the last screen in the screen set is CGPA, TT, CDPA, or AFTPC, it is recommended that either this screen set is changed so that the last screen in the screen set is OPC, BLKOPC, SIO, DPC, BLKDPC, DESTFLD, or ISUP with the **rdct** gateway screening stop action, or that another screen set with OPC, BLKOPC, SIO, DPC, BLKDPC, DESTFLD, or ISUP as the last screen in the screen set with the **rdct** gateway screening stop action be used. To find another screen set, enter the **rtrv-scrset** command, then enter the **rtrv-scrset** command again with one of the screen set names shown in the first **rtrv-scrset** output. If the last screen in the screen set is OPC, BLKOPC, SIO, DPC, BLKDPC, DESTFLD, or ISUP, enter the gateway screening retrieve command corresponding to the last screen in the screen set, with the screening reference name shown in the **rtrv-scrset** output. Repeat this entering the **rtrv-scrset** commands until a desirable screen set is found. If a desirable screen set cannot be found, either add a new screen set, or change the existing screen set. To add a new screen set, go to the *Database Administration Manual - Gateway Screening* and perform one of these procedures, as appropriate, and assign the **rdct** gateway screening stop action to the last screen in the screen set.

- "Adding an Allowed ISUP Message Type Screen"
- "Adding an Allowed Affected Destination Field Screen"
- "Adding a Blocked DPC Screen"
- "Adding an Allowed DPC Screen"
- "Adding an Allowed SIO Screen"
- "Adding a Blocked OPC Screen"
- "Adding an Allowed OPC Screen"

If you wish to change the existing screen set, go to the *Database Administration Manual - Gateway Screening* and perform one of these procedures, as appropriate. Make sure the last screen in the screen set has the **rdct** gateway screening stop action assigned.

- "Changing an Allowed ISUP Message Type Screen"
- "Changing an Allowed Affected Destination Field Screen"
- "Changing a Blocked DPC Screen"
- "Changing an Allowed DPC Screen"
- "Changing an Allowed SIO Screen"
- "Changing a Blocked OPC Screen"
- "Changing an Allowed OPC Screen"

Verify that the necessary gateway screening entities have been configured with the required gateway screening stop action set, by entering the appropriate gateway screening retrieve command specifying the **actname** parameter with the gateway screening stop action name shown in the **rtrv-gws-actset** command output.

- **rtrv-scr-opc:actname=rdct** – to display the allowed OPC screens
- **rtrv-scr-blkopc:actname=rdct** – to display the blocked OPC screens
- **rtrv-scr-sio:actname=rdct** – to display the allowed SIO screens
- **rtrv-scr-dpc:actname=rdct** – to display the allowed DPC screens
- **rtrv-scr-blkdpc:actname=rdct** – to display the blocked DPC screens
- **rtrv-scr-destfld:actname=rdct** – to display the allowed destination field screens
- **rtrv-scr-isup:actname=rdct** – to display the allowed ISUP message type screens

If a gateway screening entity is configured to redirect, the entry **STOP** appears in the **NSFI** field, the **NSR/ACT** field contains the name of the gateway screening stop action set specified in the gateway screening retrieve command (see the following example).

```
rlghncxa03w 04-03-07 00:17:31 GMT Rel 31.4.0
SCREEN = ALLOWED OPC
SR    NI       NC       NCM      NSFI    NSR/ACT
opc1  010      010      010      STOP    RDCT
opc1  010      010      012      STOP    RDCT
```

If the necessary gateway screening entities are not in the database, add them to the database using one of these procedures in the *Database Administration Manual - Gateway Screening*.

- "Adding an Allowed ISUP Message Type Screen"
- "Adding an Allowed Affected Destination Field Screen"
- "Adding a Blocked DPC Screen"
- "Adding an Allowed DPC Screen"
- "Adding an Allowed SIO Screen"
- "Adding a Blocked OPC Screen"
- "Adding an Allowed OPC Screen"

If the necessary gateway screening entities are in the database, use one these procedures in the *Database Administration Manual - Gateway Screening* to assign the redirect gateway screening stop action to them.

- "Changing an Allowed ISUP Message Type Screen"
- "Changing an Allowed Affected Destination Field Screen"
- "Changing a Blocked DPC Screen"
- "Changing an Allowed DPC Screen"
- "Changing an Allowed SIO Screen"
- "Changing a Blocked OPC Screen"
- "Changing an Allowed OPC Screen"

CAUTION: When Gateway Screening is in the screen test mode, as defined by the linkset parameters `gwsa=off` and `gwsm=on`, the gateway screening action in the gateway screening stop action set specified by the `actname` parameter of the gateway screening screen set at the end of the gateway screening process will be performed.

A screen set is required to start the screening process. Enter the **`rtrv-scrset`** command to verify that the necessary screen set is in the database. If the necessary screen set is not in the database, use the "Adding a Screen Set" in the in the *Database Administration Manual - Gateway Screening* and add the necessary screen set to the database. If the necessary screen set is in the database and the next screening function identifier (NSFI) needs to be changed, use the "Changing a Screen Set" in the in the *Database Administration Manual - Gateway Screening* to change the NSFI of the screen set.

Canceling the RTRV-GTT, RTRV-MAP, and RTRV-GTA Commands

Because the **rtrv-gtt**, **rtrv-map**, and **rtrv-gta** commands used in this procedure can output information for a long period of time, the **rtrv-gtt**, **rtrv-map**, and **rtrv-gta** commands can be canceled and the output to the terminal stopped. There are three ways that the **rtrv-gtt**, **rtrv-map**, and **rtrv-gta** commands can be canceled.

- Press the **F9** function key on the keyboard at the terminal where the **rtrv-gtt**, **rtrv-map**, or **rtrv-gta** commands were entered.
- Enter the **canc-cmd** without the **trm** parameter at the terminal where the **rtrv-gtt**, **rtrv-map**, or **rtrv-gta** commands were entered.
- Enter the **canc-cmd:trm=<xx>**, where **<xx>** is the terminal where the **rtrv-gtt**, **rtrv-map**, or **rtrv-gta** commands were entered, from another terminal other that the terminal where the **rtrv-gtt**, **rtrv-map**, or **rtrv-gta** commands were entered. To enter the **canc-cmd:trm=<xx>** command, the terminal must allow Security Administration commands to be entered from it and the user must be allowed to enter Security Administration commands. The terminal's permissions can be verified with the **rtrv-secu-trm** command. The user's permissions can be verified with the **rtrv-user** or **rtrv-secu-user** commands.

For more information about the **canc-cmd** command, go to the *Commands Manual*.

Procedure

1. Verify that the gateway screening redirect function is disabled by entering the **rtrv-gws-redirect** command. The following is an example of the possible output.

```
rlghncxa03w 04-03-07 00:17:31 GMT Rel 31.4.0

ENABLED DPC          RI  SSN  TT     GTA

Redirect function data is not provisioned.
```

If the gateway screening redirect function is enabled, the **ent-gws-redirect** command in step 2 cannot be executed.

2. Provision the gateway screening redirect function by entering the following command. This example is using the destination point code (**dpc**) 009-002-001, the routing indicator (**ri**) GT, the subsystem number (**ssn**) 15, the global title translation type (**tt**) 225, the global title address (**gta**) 9105551212, and the **enabled** parameter is equal to **on**.

ent-gws-redirect:dpc=009-002-001:ri=gt:ssn=15:tt=225 :gta=9105551212:enabled=on

- **:dpc** – The destination point code that the message is being redirected to. The point code used for this parameter must be in the database as a destination point code or must be the STP's site point code.

If you wish to use a destination point code as a value for this parameter, verify that this destination point code is in the database by entering the **rtrv-dstn:dpc=009-002-001** command. The following is an example of the possible output.

```
rlghncxa03w 04-03-07 00:18:31 GMT Rel 31.4.0
DPCA        CLLI        BEI ELEI  ALIASI   ALIASN      DOMAIN
009-002-001 dtaclli     yes ---   -----    ----------  X25

            SPC          NCAI
            -----------  no

Destination table is (11 of 2000) 1% full
```

If the value for this parameter is a destination point code, it must have at least one route assigned to it. Verify that the destination point code has a route assigned to it by entering the **rtrv-rte:dpc=009-002-001** command. The following is an example of the possible output.

```
rlghncxa03w 04-03-07 00:19:31 GMT Rel 31.4.0
DPCA        ALIASI      ALIASN     CLLI        LSN      RC APC
009-002-001 ----------- ---------- dtaclli     ls02      0 009-002-001
```

If you wish to use the STP's point code for the **dpc** parameter, enter the **rtrv-sid** command to find the STP's point code. The following is an example of the possible output.

```
rlghncxa03w 04-03-07 00:20:31 GMT Rel 31.4.0
PCA              PCI             PCN           CLLI             PCTYPE
144-201-001      0-123-1         11211         rlghncxa03w      ANSI

CPCA
002-002-002       002-002-003       002-002-004      002-002-005
002-002-006       002-002-007       002-002-008      002-002-009
004-002-001       004-003-003       144-212-003

CPCA (LNP)
005-005-002      005-005-004      005-005-005

CPCI
1-001-1           1-001-2           1-001-3          1-001-4
1-002-1           1-002-2           1-002-3          1-002-4
2-001-1           7-222-7

CPCN
02091             02092             02094             02097
02191             02192             11177
```

The system's point code is shown in the **PCA** field of the **rtrv-sid** command output.

- **:ri** – The CDPA routing indicator for the redirected message. If the routing indicator is **ssn**, the DPC and SSN shown in the output of the **rtrv-gws-redirect** command, is the final destination of the redirected message. If the routing indicator is **gt**, additional global title translation is required to determine the final destination of the redirected message.
- **:ssn** – The CDPA subsystem to which the redirected message is bound for
- **:tt** – The CDPA translation type of the global title translation
- **:gta** – The CDPA global title translation address
- **:enabled** – Whether the messages that have passed GWS are to be redirected (**on**) or discarded based on the linkset's **gwsd** parameter value (**off**). If the **enabled** parameter is **off** and the linkset's **gwsd** value is **on**, the MSU is discarded, MRN 1084 is generated, and the DTAMSULOST measurement is pegged. If the **enabled** parameter is **off** and the linkset's **gwsd** value is **off**, the MSU is routed to its original destination, MRN 1084 is not generated, and the DTAMSULOST measurement is not pegged.

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

```
rlghncxa03w 04-03-07 00:21:31 GMT Rel 31.4.0
ENT-GWS-REDIRECT: MASP A - COMPLTD
```

---

3. Verify the changes by entering the **rtrv-gws-redirect** command. The following is an example of the possible output.

```
rlghncxa03w 04-03-07 00:22:31 GMT Rel 31.4.0

ENABLED DPC          RI  SSN  TT     GTA
on      009-002-001  GT  15   225    9105551212
```

---

4. Verify if the enhanced global title translation feature is on or off by entering the **rtrv-feat** command. If the enhanced global title translation feature is on, the **EGTT** field should be set to **on**.

NOTE: The rtrv-feat command output contains other fields that are not used by this procedure. If you wish to see all the fields displayed by the rtrv-feat command, see the rtrv-feat command description in the *Commands Manual*.

If the enhanced global title translation feature is on, the **rtrv-tt**, **ent-tt**, **rtrv-gtt**, and **ent-gtt** commands cannot be executed. Instead, the **rtrv-gttset**, **ent-gttset**, **rtrv-gttsel**, **ent-gttsel**, **rtrv-gta**, and **ent-gta** are used to verify and configure the global title translation data.

NOTE: If the enhanced global title translation is on, skip steps 5, 6, and 7, and go to step 8 on page 4-24.

5. Verify the global title translation data in the database for the translation type specified in the output of step 3 on page 4-22 by entering the **rtrv-gtt** command with the **type** and **gta** parameters, specifying the values shown in step 3 on page 4-22 in the **TT** and **GTA** fields of the **rtrv-gws-redirect** command output. For this example, enter this command.

   rtrv-gtt:type=225:gta=9105551212

   The following is an example of the possible output.

```
rlghncxa03w 04-03-07 00:24:31 GMT Rel 31.4.0
TYPEA  TTN        NDGT
225    DTA7       10
GTT TABLE IS 10% FULL.    (27000 of 269999)

START GTA             END GTA               XLAT   RI   PCA          SSN  NGT
9105551212                                  DPCSSN GT   009-002-001   15  ---
```

   If the global title translation data is shown in the **rtrv-gtt** comand output, no further action is necessary. Go to step 19 on page 4-28.

---

6. Verify that the global title translation type shown in the output of step 3 on page 4-22, in the **TT** field, is in the database by entering the **rtrv-tt** command with the **typea** parameter. In this example, the global title translation type is **225**. The translation type is shown in the **TYPEA** field. For this example, enter this command.

   rtrv-tt:typea=225

   The following is an example of the possible output.

```
rlghncxa03w 04-03-07 00:25:31 GMT Rel 31.4.0
TYPEA  TTN        NDGT
225    DTA7       10
```

   If the translation type is in the database, no action is necessary. Go to step 13 on page 4-25.

---

7. Add the global title translation type to the database by entering the **ent-tt** command. In this example, the translation type (**tt**) is **225**, the translation type name (**ttn**) is **dta7** and the number of digits in the global title address (**ndgt**) is **10**.

   ent-tt:type=225:ttn=dta7:ndgt=10

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

```
rlghncxa03w 04-03-07 00:26:31 GMT Rel 31.4.0
ENT-TT: MASP A - COMPLTD
```

NOTE: If the enhanced global title translation is off, skip steps 8, 9, 10, 11, and 12, and go to step 13 on page 4-25.

8. Verify that the global title translation type specified in the output of step 3 on page 4-22, in the **TT** field, is in the database by entering the **rtrv-gttsel** command with the **tt** parameter.

For this example, enter the **rtrv-gttsel:tt=225** command. The following is an example of the possible output.

```
rlghncxa03w 04-03-07 00:27:31 GMT Rel 31.4.0
GTIA  TT   NP       NAI   GTTSN
2     225  --       ---   dta7
```

If the translation type is not in the database, this message is displayed in the scroll area of the terminal display.

```
No GTT Selectors matching the specified criteria were found.
```

If the translation type is shown in the **rtrv-gttsel** command output, go to step 9 and verify that the global title address data is in the database.

If the translation type is not shown in the **rtrv-gttsel** command output, skip step 9 and go to step 10 on page 4-25.

---

9. The new global title address data must be in the database. Verify the global title translation data in the database for the translation type specified in the output of step 8 by entering the **rtrv-gta** command with the **GTTSN** value shown in the output of step 8, and with the **GTA**, **SSN**, and **DPC** values shown in the output of step 3 on page 4-22. For this example, enter this command.

rtrv-gta:gttsn=dta7:gta=9195551212:ssn=15:pca=009-002-001

The following is an example of the possible output.

```
rlghncxa03w 04-03-07 00:28:31 GMT Rel 31.4.0
GTTSN      NETDOM  NDGT
dta7       ansi    10
GTA TABLE IS   1 % FULL  (17 of 269999)

START GTA  END GTA    XLAT   RI  PCA         SSN CCGT NTT
```

If the required global title translation data is shown in the **rtrv-gta** comand output, no further action is necessary. Go to step 19 on page 4-28.

If the required global title translation data is not shown in the **rtrv-gta** comand output, go to step 13 on page 4-25.

---

10. If the global title translation type is not shown in the **rtrv-gttsel** command output in step 8 on page 4-24, display the GTT sets in the database with the **rtrv-gttset** command. The following is an example of the possible output.

```
rlghncxa03w 04-03-07 00:29:31 GMT Rel 31.4.0
GTTSN      NETDOM  NDGT
setans000  ansi    6
lidb       ansi    10
t800       ansi    6
setint000  itu     15
imsi       itu     15
abcd12345  itu     12
setnat002  itu     15
```

NOTE: If the required global title translation type is to be added to an existing GTT set, skip this step and go to step 12.

11. Add a new GTT set to the database with the **ent-gttset** command. For this example, enter this command.

ent-gttset:gttsn=dta7:netdom=ansi:ndgt=10

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

```
rlghncxa03w 04-03-07 00:30:31 GMT Rel 31.4.0
GTT Set table is (  8 of 950)  1% full
ENT-GTTSEL: MASP A - COMPLTD
```

---

12. Add the required translation type to either an existing GTT set shown in step 10 or to the new GTT set added in step 11 with the **ent-gttsel** command. For this example, enter this commands.

ent-gttsel:gtia=2:tt=225:gttsn=dta7

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

```
rlghncxa03w 04-03-07 00:31:31 GMT Rel 31.4.0
GTT Selector table is (114 of 1024) 11% full
ENT-GTTSEL: MASP A - COMPLTD
```

---

13. Verify the mated application information in the database by entering the **rtrv-map** command with the **pca** and **ssn** parameters. The values of the **pca** and **ssn** parameters are the point code and subsystem number shown in the **DPC** and **SSN** fields of the **rtrv-gws-redirect** output in step 3 on page 4-22. For this example, enter this command.

rtrv-map:pca=009-002-001:ssn=15

The following is an example of the possible output.

```
rlghncxa03w 04-03-07 00:34:31 GMT Rel 31.4.0

MAP TABLE IS   2 % FULL    (20 of 1024)

PCA           SSN   RC MULT MPCA           MSSN  MATERC MULT SRM  MRC  GRP NAME SSO
009-002-001    15   10 DOM
                           009-003-001      15    20   DOM  YES  YES  GRP01    ON
```

If the mated application information is in the database, no action is necessary. Skip steps 14, 15, and 16, and go to step 17 on page 4-27.

---

14. Verify the concerned signaling point code information in the database by entering the **rtrv-cspc** command with the **grp** parameter. In this example, concerned signaling point code group name (**CSPC GRP**) the used for the DTA feature is **grp01**. For this example, enter this command.

rtrv-cspc:grp=grp01

The following is an example of the possible output.

```
rlghncxa03w  04-03-25 09:58:31  GMT  Rel 31.4.0
CSPC GRP   PCA
GRP01      009-000-000
```

If the concerned signaling point code information is in the database, no action is necessary. Go to step 16 on page 4-27.

---

15. Add the concerned signaling point code information to the database by entering the **ent-cspc** command. If the required concerned signaling point code group name is not shown in the output of the **rtrv-cspc** command in step 14, the **ent-cspc** must be entered twice, first to add the concerned signaling point code group name with the **grp** parameter; then a second time to assign the point code to the concerned signaling point code group name with both the **grp** and **pc** parameters. If the required concerned signaling point code group name is shown in the output of the **rtrv-cspc** command in step 14, then the **ent-cspc** command only needs to entered once with both the **grp** and **pc** parameters.

In this example, the concerned signaling point code group name (**grp01**) is not shown in the **rtrv-cspc** command output in step 14 and the point code (**pc**) is **009-000-000**. Enter these commands.

ent-cspc:grp=grp01

ent-cspc:grp=grp01:pc=009-000-000

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

```
rlghncxa03w 04-03-07 00:33:31 GMT Rel 31.4.0
ENT-CSPC: MASP A - COMPLTD
```

---

16. Add the mated application information to the database by entering the **ent-map** command. In this example, the point code (**pc**) is **009-002-001**, the subsystem number (**ssn**) is **15**, the relative cost (**rc**) is 10, the mate point code (**mpc**) is **009-003-001**, the mate subsystem number (**mssn**) is **15**, the mate relative cost (**materc**) is 20, and the concerned signaling point code group name (**grp**) is **grp01**.

```
ent-map:pc=009-002-001:ssn=15:rc=10:mpc=009-003-001:mssn=15
:materc=20:grp=grp01
```

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

```
rlghncxa03w 04-03-07 00:35:31 GMT Rel 31.4.0
ENT-MAP: MASP A - COMPLTD
```

If the enhanced global title translation feature is not on, go to step 17. If the enhanced global title translation feature is on, go to step 18.

NOTE: If the enhanced global title translation is on, skip step 17 and go to step 18.

17. If the global title translation data is not in the database, add it to the database by entering the **ent-gtt** command. In this example, the translation type (**tt**) is **225**, the global title address (**gta**) is **9105551212**, the translate indicator (**xlat**) is **dpcssn**, the routing indicator (**ri**) is **gt**, the point code (**pc**) is **009-002-001**, and the subsystem number (**ssn**) is **15**.

```
ent-gtt:type=225:gta=9105551212:xlat=dpcssn:ri=gt
:pc=009-002-001:ssn=15
```

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

```
rlghncxa03w 04-03-07 00:36:31 GMT Rel 31.4.0
ENT-GTT: MASP A - COMPLTD
```

NOTE: If the enhanced global title translation is off, skip step 18 and go to step 19 on page 4-28.

18. Add the global title address data to the GTT set **dta7** using the **ent-gta** command. For this example, enter these commands:

```
ent-gta:gttsn=dta7:gta=9195551212:xlat=dpcssn:ri=gt
:pc=009-002-001:ssn=15
```

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

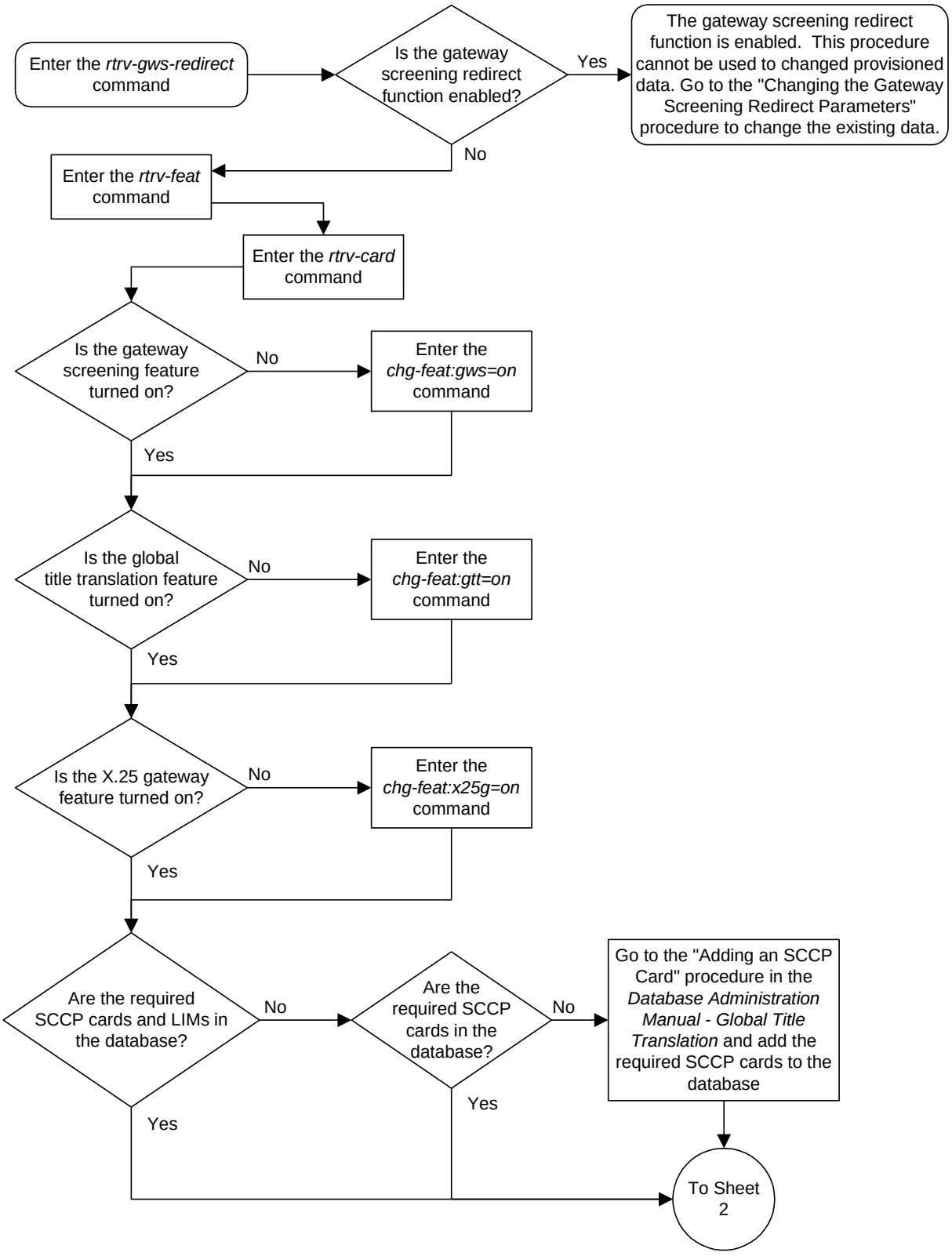
```
rlghncxa03w 04-03-07 00:37:31 GMT Rel 31.4.0
ENT-GTA: MASP A - COMPLTD
```

---

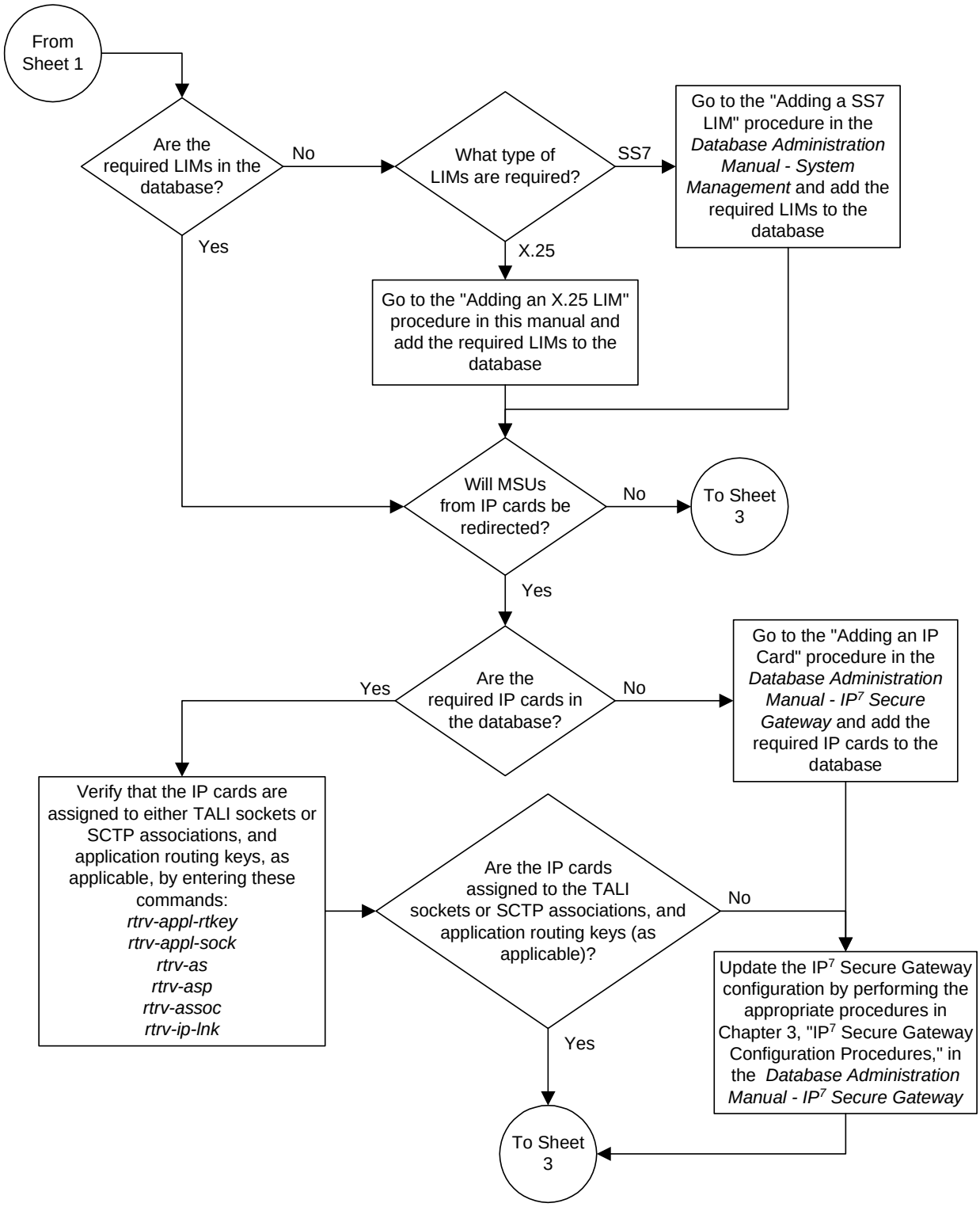
19. Backup the new changes using the **chg-db:action=backup:dest=fixed** command. The following messages should appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
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.
```

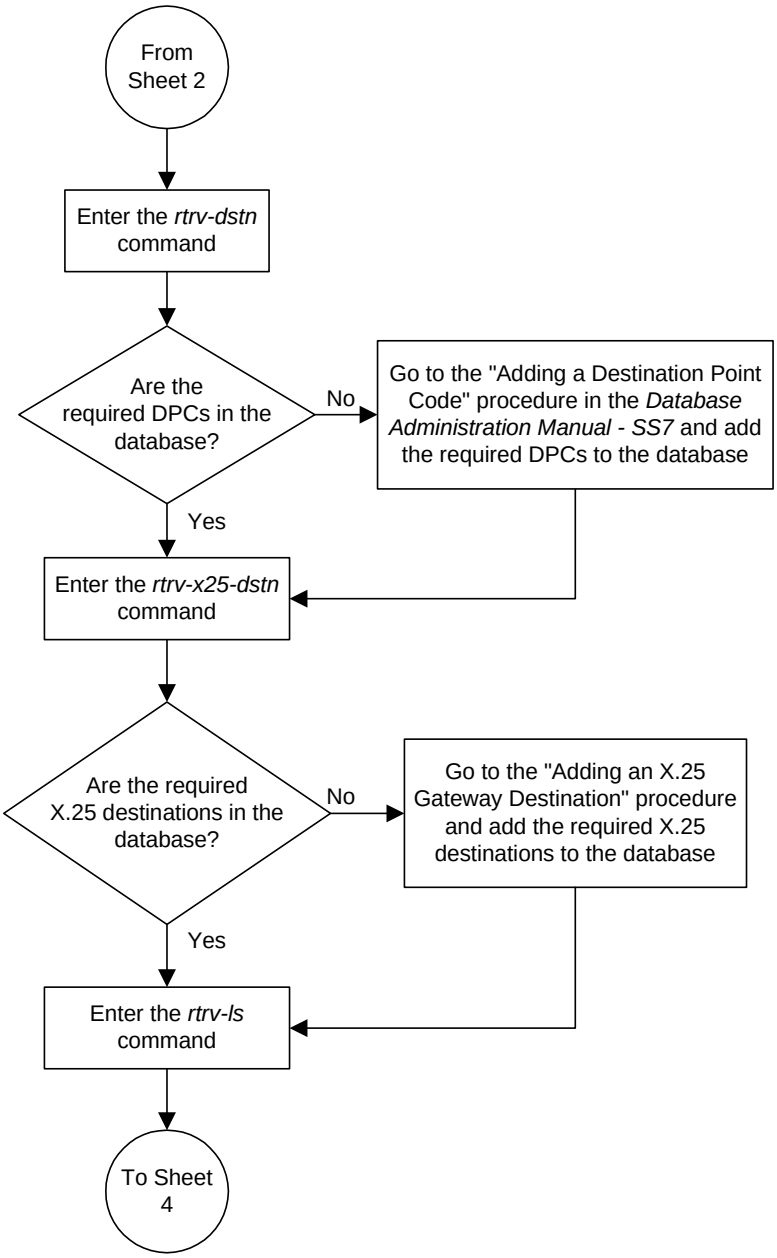
Flowchart 4-1. Configuring for the DTA Feature (Sheet 1 of 16)



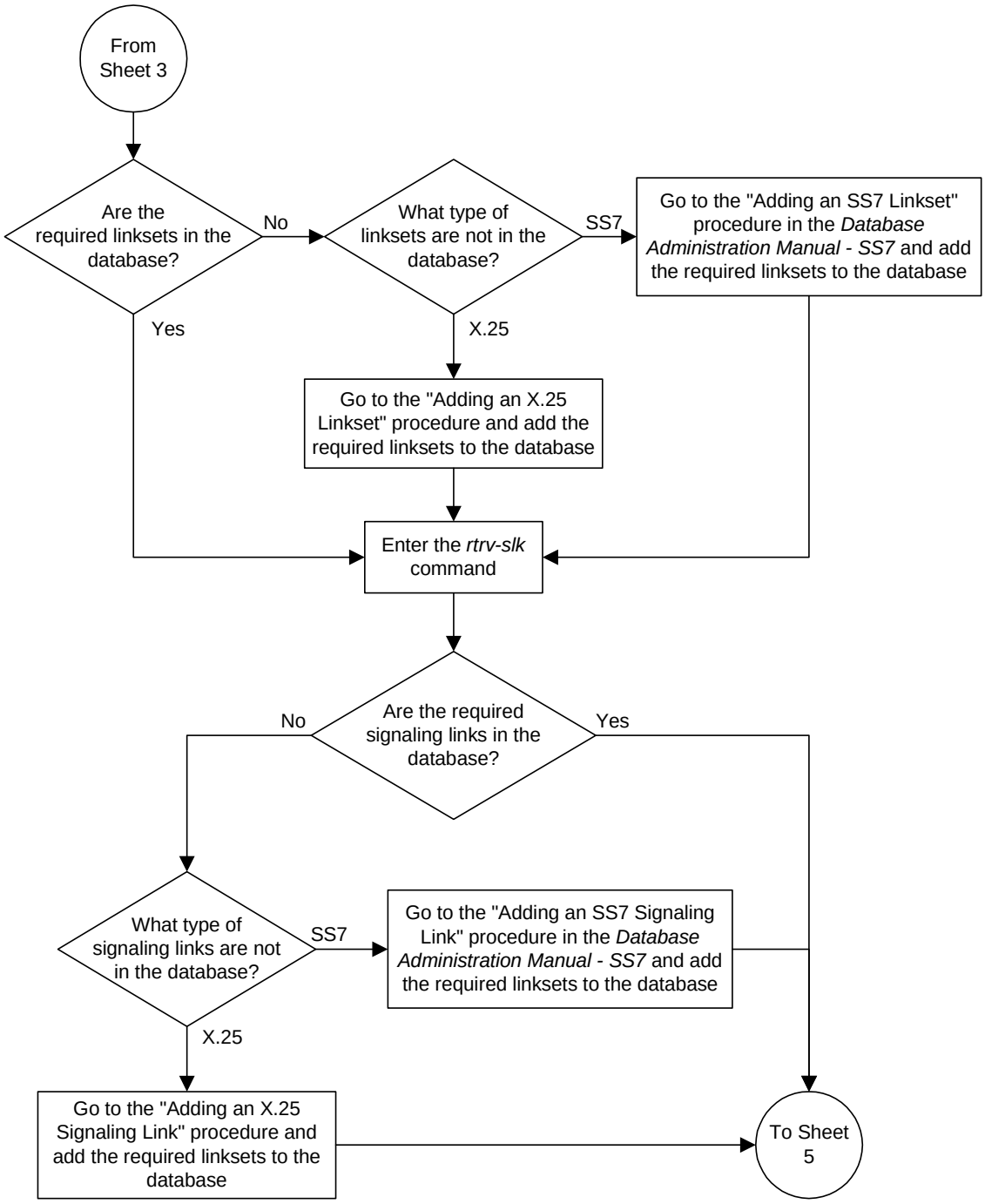
Flowchart 4-1. Configuring for the DTA Feature (Sheet 2 of 16)



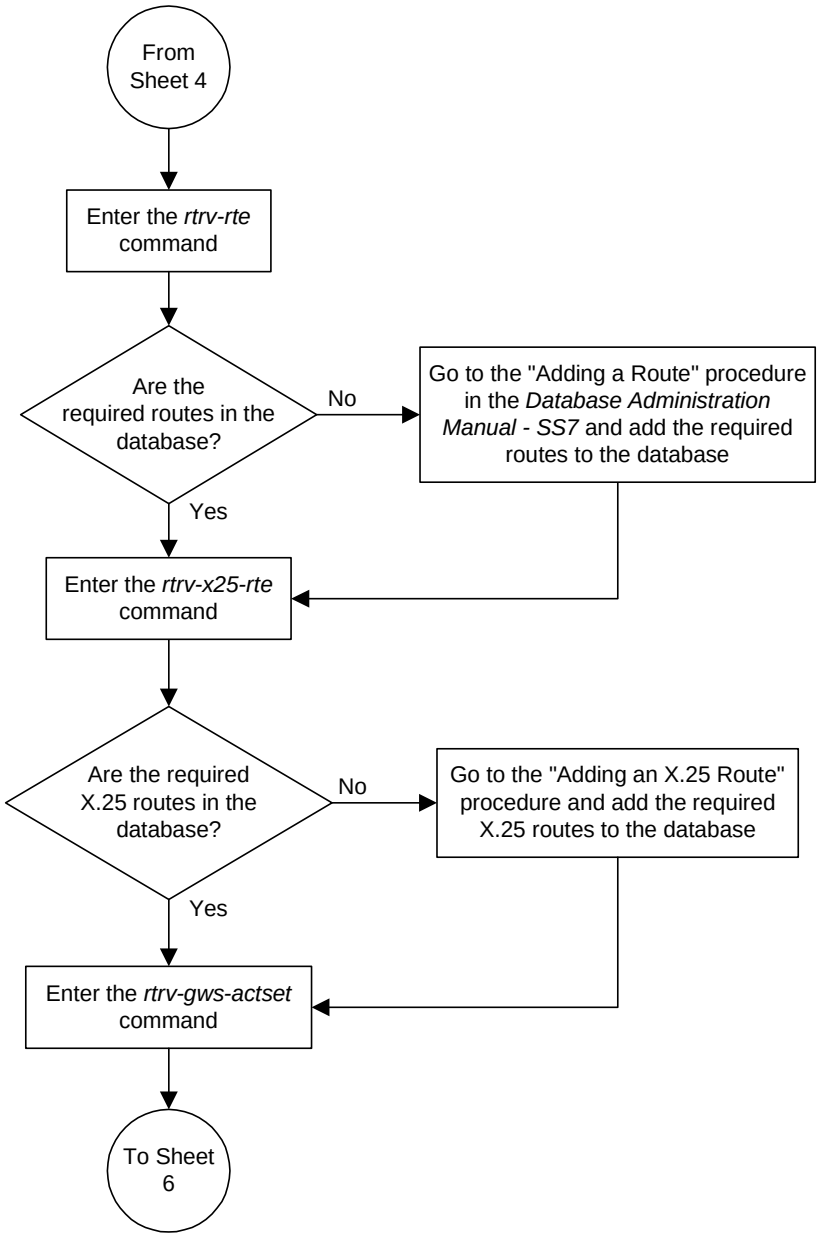
Flowchart 4-1. Configuring for the DTA Feature (Sheet 3 of 16)



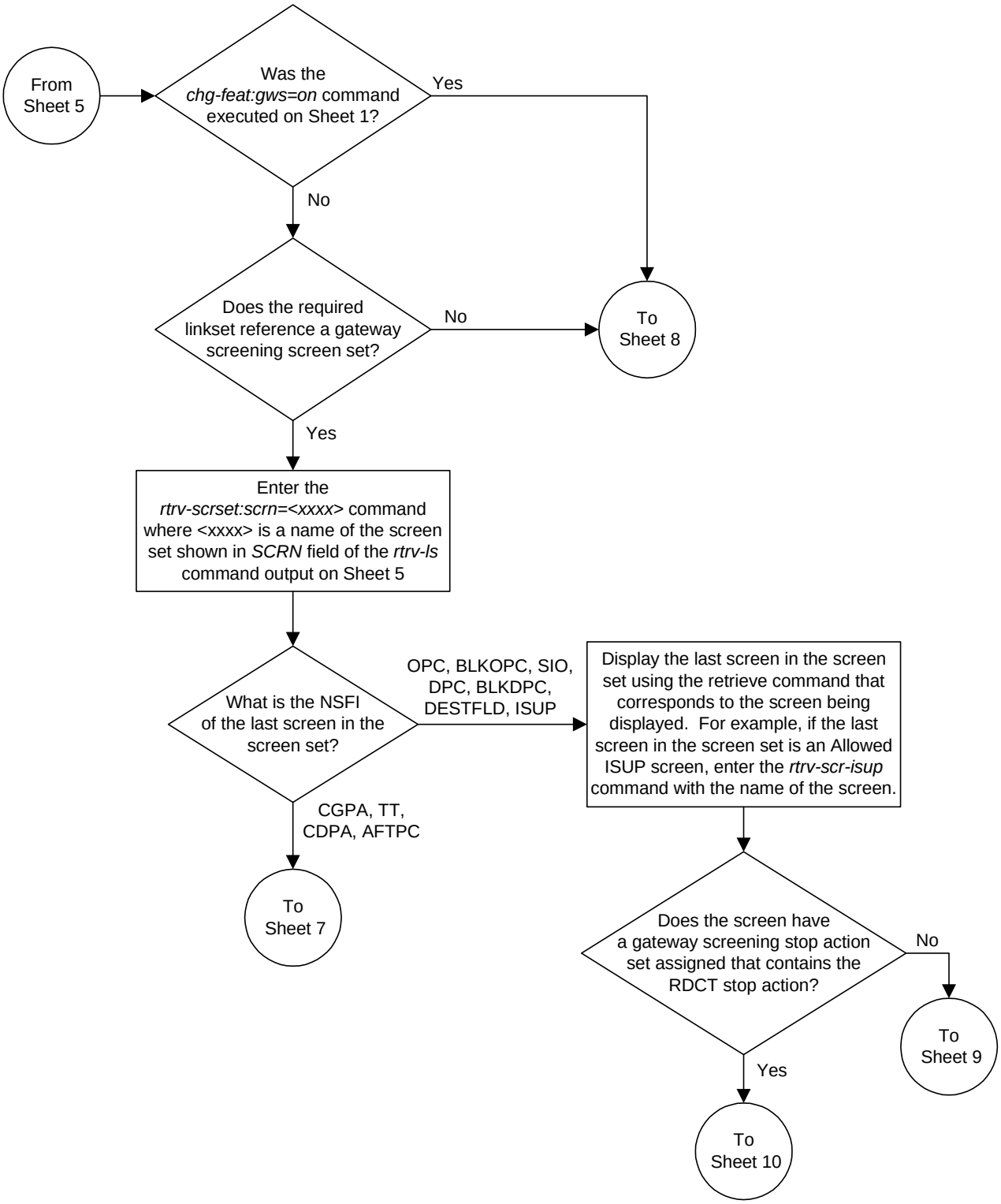
Flowchart 4-1. Configuring for the DTA Feature (Sheet 4 of 16)



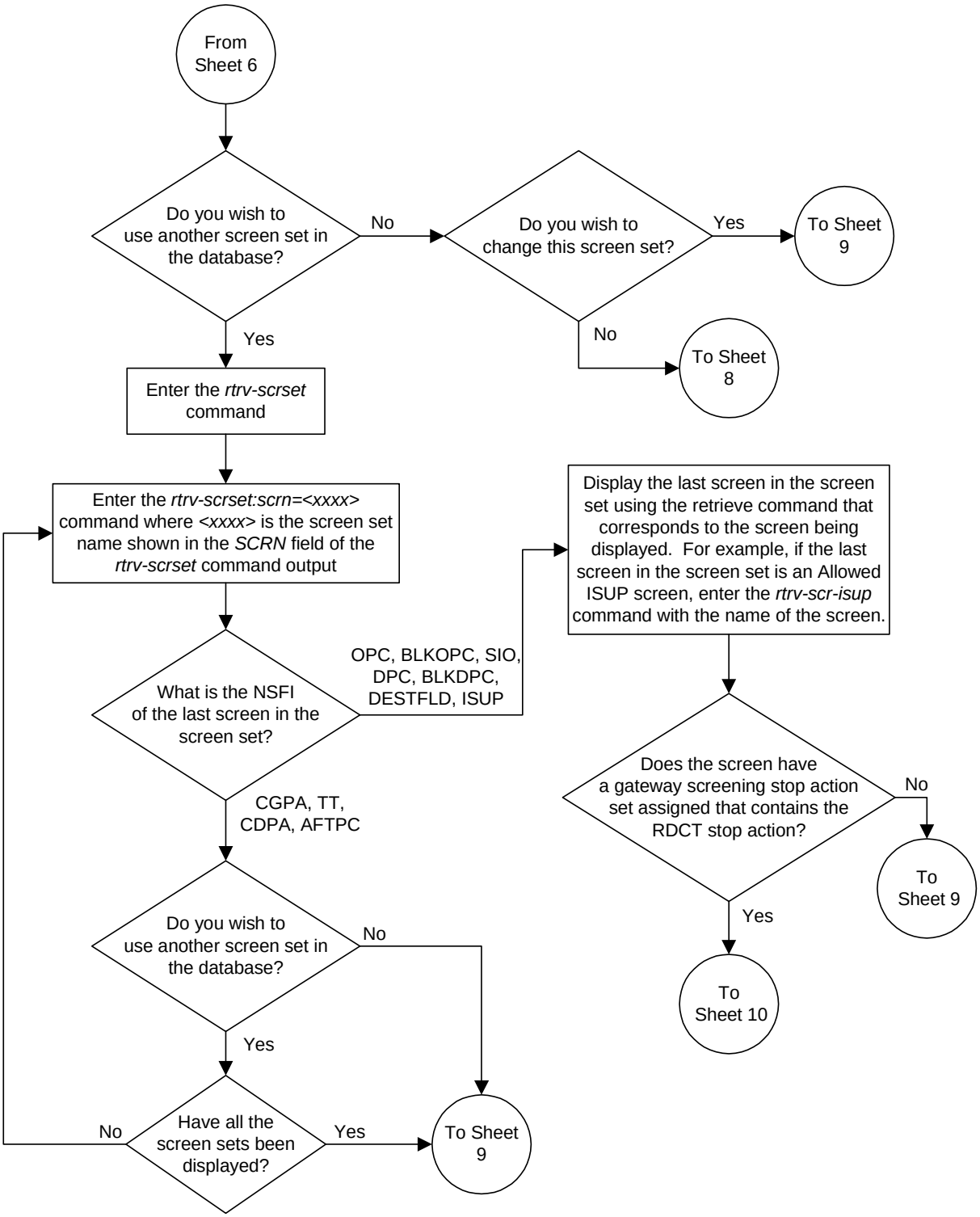
Flowchart 4-1. Configuring for the DTA Feature (Sheet 5 of 16)



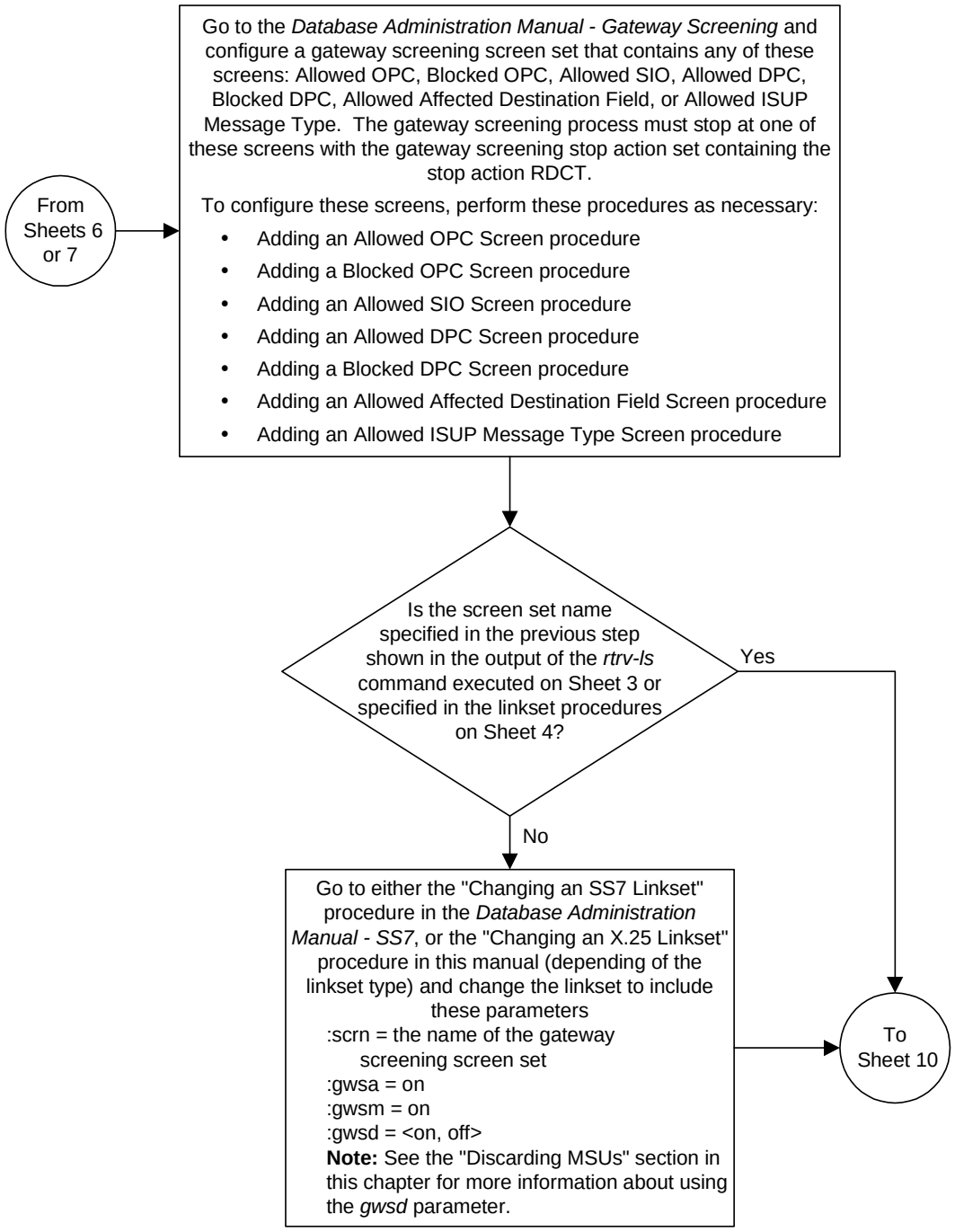
Flowchart 4-1. Configuring for the DTA Feature (Sheet 6 of 16)



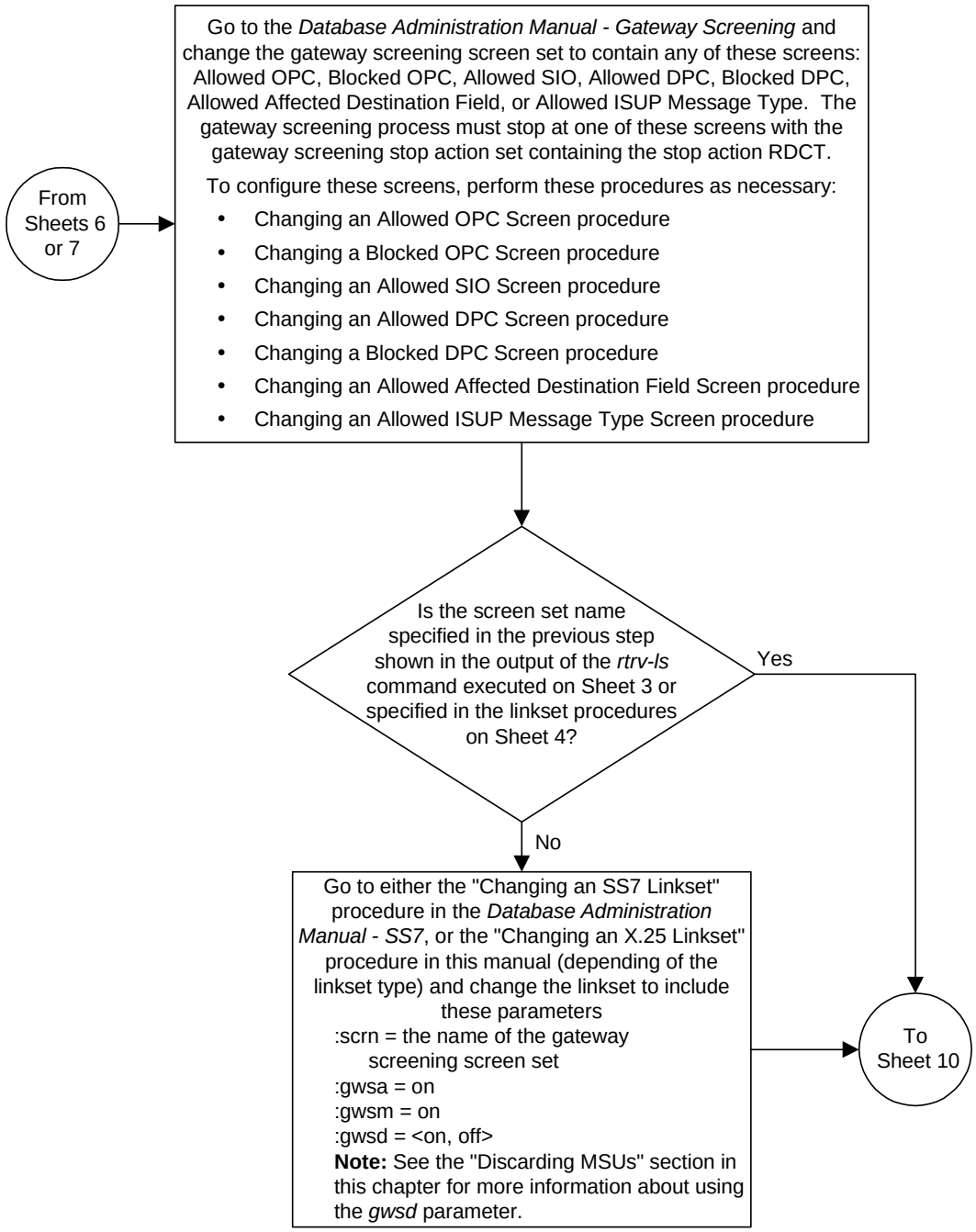
Flowchart 4-1. Configuring for the DTA Feature (Sheet 7 of 16)



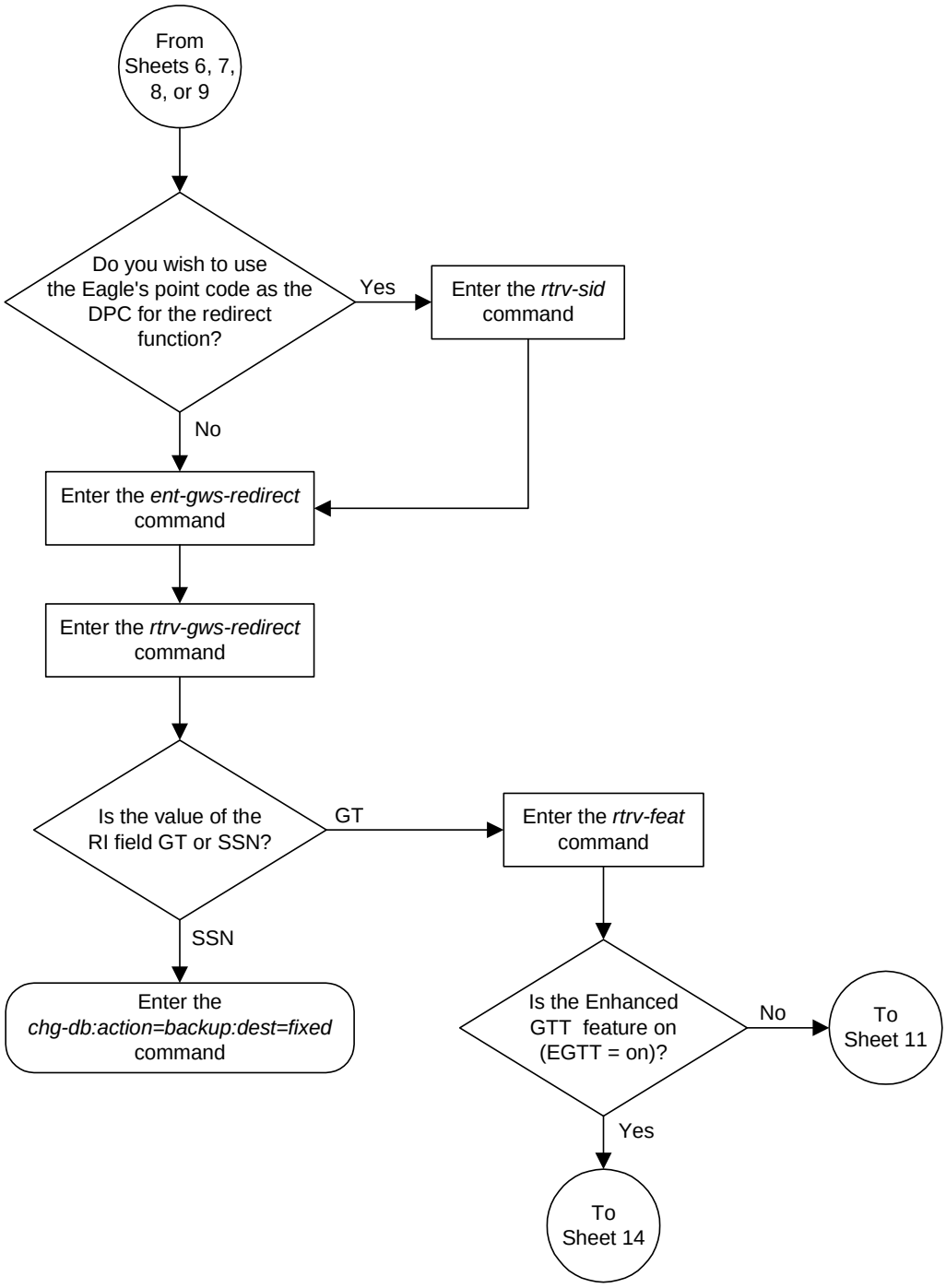
Flowchart 4-1. Configuring for the DTA Feature (Sheet 8 of 16)



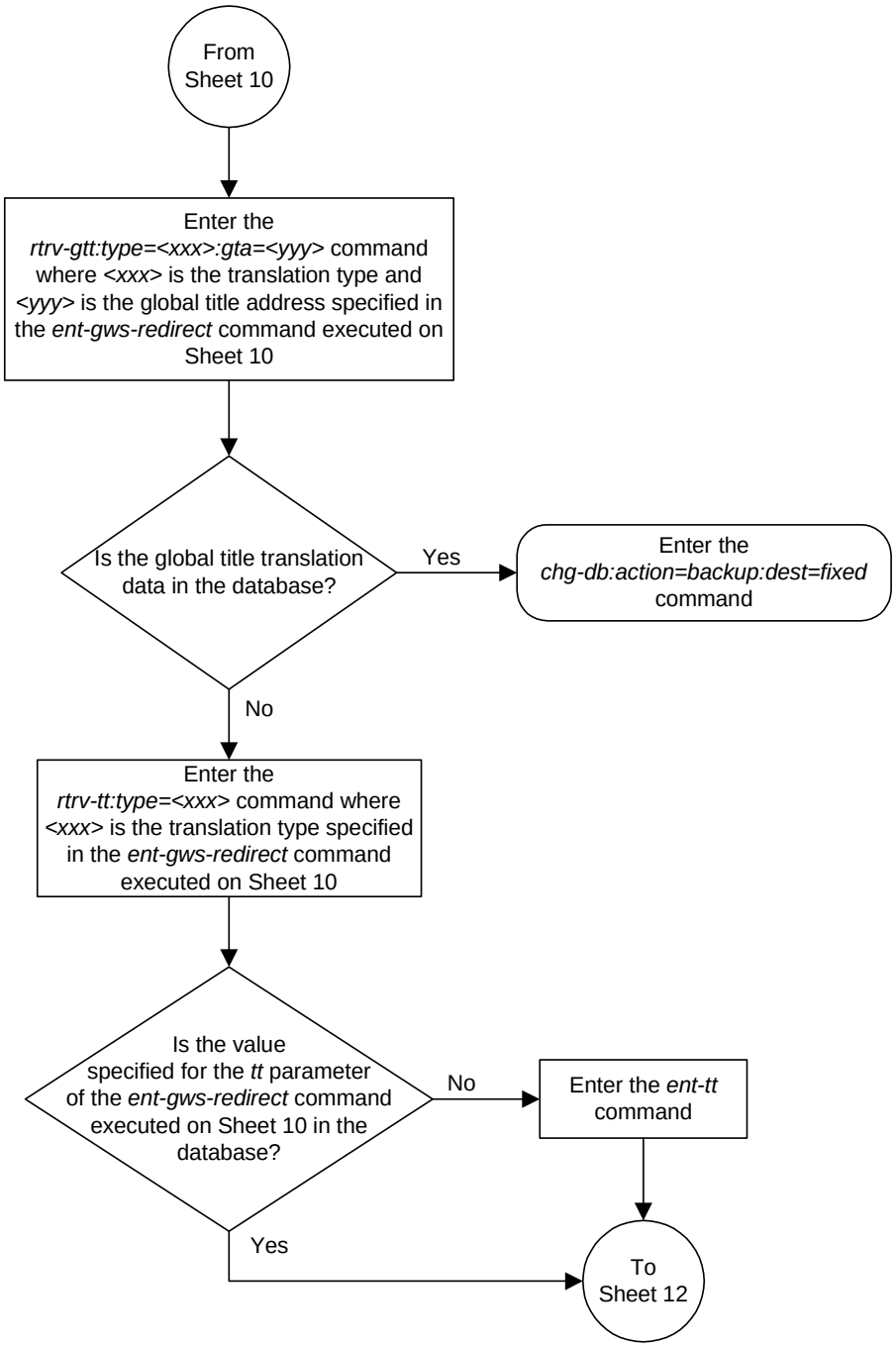
Flowchart 4-1. Configuring for the DTA Feature (Sheet 9 of 16)



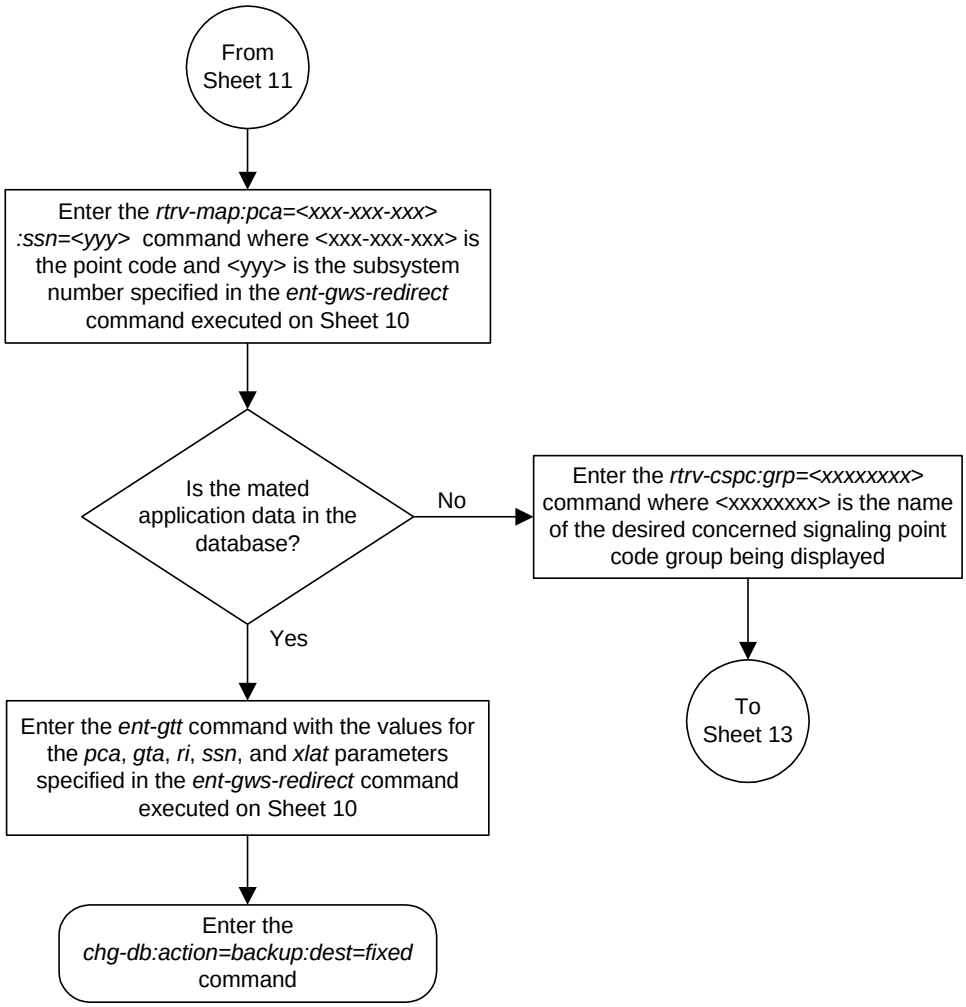
Flowchart 4-1. Configuring for the DTA Feature (Sheet 10 of 16)



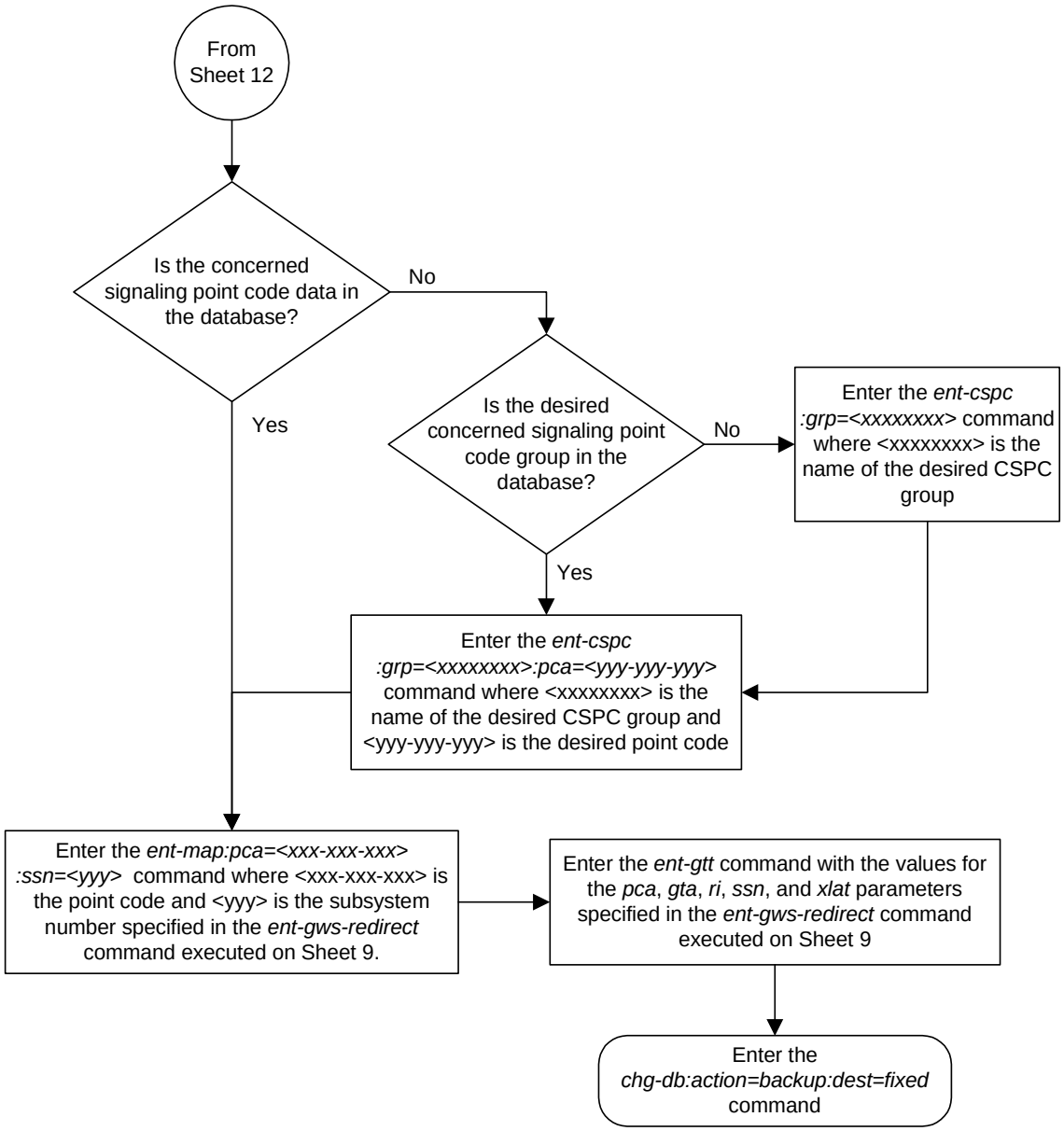
Flowchart 4-1. Configuring for the DTA Feature (Sheet 11 of 16)



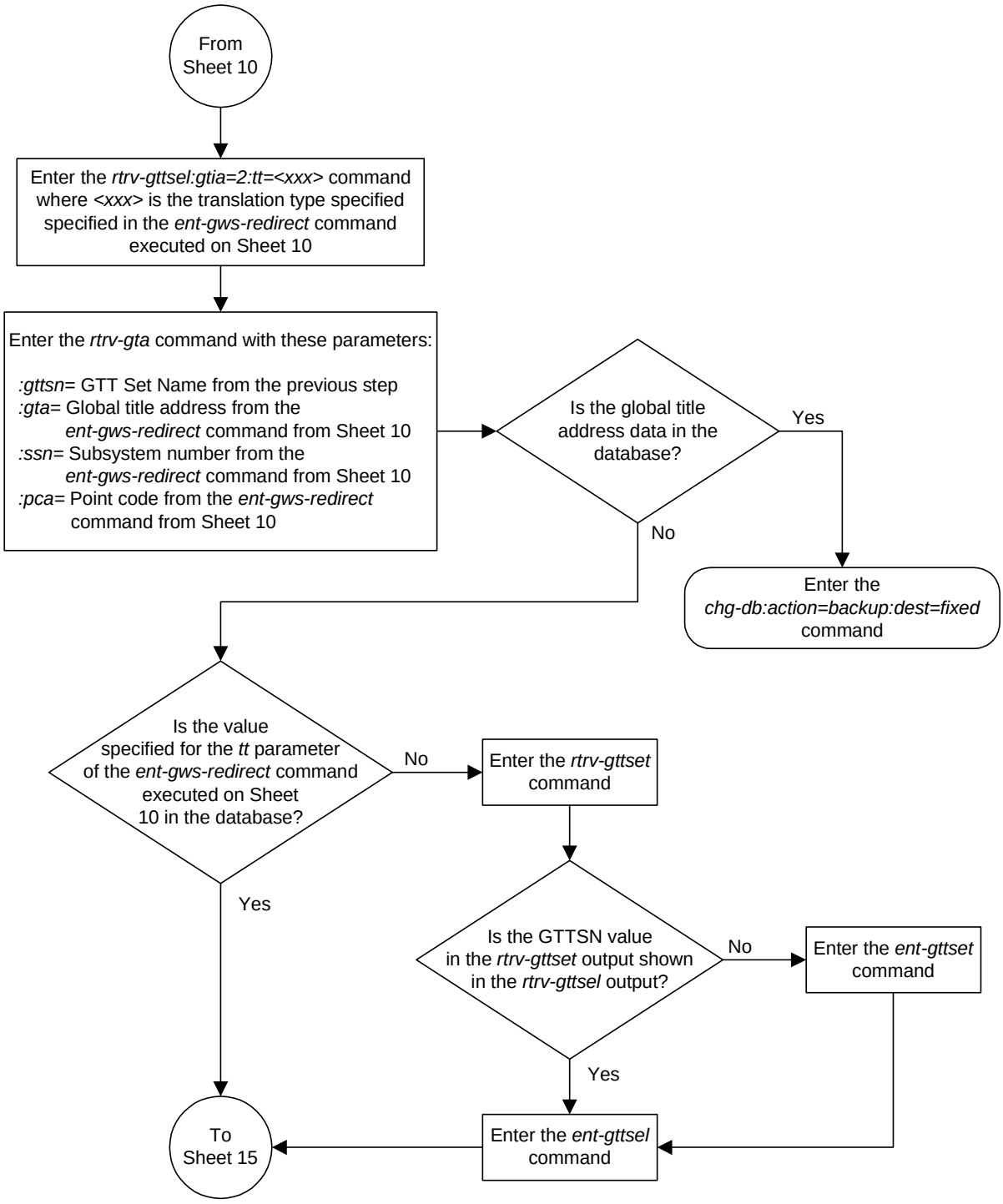
Flowchart 4-1. Configuring for the DTA Feature (Sheet 12 of 16)



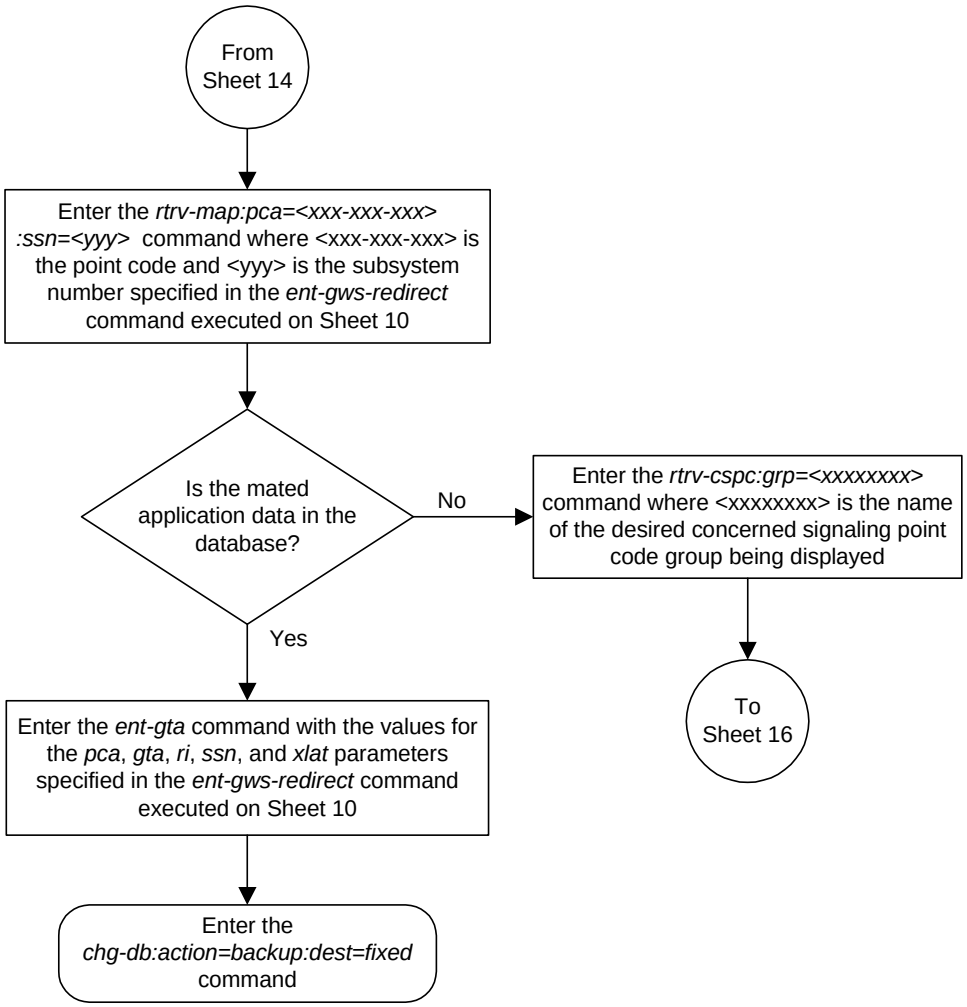
Flowchart 4-1. Configuring for the DTA Feature (Sheet 13 of 16)



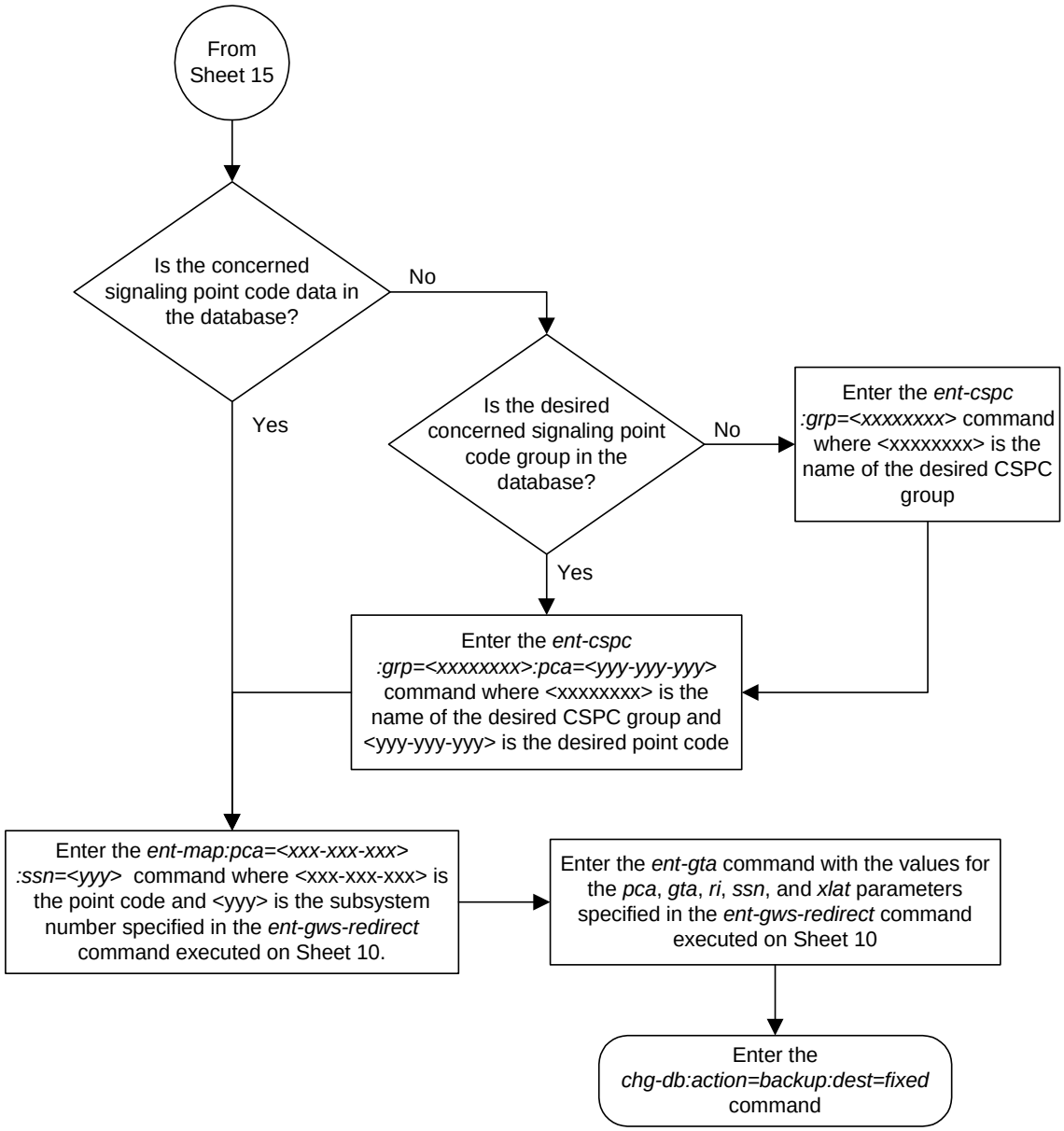
Flowchart 4-1. Configuring for the DTA Feature (Sheet 14 of 16)



Flowchart 4-1. Configuring for the DTA Feature (Sheet 15 of 16)



Flowchart 4-1. Configuring for the DTA Feature (Sheet 16 of 16)



Changing the Gateway Screening Redirect Parameters

To change the configuration to support the DTA feature, one or more of the gateway screening redirect function's attributes can be changed using the **chg-gws-redirect** command. This procedure shows the steps necessary to change these attributes.

The gateway screening redirect function's data must be in the database and the gateway screening redirect function must be enabled, shown by the entry **on** in the enabled field of the **rtrv-gws-redirect** command output.

Any of the gateway screening redirect function's attributes can be changed. The new attributes, and any database entities required to support these attributes, must be in the database.

Canceling the RTRV-DSTN, RTRV-GTT, RTRV-MAP, and RTRV-GTA Commands

Because the **rtrv-dstn**, **rtrv-gtt**, **rtrv-map**, and **rtrv-gta** commands used in this procedure can output information for a long period of time, the **rtrv-dstn**, **rtrv-gtt**, **rtrv-map**, and **rtrv-gta** commands can be canceled and the output to the terminal stopped. There are three ways that the **rtrv-dstn**, **rtrv-gtt**, **rtrv-map**, and **rtrv-gta** commands can be canceled.

- Press the **F9** function key on the keyboard at the terminal where the **rtrv-dstn**, **rtrv-gtt**, **rtrv-map**, or **rtrv-gta** commands were entered.
- Enter the **canc-cmd** without the **trm** parameter at the terminal where the **rtrv-dstn**, **rtrv-gtt**, **rtrv-map**, or **rtrv-gta** commands were entered.
- Enter the **canc-cmd:trm=<xx>**, where **<xx>** is the terminal where the **rtrv-dstn**, **rtrv-gtt**, **rtrv-map**, or **rtrv-gta** commands were entered, from another terminal other that the terminal where the **rtrv-dstn**, **rtrv-gtt**, **rtrv-map**, or **rtrv-gta** commands were entered. To enter the **canc-cmd:trm=<xx>** command, the terminal must allow Security Administration commands to be entered from it and the user must be allowed to enter Security Administration commands. The terminal's permissions can be verified with the **rtrv-secu-trm** command. The user's permissions can be verified with the **rtrv-user** or **rtrv-secu-user** commands.

For more information about the **canc-cmd** command, go to the *Commands Manual*.

The examples in this procedure are used to change the gateway screening redirect function's attributes to these values. The routing indicator is not being changed.

- **:dpc** – 009-003-001
- **:ssn** – 45
- **:tt** – 175
- **:gta** – 3365841342

Procedure

1. Verify the gateway screening redirect function attributes by entering the **rtrv-gws-redirect** command. The following is an example of the possible output.

```
rlghncxa03w 04-03-07 00:17:31 GMT Rel 31.4.0

ENABLED DPC          RI  SSN  TT     GTA
on      003-175-010  GT  15   225    9105551212
```

If the DPC, shown in the **DPC** field, is not being changed, skip steps 2, 3, and 4, and go to step 5 on page 4-48.

NOTE: If the DPC is being changed to the Eagle's point code, skip steps 2 and 3 and go to step 4 on page 4-47.

2. Verify that the new DPC you wish to use is in the database by entering the **rtrv-dstn** command. For this procedure, the new DPC is 009-003-001. The following is an example of the possible output.

```
rlghncxa03w 04-03-07 00:18:31 GMT Rel 31.4.0
DPCA        CLLI        BEI ELEI  ALIASI   ALIASN      DOMAIN
001-002-003 ls04clli    yes ---   -------  ----------  SS7
020-002-*   rlghncbb000 yes yes   -------  ----------  SS7
240-012-004 rlghncbb001 yes ---   1-111-1  11111       SS7
240-012-005 rlghncbb002 yes ---   1-112-2  11112       SS7
240-012-006 rlghncbb003 yes ---   1-112-3  11113       SS7
240-012-008 --------    yes ---   1-113-5  11114       SS7
244-012-007 --------    no  ---   -------  ----------  X25
244-012-008 --------    no  ---   -------  ----------  X25
003-175-010 --------    no  ---   -------  ----------  X25
003-175-015 --------    no  ---   -------  ----------  X25
009-001-001 --------    no  ---   -------  ----------  X25
009-002-001 dtaclli     yes ---   -------  ----------  X25
009-003-001 dtaclli1    yes ---   -------  ----------  X25

DPCI        CLLI        BEI ELEI  ALIASA       ALIASN      DOMAIN
2-131-1     rlghncbb023 no  ---   222-210-000  12001       SS7
2-131-2     --------    no  ---   222-211-001  12002       SS7
2-131-3     --------    no  ---   222-211-002  12003       SS7

DPCN        CLLI        BEI ELEI  ALIASA       ALIASI  DOMAIN
11211       rlghncbb013 no  ---   222-200-200 2-121-1  SS7
11212       rlghncbb013 no  ---   222-200-201 2-121-2  SS7

DESTINATION ENTRIES ALLOCATED:   2000
    FULL DPC(s):                   17
    NETWORK DPC(s):                 0
    CLUSTER DPC(s):                 1
    TOTAL DPC(s):                  18
    CAPACITY (% FULL):             1%
X-LIST ENTRIES ALLOCATED:         500
```

If the required DPC is not shown in the **rtrv-dstn** command output, go to the " Adding a Destination Point Code" procedure in the *Database Administration Manual - SS7* and add the DPC to the database.

---

3. The new DPC must have a route assigned to it. Verify this by entering the **rtrv-rte** command with the new DPC, in this example, 009-003-001.

```
rlghncxa03w 04-03-07 00:19:31 GMT Rel 31.4.0
DPCA        ALIASI      ALIASN     CLLI        LSN      RC APC
009-003-001 ----------- ---------- dtaclli1    ls02      0 009-001-001
```

If the required route to the DPC is not shown in the **rtrv-rte** command output, go to the "Adding a Route" procedure in the *Database Administration Manual - SS7* and add the route to the DPC to the database.

NOTE: If the DPC is being changed to a point code in the routing table, shown in the output of steps 2 and 3, skip step 4 and go to step 5 on page 4-48.

4. Display the system's point code by entering the **rtrv-sid** command. The following is an example of the possible output.

```
rlghncxa03w 04-03-07 00:20:31 GMT Rel 31.4.0
PCA              PCI              PCN           CLLI             PCTYPE
144-201-001      0-123-1          11211         rlghncxa03w      ANSI

CPCA
002-002-002       002-002-003       002-002-004      002-002-005
002-002-006       002-002-007       002-002-008      002-002-009
004-002-001       004-003-003       144-212-003

CPCA (LNP)
005-005-002      005-005-004      005-005-005

CPCI
1-001-1           1-001-2           1-001-3          1-001-4
1-002-1           1-002-2           1-002-3          1-002-4
2-001-1           7-222-7

CPCN
02091             02092             02094             02097
02191             02192             11177
```

The system's point code is shown in the **PCA** field.

---

5. Change the parameters for the gateway screening redirect function by entering the **chg-gws-redirect** command with any of these parameters:

   - **:dpc** – either a DPC from the routing table, shown in the output of steps 2 and 3, or the system's point code shown in the **rtrv-sid** command output in step 4.
   - **:ri** – the global title translation routing indicator, either **gt** or **ssn**
   - **:ssn** – the subsystem number, from 2 to 255
   - **:tt** – the global title translation type, from 1 to 255
   - **:gta** – the global title address containing from 1 to 21 digits.

   For this example, enter this comand. In this example, the **ri** parameter is not being changed.

   chg-gws-redirect:dpc=009-003-001:ssn=45:tt=175:gta=3365841342

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

   ```
   rlghncxa03w 04-03-07 00:21:31 GMT Rel 31.4.0
   CHG-GWS-REDIRECT: MASP A - COMPLTD
   ```

---

6. Verify the changes by entering the **rtrv-gws-redirect** command. The following is an example of the possible output.

   ```
   rlghncxa03w 04-03-07 00:22:31 GMT Rel 31.4.0

   ENABLED DPC          RI  SSN  TT     GTA
   on      009-003-001  GT  45   175    3365841342
   ```

   If only the DPC parameter was changed in step 5, skip steps 7 through 21, go to step 22 on page 4-54.

---

7. Verify if the enhanced global title translation feature is on or off by entering the **rtrv-feat** command. If the enhanced global title translation feature is on, the **EGTT** field should be set to **on**.

   For this example, the enhanced global title translation feature is on.

   NOTE: The rtrv-feat command output contains other fields that are not used by this procedure. If you wish to see all the fields displayed by the rtrv-feat command, see the rtrv-feat command description in the *Commands Manual*.

   If the enhanced global title translation feature is on, the **rtrv-tt**, **ent-tt**, **rtrv-gtt**, and **ent-gtt** commands cannot be executed. Instead, the **rtrv-gttset**, **ent-gttset**, **rtrv-gttsel**, **ent-gttsel**, **rtrv-gta**, and **ent-gta** are used to verify and configure the global title translation data.

   NOTE: If the enhanced global title translation is on, skip steps 8, 9, and 10, and go to step 12 on page 4-51.

8. The new global title address data must be in the database. Verify the global title translation data in the database for the translation type specified in the output of step 6 on page 4-48 by entering the **rtrv-gtt** comand with the **type** and **gta** paramters. For this example, enter this command.

   rtrv-gtt:type=175:gta=3365841342

   The following is an example of the possible output.

```
rlghncxa03w 04-03-07 00:24:31 GMT Rel 31.4.0
TYPEA  TTN        NDGT
175    DTA7        10
GTT TABLE IS 10% FULL.    (27000 of 269999)

START GTA             END GTA               XLAT   RI   PCA          SSN  NGT
3365841342            ------                DPCSSN GT   009-003-001   45  ---
```

   If the global title translation data is shown in the **rtrv-gtt** comand output, no further action is necessary. Go to step 22 on page 4-54.

---

9. The new translation type must be in the database. Verify that the global title translation type specified in the output of step 6 on page 4-48 in the **TT** field, is in the database by entering the **rtrv-tt** command. In this example, the new global title translation type is **175**. The translation type is shown in the **TYPEA** field. For this example, enter this command.

rtrv-tt:typea=175

The following is an example of the possible output.

```
rlghncxa03w 04-03-07 00:25:31 GMT Rel 31.4.0
TYPEA  TTN        NDGT
175    DTA7       10
```

If the required translation type is in the database, no action is necessary. Go to step 16 on page 4-52.

---

10. If the global title translation type is not in the database, add it to the database by entering the **ent-tt** command. In this example, the translation type (**tt**) is **175**, the translation type name (**ttn**) is **dta7** and the number of digits in the global title address (**ndgt**) is **10**.

ent-tt:type=175:ttn=dta7:ndgt=10

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

```
rlghncxa03w 04-03-07 00:26:31 GMT Rel 31.4.0
ENT-TT: MASP A - COMPLTD
```

NOTE: If the enhanced global title translation is off, skip steps 11, 12, 13, 14, and 15, and go to step 16 on page 4-52.

11. Verify that the global title translation type specified in the output of step 6, in the **TT** field, is in the database by entering the **rtrv-gttsel** command with the **tt** parameter.

For this example, enter the **rtrv-gttsel:tt=175** command. The following is an example of the possible output.

```
rlghncxa03w 04-03-07 00:27:31 GMT Rel 31.4.0
GTIA  TT   NP       NAI   GTTSN
2     175  --       ---   dta7
```

If the translation type is not in the database, this message is displayed in the scroll area of the terminal display.

```
No GTT Selectors matching the specified criteria were found.
```

If the translation type is shown in the **rtrv-gttsel** command output, go to step 12 and verify that the global title address data is in the database.

If the translation type is not shown in the **rtrv-gttsel** command output, skip step 12 and go to step 13 on page 4-51.

---

12. The new global title address must be in the database. Verify the global title translation data in the database for the translation type specified in the output of step 6 on page 4-48 by entering the **rtrv-gta** command with the **GTTSN** value shown in the output of step 11 and with the **GTA**, **SSN**, and **DPC** values shown in the output of step 6 on page 4-48. For this example, enter this command.

rtrv-gta:gttsn=dta7:gta=3365841342:pca=009-003-001:ssn=45

```
rlghncxa03w 04-03-07 00:28:31 GMT Rel 31.4.0
GTTSN      NETDOM  NDGT
t800       ansi    10
GTA TABLE IS   1 % FULL  (17 of 269999)

START GTA  END GTA    XLAT   RI  PCA         SSN CCGT NTT
```

If the required global title translation data is shown in the **rtrv-gta** comand output, no further action is necessary. Go to step 22 on page 4-54.

If the required global title translation data is not shown in the **rtrv-gta** data command output, go to step 17 on page 4-52.

---

13. If the global title translation type is not shown in the **rtrv-gttsel** command output in step 10 on page 4-50, display the GTT sets in the database with the **rtrv-gttset** command. The following is an example of the possible output.

```
rlghncxa03w 04-03-07 00:29:31 GMT Rel 31.4.0
GTTSN      NETDOM  NDGT
setans000  ansi    6
lidb       ansi    10
t800       ansi    6
setint000  itu     15
imsi       itu     15
abcd12345  itu     12
setnat002  itu     15
```

NOTE: If the required global title translation type is to be added to an existing GTT set, skip this step and go to step 15.

14. Add a new GTT set to the database with the **ent-gttset** command. For this example, enter this command.

ent-gttset:gttsn=dta7:netdom=ansi:ndgt=10

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

```
rlghncxa03w 04-03-07 00:30:31 GMT Rel 31.4.0
GTT Set table is (  8 of 950)  1% full
ENT-GTTSEL: MASP A - COMPLTD
```

---

15. Add the required translation type to either an existing GTT set shown in step 13 or to the new GTT set added in step 14 with the **ent-gttsel** command. For this example, enter this commands.

ent-gttsel:gtia=2:tt=175:gttsn=dta7

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

```
rlghncxa03w 04-03-07 00:31:31 GMT Rel 31.4.0
GTT Selector table is (114 of 1024) 11% full
ENT-GTTSEL: MASP A - COMPLTD
```

---

16. Verify the mated application information in the database by entering the **rtrv-map** command with the **pca** and **ssn** parameters. The values of the **pca** and **ssn** parameters are the point code and subsystem number shown in the **DPC** and **SSN** fields of the **rtrv-gws-redirect** output in step 6 on page 4-48. For this example enter this command.

rtrv-map:pca=009-003-001:ssn=45

The following is an example of the possible output.

```
rlghncxa03w 04-03-07 00:34:31 GMT Rel 31.4.0

MAP TABLE IS   2 % FULL    (20 of 1024)

PCA           SSN   RC MULT MPCA           MSSN  MATERC MULT SRM  MRC  GRP NAME SSO
009-003-001    45   10 DOM
                          009-002-001      45    20   DOM  YES  YES  GRP01    ON
```

If the mated application information is in the database, no action is necessary. Skip steps 17, 18, and 19 and go to step 20 on page 4-54.

---

17. Verify the concerned signaling point code information in the database by entering the **rtrv-cspc** command with the **grp** parameter. In this example, concerned signaling point code group name (**CSPC GRP**) the used for the DTA feature is **grp01**. For this example, enter this command.

rtrv-cspc:grp=grp01

The following is an example of the possible output.

```
rlghncxa03w  04-03-25 09:58:31  GMT  Rel 31.4.0
CSPC GRP   PCA
GRP01      009-000-000
```

If the concerned signaling point code information is in the database, no action is necessary. Go to step 16.

---

18. If the concerned signaling point code information is not in the database, add it to the database by entering the **ent-cspc** command. If the required concerned signaling point code group name is not shown in the output of the **rtrv-cspc** command in step 17, the **ent-cspc** must be entered twice, first to add the concerned signaling point code group name with the **grp** parameter; then a second time to assign the point code to the concerned signaling point code group name with both the **grp** and **pc** parameters. If the required concerned signaling point code group name is shown in the output of the **rtrv-cspc** command in step 17, then the **ent-cspc** command only needs to entered once with both the **grp** and **pc** parameters.

In this example, the concerned signaling point code group name (**grp01**) is not shown in the **rtrv-cspc** command output in step 17 and the point code (**pc**) is **009-000-000**. Enter these commands.

```
ent-cspc:grp=grp01
```

```
ent-cspc:grp=grp01:pc=009-000-000
```

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

```
rlghncxa03w 04-03-07 00:33:31 GMT Rel 31.4.0
ENT-CSPC: MASP A - COMPLTD
```

---

19. Add the mated application to the database by entering the **ent-map** command. In this example, the point code (**pc**) is **009-002-001**, the subsystem number (**ssn**) is **45**, the relative cost (**rc**) is 10, the mate point code (**mpc**) is **009-003-001**, the mate subsystem number (**mssn**) is **45**, the mate relative cost (**materc**) is 20, and the concerned signaling point code group name (**grp**) is **grp01**.

```
ent-map:pc=009-002-001:ssn=45:rc=10:mpc=009-003-001:mssn=45
:materc=20:grp=grp01
```

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

```
rlghncxa03w 04-03-07 00:35:31 GMT Rel 31.4.0
ENT-MAP: MASP A - COMPLTD
```

NOTE: If the enhanced global title translation is on, skip step 20 and go to step 21.

20. If the global title address and its associated translation type are not in the database, add them to the database by entering the **ent-gtt** command. In this example, the translation type (**tt**) is **175**, the global title address (**gta**) is **3365841342**, the translate indicator (**xlat**) is **dpcssn**, the routing indicator (**ri**) is **gt**, the point code (**pc**) is **009-003-001**, and the subsystem number (**ssn**) is **45**.

```
ent-gtt:type=175:gta=3365841342:xlat=dpcssn:ri=gt
:pca=009-003-001:ssn=45
```

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

```
rlghncxa03w 04-03-07 00:36:31 GMT Rel 31.4.0
ENT-GTT: MASP A - COMPLTD
```

NOTE: If the enhanced global title translation is off, skip step 21 and go to step 22.

21. Add the global title address data to the GTT set **dta7** using the **ent-gta** command. For this example, enter these commands:

```
ent-gta:gttsn=dta7:gta=3365841342:xlat=dpcssn:ri=gt
:pca=009-003-001:ssn=45
```

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

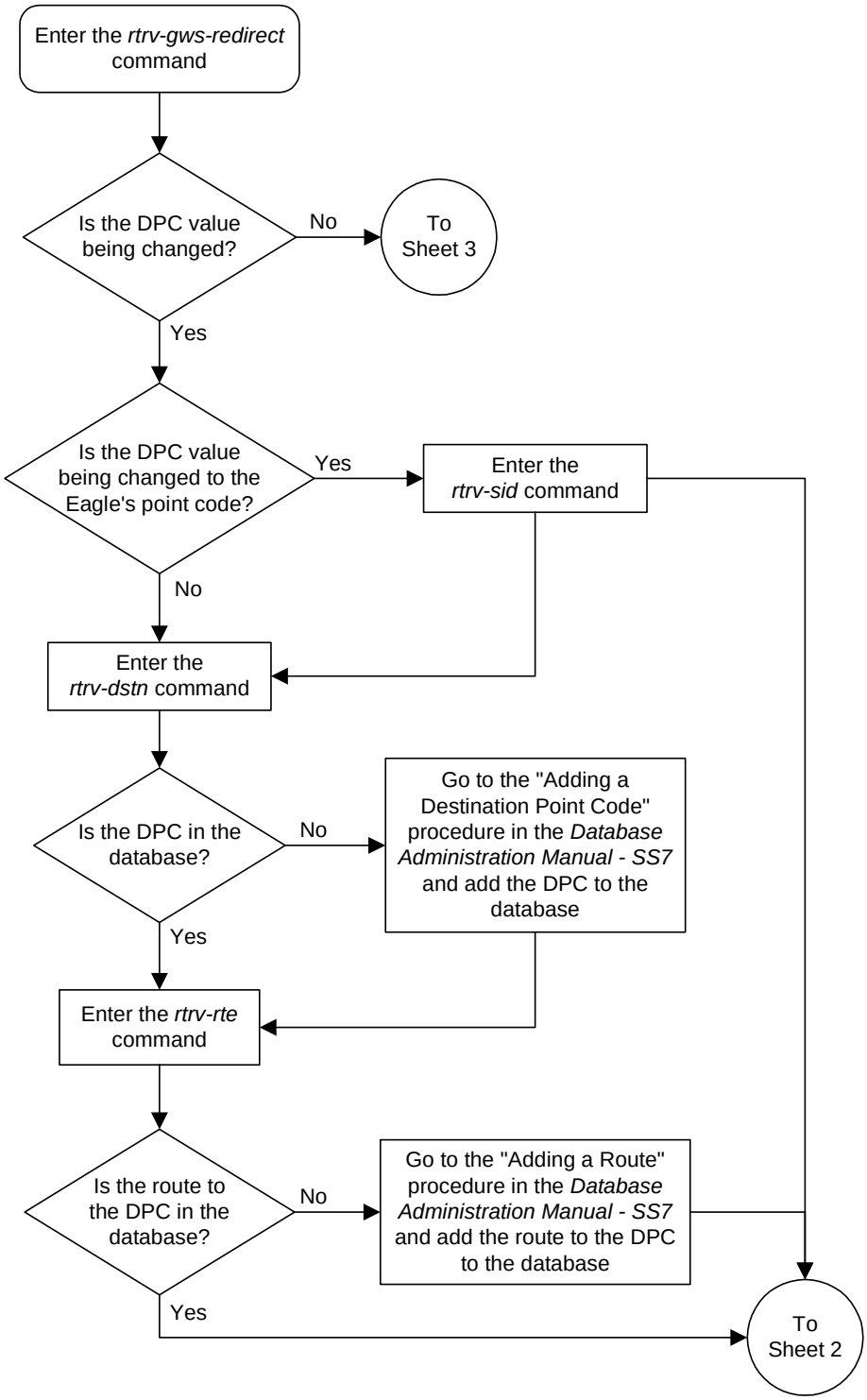
```
rlghncxa03w 04-03-07 00:37:31 GMT Rel 31.4.0
ENT-GTA: MASP A - COMPLTD
```

---

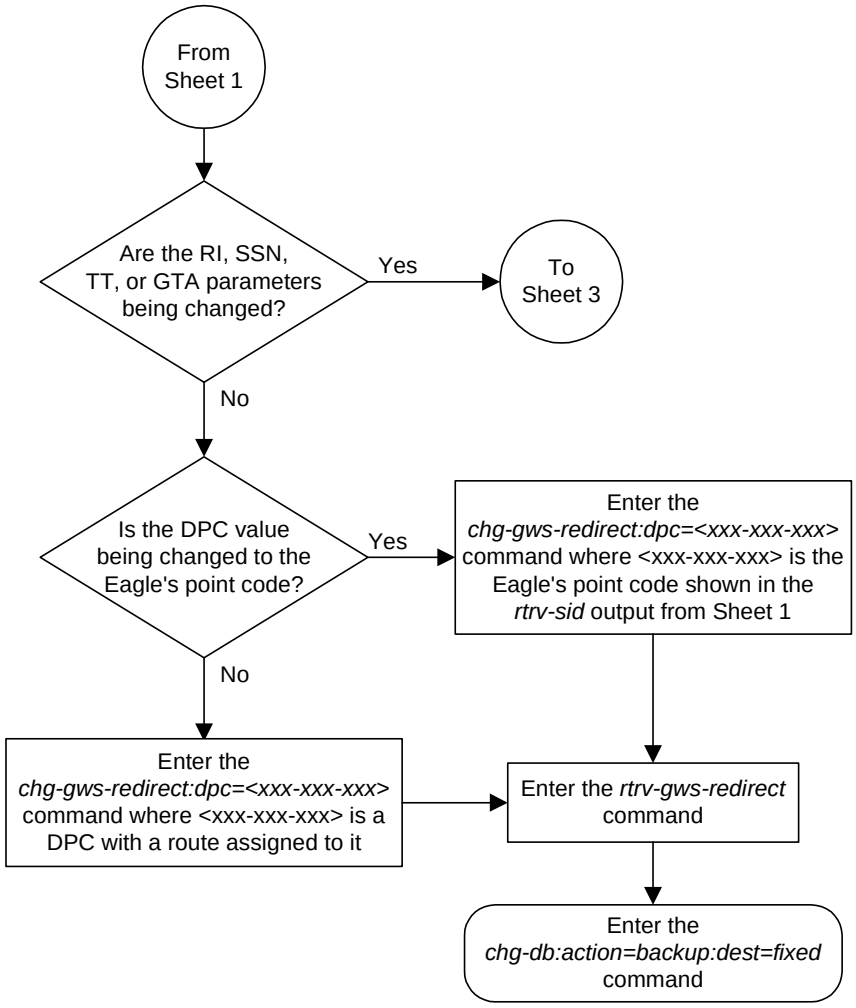
22. Backup the new changes using the **chg-db:action=backup:dest=fixed** command. The following messages should appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
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.
```

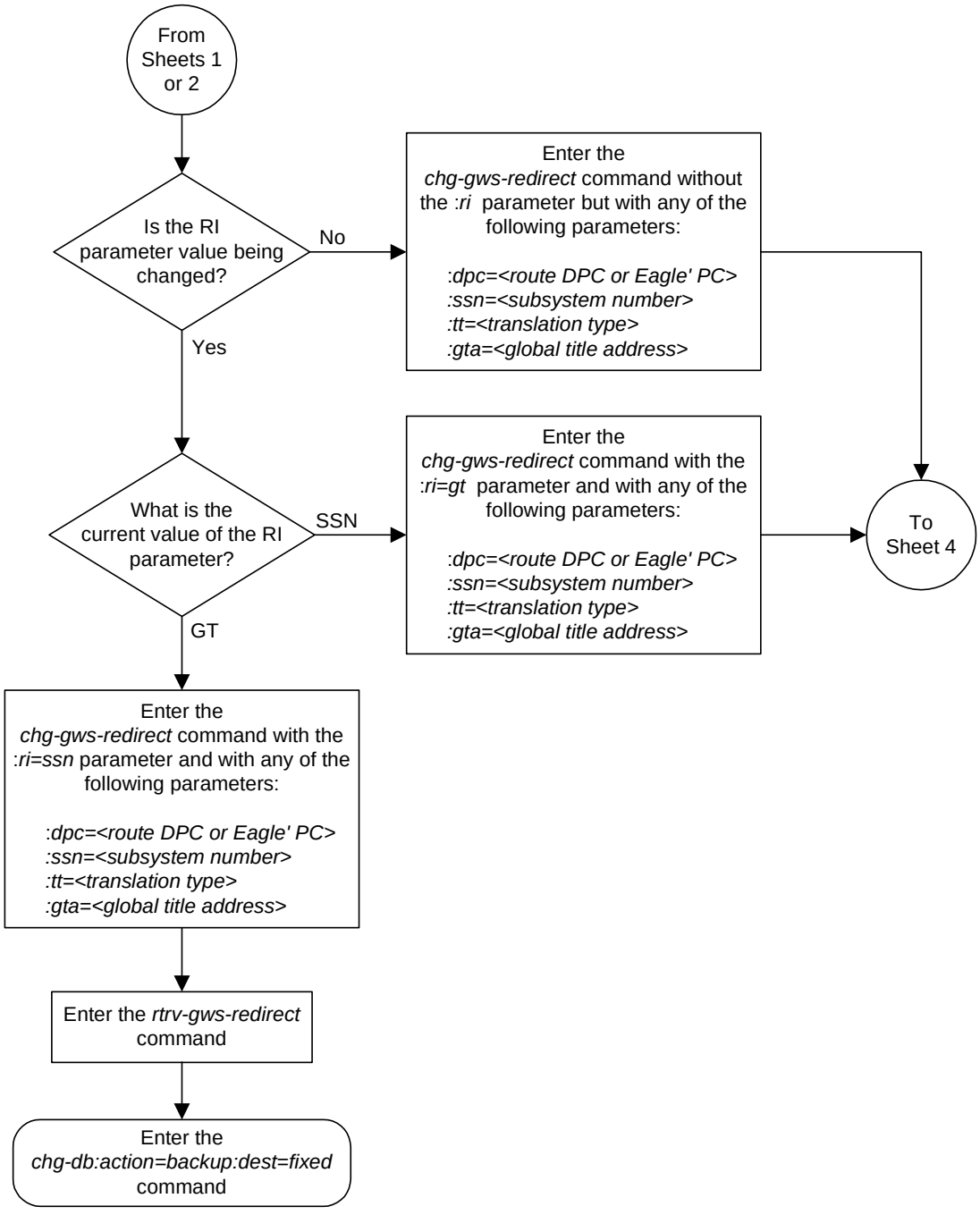
Flowchart 4-2. Changing the Gateway Screening Redirect Parameters (Sheet 1 of 9)



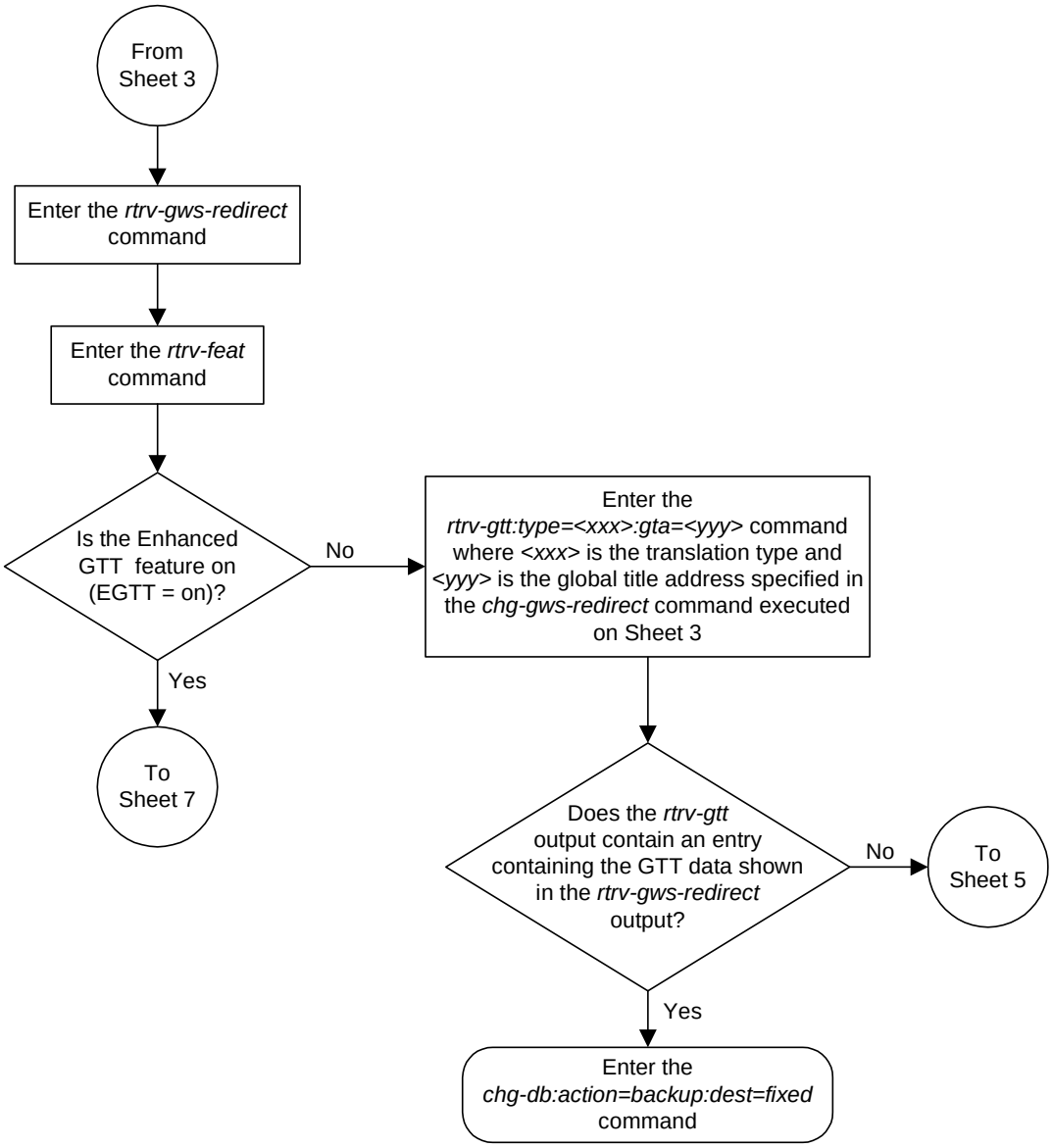
Flowchart 4-2. Changing the Gateway Screening Redirect Parameters (Sheet 2 of 9)



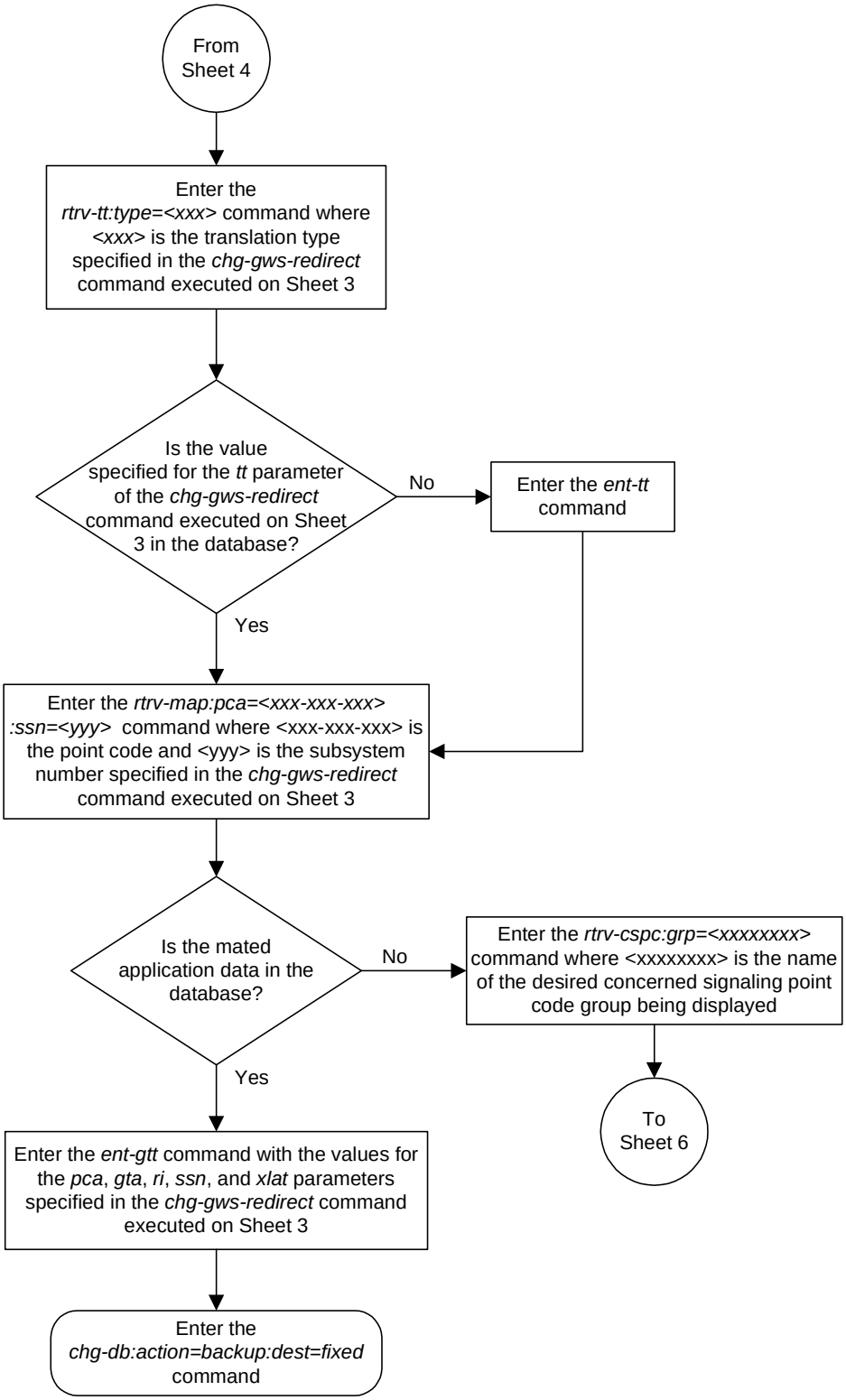
Flowchart 4-2. Changing the Gateway Screening Redirect Parameters (Sheet 3 of 9)



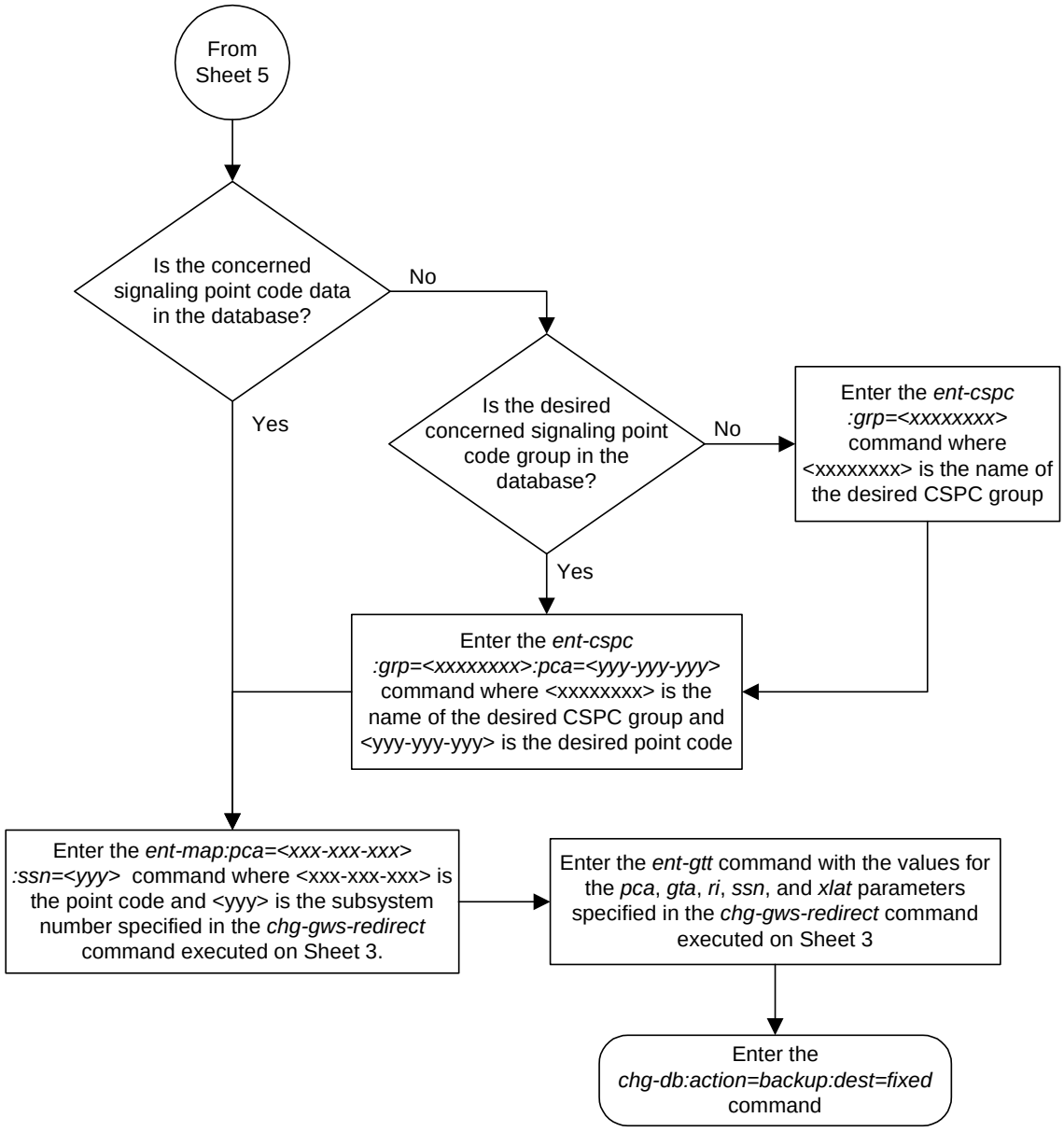
Flowchart 4-2. Changing the Gateway Screening Redirect Parameters (Sheet 4 of 9)



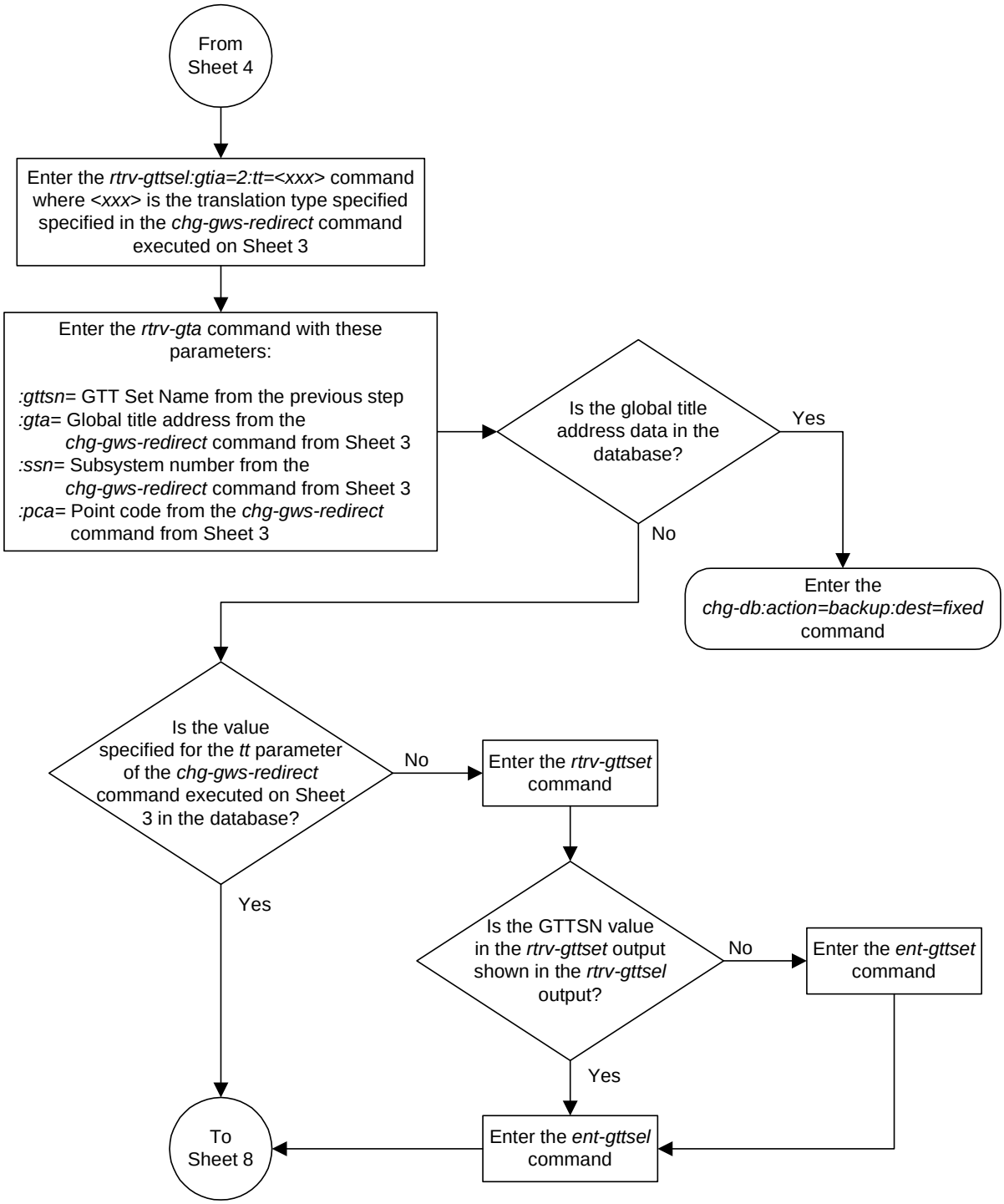
Flowchart 4-2. Changing the Gateway Screening Redirect Parameters (Sheet 5 of 9)



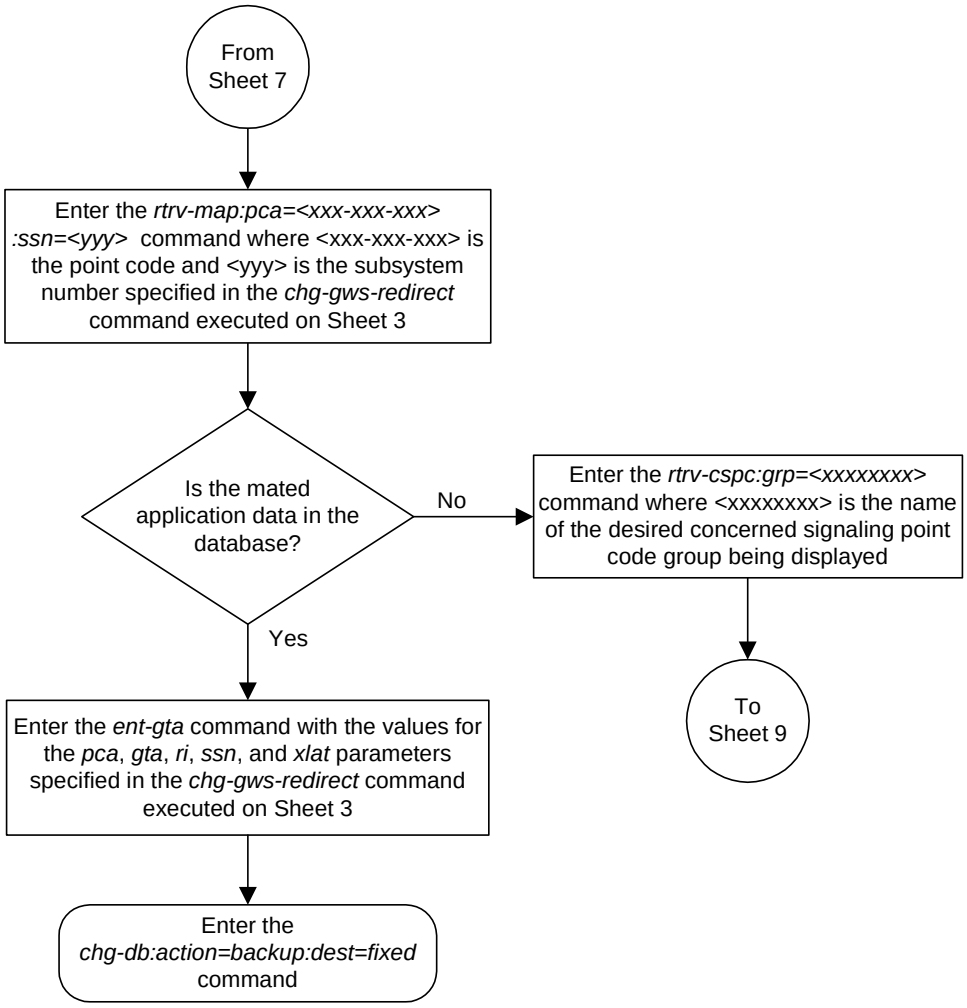
Flowchart 4-2. Changing the Gateway Screening Redirect Parameters (Sheet 6 of 9)



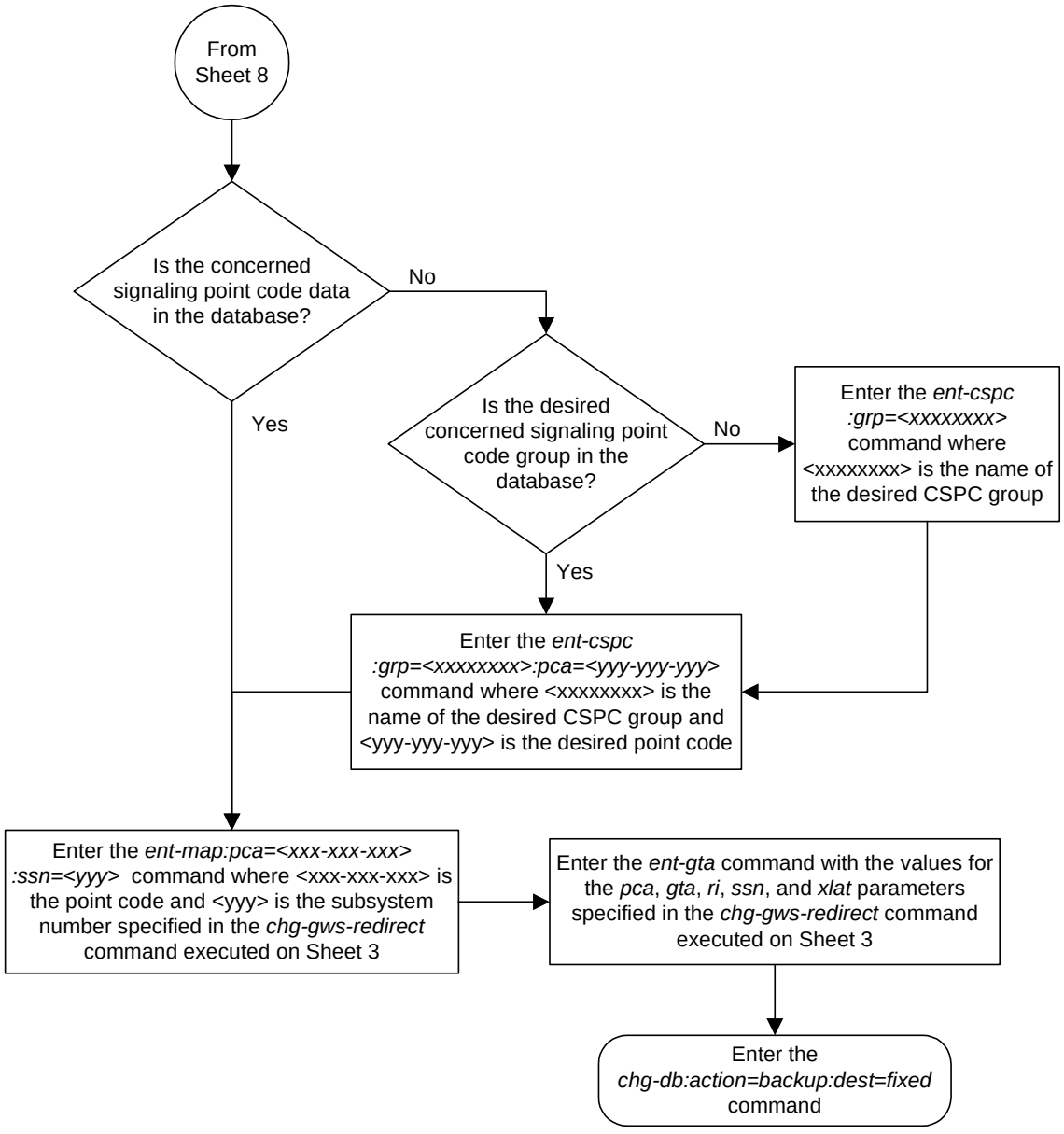
Flowchart 4-2. Changing the Gateway Screening Redirect Parameters (Sheet 7 of 9)



Flowchart 4-2. Changing the Gateway Screening Redirect Parameters (Sheet 8 of 9)



Flowchart 4-2. Changing the Gateway Screening Redirect Parameters (Sheet 9 of 9)



Disabling the Gateway Screening Redirect Function

This procedure is used to turn off the gateway screening redirect function using either the **dlt-gws-redirect** or **chg-gws-redirect** commands. Turning off the gateway screening redirect function also turns off the DTA feature.

Procedure

1. Verify that the gateway screening redirect function is enabled by entering the **rtrv-gws-redirect** command. The following is an example of the possible output.

```
rlghncxa03w 04-03-07 00:17:31 GMT Rel 31.4.0

ENABLED DPC          RI  SSN  TT     GTA
on      009-002-001  GT  15   225    9105551212
```

2. Disable the gateway screening redirect function by entering the **dlt-gws-redirect** command or the **chg-gws-redirect:enable=off** command.

When the **dlt-gws-redirect** command has been completed successfully, the following message should appear.

```
rlghncxa03w 04-03-07 00:18:31 GMT Rel 31.4.0
DLT-GWS-REDIRECT: MASP A - COMPLTD
```

When the **chg-gws-redirect** command has been completed successfully, the following message should appear.

```
rlghncxa03w 04-03-07 00:19:31 GMT Rel 31.4.0
CHG-GWS-REDIRECT: MASP A - COMPLTD
```

3. Display the gateway screening stop action sets in the database by entering the **rtrv-gws-actset** command. The entry **rdct** is displayed in the **ACT1** through the **ACT10** fields in any gateway screening stop action sets that have the redirect gateway screening stop action assigned to them. The following is an example of the possible output.

```
rlghncxa03w 04-03-07 00:20:31 GMT Rel 31.4.0
ACT  ACT    ACT  ACT  ACT  ACT  ACT  ACT  ACT  ACT  ACT  ACT
ID   NAME   1    2    3    4    5    6    7    8    9    10
--   ------ ---- ---- ---- ---- ---- ---- ---- ---- ---- ----
1    copy   copy
2    rdct   rdct
3    cr     copy rdct
GWS action set table is (3 of 16) 19% full
```

4. All gateway screening entities that have been assigned the redirect function must have the redirect function turned off. Check the gateway screening entities for any screening references that have the redirect gateway screening stop action assigned to them.

   Enter each of the following commands with the **actname** parameter specifying the name of the gateway screening stop action set shown in step 3 that contains the redirect gateway screening stop action. If a redirect gateway screening stop action has been assigned to a gateway screening entity, the name of the gateway screening stop action appears after the **NSR/ACT** field.

   If a redirect gateway screening stop action has not been assigned to a gateway screening entity, the command is rejected with this message.

   ```
   E3680 Cmd Rej: No match on ACTNAME parameter during retrieve
   ```

   rtrv-scr-opc:actname=rdct

   The following is an example of the possible output.

   ```
   rlghncxa03w 04-03-07 00:21:31 GMT Rel 31.4.0
   SCREEN = ALLOWED OPC
   SR    NI       NC       NCM      NSFI    NSR/ACT
   DTA1  240      001      010      STOP    RDCT
   ```

   rtrv-scr-blkopc:actname=rdct

   The following is an example of the possible output.

   ```
   rlghncxa03w 04-03-07 00:22:31 GMT Rel 31.4.0
   SCREEN = BLOCKED OPC
   SR    NI       NC       NCM      NSFI    NSR/ACT
   DTA2  C        C        C        STOP    RDCT
   ```

   rtrv-scr-sio:actname=rdct

   The following is an example of the possible output.

   ```
   rlghncxa03w 04-03-07 00:23:31 GMT Rel 31.4.0
   SCREEN = ALLOWED SIO
   SR    NIC  PRI  SI  H0     H1     NSFI    NSR/ACT
   DTA3  1    3    4   --     --     STOP    RDCT
   ```

   rtrv-scr-dpc:actname=rdct

   The following is an example of the possible output.

   ```
   rlghncxa03w 04-03-07 00:24:31 GMT Rel 31.4.0
   SCREEN = ALLOWED DPC
   SR    NI       NC       NCM      NSFI    NSR/ACT
   DTA4  243      015      001      STOP    RDCT
   ```

rtrv-scr-blkdpc:actname=rdct

The following is an example of the possible output.

```
rlghncxa03w 04-03-07 00:25:31 GMT Rel 31.4.0
SCREEN = BLOCKED DPC
SR    NI       NC       NCM      NSFI    NSR/ACT
DTA5  C        C        C        STOP    RDCT
```

rtrv-scr-destfld:actname=rdct

The following is an example of the possible output.

```
rlghncxa03w 04-03-07 00:26:31 GMT Rel 31.4.0
SCREEN = ALLOWED DESTFLD
SR    NI       NC       NCM      NSFI   NSR/ACT
DTA6  240      001      010      STOP   RDCT
```

---

5. If any of the necessary gateway screening entities displayed in step 4 have been assigned a gateway screening stop action containing the redirect gateway screening stop action, change the gateway screening stop action for these entities to a gateway screening stop action displayed in step 3 that does not have the redirect gateway screening stop action assigned to it, or to have no gateway screening stop action set assigned to the gateway screening entity with the **actname=none** parameter.

   These command examples are based on the example outputs shown in step 4.

   chg-scr-opc:sr=dta1:ni=240:nc=001:ncm=010:actname=none

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

   ```
   rlghncxa03w 04-03-07 00:27:31 GMT Rel 31.4.0
   CHG-SCR-OPC: SCREEN SET AFFECTED - DTA1 55% FULL
   CHG-SCR-OPC: MASP A - COMPLTD
   ```

   chg-scr-blkdpc:sr=dta2:nc=c:ni=c:ncm=c:actname=none

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

   ```
   rlghncxa03w 04-03-07 00:28:31 GMT Rel 31.4.0
   CHG-SCR-BLKOPC: SCREEN SET AFFECTED - DTA2 55% FULL
   CHG-SCR-OPC: MASP A - COMPLTD
   ```

   chg-scr-sio:sr=dta3:nic=1:pri=3:si=4:actname=none

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

   ```
   rlghncxa03w 04-03-07 00:29:31 GMT Rel 31.4.0
   CHG-SCR-SIO: SCREEN SET AFFECTED - DTA3 55% FULL
   CHG-SCR-SIO: MASP A - COMPLTD
   ```

chg-scr-dpc:sr=dta4:ni=243:nc=015:ncm=001:actname=none

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

```
rlghncxa03w 04-03-07 00:30:31 GMT Rel 31.4.0
CHG-SCR-DPC: SCREEN SET AFFECTED - DTA4 55% FULL
CHG-SCR-DPC: MASP A - COMPLTD
```

chg-scr-blkdpc:sr=dta5:nc=c:ni=c:ncm=c:actname=none

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

```
rlghncxa03w 04-03-07 00:31:31 GMT Rel 31.4.0
CHG-SCR-BLKDPC: SCREEN SET AFFECTED - DTA5 55% FULL
CHG-SCR-BLKDPC: MASP A - COMPLTD
```

chg-scr-destfld:sr=dta6:ni=240:nc=001:ncm=010:actname=none

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

```
rlghncxa03w 04-03-07 00:32:31 GMT Rel 31.4.0
CHG-SCR-DESTFLD: SCREEN SET AFFECTED - DTA6 55% FULL
CHG-SCR-DESTFLD: MASP A - COMPLTD
```

6. Verify that the changes have been made by entering any of the following commands with the **actname** parameter and the name of the gateway screening stop action set used in step 4.

   rtrv-scr-opc:actname=rdct

   rtrv-scr-blkopc:actname=rdct

   rtrv-scr-sio:actname=rdct

   rtrv-scr-dpc:actname=rdct

   rtrv-scr-blkdpc:actname=rdct

   rtrv-scr-destfld:actname=rdct

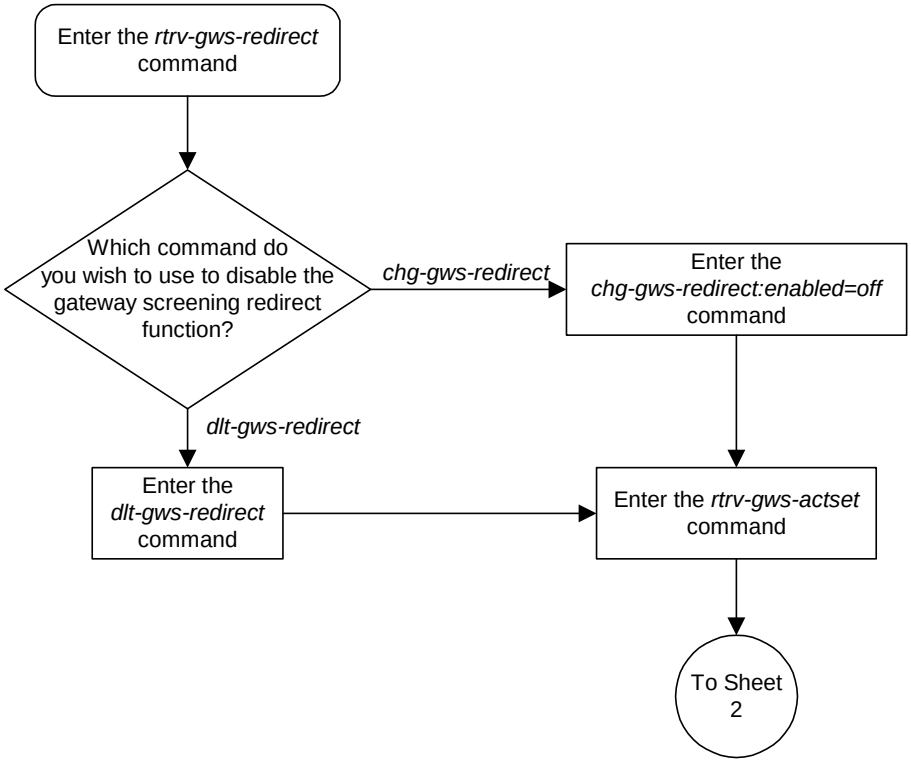
   None of the screens should contain any entries assigned to the gateway screening redirect function. When each these commands are executed, this message should appear.

   ```
   E3680 Cmd Rej: No match on ACTNAME parameter during retrieve
   ```

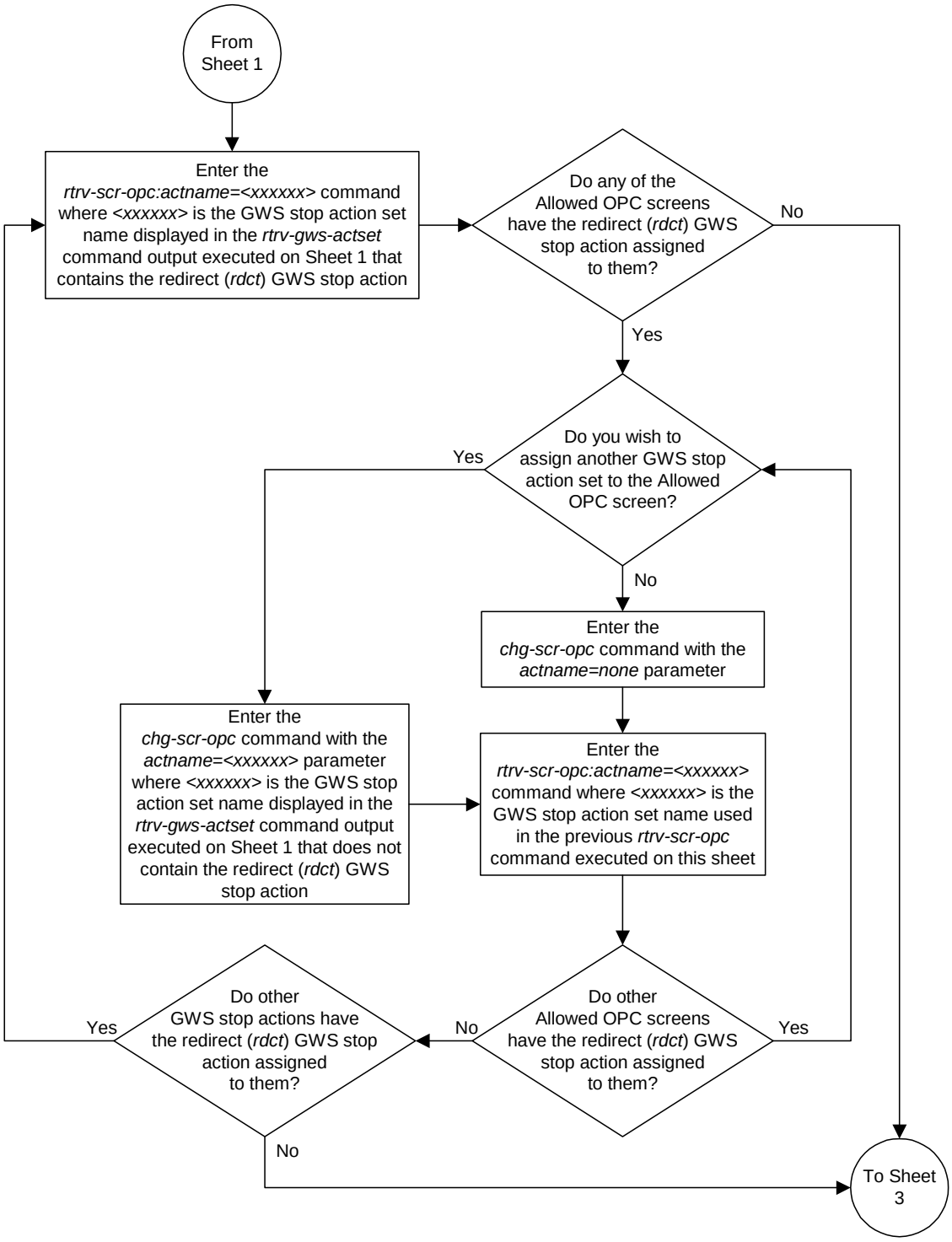
7. Backup the new changes using the **chg-db:action=backup:dest=fixed** command. The following messages should appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

   ```
   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.
   ```

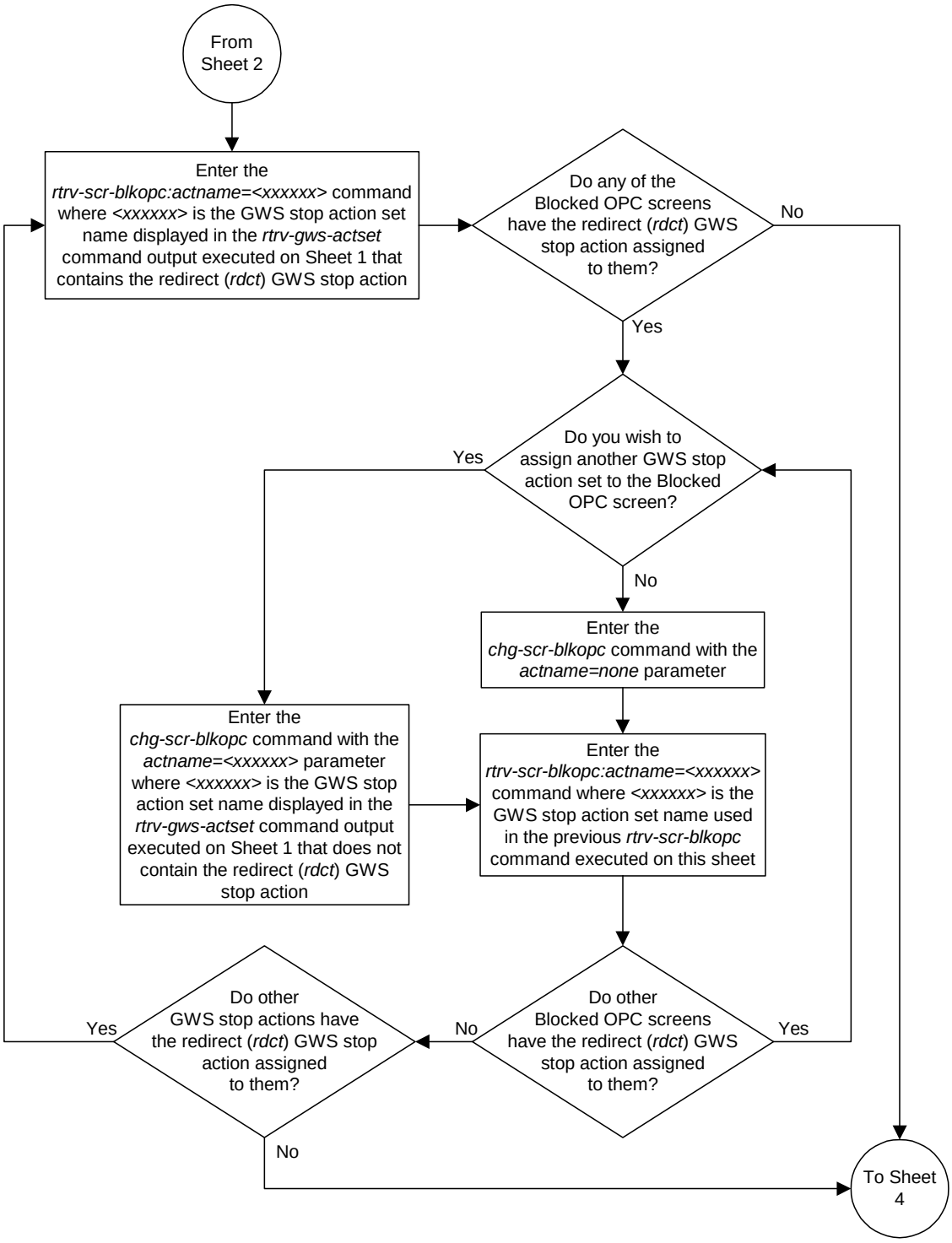
Flowchart 4-3. Disabling the Gateway Screening Redirect Function (Sheet 1 of 7)



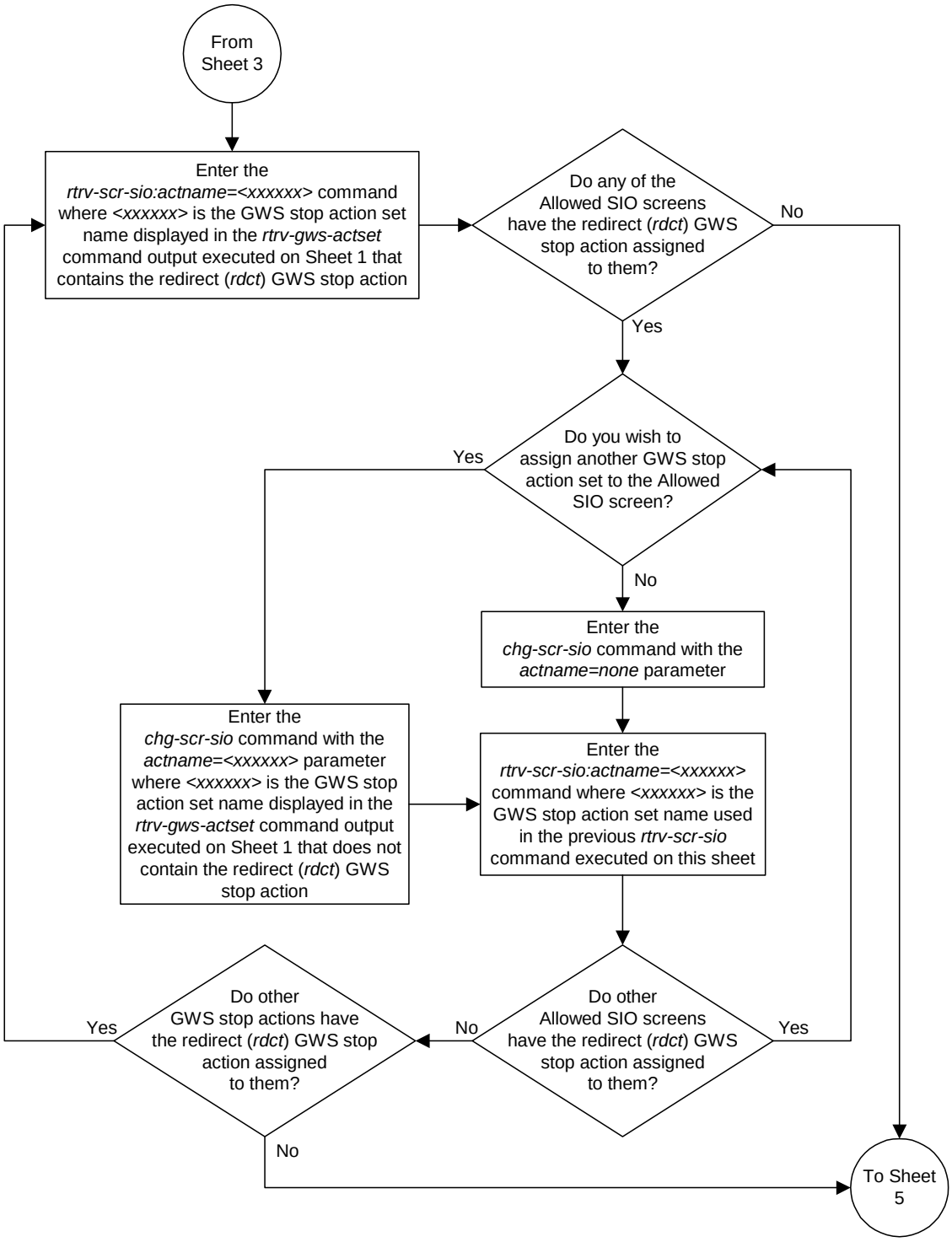
Flowchart 4-3. Disabling the Gateway Screening Redirect Function (Sheet 2 of 7)



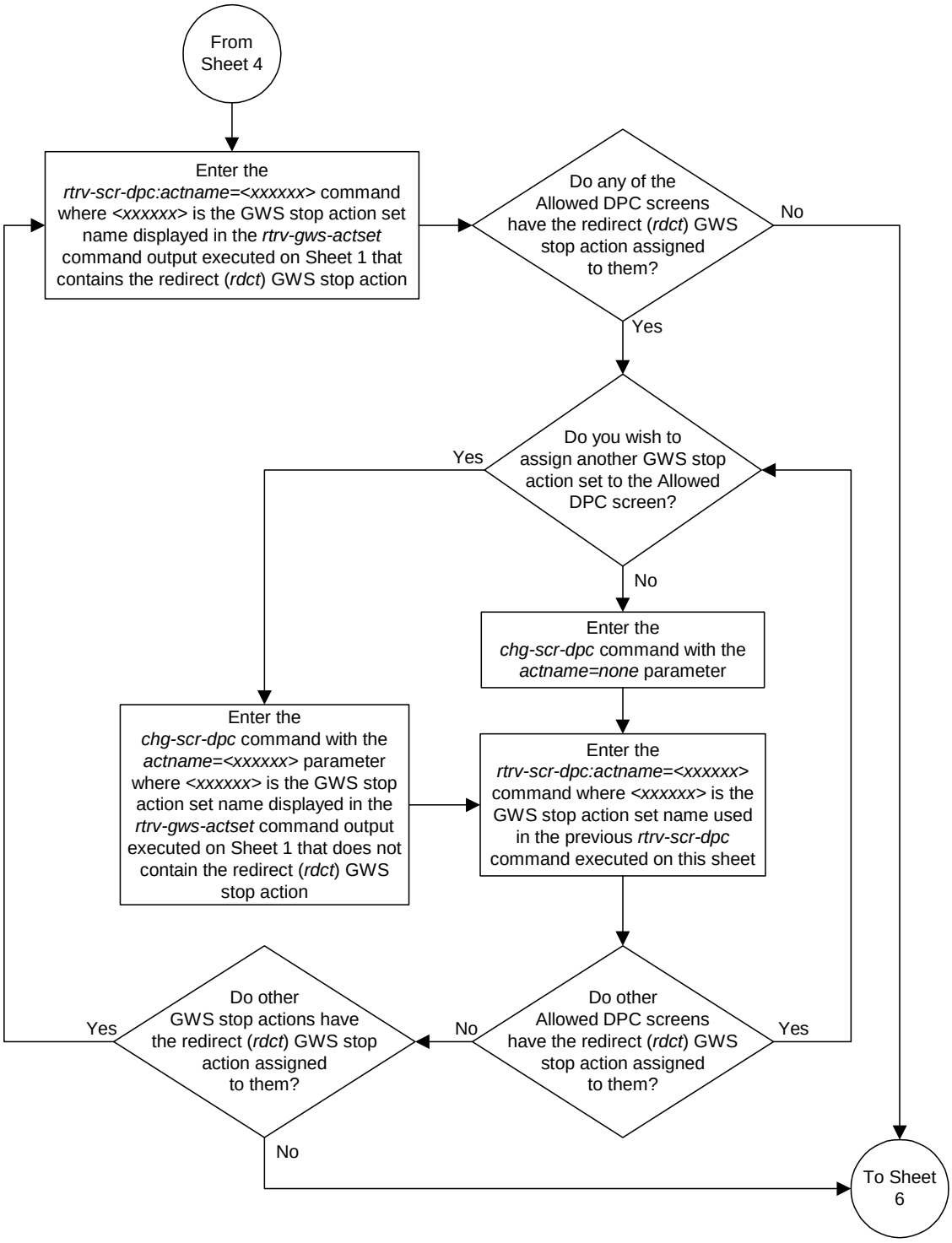
Flowchart 4-3. Disabling the Gateway Screening Redirect Function (Sheet 3 of 7)



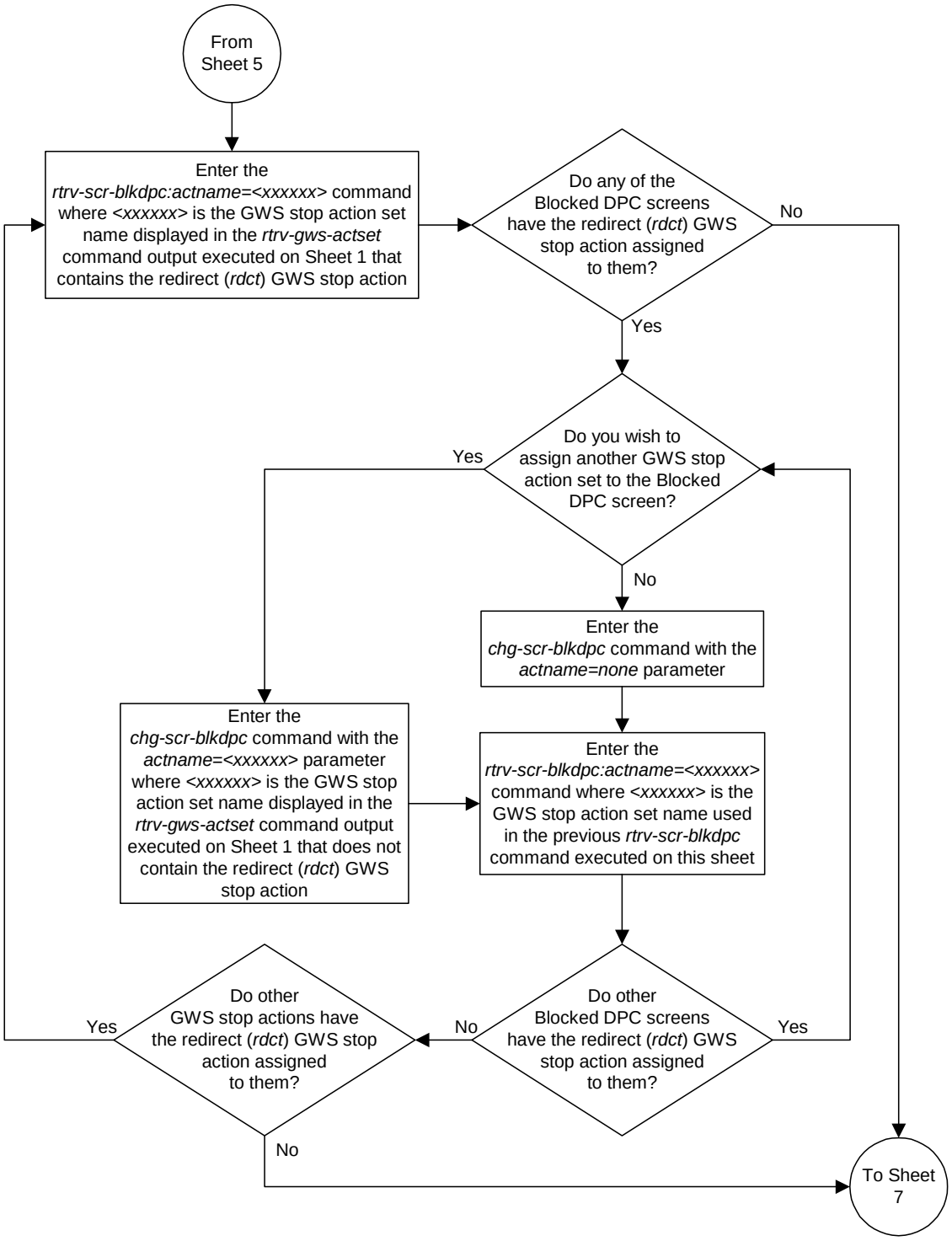
Flowchart 4-3. Disabling the Gateway Screening Redirect Function (Sheet 4 of 7)



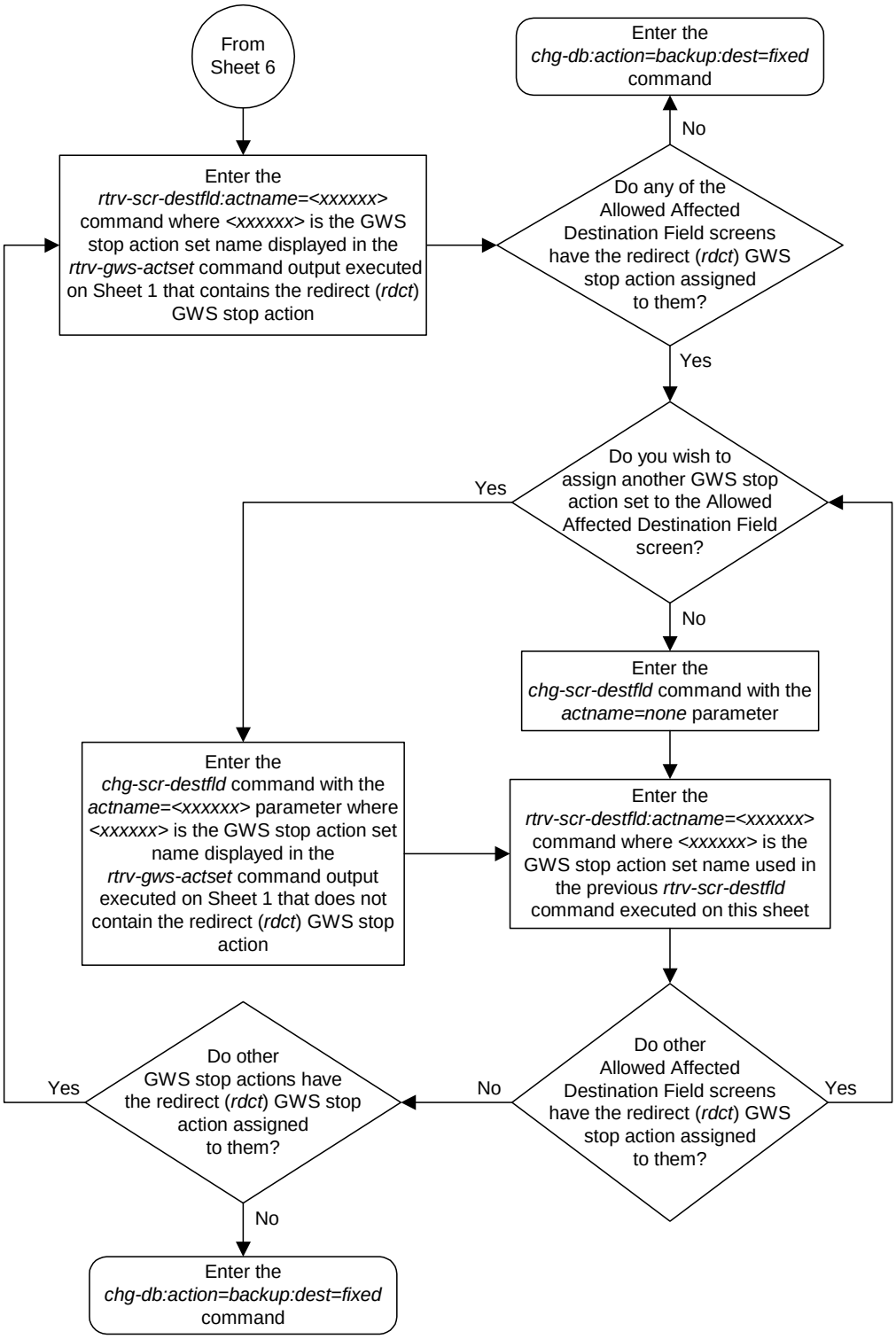
Flowchart 4-3. Disabling the Gateway Screening Redirect Function (Sheet 5 of 7)



Flowchart 4-3. Disabling the Gateway Screening Redirect Function (Sheet 6 of 7)



Flowchart 4-3. Disabling the Gateway Screening Redirect Function (Sheet 7 of 7)



5

GSM MAP Screening Configuration

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Introduction

Traditionally, STP message screening has been limited to the MTP and SCCP levels; this has been sufficient to meet operators' needs. However, GSM mobile operators have an increasing need for screening at the Mobile Application Part (MAP) level. This need is driven by advanced network capabilities and proliferating roaming agreements.

New features that require this enhanced screening capability are Inter-operator Short Message Service (SMS) and Any Time Interrogation (ATI). The GSM MAP Screening feature focuses on solving the screening needs associated with ATI, which is defined in MAP version 3. An ATI message allows an external server to interrogate an HLR and obtain information about the location and/or state of a GSM subscriber. It may be desirable to control which external entities can request this information, and what information they can request before allowing the message to pass through to the HLR.

This feature allow the user to provision which MAP SSNs are affected, which MAP operations codes to screen, which origination points are allowed, and which error messages to use.

NOTE: GSM MAP Screening can be used with linksets containing ITU international or ITU national adjacent point codes whether or not the Enhanced GSM MAP Screening feature is enabled and on. GSM MAP Screening can be used with linksets containing ANSI adjacent point codes only if the Enhanced GSM MAP screening feature is enabled and on.

GSM MAP Screening Overview

When the Eagle receives an SCCP message which requires global title translation, it performs global title translation and forwards the message to its destination. Before forwarding the message to its destination, the Eagle performs Gateway Screening. GSM MAP screening is then performed on the message before forwarding it to the destination. GSM MAP screening checks to see if the GSM MAP screening feature is enabled and on before screening the message. If the feature is not enabled and off, the message is routed to its destination. If the message fails GSM MAP screening, the Eagle performs one of the following actions:

- Route the message to destination
- Discard the message
- Forward the message to a new destination
- Duplicate the message. Send the original message to the original destination, and send the duplicate message to a new destination.
- Duplicate the message and send the duplicate message to a new destination. Discard the original message.
- Return an error message to the originator.

GSM MAP screening first checks to see whether the calling party SSN and called party SSN are present and targeted to be screened or not. If both SSNs are targeted, it then checks for the MAP operations code of the message to know whether it is targeted to be screened or not. If the MAP operations code is not targeted to be screened, then the system either discards or routes the message, defined by the **gsmdflt** parameter of the **chg-stpopts** command. If the MAP operations code is targeted to be screened, GSM MAP screening checks the calling party address of the message to know whether it is targeted for screening or not.

If the CGPA (calling party address) of the message is not targeted for GSM MAP Screening, then the screening action defined in the MAP operations code table by the **dfltact** parameter of the **ent-gsms-opcode** command is performed on the message.

If the CGPA of the message is targeted for screening and the Enhanced GSM MAP Screening feature is enabled and on, GSM MAP Screening checks the CDPA (called party address) of the message to know whether or not it is targeted for screening. If the CDPA of the message is targeted for screening, GSM MAP screening checks to see if the ATI request contains the forbidden parameter value provisioned for the CDPA. If there is no forbidden parameter in the ATI request, the message is not an ATI request, or the provisioned forbidden parameter value for the CDPA is **none**, the message is routed to the destination. If the message contains the forbidden parameter value provisioned for the CDPA, or the provisioned forbidden parameter value is **all**, GSM MAP screening performs the screening action defined in the CDPA screening table by the **action** parameter of the **ent-gsmmap-scrn** command.

If the CDPA of the message is not targeted for screening, GSM MAP screening checks to see if the ATI request contains the forbidden parameter value provisioned for the CGPA. If there is no forbidden parameter in the ATI request, the message is not an ATI request, or the provisioned forbidden parameter value for the CGPA is **none**, the message is routed to the destination. If the message contains the forbidden parameter value provisioned for the CGPA, or the provisioned forbidden parameter value is **all**, GSM MAP screening performs the screening action defined in the CGPA screening table by the **action** parameter of the **ent-gsmmap-scrn** command.

If the CGPA of the message is targeted for screening and the Enhanced GSM MAP Screening feature is not enabled and off, GSM MAP Screening checks the CGPA (calling party address) of the message to know whether or not it is targeted for screening. If the CGPA of the message is targeted for screening, GSM MAP screening checks to see if the ATI request contains the forbidden parameter value provisioned for the CGPA. If there is no forbidden parameter in the ATI request, the message is not an ATI request, or the provisioned forbidden parameter value for the CGPA is **none**, the message is routed to the destination. If the message contains the forbidden parameter value provisioned for the CGPA, or the provisioned forbidden parameter value is **all**, GSM MAP screening performs the screening action defined in the CGPA screening table by the **action** parameter of the **ent-gsmmap-scrn** command.

Figure 5-1 on page 5-4 shows overview of GSM MAP screening functionality.

Figure 5-1. GSM MAP Screening Overview (Sheet 1 of 2)

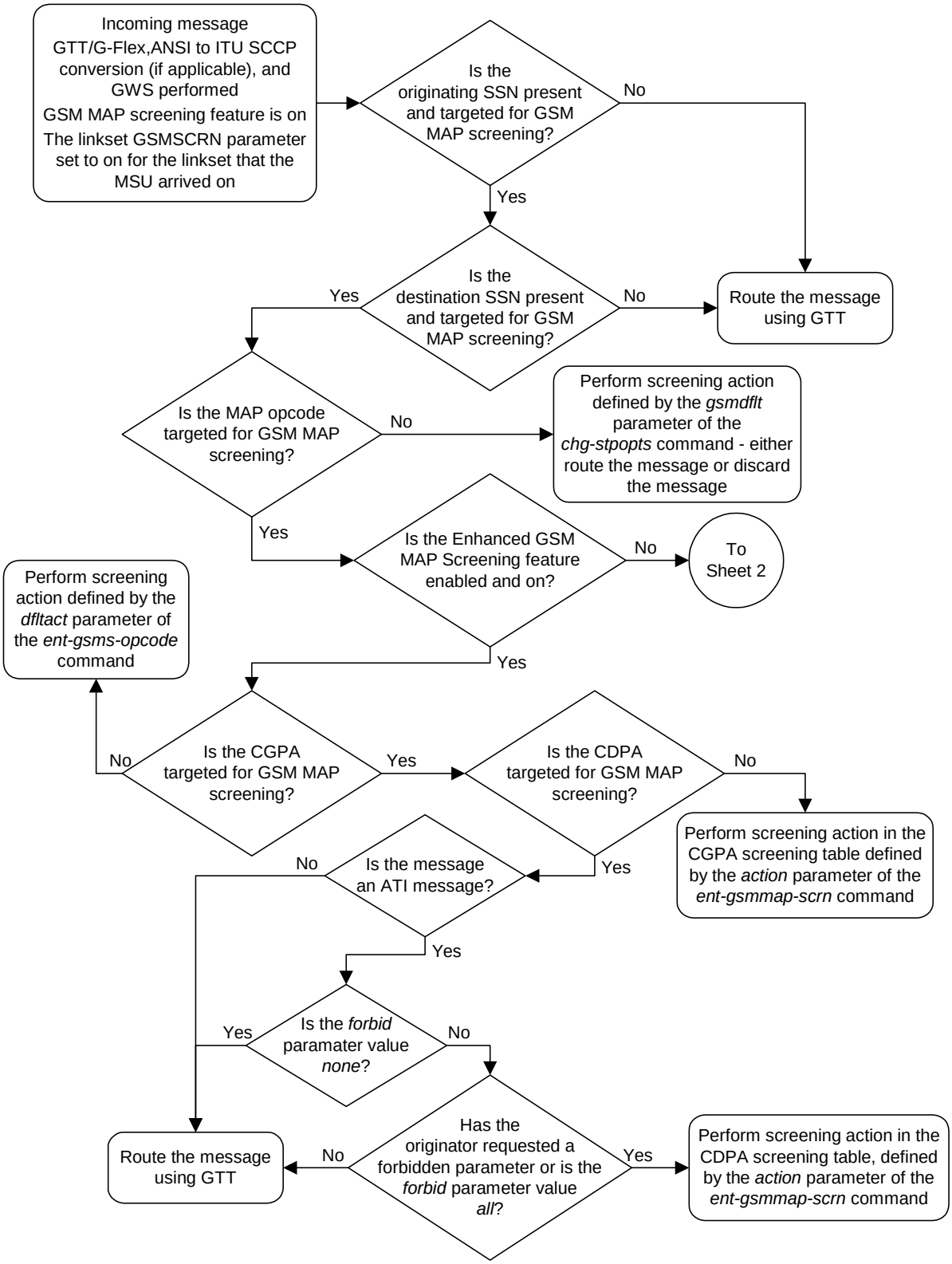
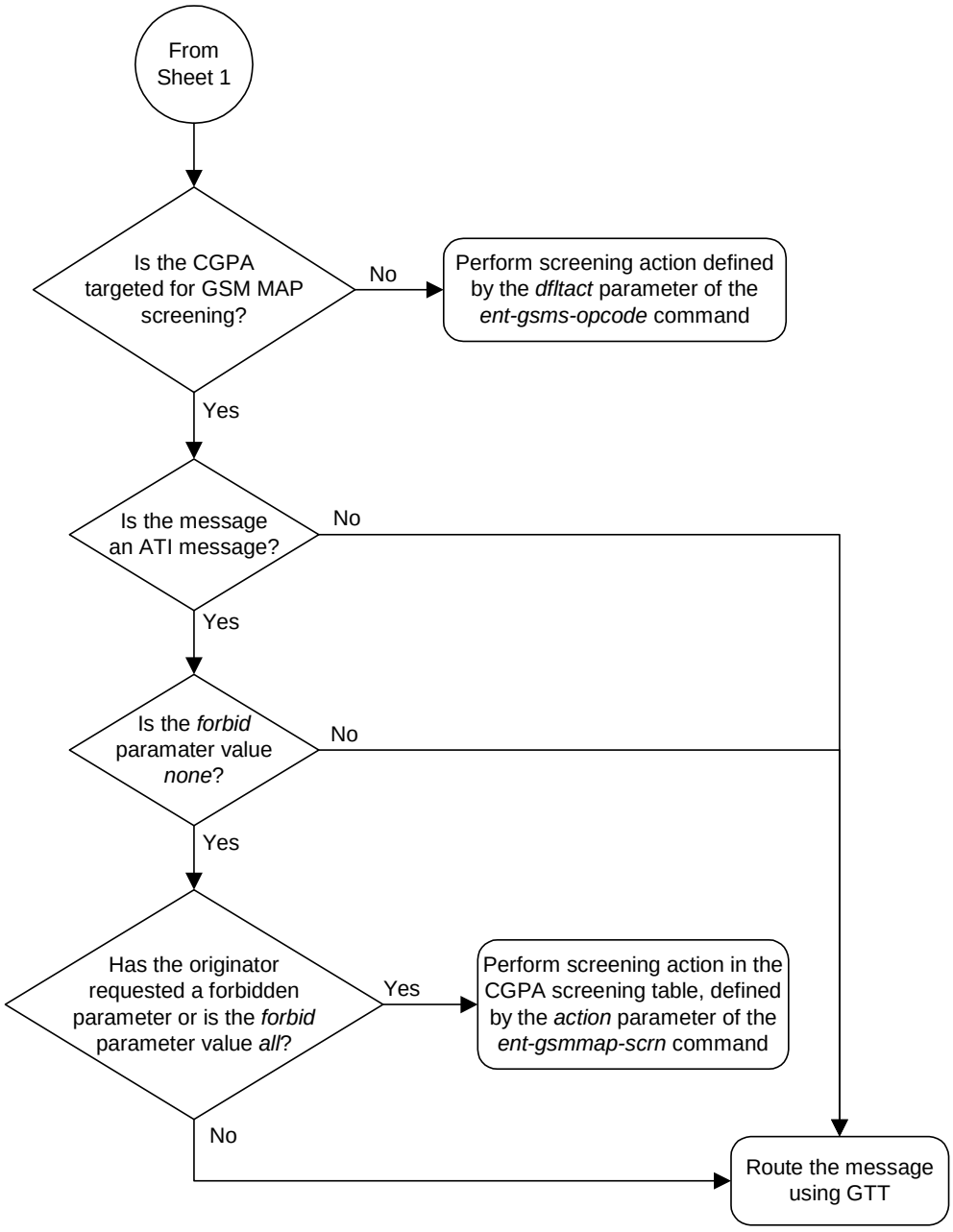


Figure 5-1. GSM MAP Screening Overview (Sheet 2 of 2)



GSM MAP Screening Details

GSM MAP screening verifies the MAP message format and performs screening before the message is routed to the destination. The following database tables are used in performing GSM MAP screening:

- SSN table
- MAP operations code table
- STP option table
- MAP screening able

GSM MAP Screening is performed in the following stages.

1. The following fields from SCCP message are decoded:
   - — The SSN from the calling party address
   - — The SSN from the called party address
   - — The global title address from the calling party address
   - — The global title address from the called party address (only if the Enhanced GSM MAP Screening feature is enabled and on).
2. GSM MAP Screening performs a lookup in the origination SSN table for an entry with the SSN of calling party address. If an entry is not found, GSM MAP screening is stopped and the message is routed to its destination using global title translation.
3. GSM MAP Screening performs a lookup in the destination SSN table for an entry with the SSN of called party address. If an entry is not found, GSM MAP screening is stopped and the message is routed to its destination using global title translation.
4. GSM MAP Screening checks to see if the MAP message was received in proper format. The MAP operations code and parameters are extracted from the MAP message. If the SCCP portion of the message was not in a valid format, GSM MAP screening routes the message to its destination as if the message passed GSM MAP screening. If the TCAP portion is not in a valid format, the action defined by the GSM MAP screening decode error action from the STP option table (pass or discard) is performed and a UIM is generated indicating that an Invalid TCAP message received.
5. GSM MAP Screening performs a lookup in the MAP screening table for an entry with the MAP operations code of the MAP message. If an entry is not found, the default action from the STP option table is performed. If the default action is pass, the message is routed to its destination. If the default action is discard, the message is discarded.

6. GSM MAP Screening performs a lookup in the MAP screening table for an entry containing the global title address of the calling party address and the MAP operations code. If an entry is not found in the MAP screening table, the screening action defined in the MAP operations code table by the **dfltact** parameter of the **ent-gsms-opcode** command is performed.

7. If an entry is found in the MAP screening table, the forbidden parameter from the MAP screening table is checked. If the forbidden parameter value is **none**, the message is routed to its destination. If the forbidden parameter value is **all**, the screening action defined in the GSM MAP screening table by the **action** parameter of the **ent-gsmmap-scrn** command is performed. For any other forbidden parameter, the parameter list of the message is examined. If the forbidden parameter is found in the parameter list, then the screening action defined in the GSM MAP screening table by the **action** parameter of the **ent-gsmmap-scrn** command is performed.

   The screening actions defined by the **dfltact** parameter of the **ent-gsms-opcode** command and the **action** parameter of the **ent-gsmmap-scrn** command are:

   – DISCARD – do not route the MSU. The MSU is discarded (thrown away) and the appropriate UIM is issued. This is the default action value.
   – PASS – route the message as normal to the destination, a UIM is generated.
   – ATIERR – do not route the MSU and send a rejection message back to the originator.
   – ROUTE – route the message as normal to the original destination node, defined by global title translation. No UIM is output.
   – FORWARD – route the original message to the forward node. The original message is not sent to the original node. If, however, the forwarded node is not available for routing then the MSU is routed to the original node, defined by global title translation.
   – DUPLICATE – route the message as normal to the original destination, defined by global title translation, and route a copy of the original message to the duplicate node. If the MSU fails to route to the duplicate node, then a UIM is generated indicating the duplicate routing failure.
   – DUPLICATE AND DISCARD – route the original message to the duplicate node. The original message is not sent to the original node. If, however, the duplicate node is not available for routing then the MSU is discarded.

Figure 5-2 on page 5-8 shows how GSM MAP screening is performed.

Figure 5-2. GSM MAP Screening Details (Sheet 1 of 7)

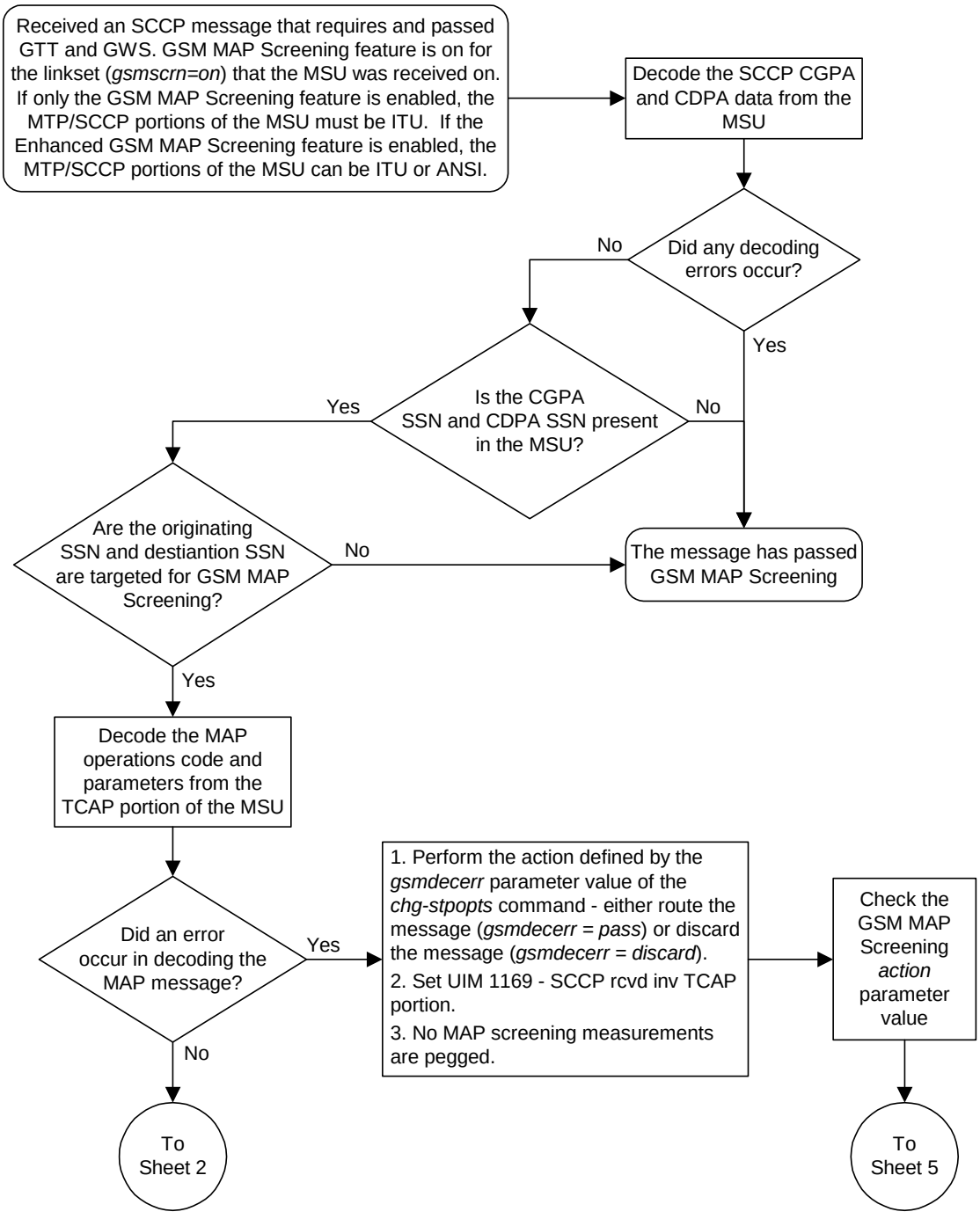


Figure 5-2. GSM MAP Screening Details (Sheet 2 of 7)

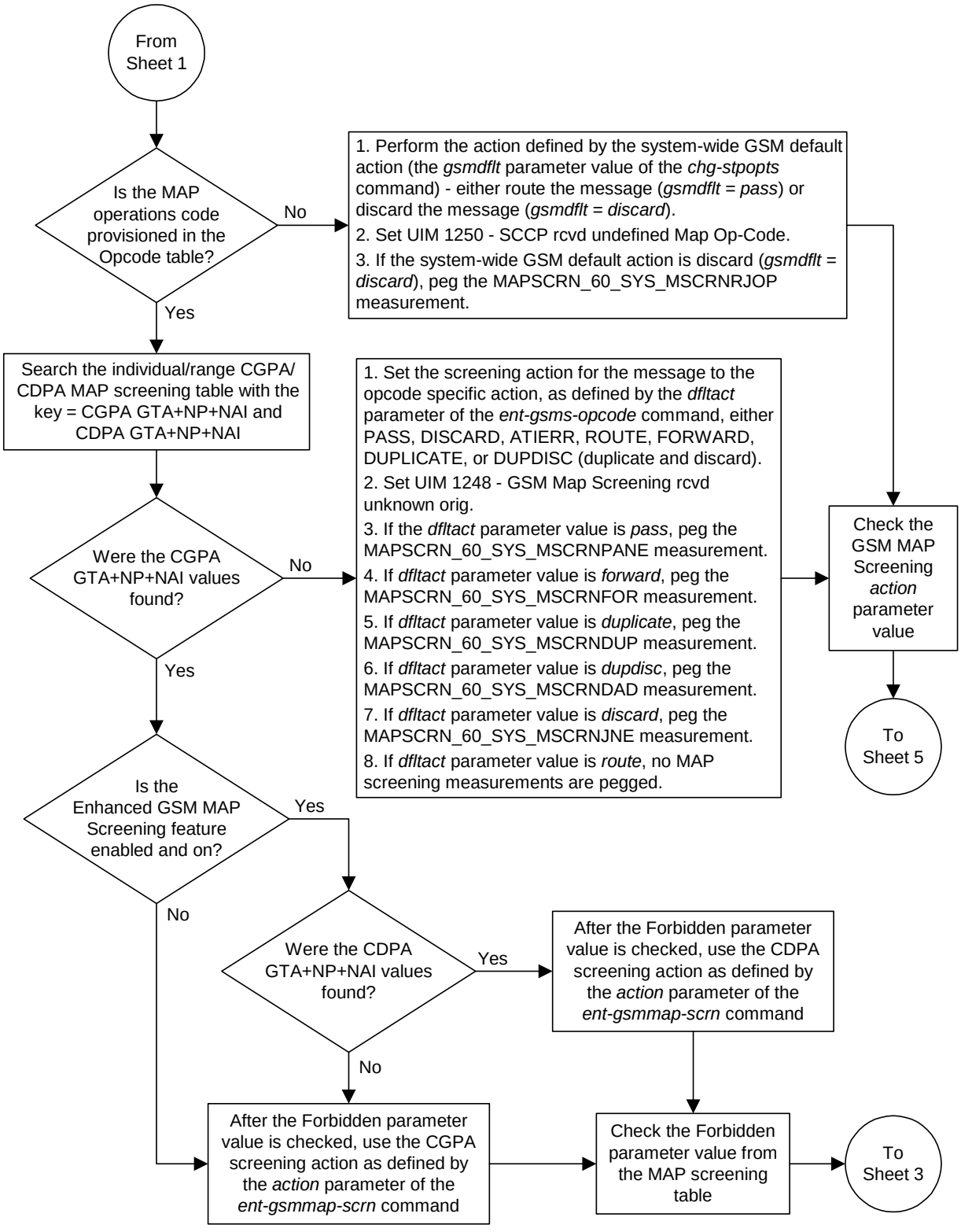


Figure 5-2. GSM MAP Screening Details (Sheet 3 of 7)

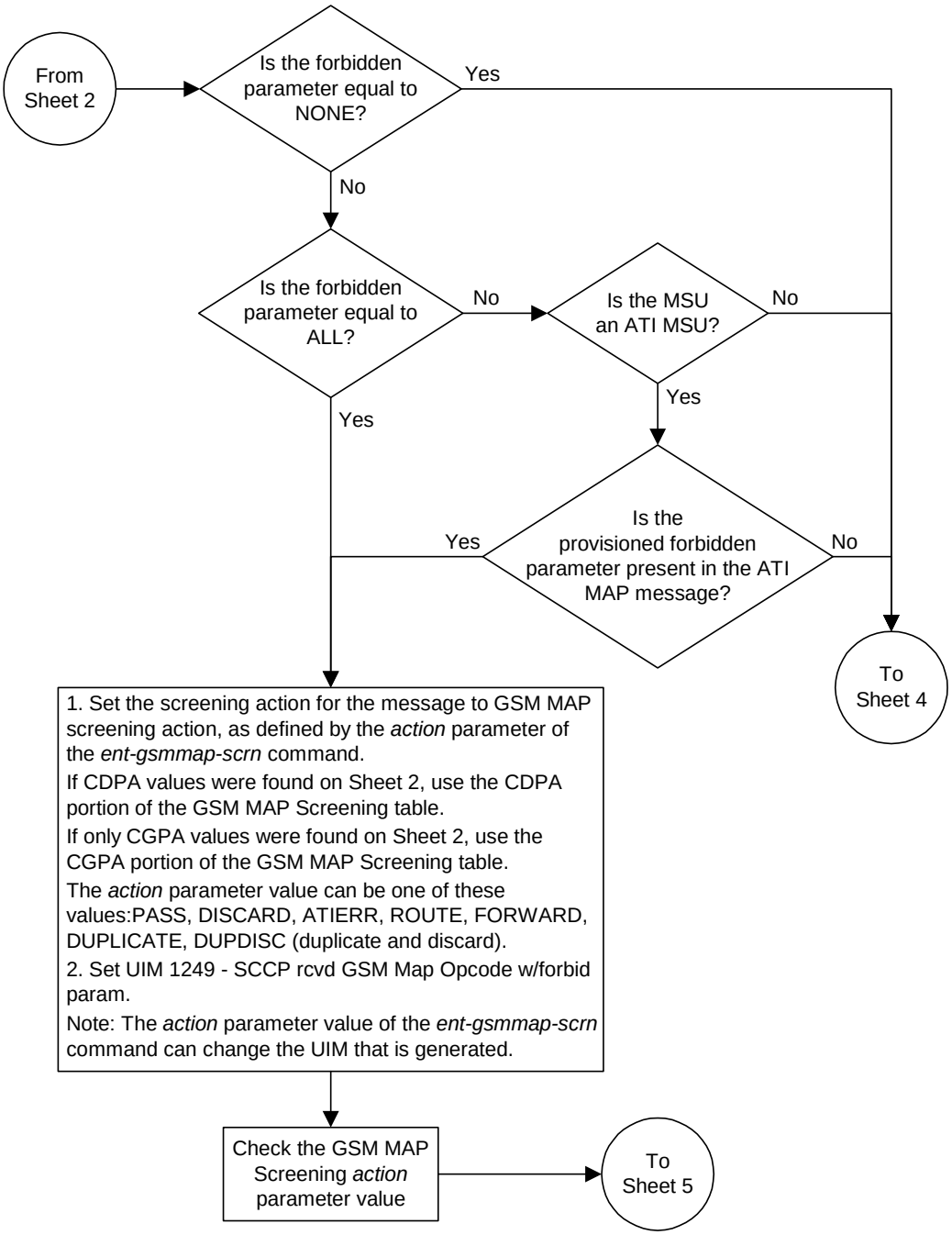


Figure 5-2. GSM MAP Screening Details (Sheet 4 of 7)

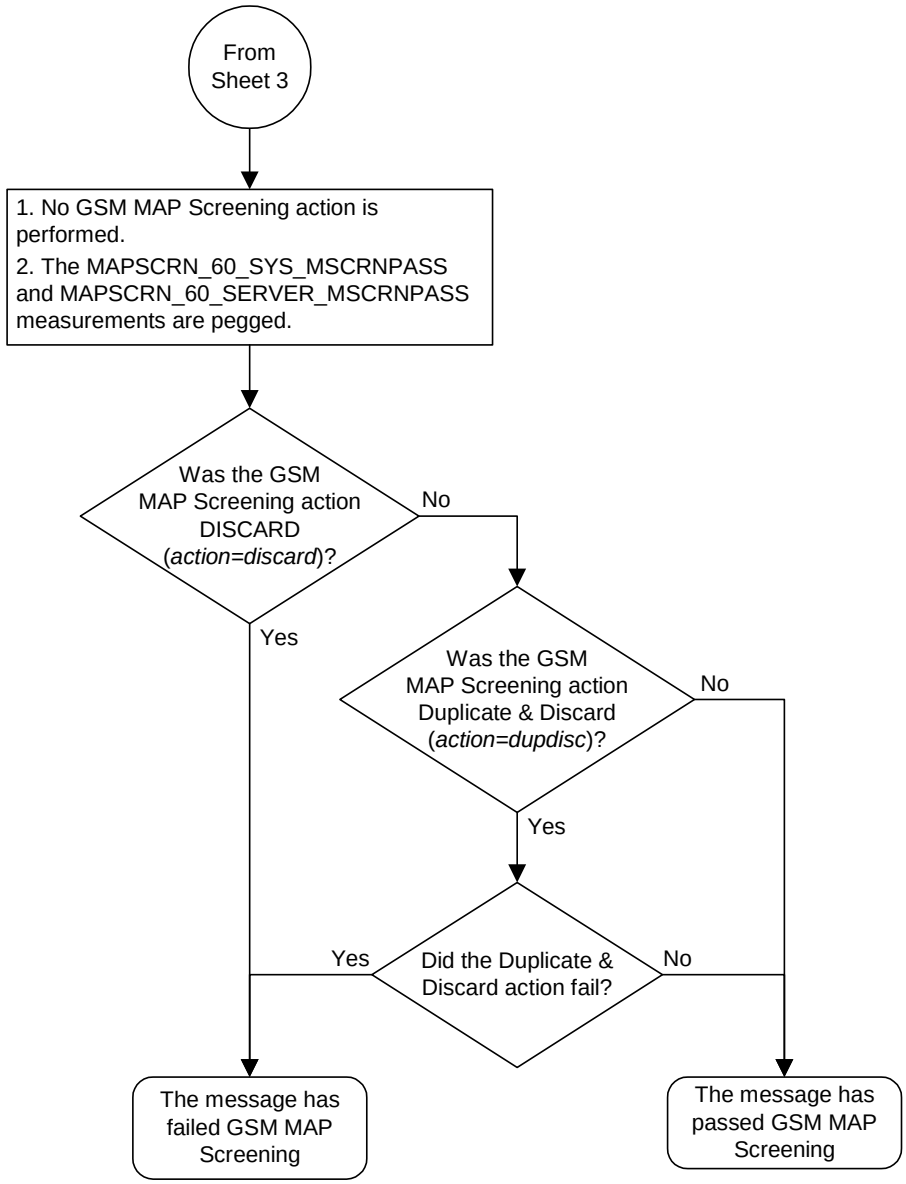


Figure 5-2. GSM MAP Screening Details (Sheet 5 of 7)

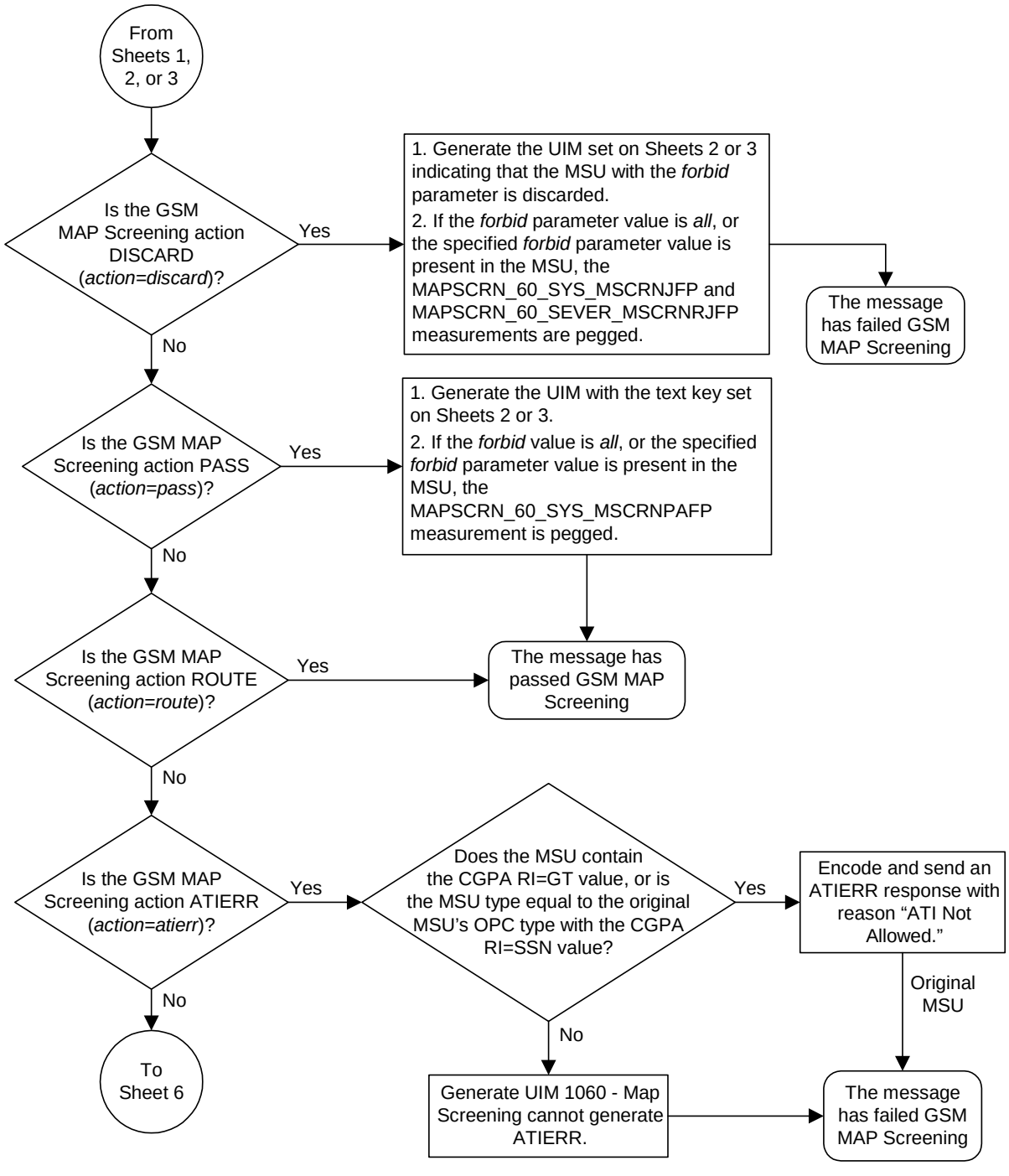


Figure 5-2. GSM MAP Screening Details (Sheet 6 of 7)

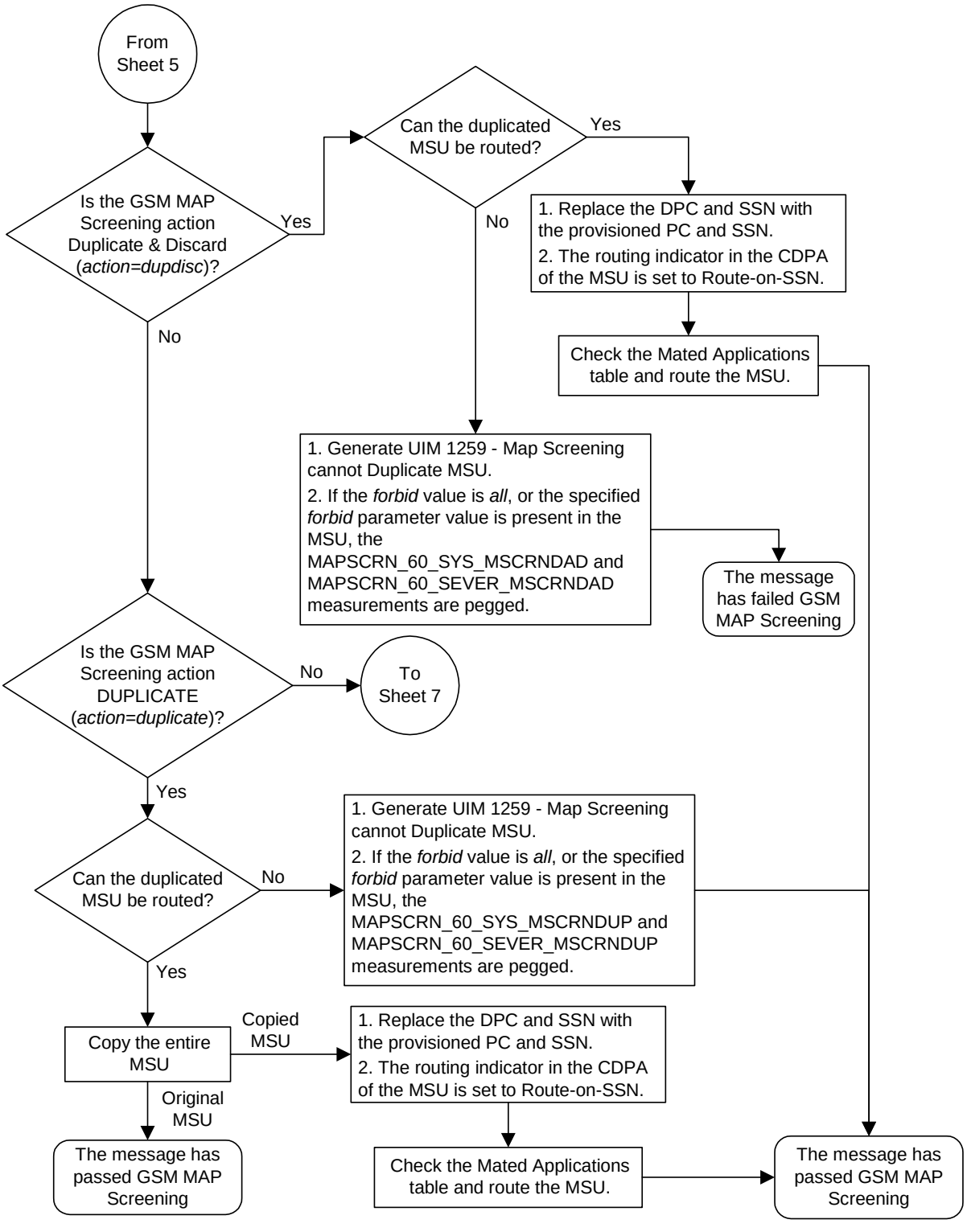
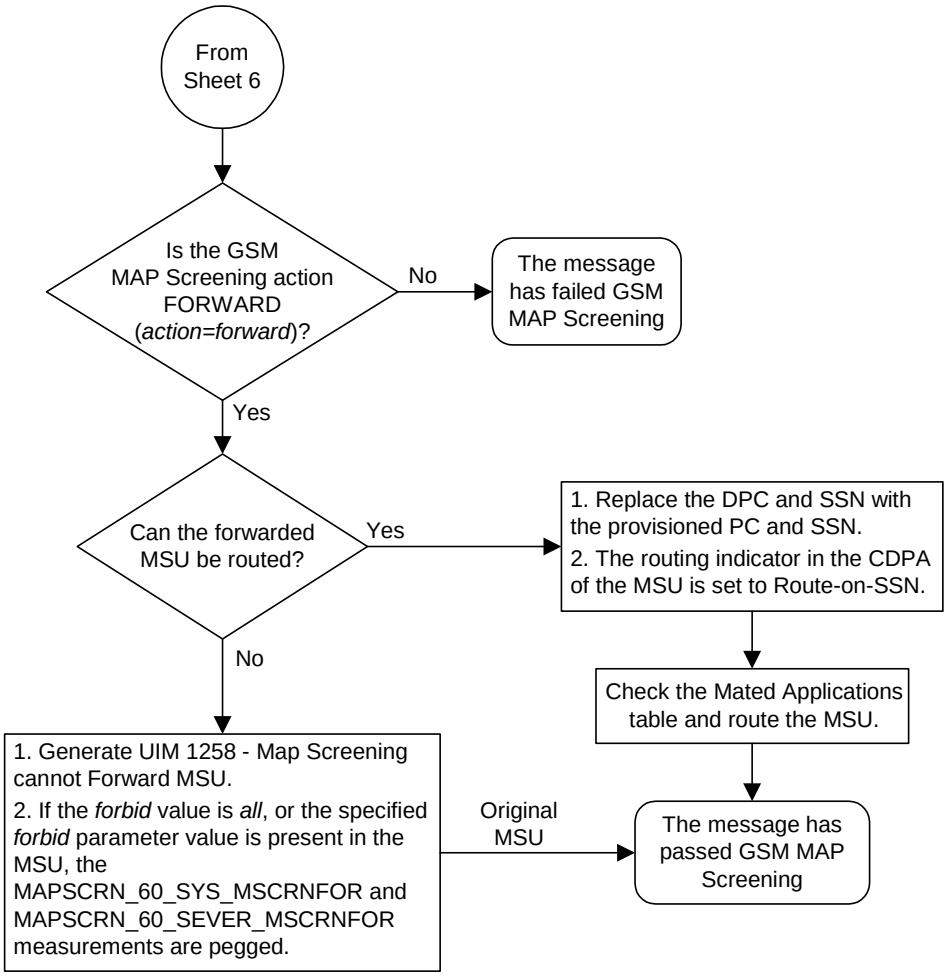


Figure 5-2. GSM MAP Screening Details (Sheet 7 of 7)



GSM MAP Screening Example

Table 5-1 shows an example of the GSM MAP screening table.

Table 5-1. Example GSM MAP Screening Table

Authorized Origination Point (E.164 address)	Numbering Plan	Nature of Address Indicator	MAP Operations Code	Forbidden Parameters	Screening Action
6611273888	1	4	ATI_Request	All	Discard
6611273444	1	4	SRI_for_SM	All	Discard
6611273444	1	4	ATI_Request	Subscriber state	ATI-error
5431111888	1	4	FW_SM	None	----
5431111777	1	4	ATI_Request	All	Pass

In this example,

- Any ATI_Request message from 6611273888 would be discarded.
- Any SRI_for_SM from 6611273444 would be discarded.
- An ATI_Request message from 6611273444 requesting the Location only would be routed. An ATI_Request message from 6611273444 requesting both the Location and Subscriber state would result in an ATI-error message being sent back to the originator. An ATI_Request message from 6611273444 requesting the Subscriber state only would result in an ATI-error message being sent back to the originator.
- A FW_SM message from 5431111888 would be routed successfully, because no parameters are forbidden.
- Any ATI_Request from 5431111777 would be routed successfully because of the “Pass” screening action. This could be used for testing purposes prior to screening.

Table 5-2 shows an example of the system-wide screening table. It specifies the action to be taken in the event that a MAP operations code was defined for MAP screening, but no specific entry was found in the MAP screening table.

Table 5-2. System-Wide Screening Table

MAP Operations Code	Operations Code Specific Screening Action
ATI	ATI-error
SRI_for_SM	Discard

GSM MAP Screening Procedures

The following procedures describe the steps needed to add, remove, or change GSM MAP Screening data in the database.

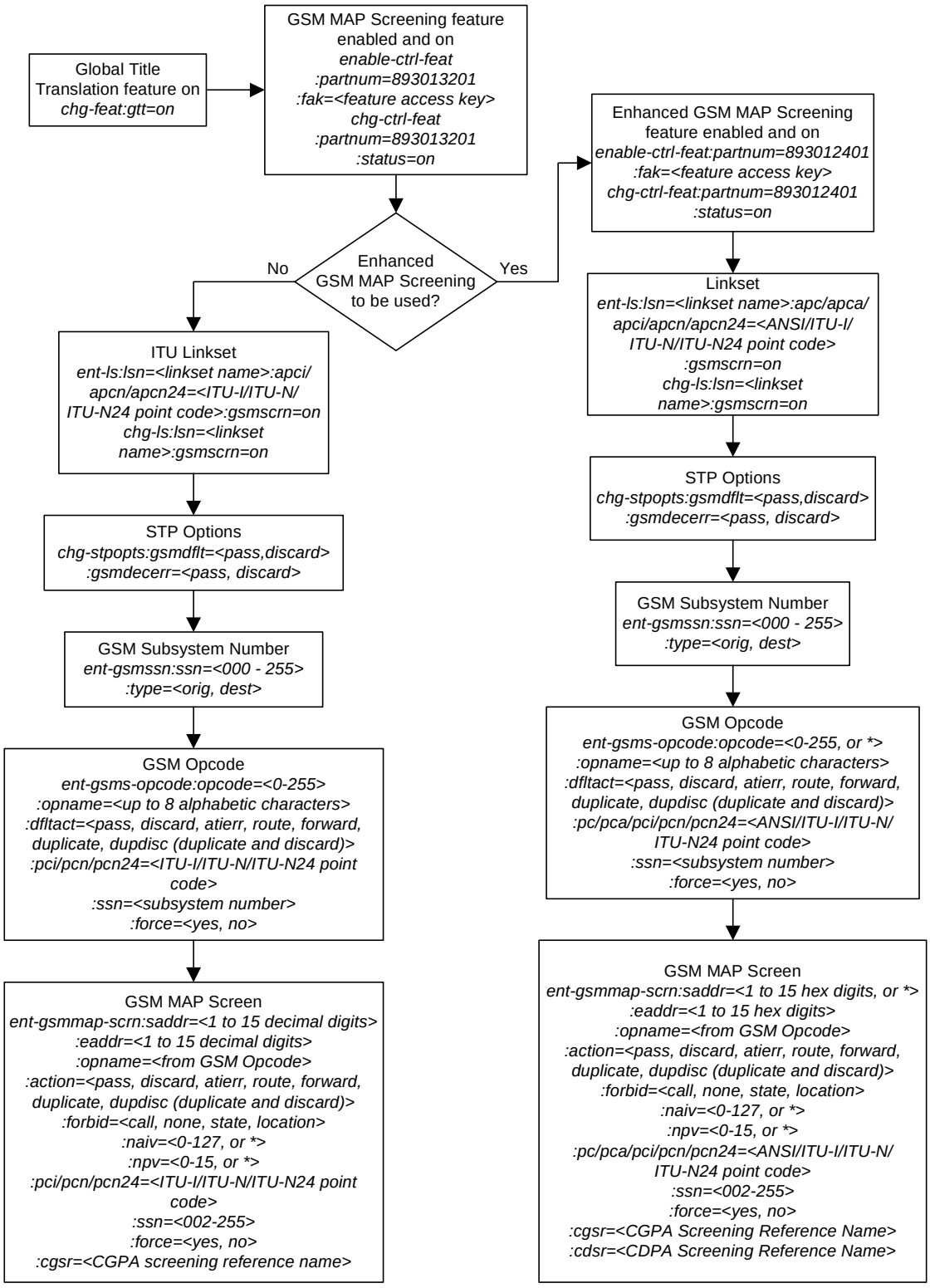
The items administered in this section are:

- Linkset with GSM MAP Screening enabled
- STP options for GSM MAP Screening
- GSM SSN
- GSM Opcodes
- GSM MAP Screening entries

The procedures shown in this chapter use a variety of commands. For more information on these commands, refer to the *Commands Manual*.

Figure 5-3 shows the relationships of the database elements that are configured in these procedures.

Figure 5-3. GSM MAP Screening Database Relationships



The following is a brief description of the GSM MAP Screening entities. These entities must be configured in the order that they are shown.

1. The Global Title Translation (GTT) feature must be turned on with the **chg-feat** command using the **gtt=on** parameter. The global title translation feature must be on before the GSM MAP Screening feature can be enabled and turned on. Verify that the GTT feature is on using the **rtrv-feat** command.

   NOTE: Once the Global Title Translation (GTT) feature is turned on with the chg-feat command, it cannot be turned off.

   The GTT feature must be purchased before turning on the GTT feature. If you are not sure whether you have purchased the GTT feature, contact your Tekelec Sales Representative or Account Representative.

2. The GSM MAP Screening feature must be enabled with the **enable-ctrl-feat** command, and turned on with the **chg-ctrl-feat** command. Verify the status of the GSM MAP Screening feature with the **rtrv-ctrl-feat** command.

   NOTE: Once the GSM MAP Screening feature is enabled and turned on, it cannot be disabled or turned off.

3. To use GSM MAP Screening on all types of linksets including ANSI linksets, or to provision CDPA entries in the GSM MAP Screening table, the Enhanced GSM MAP Screening feature must be enabled with the **enable-ctrl-feat** command, and turned on with the **chg-ctrl-feat** command. Verify the status of the Enhanced GSM MAP Screening features with the **rtrv-ctrl-feat** command.

   NOTE: Once the Enhanced GSM MAP Screening feature is enabled and turned on, it cannot be disabled or turned off.

4. Linksets containing the **gsmscrn=on** parameter must be in the database. The **gsmscrn=on** parameter allows the messages on these linksets to be screened by the GSM MAP Screening feature. Verify this with the **rtrv-ls** command. If the necessary linksets are not in the database, add them with the **ent-ls** command, specifying the **gsmscrn=on** parameter. If the necessary linksets are in the database, but do not contain the **gsmscrn=on** parameter, change these linksets with the **chg-ls** command, specifying the **gsmscrn=on** parameter. If the Enhanced GSM MAP screening feature is enabled and on, the adjacent point code of the linkset can be any type. If the Enhanced GSM MAP screening feature is not enabled and off, the adjacent point code of the linkset can be either an ITU international or ITU national point code.

   NOTE: An ITU national point code can be either a 14-bit ITU national point code (defined by the ent-ls command's apcn parameter), or a 24-bit ITU national point code (defined by the ent-ls command's apcn24 parameter). The system can contain either type of ITU national point code, but not both at the same time.

5. The GSM MAP screening options, **gsmdflt** (GSM MAP screening default action) and **gsmdecerr** (GSM MAP screening decode error action), can be changed with the **chg-stpopts** command. The current values for these options can be verified with the **rtrv-stpopts** command. The **gsmdflt** parameter allows the user to specify the default screening action (PASS or DISCARD) that occurs when a MAP operations code contained in the MSU is not found in the GSM MAP operations code table. The **gsmdecerr** parameter allows the user to specify the default screening action (PASS or DISCARD) that occurs when an error is detected in the TCAP layer of the MSU being screened. Such errors included an invalid value for a parameter, length error, missing data, and so on.

6. The origination and destination subsystem numbers that are being screened using the GSM MAP screening feature need to be provisioned in the database. These subsystem numbers are shown in the **rtrv-gsmssn-scrn** command and provisioned using the **ent-gsmssn-scrn** command.

7. The concerned GSM MAP screening operation codes and the default screening action for the operation code need to be provisioned in the database. These operation codes are shown in the **rtrv-gsms-opcode** command and provisioned using the **ent-gsms-opcode** command. The **ent-gsms-opcode** allows the user to provision a list of all operation codes that the Eagle uses in performing GSM screening.

8. The GSM MAP screening entries that filter or allow TCAP messages for certain MAP operation codes need to be provisioned in the database. The GSM MAP screening entries are shown in the **rtrv-gsmmap-scrn** command and provisioned using the **ent-gsmmap-scrn** command. The messages are filtered or allowed based on the origination addresses (**saddr/eaddr**), numbering plan value (**npv**), nature of address indicator value (**naiv**), MAP opnames (**opname**), and forbidden (**forbid**) parameters. If the Enhanced GSM MAP Screening feature is enabled and on, the CGPA and CDPA of the messages are checked by the GSM MAP Screening table. If the Enhanced GSM MAP Screening feature is not enabled and off, only the CGPA of the messages are checked by the GSM MAP Screening table.

Activating the GSM MAP Screening Feature

The GSM MAP screening feature is activated by enabling the GSM MAP Screening feature with the **enable-ctrl-feat** command, then by turing the feature on with the **chg-ctrl-feat** command. The status of the GSM MAP Screening feature can be verified with the **rtrv-ctrl-feat** command. Before the GSM MAP Screening feature is activated, the global title translation feature must be on. This can be verified with the **rtrv-feat** command.

NOTE: Once the global title translation feature is turned on with the chg-feat command, it cannot be turned off.

The global title translation feature must be purchased before you turn the feature on with the chg-feat command. If you are not sure if you have purchased the global title translation feature, contact your Tekelec Sales Representative or Account Representative.

This procedure can also be used to enable and turn on the Enhanced GSM MAP Screening feature. The **enable-ctrl-feat** and **chg-ctrl-feat** commands are used to enable and turn on the Enhanced GSM MAP Screening feature. The GSM MAP Screening feature must be enabled and turned on before the Enhanced GSM MAP Screening feature is enabled and turned on.

The **enable-ctrl-feat** command enables the feature by inputting the feature's access key and the feature's part number with these parameters:

:fak – The feature access key supplied by Tekelec. The feature access key contains 13 alphanumeric characters and is not case sensitive.

:partnum – The Tekelec-issued part number of the GSM MAP Screening and Enhanced GSM MAP Screening features.

- The GSM MAP Screening feature, 893013201
- The Enhanced GSM MAP Screening feature, 893012401

The **enable-ctrl-feat** command requires that the database contain a valid serial number for the system, and that this serial number is locked. This can be verified with the **rtrv-serial-num** command. The system 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 system is on-site, with the **ent-serial-num** command. The **ent-serial-num** command uses these parameters.

:serial – The serial number assigned to the system. 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 system'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. You should 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 GSM MAP Screening and Enhanced GSM MAP Screening features cannot be temporarily enabled (with the temporary feature access key).

Once these features have been enabled, the features must be activated with the **chg-ctrl-feat** command. The **chg-ctrl-feat** command uses these parameters:

:partnum – The Tekelec-issued part number of the GSM MAP Screening and Enhanced GSM MAP Screening features.

- The GSM MAP Screening feature, 893013201
- The Enhanced GSM MAP Screening feature, 893012401

:status=on – used to activate the features that customer has purchased and enabled.

NOTE: Once the GSM MAP Screening and Enhanced GSM MAP Screening features are turned on, they cannot be turned off.

The status of the features in the system is shown with the **rtrv-ctrl-feat** command.

The GSM MAP Screening feature requires that either TSMs or DSMs are installed and provisioned in the system. The Enhanced GSM MAP Screening feature require that DSMs are installed and provisioned in the system. TSMs, and ASMs also, are shown by the entry **ASM** in the **TYPE** column of the **rtrv-card** output and **SCCP** in the **APPL** column of the **rtrv-card** output. DSMs are shown by the entry **DSM** in the **TYPE** column of the **rtrv-card** output and **SCCP** in the **APPL** column of the **rtrv-card** output.

If the GSM MAP Screening feature is being enabled and turned on, and the **rtrv-card** output shows ASMs in the system, visually verify that these cards are TSMs. If these cards are ASMs, the ASMs must be replaced by either TSMs or DSMs. Contact Tekelec Technical Services before replacing any SCCP cards. See "Tekelec Technical Services" on page 1-9.

If the Enhanced GSM MAP Screening feature is being enabled and turned on, any cards with the ASM card type running the SCCP application in the system must be replaced by DSMs. Contact Tekelec Technical Services before replacing any SCCP cards. See "Tekelec Technical Services" on page 1-9.

Procedure

1. Display the status of the controlled features by entering the **rtrv-ctrl-feat** command. The following is an example of the possible output.

```
rlghncxa03w 04-03-28 21:15:37 GMT EAGLE5 31.4.0
The following features have been permanently enabled:
Feature Name              Partnum    Status  Quantity
TPS                       893000110  on      1000
ISUP Normalization        893000201  on      ----
Command Class Management  893005801  on      ----
LNP Short Message Service 893006601  on      ----
Intermed GTT Load Sharing 893006901  on      ----
XGTT Table Expansion      893006101  on      400000
XMAP Table Expansion      893007710  off     ----
Large System # Links      893005910  on      2000
Routesets                 893006401  on      6000

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
Zero entries found.
```

If the GSM MAP Screening feature (shown in the **rtrv-ctrl-feat** output as **GSM Map Screening (GMS)**) is enabled and on, no further action is necessary. This procedure does not need to be performed.

If you wish to use the Enhanced GSM MAP Screening feature, and the Enhanced GSM MAP Screening feature (shown in the **rtrv-ctrl-feat** output as **Enhanced GMS (EGMS)**) is enabled and on, no further action is necessary. This procedure does not need to be performed.

If the GSM MAP Screening feature is enabled and off, skip steps 2 through 7 and go to step 8.

If the Enhanced GSM MAP Screening feature is enabled and off, skip steps 2 through 10 and go to step 11.

2. Display the cards in the system using the **rtrv-card** command. The GSM MAP Screening feature requires that TSMs or DSMs are in the database. The Enhanced GSM MAP Screening feature requires that DSMs are in the database. This is an example of the possible output.

```
rlghncxa03w 04-03-25 09:58:31 GMT EAGLE5 31.4.0
CARD   TYPE      APPL      LSET NAME     PORT SLC LSET NAME     PORT SLC
1102   ASM       GLS       ------------  --   --  ------------  --   --
1113   GPSM      EOAM
1114   TDM-A
1115   GPSM      EOAM
1116   TDM-B
1117   MDAL
1118   RESERVED
1201   LIMDS0    SS7ANSI   sp2           A    0   sp1           B    0
1203   LIMDS0    SS7ANSI   sp3           A    0   ------------  --   --
1204   LIMDS0    SS7ANSI   sp3           A    1   ------------  --   --
1206   LIMDS0    SS7ANSI   nsp3          A    1   nsp4          B    1
1207   LIMV35    SS7GX25   nsp1          A    0   ------------  --   --
1208   LIMV35    SS7GX25   nsp1          A    1   ------------  --   --
1216   ACMENET   STPLAN    ------------  --   --  ------------  --   --
1308   LIMDS0    SS7ANSI   sp6           A    1   sp7           B    0
1314   LIMDS0    SS7ANSI   sp7           A    1   sp5           B    1
1317   ACMENET   STPLAN    ------------  --   --  ------------  --   --
```

TSMs, and ASMS also, are shown by the entry **ASM** in the **TYPE** column and **SCCP** in the **APPL** column of the **rtrv-card** output. DSMs are shown by the entry **DSM** in the **TYPE** column and **SCCP** in the **APPL** column of the **rtrv-card** output.

If the GSM MAP Screening feature is being enabled and turned on, and the **rtrv-card** output shows ASMs in the system, visually verify that these cards are TSMs. If these cards are ASMs, the ASMs must be replaced by either TSMs or DSMs. Contact Tekelec Technical Services before replacing any SCCP cards. See "Tekelec Technical Services" on page 1-9.

If the Enhanced GSM MAP Screening feature is being enabled and turned on, and the **rtrv-card** output shows ASM card types in the system, these cards must be replaced by DSMs. Contact Tekelec Technical Services before replacing any SCCP cards. See "Tekelec Technical Services" on page 1-9.

If no SCCP cards are shown in the **rtrv-card** output, perform the "Adding an SCCP Card" procedure in the *Database Administration Manual - Global Title Translation* and add the required SCCP cards to the database.

If DSMs are in the system, go to step 3.

NOTE: If the rtrv-ctrl-feat output in step 1 shows any controlled features, skip steps 3 through 6, and go to step 7.

3. Display the serial number in the database with the **rtrv-serial-num** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 21:15:37 GMT EAGLE5 31.4.0
System serial number = nt00001231

System serial number is not locked.

rlghncxa03w 04-03-28 21:15:37 GMT EAGLE5 31.4.0
Command Completed
```

NOTE: If the serial number is correct and locked, skip steps 4, 5, and 6, and go to step 7. If the serial number is correct but not locked, skip steps 4 and 5, and go to step 6. If the serial number is not correct, but is locked, the GSM MAP Screening and Enhanced GSM MAP Screening features cannot be enabled and the remainder of this procedure cannot be performed. Contact Tekelec Technical Services to get an incorrect and locked serial number changed. See "Tekelec Technical Services" on page 1-9. The serial number can be found on a label affixed to the control shelf (shelf 1100).

4. 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=<system's correct serial number>

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

   ```
   rlghncxa03w 04-03-28 21:15:37 GMT EAGLE5 31.4.0
   ENT-SERIAL-NUM:  MASP A - COMPLTD
   ```

5. Verify that the serial number entered into step 4 was entered correctly using the **rtrv-serial-num** command. This is an example of the possible output.

   ```
   rlghncxa03w 04-03-28 21:15:37 GMT EAGLE5 31.4.0
   System serial number = nt00001231

   System serial number is not locked.

   rlghncxa03w 04-03-28 21:15:37 GMT EAGLE5 31.4.0
   Command Completed
   ```

   If the serial number was not entered correctly, repeat steps 4 and 5 and re-enter the correct serial number.

6. Lock the serial number in the database by entering the **ent-serial-num** command with the serial number shown in step 3, if the serial number shown in step 3 is correct, or with the serial number shown in step 5, if the serial number was changed in step 4, and with the **lock=yes** parameter.

   For this example, enter this command.

   ent-serial-num:serial=<system's serial number>:lock=yes

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

   ```
   rlghncxa03w 04-03-28 21:15:37 GMT EAGLE5 31.4.0
   ENT-SERIAL-NUM:  MASP A - COMPLTD
   ```

7. Enable the GSM MAP Screening feature with the **enable-ctrl-feat** command specifying the part number for the GSM MAP Screening feature and the feature access key. Enter this command.

   enable-ctrl-feat:partnum=893013201:fak=<GSM MAP Screening feature access key>

   NOTE: A temporary feature access key cannot be specified to enable this feature.

   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 GSM MAP Screening feature, contact your Tekelec Sales Representative or Account Representative.

   When the **enable-ctrl-feat** command has successfully completed, this message should appear.

   ```
   rlghncxa03w 04-03-28 21:15:37 GMT EAGLE5 31.4.0
   ENABLE-CTRL-FEAT: MASP B - COMPLTD
   ```

8. Turn the GSM MAP Screening feature on with the **chg-ctrl-feat** command specifying the part number for the GSM MAP Screening feature and the **status=on** parameter. Enter this command.

   chg-ctrl-feat:partnum=893013201:status=on

   NOTE: Once the GSM MAP Screening feature is turned on, it cannot be turned off.

   When the **chg-ctrl-feat** command has successfully completed, this message should appear.

   ```
   rlghncxa03w 04-03-28 21:15:37 GMT EAGLE5 31.4.0
   CHG-CTRL-FEAT: MASP B - COMPLTD
   ```

9. Verify the changes by entering the **rtrv-ctrl-feat** command with the GSM MAP Screening feature part number. Enter this command.

   rtrv-ctrl-feat:partnum=893013201

   The following is an example of the possible output.

   ```
   rlghncxa03w 04-03-28 21:15:37 GMT EAGLE5 31.4.0
   The following features have been permanently enabled:
   Feature Name              Partnum    Status  Quantity
   GSM Map Screening (GMS)   893013201  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
   Zero entries found.
   ```

NOTE: If you do not wish to enable and turn on the Enhanced GSM MAP Screening feature, skip steps 10, 11, and 12, and go to step 13.

10. Enable the Enhanced GSM MAP Screening feature with the **enable-ctrl-feat** command specifying the part number for the Enhanced GSM MAP Screening feature and the feature access key. Enter this command.

enable-ctrl-feat:partnum=893012401:fak=<Enhanced GSM MAP Screening feature access key>

NOTE: A temporary feature access key cannot be specified to enable this feature.

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 Enhanced GSM MAP Screening feature, contact your Tekelec Sales Representative or Account Representative.

When the **enable-ctrl-feat** command has successfully completed, this message should appear.

```
rlghncxa03w 04-03-28 21:15:37 GMT EAGLE5 31.4.0
ENABLE-CTRL-FEAT: MASP B - COMPLTD
```

11. Turn the Enhanced GSM MAP Screening feature on with the **chg-ctrl-feat** command specifying the part number for the Enhanced GSM MAP Screening feature and the **status=on** parameter. Enter this command.

chg-ctrl-feat:partnum=893012401:status=on

NOTE: Once the Enhanced GSM MAP Screening feature is turned on, it cannot be turned off.

When the **chg-ctrl-feat** command has successfully completed, this message should appear.

```
rlghncxa03w 04-03-28 21:15:37 GMT EAGLE5 31.4.0
CHG-CTRL-FEAT: MASP B - COMPLTD
```

12. Verify the changes by entering the **rtrv-ctrl-feat** command with the Enhanced GSM MAP Screening feature part number. Enter this command.

rtrv-ctrl-feat:partnum=893012401

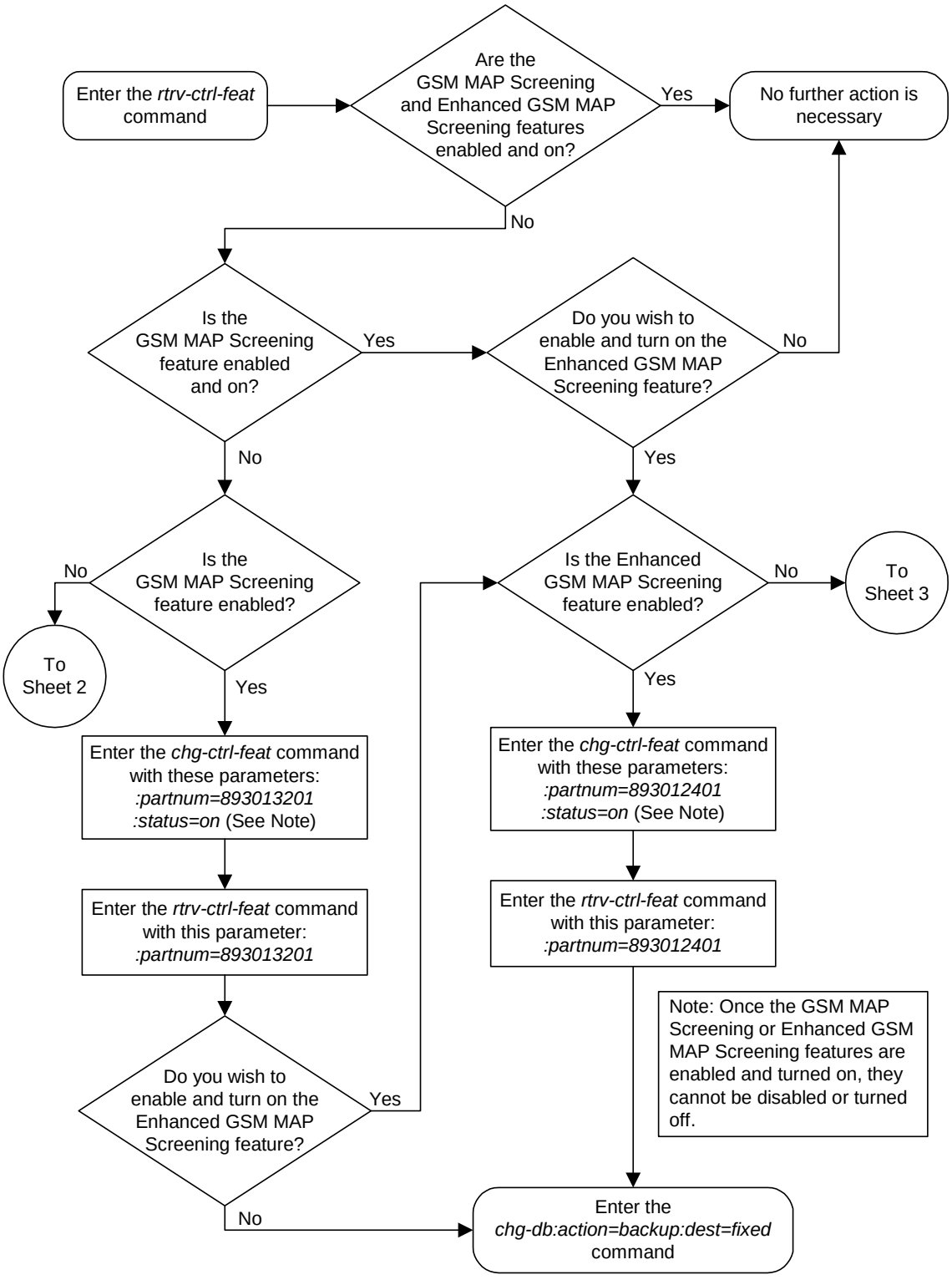
The following is an example of the possible output.

```
rlghncxa03w 04-03-28 21:15:37 GMT EAGLE5 31.4.0
The following features have been permanently enabled:
Feature Name              Partnum    Status  Quantity
Enhanced GMS (EGMS)       893012401  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
Zero entries found.
```

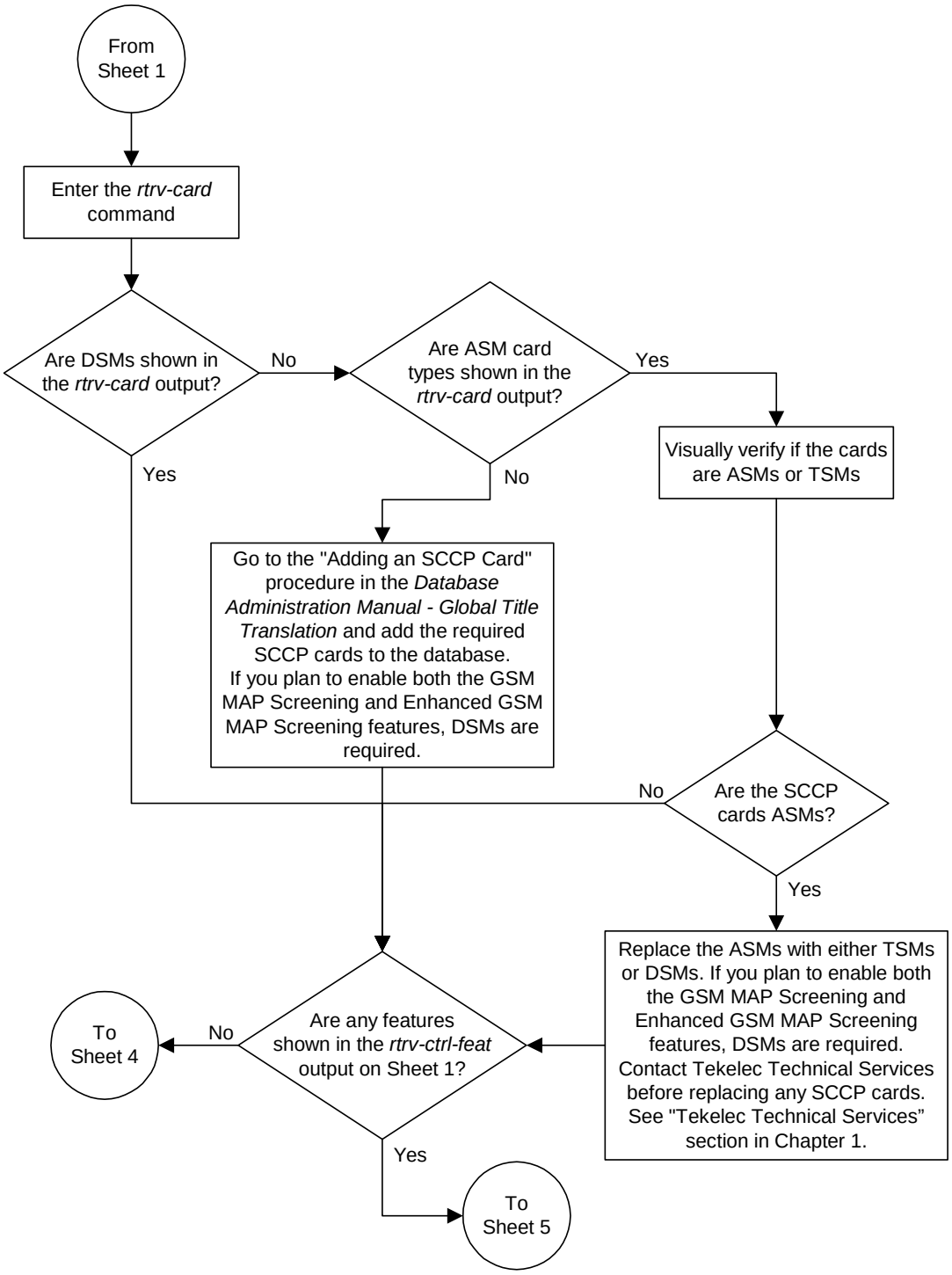
13. Backup the new changes using the **chg-db:action=backup:dest=fixed** command. These messages should appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
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.
```

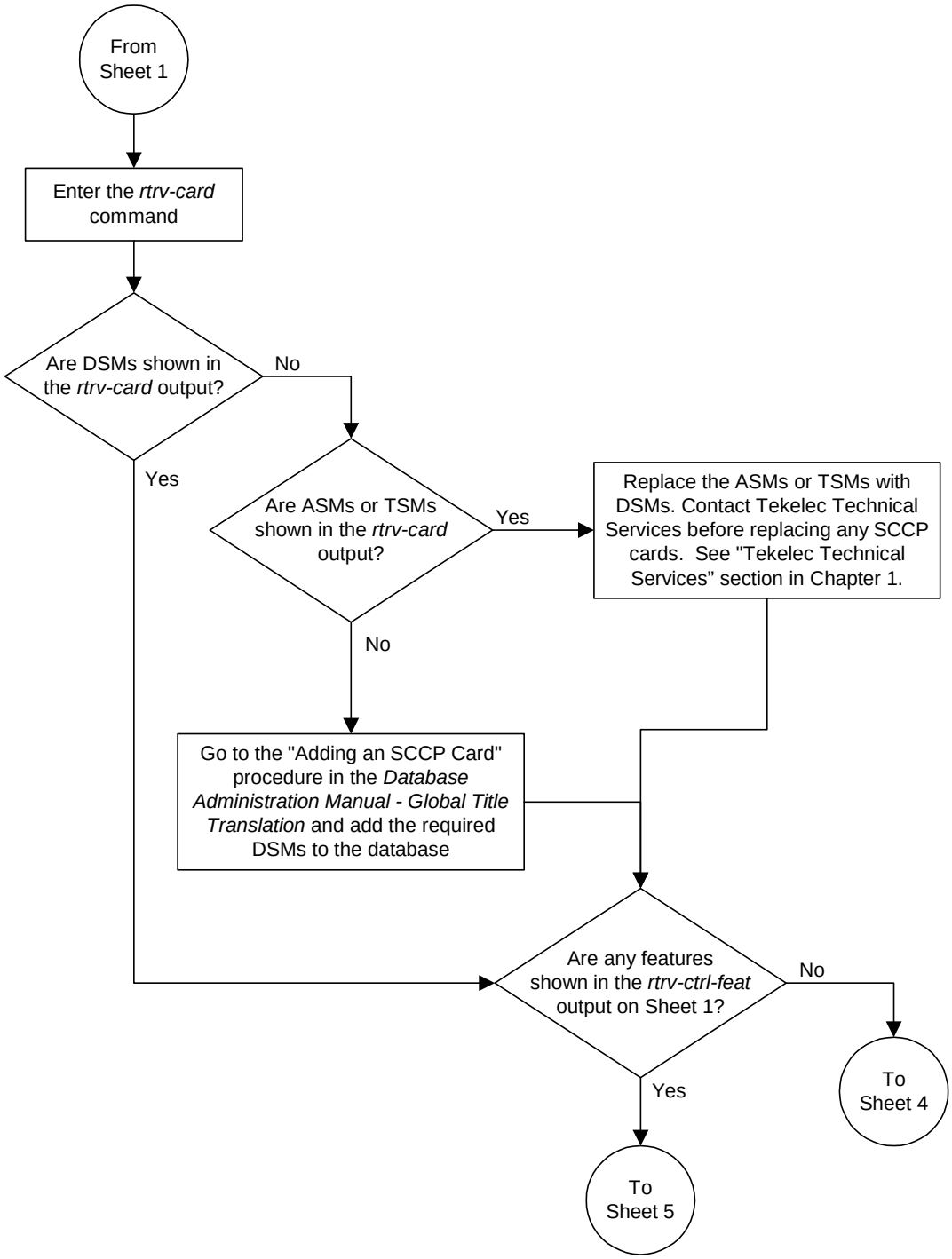
Flowchart 5-1. Activating the GSM MAP Screening Feature (Sheet 1 of 5)



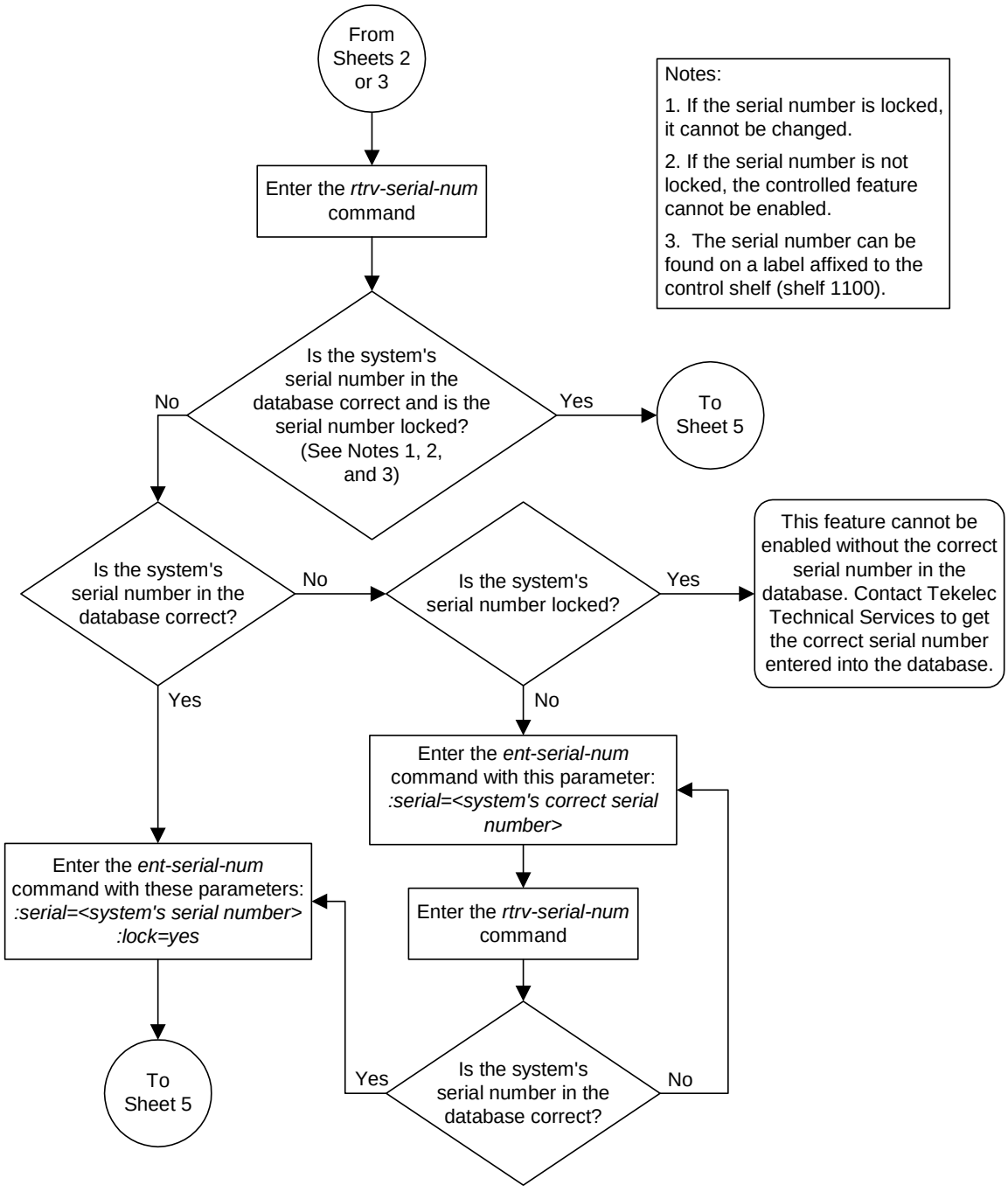
Flowchart 5-1. Activating the GSM MAP Screening Feature (Sheet 2 of 5)



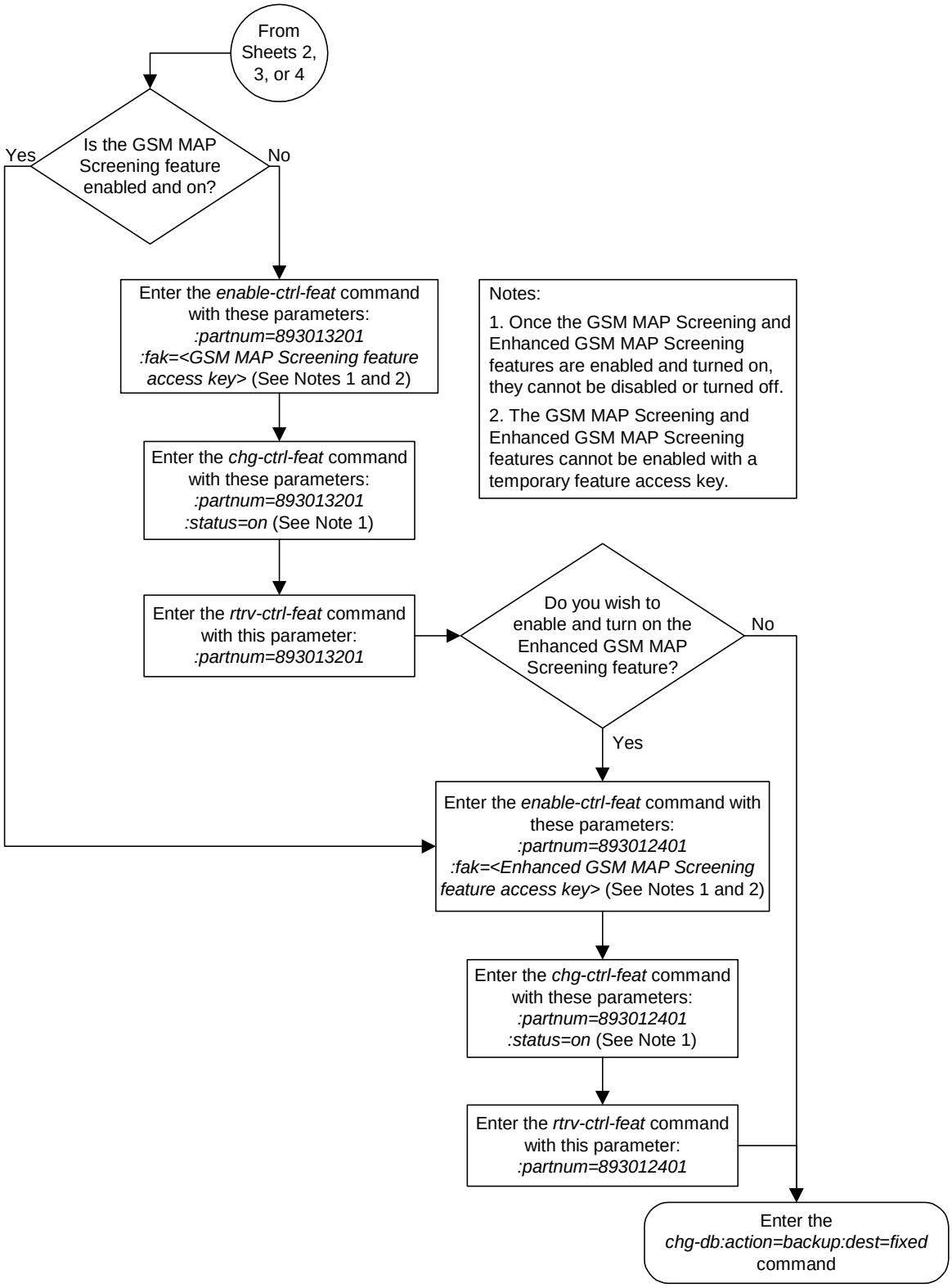
Flowchart 5-1. Activating the GSM MAP Screening Feature (Sheet 3 of 5)



Flowchart 5-1. Activating the GSM MAP Screening Feature (Sheet 4 of 5)



Flowchart 5-1. Activating the GSM MAP Screening Feature (Sheet 5 of 5)



Configuring a Linkset for the GSM MAP Screening Feature

This procedure is used to configure SS7 linksets for the GSM MAP Screening feature using the **gsmscrn** parameter of either the **ent-ls** or **chg-ls** command.

The **gsmscrn** parameter specifies whether or not GSM MAP screening is applied to messages arriving on the linkset. This parameter can be applied to all linksets, but this parameter can be specified for linksets with ANSI adjacent point codes only if the Enhanced GSM MAP Screening feature is enabled and on. The values for this parameter are **on** (GSM MAP screening is applied to the linkset) or **off** (GSM MAP screening is not applied to the linkset). GSM MAP screening is used to screen GSM MAP messages to control which external entities can request information about a GSM subscriber and the specific information these entities can request before allowing the GSM MAP message to pass through to the HLR.

Before the **gsmscrn** parameter can be specified for a specific linkset, the GSM MAP screening feature must be enabled and on. The status of the GSM MAP Screening feature, and if applicable the Enhanced GSM MAP screening feature, is shown in the **rtrv-ctrl-feat** command output with the entries **GSM Map Screening (GMS)** (for the GSM MAP Screening feature) and **Enhanced GMS (EGMS)** (for the Enhanced GSM MAP Screening feature). Perform the "Activating the GSM MAP Screening Feature" procedure on page 5-20 to enable and turn on either of these features as required.

The value of the **gsmscrn** parameter is only displayed in the **rtrv-ls** command output when a specific linkset is being displayed with the **rtrv-ls:lsn=<linkset name>** command.

To configure a linkset for the GSM MAP Screening feature, the **ent-ls** or **chg-ls** commands uses these mandatory parameters in addition to the **gsmscrn** parameter.

:lsn – The name of the linkset. The linkset name can contain up to 10 characters, with the first character being a letter.

:apc/apca/apci/apcn/apcn24 – Adjacent point code – the point code identifying the node that is next to the system. This parameter is only mandatory for the **ent-ls** command.

NOTE: See Chapter 2, "Configuring Destination Tables" in the *Database Administration Manual - SS7* for a definition of the point code types that are used on the system and for a definition of the different formats that can be used for ITU national point codes.

NOTE: The system can contain a 14-bit ITU-N point code (apcn) or a 24-bit ITU-N point code (apcn24), but not both at the same time.

:lst – The linkset type of the specified linkset This parameter is only mandatory for the **ent-ls** command.

The **ent-ls** and **chg-ls** commands contain other optional parameters that can be used to configure a linkset. These parameters are not shown here because they are not necessary for configuring a linkset for the GSM MAP Screening feature. These parameters are explained in more detail in the "Adding an SS7 Linkset" procedure or in the "Changing an SS7 Linkset" procedure in the *Database Administration Manual - SS7*, or in the **ent-ls** and **chg-ls** command descriptions in the *Commands Manual*.

The system can contain 1024 linksets, with a maximum of 255 of these linksets being gateway linksets. A gateway linkset is a linkset that contains routes to a different network.

This examples used in this procedure are based on the examples shown in Table 5-3.

Table 5-3. GSM MAP Screening Linkset Configuration Table

Linkset Names	Linkset APC	LST	GSMSCRN
New Linksets Being Added			
lsn5	10685	a	on
lsi7	3-150-4	a	on
Existing Linkset Being Changed			
lsn4	N/A	N/A	on

The linkset to be added cannot be in the database. This can be verified in step 1 of this procedure.

Canceling the RTRV-LS and RTRV-DSTN Commands

Because the **rtrv-ls** and **rtrv-dstn** commands used in this procedure can output information for a long period of time, the **rtrv-ls** and **rtrv-dstn** commands can be canceled and the output to the terminal stopped. There are three ways that the **rtrv-ls** and **rtrv-dstn** commands can be canceled.

- Press the **F9** function key on the keyboard at the terminal where the **rtrv-ls** or **rtrv-dstn** commands were entered.
- Enter the **canc-cmd** without the **trm** parameter at the terminal where the **rtrv-ls** or **rtrv-dstn** commands were entered.
- Enter the **canc-cmd:trm=<xx>**, where **<xx>** is the terminal where the **rtrv-ls** or **rtrv-dstn** commands were entered, from another terminal other that the terminal where the **rtrv-ls** or **rtrv-dstn** commands were entered. To enter the **canc-cmd:trm=<xx>** command, the terminal must allow Security Administration commands to be entered from it and the user must be allowed to enter Security Administration commands. The terminal's permissions can be verified with the **rtrv-secu-trm** command. The user's permissions can be verified with the **rtrv-user** or **rtrv-secu-user** commands.

For more information about the **canc-cmd** command, go to the *Commands Manual*.

Procedure

1. Display the current linkset configuration using the **rtrv-ls** command. This is an example of the possible output.

```
rlghncxa03w 04-03-10 11:43:04 GMT EAGLE5 31.4.0
                              L3T SLT              GWS GWS GWS
LSN          APCA (SS7)   SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
lsa1         240-020-000  scr1  1   1   yes a   1    off off off no    off
lsa2         240-030-000  scr2  1   2   no  c   3    on  on  on  yes   off
lsa3         240-040-000  scr3  1   3   yes c   5    off off off yes   off
ls04         001-002-003  scr2  1   1   no  a   4    on  off on  yes   off

                              L3T SLT              GWS GWS GWS
LSN          APCA (X25)   SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
ls6          244-010-004  scr4  1   4   no  a   6    off off off ---   off
ls7          244-012-005  scr5  1   5   no  c   3    on  on  on  ---   off
ls8          244-012-006  scr6  1   6   no  c   8    off off off ---   off

                              L3T SLT              GWS GWS GWS
LSN          APCI (SS7)   SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
lsi1         1-111-1      scr1  1   1   yes a   1    off off off ---   ---
lsi2         1-111-2      scr2  1   2   no  c   3    on  on  on  ---   ---
lsi3         1-111-3      scr3  1   3   yes c   5    off off off ---   ---

                              L3T SLT              GWS GWS GWS
LSN          APCN (SS7)   SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
lsn1         11111        scr1  1   1   yes a   1    on  off off ---   off
lsn2         11112        scr2  1   2   no  c   3    on  on  on  ---   off
lsn3         11113        scr3  1   3   yes c   5    on  off off ---   off
lsn5         10685        scr1  1   3   yes a   4    on  off off ---   off

                               L3T SLT              GWS GWS GWS
LSN          APCN24 (SS7)  SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS

Link set table is ( 13 of 1024)  1% full
```

NOTE: If the APC of an existing linkset is not being changed, skip steps 2 and 3, and go to step 4.

2. Display the point code and capability point code of the system by using the **rtrv-sid** command. This is an example of the possible output.

```
rlghncxa03w 04-03-10 11:43:04 GMT EAGLE5 31.4.0
PCA              PCI              PCN           CLLI             PCTYPE
001-001-001      3-150-4          13482         rlghncxa03w      OTHER

CPCA
002-002-002       002-002-003       002-002-004      002-002-005
002-002-006       002-002-007       002-002-008      002-002-009
004-002-001       004-003-003       144-212-003

CPCA (LNP)
005-005-002      005-005-004      005-005-005

CPCI
1-001-1           1-001-2           1-001-3          1-001-4

CPCN
02091             02092             02094             02097
02191             02192             11177
```

3. Display the point codes in the destination point code table by using the **rtrv-dstn** command with the linkset's adjacent point code. For this example, enter these commands.

rtrv-dstn:dpci=3-150-4

This is an example of the possible output.

```
rlghncxa03w 04-03-10 11:43:04 GMT EAGLE5 31.4.0
DPCI          CLLI        BEI ELEI  ALIASA       ALIASN/N24    DOMAIN
3-150-4       lsi7clli    yes ---   -----------  -----------    SS7

             SPC           NCAI
             -----------  ----
```

rtrv-dstn:dpcn=10685

This is an example of the possible output.

```
rlghncxa03w 04-03-10 11:43:04 GMT EAGLE5 31.4.0
DPCN          CLLI        BEI ELEI  ALIASA       ALIASI        DOMAIN
10685         lsn5clli    yes ---   -----------  -------        SS7

            SPC           NCAI
            -----------  ----
```

If the point code specified in the **rtrv-dstn** command in this step is not in the database, the following message is displayed.

```
rlghncxa03w 04-03-10 11:43:04 GMT EAGLE5 31.4.0
DPCA          CLLI        BEI ELEI  ALIASI       ALIASN/N24    DOMAIN

No destinations meeting the requested criteria were found

Destination table is (28 of 2000) 1% full
```

If a linkset is being added to the database, or the adjacent point code of the linkset is being changed, and the adjacent point code is not shown in the **rtrv-dstn** command output, go to the "Adding a Destination Point Code" procedure in the *Database Administration Manual - SS7* and add the adjacent point code to the destination point code table.

NOTE: An ANSI point code can be used as the APC of a linkset for GSM MAP Screening only if the Enhanced GSM MAP Screening feature is enabled and on.

4. Verify that the GSM MAP Screening feature is enabled and on by entering the **rtrv-ctrl-feat** command with the part number of the GSM MAP Screening feature. Enter this command.

rtrv-ctrl-feat:partnum=893013201

The following is an example of the possible output.

```
rlghncxa03w 04-03-28 21:15:37 GMT EAGLE5 31.4.0
The following features have been permanently enabled:
Feature Name              Partnum    Status  Quantity
GSM Map Screening (GMS)   893013201  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
Zero entries found.
```

If the GSM MAP screening feature is not enabled or off, go to the "Activating the GSM MAP Screening Feature" procedure on page 5-20 to enable and turn on the GSM MAP screening feature.

NOTE: If ANSI point codes are not being used, skip step 5 and go to step 6.

5. Verify that the Enhanced GSM MAP Screening feature is enabled and on by entering the **rtrv-ctrl-feat** command with the part number of the Enhanced GSM MAP Screening feature. Enter this command.

rtrv-ctrl-feat:partnum=893012401

The following is an example of the possible output.

```
rlghncxa03w 04-03-28 21:15:37 GMT EAGLE5 31.4.0
The following features have been permanently enabled:
Feature Name              Partnum    Status  Quantity
Enhanced GMS (EGMS)       893012401  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
Zero entries found.
```

If the Enhanced GSM MAP screening feature is not enabled or off, go to the "Activating the GSM MAP Screening Feature" procedure on page 5-20 to enable and turn on the Enhanced GSM MAP screening feature.

NOTE: If no existing linksets are being changed, skip steps 6 and go to step 7.

6. Display the current linkset configuration of the linkset to be changed using the **rtrv-ls** command with the linkset name. For this example, enter this command.

rtrv-ls:lsn=lsn4

This is an example of the possible output.

```
rlghncxa03w 04-03-17 11:43:04 GMT EAGLE5 31.4.0

                                    L3T SLT          GWS GWS GWS
LSN          APCN    (SS7)  SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
lsn4         09786          scr3  1   2   no  a   4    on  off off no    on

           CLLI         TFATCABMLQ MTPRSE ASL8 SLSRSB ITUTFR GSMSCRN IPGWAPC
           lsn4clli     1          no     no   1      on     off     no

                           L2T          L1              PCR  PCR
           LOC   PORT SLC TYPE    SET  BPS    MODE TSET  ECM   N1   N2
           1205  b    0   LIMDS0  1    56000  ---  ---   BASIC ---  -----
           1213  b    1   LIMOCU  1    56000  ---  ---   BASIC ---  -----
           1211  a    2   LIMDS0  1    56000  ---  ---   BASIC ---  -----
           1207  b    3   LIMV35  1    64000  DCE  OFF   BASIC ---  -----

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

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

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

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

Link set table is ( 21 of 1024)  2% full
```

NOTE: If you are not adding a new linkset to the database, skip step 7 and go to step 8.

7. Add the new linkset to the database using the **ent-ls** command. For this example, enter these commands.

   ent-ls:lsn=lsn5:apcn=10685:lst=a:gsmscrn=on

   ent-ls:lsn=lsi7:apci=3-150-4:lst=a:gsmscrn=on

   NOTE: An ANSI point code can be used as the APC of a linkset for GSM MAP Screening only if the Enhanced GSM MAP Screening feature is enabled and on.

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

```
rlghncxa03w 04-03-17 16:23:21 GMT  EAGLE5 31.4.0
Link set table is ( 21 of 1024)  2% full
ENT-LS: MASP A - COMPLTD
```

NOTE: If you are not changing an existing linkset in the database, skip step 8 and go to step 9.

8. Change the **gsmscrn** parameter value in the existing linkset in the database using the **chg-ls** command. For this example, enter this command.

   chg-ls:lsn=lsn4:gsmscrn=on

   NOTE: The gsmscrn parameter can be specified for a linkset with an ANSI APC only if the Enhanced GSM MAP Screening feature is enabled and on.

   When this commands has successfully completed, this message should appear.

```
rlghncxa03w 04-03-17 16:23:21 GMT  EAGLE5 31.4.0
Link set table is ( 21 of 1024)  2% full
CHG-LS: MASP A - COMPLTD
```

9. Verify the changes using the **rtrv-ls** command specifying the linkset name specified in either steps 7 or 8 with the **lsn** parameter. For this example, enter these commands.

rtrv-ls:lsn=lsn4

This is an example of the possible output.

```
rlghncxa03w 04-03-17 11:43:04 GMT EAGLE5 31.4.0
                                  L3T SLT          GWS GWS GWS
LSN          APCN   (SS7)  SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
lsn4         09786         scr3  1   2   no  a   4    on  off off no    on

          CLLI         TFATCABMLQ MTPRSE ASL8 SLSRSB ITUTFR GSMSCRN IPGWAPC
          lsn4clli     1          no     no   1      on     on      no

                              L2T          L1              PCR  PCR
          LOC   PORT SLC TYPE    SET  BPS    MODE TSET  ECM   N1   N2
          1205  b    0   LIMDS0  1    56000  ---  ---   BASIC ---  -----
          1213  b    1   LIMOCU  1    56000  ---  ---   BASIC ---  -----
          1211  a    2   LIMDS0  1    56000  ---  ---   BASIC ---  -----
          1207  b    3   LIMV35  1    64000  DCE  OFF   BASIC ---  -----

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

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

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

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

Link set table is ( 21 of 1024)  2% full
```

rtrv-ls:lsn=lsn5

This is an example of the possible output.

```
rlghncxa03w 04-03-17 11:43:04 GMT EAGLE5 31.4.0
                                  L3T SLT          GWS GWS GWS
LSN          APCN   (SS7)  SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
lsn5         10685         none  1   2   no  a   0    off off off no    off

          CLLI         TFATCABMLQ MTPRSE ASL8 SLSRSB ITUTFR GSMSCRN IPGWAPC
          lsn5clli     1          no     no   1      off    on      no

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

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

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

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

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

Link set table is ( 21 of 1024)  2% full
```

rtrv-ls:lsn=lsi7

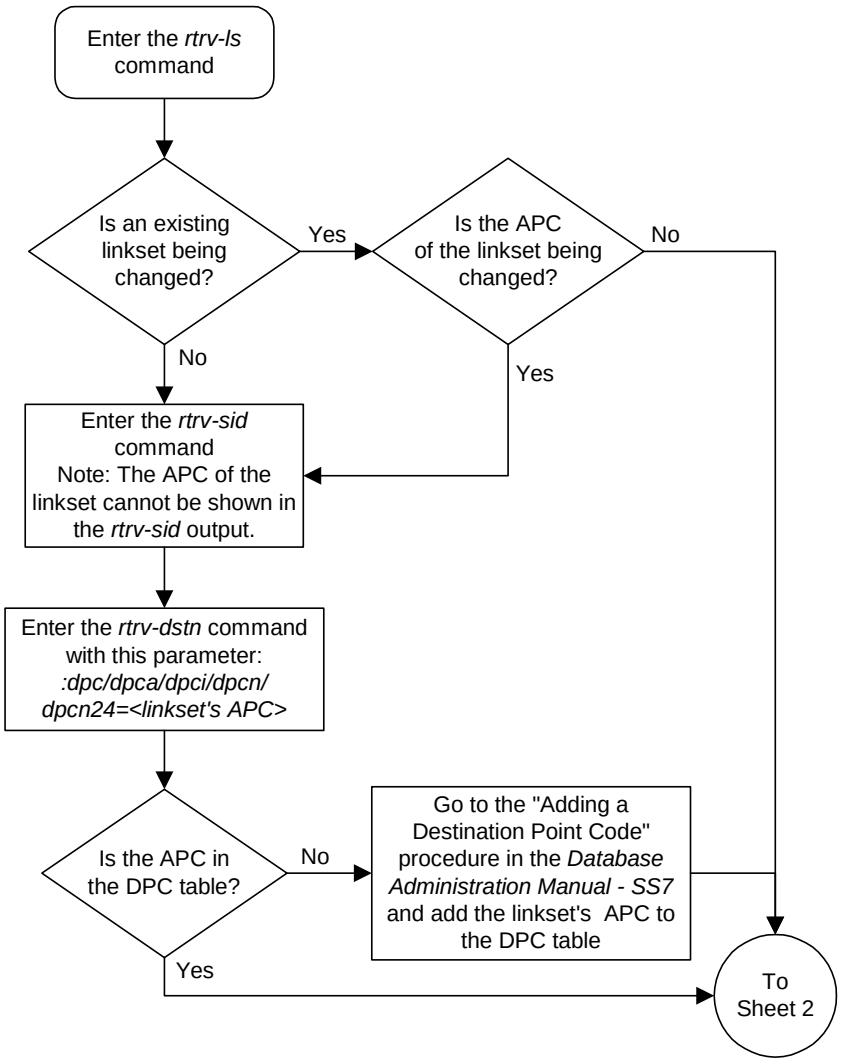
This is an example of the possible output.

```
rlghncxa03w 04-03-17 11:43:04 GMT EAGLE5 31.4.0
                                    L3T SLT          GWS GWS GWS
LSN          APCI    (SS7)  SCRN  SET SET BEI LST LNKS ACT MES DIS SLSCI NIS
lsi7         3-150-4        none  1   2   no  a   0    off off off no    off

           CLLI         TFATCABMLQ MTPRSE ASL8 SLSRSB ITUTFR GSMSCRN IPGWAPC
           lsn7clli     1          no     no   1      off    on      no

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

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

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

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

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

Link set table is ( 21 of 1024)  2% full
```

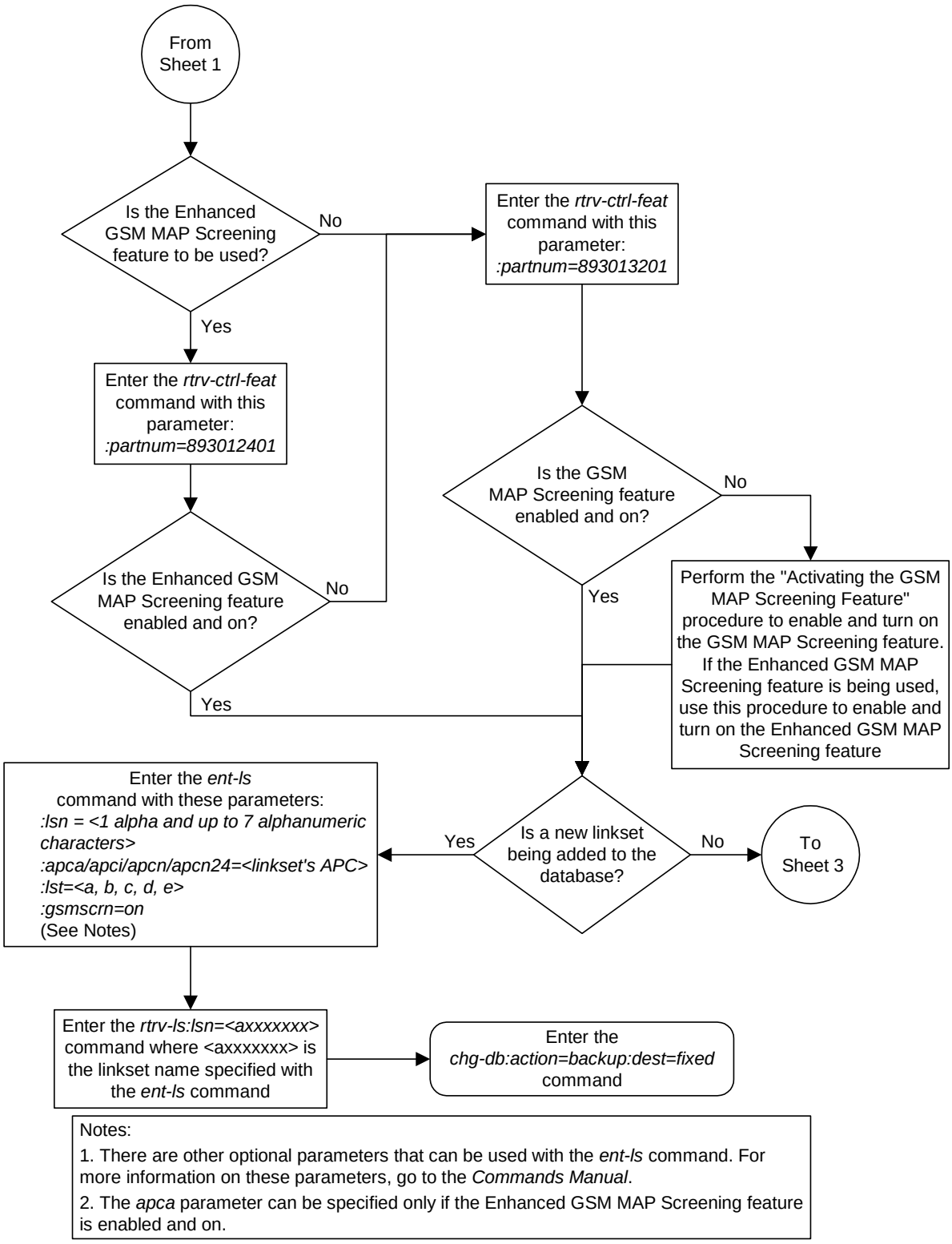
10. Back up the new changes using the **chg-db:action=backup:dest=fixed** command. These messages should appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
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.
```

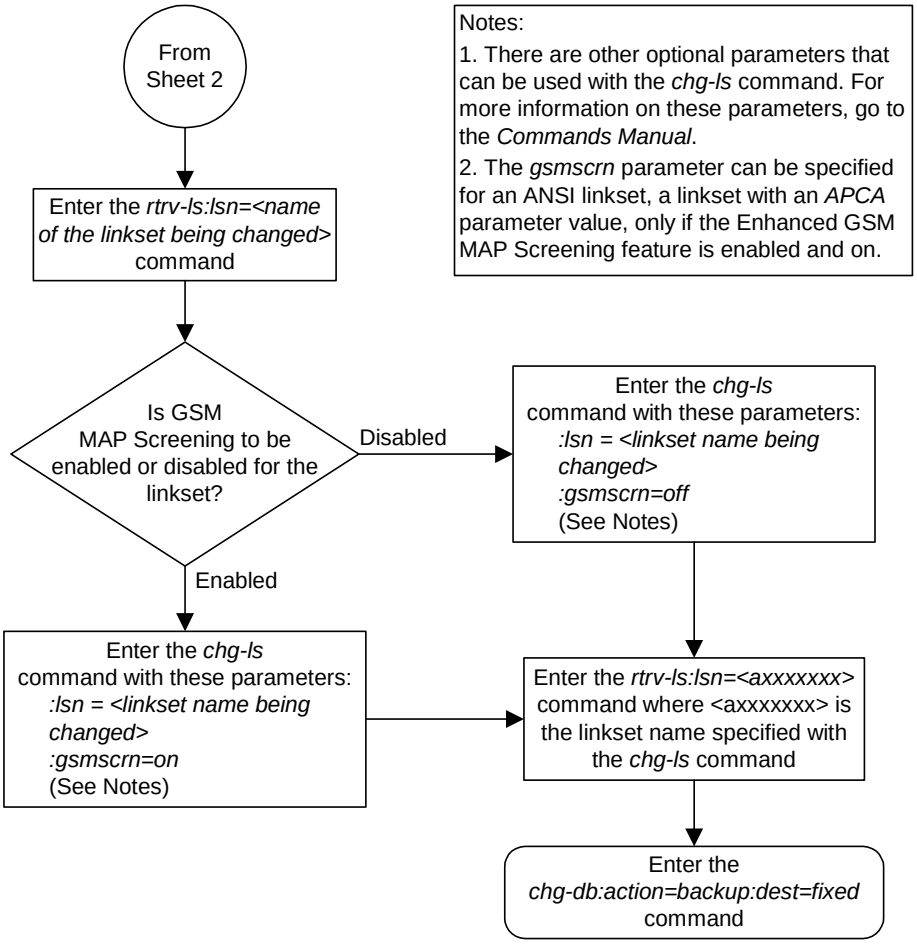
Flowchart 5-2. Configuring a Linkset for the GSM MAP Screening Feature (Sheet 1 of 3)



Flowchart 5-2. Configuring a Linkset for the GSM MAP Screening Feature (Sheet 2 of 3)



Flowchart 5-2. Configuring a Linkset for the GSM MAP Screening Feature (Sheet 3 of 3)



Changing the System-Wide GSM MAP Screening Options

The GSM MAP screening options can be changed with the **chg-stpopts** command after the GSM MAP screening feature has been activated. The **chg-stpopts** command contains two options for GSM MAP screening.

- **gsmdflt** – GSM MAP screening default action – Allows the user to specify the default screening action (PASS or DISCARD) that occurs when a MAP operations code contained in the MSU is not found in the GSM MAP operations code table.
- **gsmdecerr** – GSM MAP screening decode error action – Allows the user to specify the default screening action (PASS or DISCARD) that occurs when an error is detected in the TCAP layer of the MSU being screened. Such errors included an invalid value for a parameter, length error, missing data, and so on.

The GSM MAP Screening feature must be enabled and on before performing this procedure. Use the **rtrv-ctrl-feat** command to verify the status of the GSM MAP Screening feature. If the GSM MAP Screening feature is not enabled and off, go to the "Activating the GSM MAP Screening Feature" procedure on page 5-20 to enable and turn on the GSM MAP screening feature.

When the GSM MAP screening feature is activated, the values for the **gsmdflt** and **gsmdecerr** parameters are set to **pass**. The current values for these options can be verified with the **rtrv-stpopts** command.

Procedure

1. Verify that the GSM MAP Screening feature is enabled and on by entering the **rtrv-ctrl-feat** command with the part number of the GSM MAP Screening feature. Enter this command.

   rtrv-ctrl-feat:partnum=893013201

   The following is an example of the possible output.

```
rlghncxa03w 04-03-28 21:15:37 GMT EAGLE5 31.4.0
The following features have been permanently enabled:
Feature Name              Partnum    Status  Quantity
GSM Map Screening (GMS)   893013201  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
Zero entries found.
```

   If the GSM MAP screening feature is not enabled or off, go to the "Activating the GSM MAP Screening Feature" procedure on page 5-20 to enable and turn on the GSM MAP screening feature.

2. Display the existing values for the **gsmdflt** and **gsmdecerr** parameters by entering the **rtrv-stpopts** command. The value for the **gsmdflt** parameter is shown in the **GSMSDFLT** field. The value for the **gsmdecerr** parameter is shown in the **GSMDECERR** field. This is an example of the possible output.

```
rlghncxa03w 04-03-17 16:02:05 GMT  EAGLE5 31.4.0
STP OPTIONS
----------------------
GSMDFLT            PASS
GSMDECERR          PASS
```

NOTE: The rtrv-stpopts command output contains other fields that are not used by this procedure. If you wish to see all the fields displayed by the rtrv-stpopts command, see the rtrv-stpopts command description in the *Commands Manual*.

---

3. Change either the GSM MAP screening default action (**gsmdflt**) and GSM MAP screening decode error action (**gsmdecerr**) options using the **chg-stpopts** command.

If you wish to change both options, enter the **chg-stpopts** command with the **gsmdflt** and **gsmdecerr** parameters as shown in this example.

```
chg-stpopts:gsmdflt=discard:gsmdecerr=discard
```

If you wish to change only one option, enter the **chg-stpopts** command with either the **gsmdflt** and **gsmdecerr** parameters as shown in these examples.

```
chg-stpopts:gsmdflt=discard
```

```
chg-stpopts:gsmdecerr=discard
```

For this example, the GSM MAP screening error code action is being changed.

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

```
rlghncxa03w 04-03-07 00:22:57 GMT  EAGLE5 31.4.0
CHG-STPOPTS: MASP A - COMPLTD
```

---

4. Verify the changes using the **rtrv-stpopts** command. This is an example of the possible output.

```
rlghncxa03w 04-03-17 16:02:05 GMT  EAGLE5 31.4.0
STP OPTIONS
----------------------
GSMDFLT            PASS
GSMDECERR       DISCARD
```

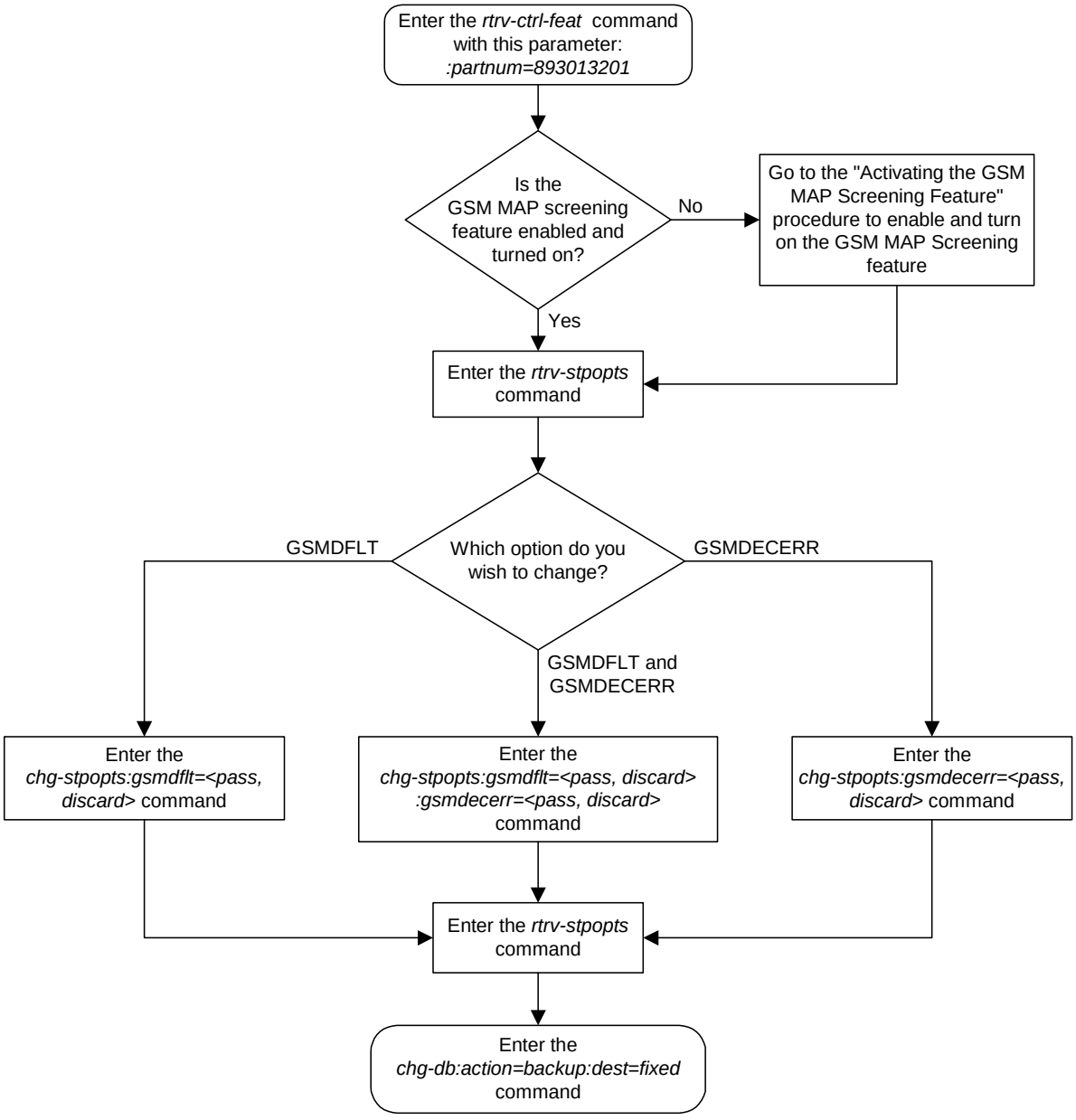
NOTE: The rtrv-stpopts command output contains other fields that are not used by this procedure. If you wish to see all the fields displayed by the rtrv-stpopts command, see the rtrv-stpopts command description in the *Commands Manual*.

---

5. Backup the new changes using the **chg-db:action=backup:dest=fixed** command. 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.
```

Flowchart 5-3. Changing the System-Wide GSM MAP Screening Options



Adding a GSM Subsystem Number Screening Entry

Use this procedure to provision the origination and destination SSNs (subsystem numbers) to be screened with the GSM MAP screening feature using the **ent-gsmssn-scrn** command.

The **ent-gsmssn-scrn** command uses these parameters.

:ssn – The subsystem number contained in either the calling party address (CGPA) or the called party address (CDPA) contained in the MAP message.

:type – The type of SSN, either an origination SSN (**orig**) or a destination SSN (**dest**). The origination SSN is found in the calling party address of the message. The destination SSN is found in the called party address of the message.

The GSM MAP Screening feature must be enabled and on before performing this procedure. Use the **rtrv-ctrl-feat** command to verify the status of the GSM MAP Screening feature. If the GSM MAP Screening feature is not enabled and off, go to the "Activating the GSM MAP Screening Feature" procedure on page 5-20 to enable and turn on the GSM MAP screening feature.

You cannot specify an **ssn** and **type** parameter combination that already exists in the database.

This examples used in this procedure are based on the examples shown in Table 5-4.

Table 5-4. Example GSM MAP Screening SSN Configuration Table

SSN	TYPE
250	orig
251	dest

Procedure

1. Verify that the GSM MAP Screening feature is enabled and on by entering the **rtrv-ctrl-feat** command with the part number of the GSM MAP Screening feature. Enter this command.

rtrv-ctrl-feat:partnum=893013201

The following is an example of the possible output.

```
rlghncxa03w 04-03-28 21:15:37 GMT EAGLE5 31.4.0
The following features have been permanently enabled:
Feature Name              Partnum    Status  Quantity
GSM Map Screening (GMS)   893013201  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
Zero entries found.
```

If the GSM MAP screening feature is not enabled or off, go to the "Activating the GSM MAP Screening Feature" procedure on page 5-20 to enable and turn on the GSM MAP screening feature.

2. Display the GSM MAP Screening subsystem numbers in the database using the **rtrv-gsmssn-scrn** command. This is an example of the possible output.

```
rlghncxa03w 04-03-07 00:28:31 GMT EAGLE5 31.4.0
SSN  ORIG  DEST
  2   Yes   No
 10   Yes   Yes
GSM Map Screening table is (2 of 512) 1% full
RTRV-GSMSSN-SCRN: MASP A - COMPLTD
```

3. Add the new subsystem numbers to be screened to the database with the **ent-gsmssn-scrn** command. For this example, enter these commands:

ent-gsmssn-scrn:ssn=250:type=orig

ent-gsmssn-scrn:ssn=251:type=dest

When each of these commands has successfully completed, this message appears.

```
rlghncxa03w 04-03-07 00:29:31 GMT EAGLE5 31.4.0
ENT-GSMSSN-SCRN: MASP A - COMPLTD
```

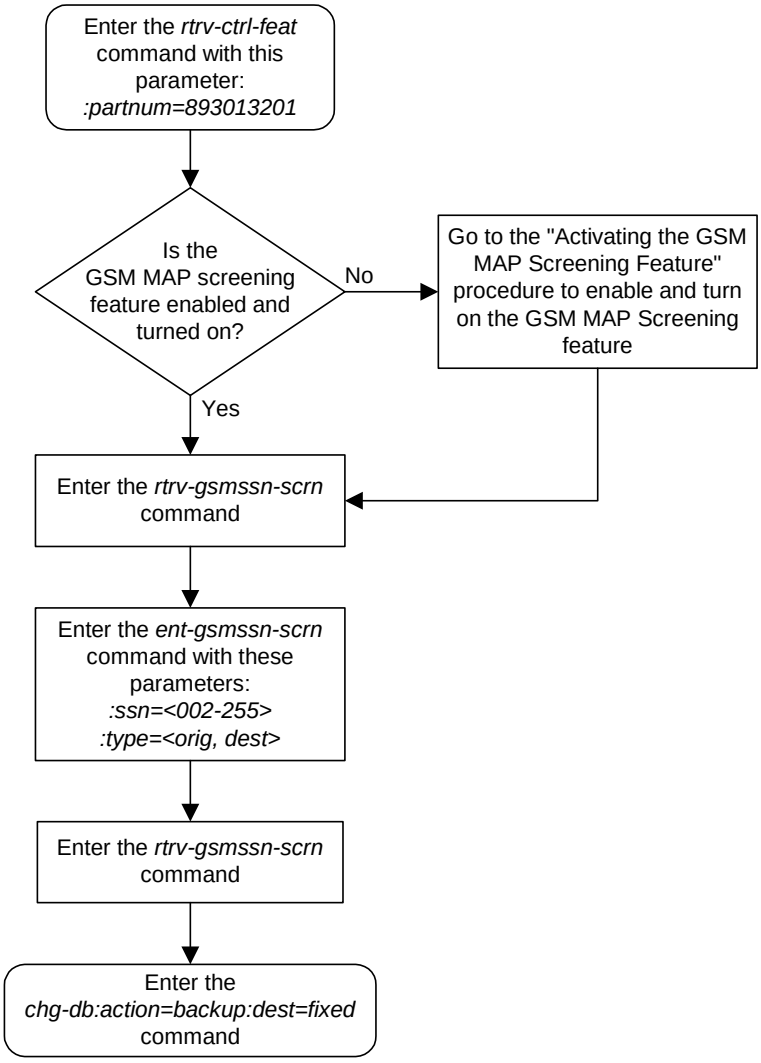
4. Verify the changes using the **rtrv-gsmssn-scrn** command. This is an example of the possible output.

```
rlghncxa03w 04-03-07 00:28:31 GMT EAGLE5 31.4.0
SSN  ORIG  DEST
  2  Yes   No
 10  Yes   Yes
250  Yes   No
251  No    Yes
GSM Map Screening table is (4 of 512) 1% full
RTRV-GSMSSN-SCRN: MASP A - COMPLTD
```

5. Backup the new changes using the **chg-db:action=backup:dest=fixed** command. 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.
```

Flowchart 5-4. Adding a GSM Subsystem Number Screening Entry



Removing a GSM Subsystem Number Screening Entry

Use this procedure to remove an SSN (subsystem number) from the GSM MAP SSN screening table using the **dlt-gsmssn-scrn** command.

The **dlt-gsmssn-scrn** command uses these parameters.

:ssn – The subsystem number contained in either the calling party address (CGPA) or the called party address (CDPA) contained in the MAP message.

:type – The type of SSN, either an origination SSN (**orig**) or a destination SSN (**dest**). The origination SSN is found in the calling party address of the message. The destination SSN is found in the called party address of the message.

The **ssn** and **type** parameter combination specified in the **dlt-gsmssn-scrn** command must be in the database.

Procedure

1. Display the GSM MAP Screening subsystem numbers in the database using the **rtrv-gsmssn-scrn** command. This is an example of the possible output.

```
rlghncxa03w 04-03-07 00:28:31 GMT EAGLE5 31.4.0
SSN  ORIG  DEST
  2  Yes   No
 10  Yes   Yes
250  Yes   No
251  No    Yes
GSM Map Screening table is (4 of 512) 1% full
RTRV-GSMSSN-SCRN: MASP A - COMPLTD
```

2. Remove the subsystem number from the database with the **dlt-gsmssn-scrn** command. For this example, enter this command.

dlt-gsmssn-scrn:ssn=010:type=orig

dlt-gsmssn-scrn:ssn=251:type=dest

When each of these commands has successfully completed, this message appears.

```
rlghncxa03w 04-03-07 00:29:31 GMT EAGLE5 31.4.0
DLT-GSMSSN-SCRN: MASP A - COMPLTD
```

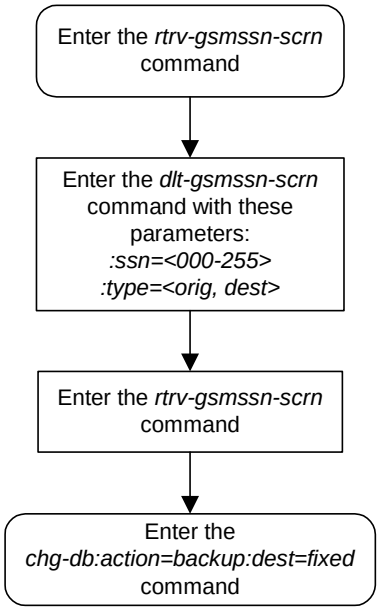
3. Verify the changes using the **rtrv-gsmssn-scrn** command. This is an example of the possible output.

```
rlghncxa03w 04-03-07 00:28:31 GMT EAGLE5 31.4.0
SSN  ORIG  DEST
  2  Yes   No
 10  No    Yes
250  Yes   No
GSM Map Screening table is (3 of 512) 1% full
RTRV-GSMSSN-SCRN: MASP A - COMPLTD
```

4. Backup the new changes using the **chg-db:action=backup:dest=fixed** command. 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.
```

Flowchart 5-5. Removing a GSM Subsystem Number Screening Entry



Adding a GSM MAP Screening Operation Code

Use this procedure to provision the concerned GSM MAP screening operation codes and the default screening action for the operation code in the database using the **ent-gsms-opcode** command. This procedure allows the user to provision a list of all operation codes that the system uses in performing GSM screening.

The **ent-gsms-opcode** command uses these parameters.

:opcode – The MAP operation code. This parameter refers to the actual decimal value of the MAP operation codes from the TCAP layer of GSM MAP messages.

:opname – The name of operation code. This parameter lets the user give a meaningful name to the MAP operation code (**opcode**) entered. This name is then used by subsequent commands such as **dlt-/chg-gsms-opcode** and **ent-/chg-/dlt-/rtrv-gsmmap-scrn**.

:dfltact – The default screening action. This parameter lets the user define a default screening action for the MAP operation code (**opcode)** entered. The default screening action is used when a matching CGPA (calling party) address is not found in the GSM MAP screening table or when a CGPA address is found but does not have the correct **npv** and **naiv** parameters as defined by the **ent-gsmmap-scrn** command. One of these actions can be assigned.

- **pass** – Route the message as normal to the destination.
- **discard** – The MSU is to be discarded.
- **atierr** – An ATI (Any Time Interrogation) reject message is generated. This option is only valid for ATI MAP operation codes.
- **route** – Route the message as normal to the original destination node.
- **forward** – Route the original message to the forward node. The original message is not sent to the original node. If, however, the forwarded node is not available for routing then the MSU is routed to the original node.
- **duplicate** – Route the message as normal to the original destination and route a copy of the original message to the duplicate node.
- **dupdisc** – Duplicate and discard – Route the original message to the duplicate node. The original message is not sent to the original node.

:pc/pca/pci/pcn/pcn24 – The ANSI point code (**pc/pca**), ITU-I point code (**pci**), 14-bit ITU-N point code (**pcn**), or 24-bit ITU-N point code (**pcn24**) of the node that the MSU is routed to by the **forward**, **duplicate**, or **dupdisc** screening actions. The system can contain 14-bit ITU-N point codes or 24-bit ITU-N point codes, but not both. To specify the **pc/pca** parameters, the Enhanced GSM MAP Screening feature must be enabled and on.

:ssn – The subsystem number of the node that the MSU is routed to by the **forward**, **duplicate**, or **dupdisc** screening actions

:force – The mated application override. Is the GSM MAP screening operation code to be entered without a mated application in the database (**yes** or **no**)?

The GSM MAP Screening feature must be enabled and on before performing this procedure. Use the **rtrv-ctrl-feat** command to verify the status of the GSM MAP Screening feature. If the GSM MAP Screening feature is not enabled and off, go to the "Activating the GSM MAP Screening Feature" procedure on page 5-20 to enable and turn on the GSM MAP screening feature.

The **opcode** parameter value must be a number between 0 and 255 or an asterisk (*). The **opcode=*** parameter can be specified only if the Enhanced GSM MAP Screening feature is enabled and on. Use the **rtrv-ctrl-feat** command to verify the status of the Enhanced GSM MAP Screening feature. If the Enhanced GSM MAP Screening feature is not enabled or off, go to the "Activating the GSM MAP Screening Feature" procedure on page 5-20 to enable and turn on the Enhanced GSM MAP screening feature.

The **opname** parameter value must be no more than 8 alphanumeric characters.

The word **none** cannot be used as a value for the **opname** parameter.

The **dfltact=atierr** parameter cannot be specified unless the value of the operation code (**opcode**) referenced by the **opname** parameter value is **71.** The **atierr** option is only valid for ATI MAP operation codes; **opcode=71** signifies an ATI MAP operation code.

The value specified for the **opcode** parameter cannot already exist in the GSM MAP operation code table.

The value specified for the **opname** parameter cannot already be used in the GSM MAP operation code table.

The **pc/pca/pci/pcn/pcn24** and **ssn** values must be shown in the **rtrv-map** output, otherwise, the **force=yes** parameter must be specified. If the **pc/pca/pci/pcn/pcn24** and **ssn** values are not shown in the **rtrv-map** output, and a new mated application is to be added, go to the "Provisioning a Mated Application" procedure in the *Database Administration Manual - Global Title Translation* and add the required mated application with the **pc/pca/pci/pcn/pcn24** and **ssn** values:

The **force=yes** parameter can be specified only with the **pc/pca/pci/pcn/pcn24** and **ssn** parameters.

The **dfltact=forward**, **dfltact=duplicate**, or **dfltact=dupdisc** parameters can be specified only with the **pc/pca/pci/pcn/pcn24** and **ssn** parameters. If the **pc/pca/pci/pcn/pcn24** and **ssn** parameters are specified, the **dfltact=forward**, **dfltact=duplicate**, or **dfltact=dupdisc** parameters must be specified.

The **pc/pca/pci/pcn/pcn24** and **ssn** parameters must be specified together.

The **pc/pca/pci/pcn/pcn24** parameter values must be the DPC of a route. The **pc/pca** parameter value must be a full point code. The **pc/pca** parameter value can be a member of a cluster point code when that cluster point code is the DPC of a route. This can be verified with the **rtrv-rte** command. If the **pc/pca/pci/pcn/pcn24** value is not shown in the **rtrv-rte** as the DPC of a route, go to the "Adding a Route" procedure in the *Database Administration Manual - SS7* and add a new route containing the **pc/pca/pci/pcn/pcn24** value.

This examples used in this procedure are based on the examples shown in Table 5-5.

Table 5-5. Example GSM MAP Screening Operation Code Configuration Table

OPCODE	OPNAME	DFLTACT	PC/PCA/PCI/PCN /PCN24	SSN
100	pass100	pass	N/A	N/A
150	discard1	discard	N/A	N/A
71	ati	atierr	N/A	N/A
25	route25	route	N/A	N/A
139	fwd139	forward	3-159-7	128
187	dup187	duplicate	11519	79
93	dd93	dupdisc	5-25-3	200
36	for1	forward	002-002-002	10
*	star	pass	N/A	N/A

Procedure

1. Verify that the GSM MAP Screening feature is enabled and on by entering the **rtrv-ctrl-feat** command with the part number of the GSM MAP Screening feature. Enter this command.

rtrv-ctrl-feat:partnum=893013201

The following is an example of the possible output.

```
rlghncxa03w 04-03-28 21:15:37 GMT EAGLE5 31.4.0
The following features have been permanently enabled:
Feature Name              Partnum    Status  Quantity
GSM Map Screening (GMS)   893013201  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
Zero entries found.
```

If the GSM MAP screening feature is not enabled or off, go to the "Activating the GSM MAP Screening Feature" procedure on page 5-20 to enable and turn on the GSM MAP screening feature.

2. Display the GSM MAP screening operation codes in the database using the **rtrv-gsms-opcode** command. This is an example of the possible output.

```
rlghncxa03w 04-03-10 11:43:04 GMT EAGLE5 31.4.0

OPCODE  OPNAME    DFLTACT    PCA          SSN


OPCODE  OPNAME    DFLTACT    PCI          SSN


OPCODE  OPNAME    DFLTACT    PCN          SSN


OPCODE  OPNAME    DFLTACT    PCN24        SSN

OPCODE  OPNAME    DFLTACT
 22     sri       disc
 50     pass50    pass

GSMMS OPCODE Table (2 of 257) is 1% full
```

NOTE: If the `dfltact` parameter value will be either `pass`, `discard`, or `route`, skip steps 3 and 4, and go to step 5.

NOTE: If the `dfltact` parameter value will be `atierr`, skip steps 3 through 5, and go to step 6.

3. The point code and subsystem number being assigned to the GSM OPCODE must be in the mated application table. Enter the **`rtrv-map`** command with the **`pci/pcn/pcn24`** and **`ssn`** values that will be specified with the **`ent-gsms-opcode`** command in step 6. For this example, enter these commands.

   `rtrv-map:pci=3-159-7:ssn=128`

   This is an example of the possible output.

```
rlghncxa03w  04-03-25 09:42:31  GMT  EAGLE5 31.4.0

MAP TABLE IS   2 % FULL    (20 of 1024)

PCI           SSN   RC MULT MPCA           MSSN  MATERC MULT SRM  MRC  GRP NAME SSO
3-159-7       128   10 SOL                                    YES  YES  GRP01    ON
```

   `rtrv-map:pcn=11519:ssn=79`

   This is an example of the possible output.

```
rlghncxa03w  04-03-25 09:42:31  GMT  EAGLE5 31.4.0

MAP TABLE IS   2 % FULL    (20 of 1024)

PCN           SSN   RC MULT MPCN           MSSN  MATERC MULT SRM  MRC  GRP NAME SSO
11519          79   10 SOL                                    YES  YES  GRP01    ON
```

   `rtrv-map:pci=5-25-3:ssn=200`

   This is an example of the possible output.

```
rlghncxa03w  04-03-25 09:42:31  GMT  EAGLE5 31.4.0

MAP TABLE IS   2 % FULL    (20 of 1024)

PCI           SSN   RC MULT MPCI           MSSN  MATERC MULT SRM  MRC  GRP NAME SSO
5-25-3        200   10 SOL                                    YES  YES  GRP01    ON
```

   `rtrv-map:pca=002-002-002:ssn=10`

   This is an example of the possible output.

```
rlghncxa03w  04-03-25 09:42:31  GMT  EAGLE5 31.4.0

E2452 Cmd Rej: Remote point code does not exist in MAP table
```

   If the point code and subsystem number is not shown in the **`rtrv-map`** output, go to the "Provisioning a Mated Application" procedure in the *Database Administration Manual - Global Title Translation* and add the required point code and subsystem number to the mated application table.

   NOTE: If the point code and subsystem number is not shown in the `rtrv-map` output, and is not added to the database in one of these procedures, the `force=yes` parameter must be specified with the `ent-gsms-opcode` command in step 6.

4. The point code specified with the **ent-gsms-opcode** command must be the DPC of a route. If the point code specified with the **ent-gsms-opcode** command is an ANSI point code, the point code can be a member of a cluster point code when that cluster point code is the DPC of a route.

Enter the **rtrv-rte** command with the **dpc** parameter specifying the point code to be used with the **ent-gsms-opcode** command to verify whether or not the point code is the DPC of a route. For this example, enter these commands.

rtrv-rte:dpci=3-159-7

This is an example of the possible output.

```
rlghncxa03w 04-03-07 11:43:04 GMT  EAGLE5 31.4.0
DPCI    ALIASN/N24    ALIASA      CLLI        LSN        RC APC
3-159-7 12111         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
```

rtrv-rte:dpcn=11519

This is an example of the possible output.

```
rlghncxa03w 04-03-07 11:43:04 GMT  EAGLE5 31.4.0
DPCN          ALIASA      ALIASI  CLLI        LSN        RC APC
11519         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
```

rtrv-rte:dpci=5-25-3

This is an example of the possible output.

```
rlghncxa03w 04-03-07 11:43:04 GMT  EAGLE5 31.4.0
DPCI    ALIASN/N24    ALIASA      CLLI        LSN        RC APC
5-25-3  07659         240-039-150 idp1        ls100001   10 5-25-3
                                              ls100002   10 3-250-6
                                              ls100003   20 7-34-7
                                              ls100004   30 6-98-1
                                              ls100005   40 3-142-2
                                              ls100006   50 1-178-3
```

rtrv-rte:dpca=002-002-002

```
rlghncxa03w  04-03-25 09:42:31  GMT  EAGLE5 31.4.0

DPCA        ALIASI  ALIASN/N24    CLLI        LSN        RC APCA
002-002-002 ------- -----------   ----------- lsn1       10 002-002-002
```

If the point code is not shown in the **rtrv-rte** output, or, if the point code is an ANSI point code, the point code is not a member of a cluster point code when that cluster point code is the DPC of a route, go to the "Adding a Route" procedure in the *Database Administration Manual - SS7* and add the required route to the database.

NOTE: If the `opcode=*` or the `pc/pca` parameters are not being used in this procedure, skip step 5, and go to step 6.

5. Verify that the Enhanced GSM MAP Screening feature is enabled and on by entering the **`rtrv-ctrl-feat`** command with the part number of the Enhanced GSM MAP Screening feature. Enter this command.

   `rtrv-ctrl-feat:partnum=893012401`

   The following is an example of the possible output.

```
rlghncxa03w 04-03-28 21:15:37 GMT EAGLE5 31.4.0
The following features have been permanently enabled:
Feature Name              Partnum    Status  Quantity
Enhanced GMS (EGMS)       893012401  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
Zero entries found.
```

   If the Enhanced GSM MAP screening feature is not enabled or off, go to the "Activating the GSM MAP Screening Feature" procedure on page 5-20 to enable and turn on the Enhanced GSM MAP screening feature.

6. Add the new GSM MAP screening operation codes to the database with the **`ent-gsms-opcode`** command. For this example, enter these commands:

   `ent-gsms-opcode:opcode=100:opname=pass100:dfltact=pass`

   `ent-gsms-opcode:opcode=150:opname=discard1:dfltact=discard`

   `ent-gsms-opcode:opcode=71:opname=ati:dfltact=atierr`

   `ent-gsms-opcode:opcode=25:opname=route25:dfltact=route`

   `ent-gsms-opcode:opcode=139:opname=fwd139:dfltact=forward :pci=3-159-7:ssn=128`

   `ent-gsms-opcode:opcode=187:opname=dup187:dfltact=duplicate :pcn=11519:ssn=79`

   `ent-gsms-opcode:opcode=93:opname=dd93:dfltact=dupdisc :pci=5-25-3:ssn=200`

   `ent-gsms-opcode:opcode=36:opname=for1:dfltact=forward :pca=002-002-002:ssn=10`

   `ent-gsms-opcode:opcode=*:opname=star1:dfltact=pass`

   When each of these commands has successfully completed, this message appears.

```
rlghncxa03w 04-03-10 11:43:04 GMT EAGLE5 31.4.0
ENT-GSMS-OPCODE: MASP A - COMPLTD
```

NOTES:

1. **If the pc/pca/pci/pcn/pcn24, ssn, dfltact=forward, dfltact=duplicate, or dfltact=dupdisc parameters are specified with the ent-gsms-opcode command, and the pc/pca/pci/pcn/pcn24 and ssn values are not in the mated application table (see step 3), the force=yes parameter must be specified with the ent-gsms-opcode command.**
2. **The word "none" cannot be used as a value for the opname parameter.**
3. **The pc/pca/pci/pcn/pcn24 value must be shown in the rtrv-rte output as the DPC of a route (see step 4). The pc/pca value must be a full point code value. The pc/pca value can be a member of a cluster point code when that cluster point code is the DPC of a route.**
4. **If the pc/pca/pci/pcn/pcn24 or ssn parameters are specified with the ent-gsms-opcode command, the dfltact parameter value must be either forward, duplicate, or dupdisc.**
5. **If the dfltact parameter value is either forward, duplicate, or dupdisc, the pc/pca/pci/pcn/pcn24 and ssn parameters must be specified with the ent-gsms-opcode command.**
6. **If the dfltact parameter value is either pass, discard, route, or atierr, the pc/pca/pci/pcn/pcn24 and ssn parameters cannot be specified with the ent-gsms-opcode command.**
7. **The dfltact=atierr parameter cannot be specified unless the value of the operation code (opcode) referenced by the opname parameter value is 71. The atierr option is only valid for ATI MAP operation codes; opcode=71 signifies an ATI MAP operation code.**
8. **To specify the opcode=* or pc/pca parameters, the Enhanced GSM MAP Screening feature must be enabled and on (see step 5).**

---

7. Verify the changes using the **rtrv-gsms-opcode** command and specifying the **opcode** parameter value used in step 6. For this example, enter these commands.

rtrv-gsms-opcode:opcode=025

This is an example of the possible output.

```
rlghncxa03w 04-03-10 11:43:04 GMT EAGLE5 31.4.0
OPCODE  OPNAME    DFLTACT
 25     route25   route

GSMMS OPCODE Table (11 of 257) is 4% full
```

rtrv-gsms-opcode:opcode=071

This is an example of the possible output.

```
rlghncxa03w 04-03-10 11:43:04 GMT EAGLE5 31.4.0
OPCODE  OPNAME    DFLTACT
 71     ati       atierr
```

```
GSMMS OPCODE Table (11 of 257) is 4% full
```

rtrv-gsms-opcode:opcode=093

This is an example of the possible output.

```
rlghncxa03w 04-03-10 11:43:04 GMT EAGLE5 31.4.0
OPCODE  OPNAME    DFLTACT    PCI          SSN
 93     dd93      dupdsc     5-25-3       200

GSMMS OPCODE Table (11 of 257) is 4% full
```

rtrv-gsms-opcode:opcode=100

This is an example of the possible output.

```
rlghncxa03w 04-03-10 11:43:04 GMT EAGLE5 31.4.0
OPCODE  OPNAME    DFLTACT
 100    pass100   pass

GSMMS OPCODE Table (11 of 257) is 4% full
```

rtrv-gsms-opcode:opcode=139

This is an example of the possible output.

```
rlghncxa03w 04-03-10 11:43:04 GMT EAGLE5 31.4.0
OPCODE  OPNAME    DFLTACT    PCI          SSN
 139    fwd139    fwd        3-159-7      128

GSMMS OPCODE Table (11 of 257) is 4% full
```

rtrv-gsms-opcode:opcode=150

This is an example of the possible output.

```
rlghncxa03w 04-03-10 11:43:04 GMT EAGLE5 31.4.0
OPCODE  OPNAME    DFLTACT
 150    discard1  disc

GSMMS OPCODE Table (11 of 257) is 4% full
```

rtrv-gsms-opcode:opcode=187

This is an example of the possible output.

```
rlghncxa03w 04-03-10 11:43:04 GMT EAGLE5 31.4.0
OPCODE  OPNAME    DFLTACT    PCN          SSN
 187    dup187    dupl       11519        79

GSMMS OPCODE Table (11 of 257) is 4% full
```

rtrv-gsms-opcode:opcode=36

This is an example of the possible output.

```
rlghncxa03w 04-03-10 11:43:04 GMT EAGLE5 31.4.0
OPCODE  OPNAME    DFLTACT    PCA          SSN
 36     for1      fwd        002-002-002  10

GSMMS OPCODE Table (11 of 257) is 4% full
```

rtrv-gsms-opcode:opcode=*

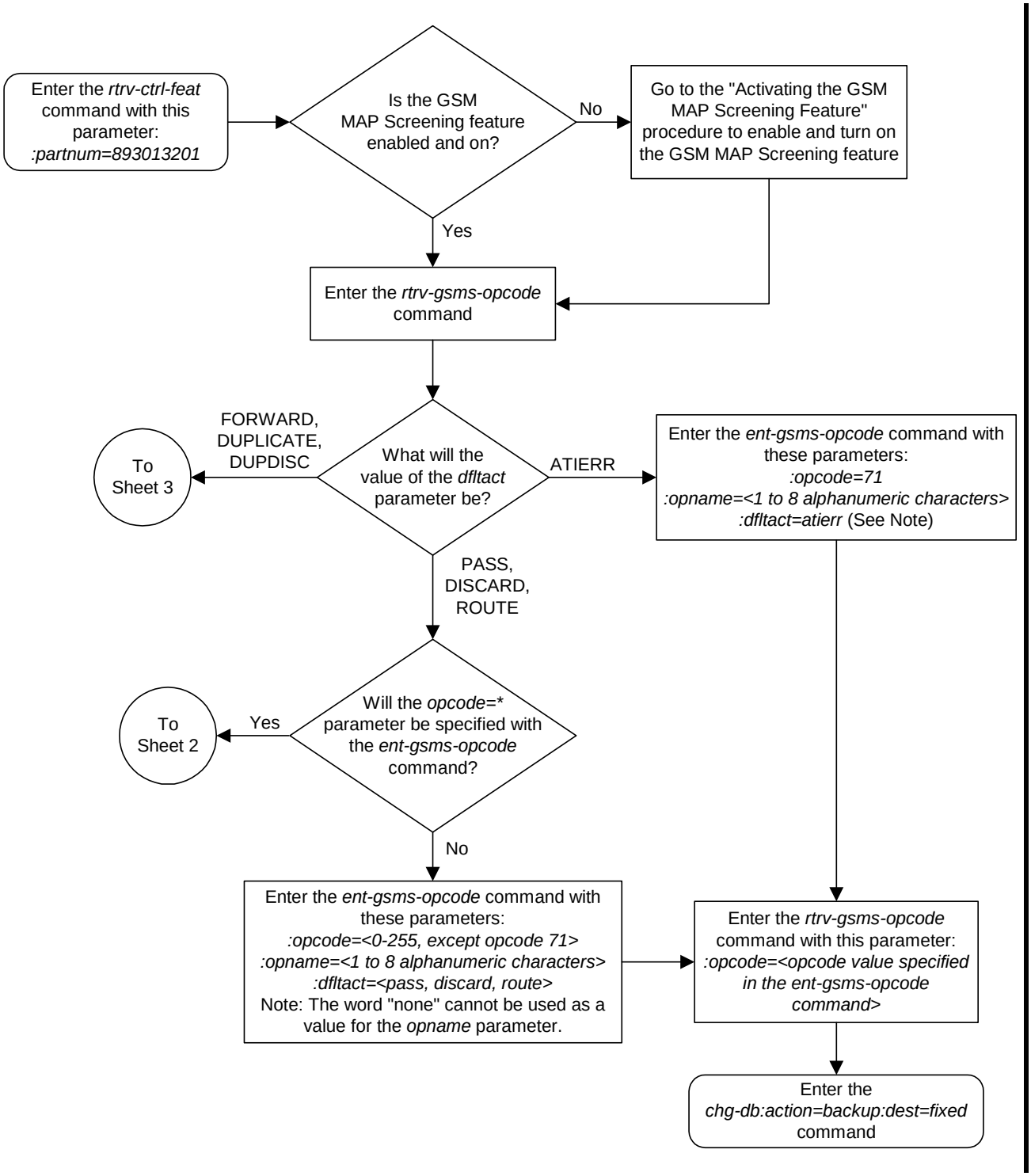
This is an example of the possible output.

```
rlghncxa03w 04-03-10 11:43:04 GMT EAGLE5 31.4.0
OPCODE  OPNAME    DFLTACT
 *      star      pass

GSMMS OPCODE Table (11 of 257) is 4% full
```

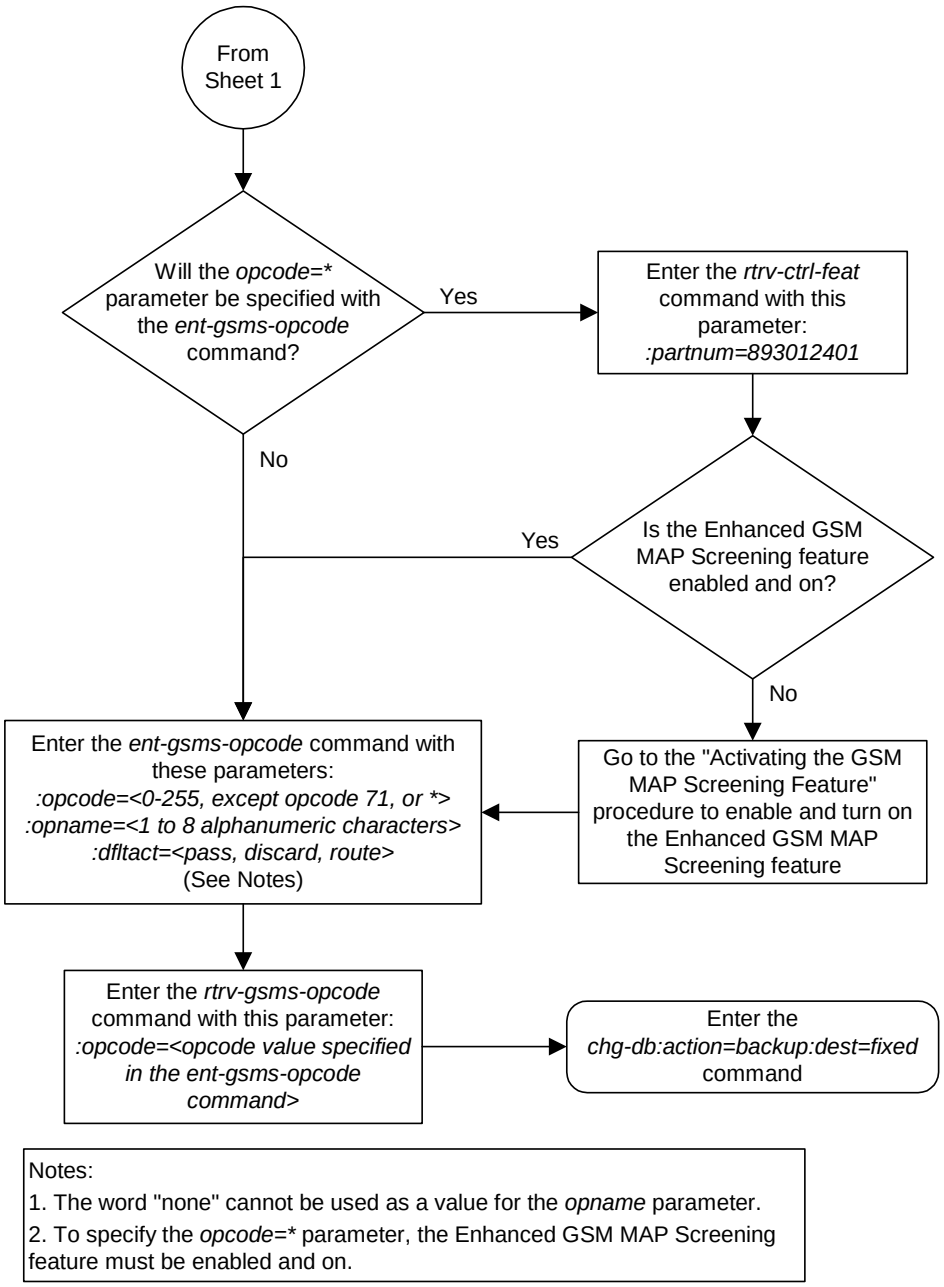
8. Backup the new changes using the **chg-db:action=backup:dest=fixed** command. These messages should appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
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.
```

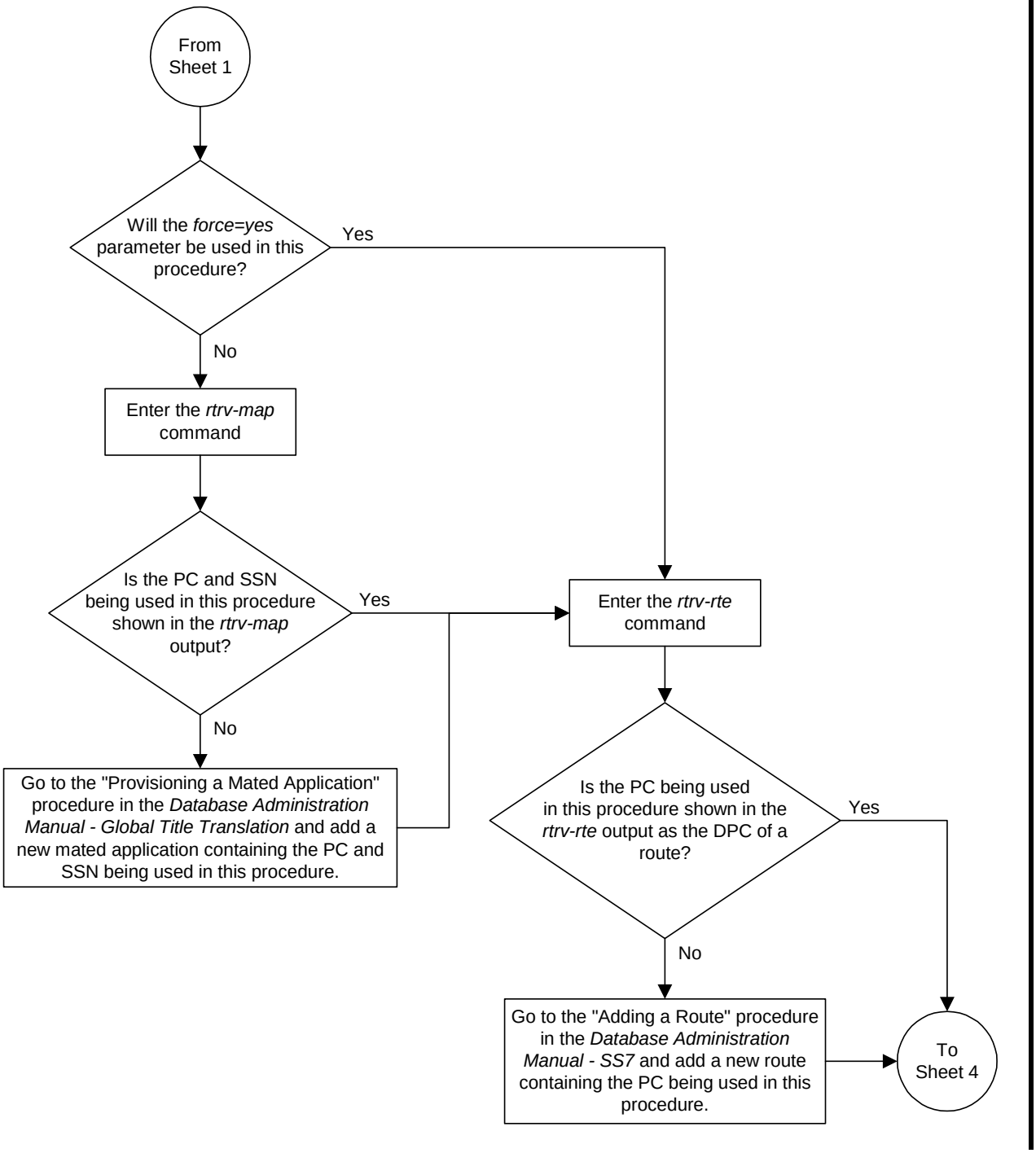
Flowchart 5-6. Adding a GSM MAP Screening Operation Code (Sheet 1 of 4)



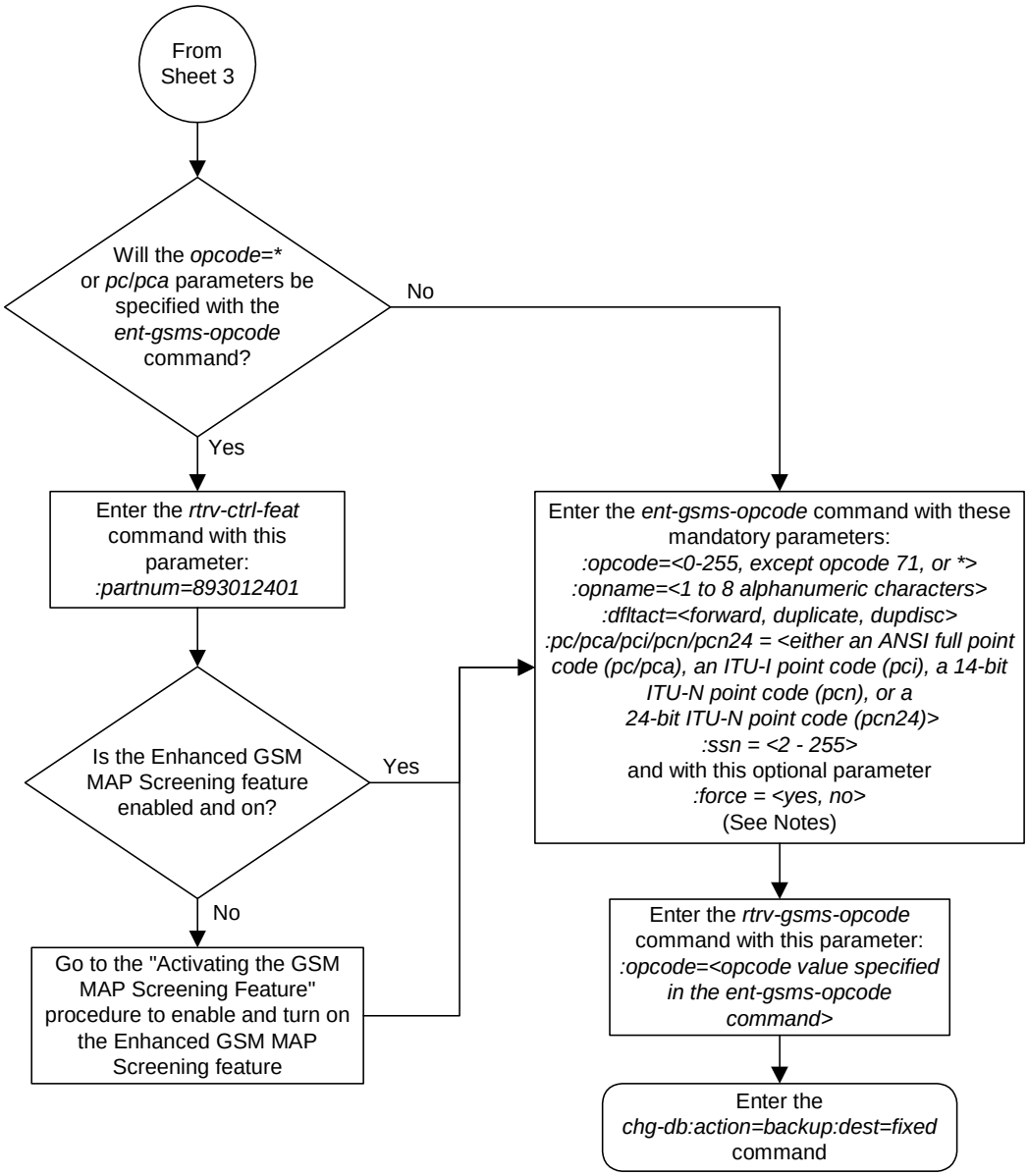
Flowchart 5-6. Adding a GSM MAP Screening Operation Code (Sheet 2 of 4)



Flowchart 5-6. Adding a GSM MAP Screening Operation Code (Sheet 3 of 4)



Flowchart 5-6. Adding a GSM MAP Screening Operation Code (Sheet 4 of 4)



Notes:

1. The word "none" cannot be used as a value for the *opname* parameter.
2. The *pc*/*pca*/*pci*/*pcn*/*pcn24* and *ssn* values must be shown in the *rtrv-map* output on Sheet 3, otherwise, the *force=yes* parameter must be specified.
3. The *pc/pca/pci/pcn/pcn24* value must be shown in the *rtrv-rte* output on Sheet 3 as the DPC of a route. The *pc*/*pca* value must be a full point code value. The *pc*/*pca* value can be a member of a cluster point code when that cluster point code is the DPC of a route.
4. The system can contain 14-bit ITU-N point codes or 24-bit ITU-N point codes, but not both.
5. To specify the *opcode=** or *pc/pca* parameters, the Enhanced GSM MAP Screening feature must be enabled and on.

Removing a GSM MAP Screening Operation Code

Use this procedure to remove GSM MAP screening operation codes and the default screening action for that operation code using the **dlt-gsms-opcode** command.

The **dlt-gsms-opcode** command uses only one parameter, **opname**. The value for the opname parameter is the user-defined name for the operation code shown in the **rtrv-gsms-opcode** command output.

The **opname** value being removed cannot be referenced by any GSM MAP screening entries (shown in the **rtrv-gsmmap-scrn** command output). Use the "Removing a GSM MAP Screening Entry" procedure on page 5-104 to remove any GSM MAP screening entries that reference the **opname** name value being removed from the database.

Procedure

1. Display the GSM MAP screening opcodes in the database using the **rtrv-gsms-opcode** command. This is an example of the possible output.

```
rlghncxa03w 04-03-10 11:43:04 GMT EAGLE5 31.4.0

OPCODE  OPNAME    DFLTACT    PCA          SSN
 36     for1      fwd        002-002-002  10

OPCODE  OPNAME    DFLTACT    PCI          SSN
 93     dd93      dupdsc     5-25-3       200
 139    fwd139    fwd        3-159-7      128

OPCODE  OPNAME    DFLTACT    PCN          SSN
 187    dup187    dupl       11519        79

OPCODE  OPNAME    DFLTACT    PCN24        SSN

OPCODE  OPNAME    DFLTACT
 22     sri       disc
 25     route25   route
 50     pass50    pass
 71     ati       atierr
 100    pass100   pass
 150    discard1  disc
 *      star      pass
GSMMS OPCODE Table (11 of 257) is 4% full
```

2. Display the GSM MAP screening entries that reference the **opname** value being removed from the database using the **rtrv-gsmmap-scrn** command specifying the **opname** parameter with the **opname** value being removed from the database. For this example, enter this command.

rtrv-gsmmap-scrn:opname=sri

This is an example of the possible output if the **rtrv-gsmmap-scrn** output contains no entries that reference the **opname** value being removed.

```
rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0

Single CgPA Entries for OPNAME: sri
-----------------------------------
SADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           NPV NAIV FORBID ACTION CGSR


Range CgPA Entries for OPNAME: sri
----------------------------------
SADDR           EADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION CGSR


GSM Map Screening table is (1500 of 4000) 38% full
```

This is an example of the possible output if the **rtrv-gsmmap-scrn** output contains entries that reference the **opname** value being removed.

rtrv-gsmmap-scrn:opname=sri

```
rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0

Single CgPA Entries for OPNAME: sri
-----------------------------------
SADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           NPV NAIV FORBID ACTION CGSR
919462000000005 1   0    none   pass   sri1
```

```
Range CgPA Entries for OPNAME: sri
----------------------------------
SADDR           EADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION CGSR
919461888888888 919461900000000 4   1    all    pass   sri2
919462000000000 919463000000000 *   *    all    disc   sri3


GSM Map Screening table is (1500 of 4000) 38% full
```

If the GSM MAP screening entry in this step contains any CGPA entries, go to the "Removing a GSM MAP Screening Entry" procedure on page 5-104 to remove the CGPA entries shown in this step.

3. Remove the GSM MAP opname value from the database using the **dlt-gsms-opcode** command. For this example, enter this command.

   dlt-gsms-opcode:opname=sri

   When this command has successfully completed, this message appears.

   ```
   rlghncxa03w 04-03-07 00:29:31 GMT EAGLE5 31.4.0
   DLT-GSMS-OPCODE: MASP A - COMPLTD
   ```

4. Verify the changes using the **rtrv-gsms-opcode** command with the **opname** parameter value specified in step 3. For this example, enter this command.

   rtrv-gsms-opcode:opname=sri

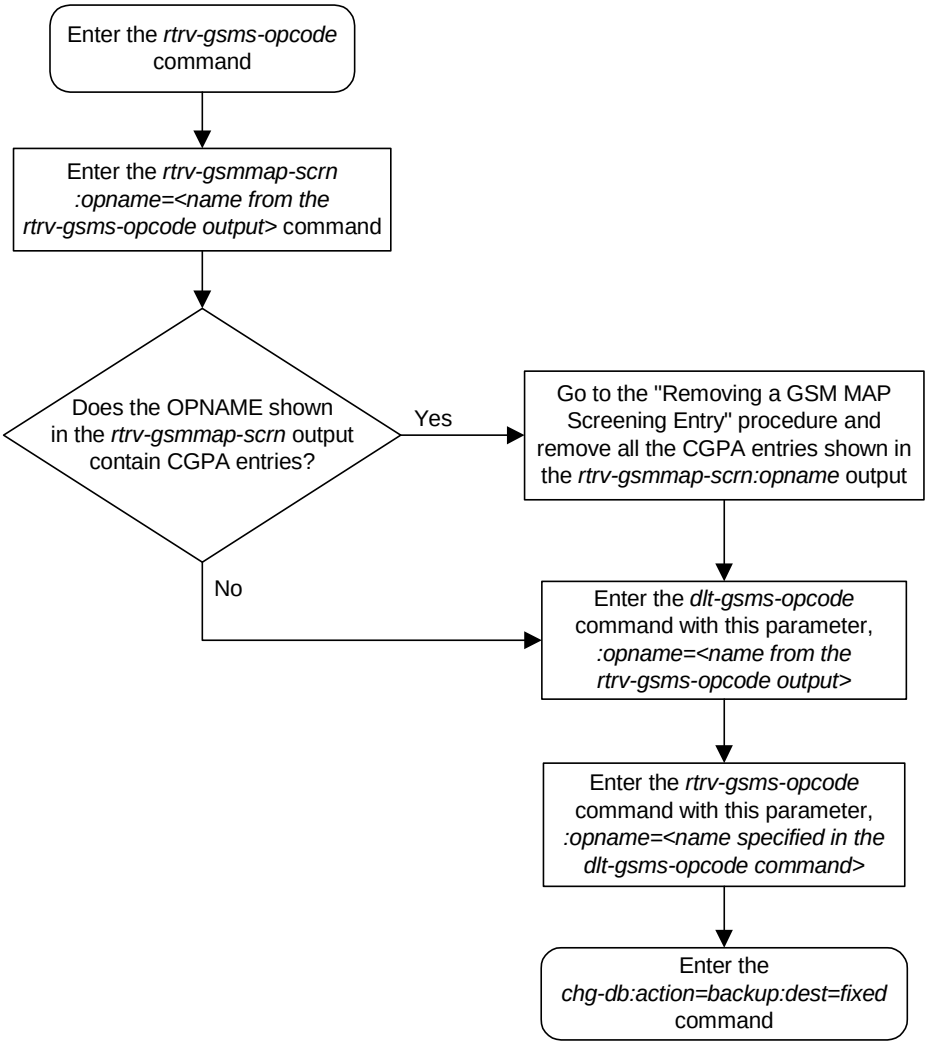
   This is an example of the possible output.

   ```
   rlghncxa03w 04-03-10 11:43:04 GMT EAGLE5 31.4.0
   E3892 Cmd Rej: OPNAME does not exist in the database
   ```

5. Backup the new changes using the **chg-db:action=backup:dest=fixed** command. 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.
   ```

Flowchart 5-7. Removing a GSM MAP Screening Operation Code



Changing a GSM MAP Screening Operation Code

Use this procedure to change the attributes of the GSM MAP screening operation codes using the **chg-gsms-opcode** command. The procedure allows you to change the default screening action and the operation-code name for a specific operation code. The **chg-gsms-opcode** command uses these parameters.

:opname – The user-defined name for the operation code shown in the **rtrv-gsms-opcode** command output.

:nopname – The new user-defined name for the operation code.

:ndfltact – The new default screening action.

- **pass** – Route the message as normal to the destination.
- **discard** – The MSU is to be discarded.
- **atierr** – An ATI (Any Time Interrogation) reject message is generated. This option is only valid for ATI MAP operation codes.
- **route** – Route the message as normal to the original destination node.
- **forward** – Route the original message to the forward node. The original message is not sent to the original node. If, however, the forwarded node is not available for routing then the MSU is routed to the original node.
- **duplicate** – Route the message as normal to the original destination and route a copy of the original message to the duplicate node.
- **dupdisc** – Duplicate and discard – Route the original message to the duplicate node. The original message is not sent to the original node.

:npc/npca/npci/npcn/npcn24 – The new ANSI point code (**npc/npca**), ITU-I point code (**npci**), new 14-bit ITU-N point code (**npcn**), or new 24-bit ITU-N point code (**npcn24**) of the node that the MSU is routed to by the **forward**, **duplicate**, or **dupdisc** screening actions. The system can contain 14-bit ITU-N point codes or 24-bit ITU-N point codes, but not both. The **npc/npca** parameters can be specified only if the Enhanced GSM MAP Screening feature is enabled and on.

:nssn – The new subsystem number of the node that the MSU is routed to by the **forward**, **duplicate**, or **dupdisc** screening actions

:force – The mated application override. Is the GSM MAP screening operation code to be entered without a mated application in the database (**yes** or **no**)?

The **nopname** parameter value must be no more than 8 alphanumeric characters.

The reserved word **none** cannot be used as a value for the **nopname** parameter.

The **ndfltact=atierr** parameter cannot be specified unless the value of the operation code (**opcode**) referenced by the **opname** parameter value is **71.** The **atierr** option is only valid for ATI MAP operation codes; **opcode=71** signifies an ATI MAP operation code.

The **npc/npca/npci/npcn/npcn24** and **nssn** values must be shown in the **rtrv-map** output, otherwise, the **force=yes** parameter must be specified. If the **npc/npca/npci/npcn/npcn24** and **nssn** values are not shown in the **rtrv-map** output, and a new mated application is to be added, go to the "Provisioning a Mated Application" procedure in the *Database Administration Manual - Global Title Translation* and add the required mated application with the **npc/npca/npci/npcn/npcn24** and **nssn** values.

The **force=yes** parameter can be specified only with the **npc/npca/npci/npcn/npcn24** and **nssn** parameters.

The **ndfltact=forward**, **ndfltact=duplicate**, or **ndfltact=dupdisc** parameters can be specified only with the **npc/npca/npci/npcn/npcn24** and **nssn** parameters. If the **npc/npca/npci/npcn/npcn24** and **nssn** parameters are specified, the **ndfltact=forward**, **ndfltact=duplicate**, or **ndfltact=dupdisc** parameters must be specified.

The **npc/npca/npci/npcn/npcn24** and **nssn** parameters must be specified together.

The **npc/npca/npci/npcn/npcn24** parameter values must be the DPC of a route or a member of a cluster route. This can be verified with the **rtrv-rte** command. If the **npc/npca/npci/npcn/npcn24** value is not shown in the **rtrv-rte** as the DPC of a route, go to the "Adding a Route" procedure in the *Database Administration Manual - SS7* and add a new route containing the **npc/npca/npci/npcn/npcn24** value.

Procedure

1. Display the GSM MAP screening operation codes in the database using the **rtrv-gsms-opcode** command. This is an example of the possible output.

```
rlghncxa03w 04-03-10 11:43:04 GMT EAGLE5 31.4.0

OPCODE  OPNAME    DFLTACT    PCA          SSN
 36     for1      fwd        002-002-002  10

OPCODE  OPNAME     DFLTACT   PCI          SSN
 93     dd93       dupdsc    5-25-3       200
 139    fwd139     fwd       3-159-7      128

OPCODE  OPNAME     DFLTACT   PCN          SSN
 187    dup187     dupl      11519        79

OPCODE  OPNAME     DFLTACT   PCN24        SSN

OPCODE  OPNAME    DFLTACT
 22     sri       disc
 25     route25   route
 50     pass50    pass
 71     ati       atierr
 150    discard1  disc
 *      star      pass

GSMMS OPCODE Table (10 of 257) is 4% full
```

NOTE: If the default action parameter value will be changed to either pass, discard, route, or atierr, or the npc/npca/npci/npcn/npcn24 and nssn parameters are not to be specified, skip steps 2, 3, and 4, and go to step 5.

2. The point code and subsystem number being assigned to the GSM operations code must be in the mated application table. Enter the **rtrv-map** command with the **npc/npca/npci/npcn/npcn24** and **nssn** values that will be specified with the **chg-gsms-opcode** command in step 5. For this example, enter this command.

   rtrv-map:pci=4-38-1:ssn=50

   This is an example of the possible output.

```
rlghncxa03w  04-03-25 09:42:31  GMT  EAGLE5 31.4.0

MAP TABLE IS   2 % FULL    (20 of 1024)

PCI           SSN   RC MULT MPCI          MSSN  MATERC MULT SRM  MRC  GRP NAME SSO
4-38-1        50    10 SOL                                  YES  YES  GRP01    ON
```

   If the point code is not shown in the **rtrv-map** output, go to the "Provisioning a Mated Application" procedure in the *Database Administration Manual - Global Title Translation* and add the required point code and subsystem number to the mated application table.

   NOTE: If the point code and subsystem number is not shown in the rtrv-map output, and is not added to the database in one of these procedures, the force=yes parameter must be specified with the chg-gsms-opcode command in step 5.

3. The point code specified with the **chg-gsms-opcode** command must be the DPC of a route. If the point code specified with the **chg-gsms-opcode** command is an ANSI point code, the point code can be a member of a cluster point code when that cluster point code is the DPC of a route.

   Enter the **rtrv-rte** command with the **dpc** parameter specifying the point code to be used with the **chg-gsms-opcode** command to verify whether or not the point code is the DPC of a route. For this example, enter these commands.

   rtrv-rte:dpci=4-38-1

   This is an example of the possible output.

```
rlghncxa03w 04-03-07 11:43:04 GMT  EAGLE5 31.4.0
DPCI         ALIASN      ALIASA      CLLI         LSN      RC APCI
4-38-1        12111      240-111-111 idp1         ls300001 10 4-38-1
                                                  ls300002 10 2-66-7
                                                  ls300003 20 5-87-4
```

   If the point code is not shown in the **rtrv-rte** output, if the point code is an ANSI point code, the point code is not a member of a cluster point code when that cluster point code is the DPC of a route, go to the "Adding a Route" procedure in the *Database Administration Manual - SS7* and add the required route to the database.

NOTE: If the npc/npca parameters are not being used in this procedure, or if the rtrv-gsms-opcode output in step 1 shows ANSI point code values (pc/pca parameter values) or the opcode=* parameter value, skip step 4, and go to step 5.

4. Verify that the Enhanced GSM MAP Screening feature is enabled and on by entering the **rtrv-ctrl-feat** command with the part number of the Enhanced GSM MAP Screening feature. Enter this command.

   rtrv-ctrl-feat:partnum=893012401

   The following is an example of the possible output.

```
rlghncxa03w 04-03-28 21:15:37 GMT EAGLE5 31.4.0
The following features have been permanently enabled:
Feature Name              Partnum    Status  Quantity
Enhanced GMS (EGMS)       893012401  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
Zero entries found.
```

   If the Enhanced GSM MAP screening feature is not enabled or off, go to the "Activating the GSM MAP Screening Feature" procedure on page 5-20 to enable and turn on the Enhanced GSM MAP screening feature.

---

5. Change the attributes of GSM MAP screening operation codes in the database with the **chg-gsms-opcode** command. For this example, enter these commands:

```
chg-gsms-opcode:opname=pass100:ndfltact=discard

chg-gsms-opcode:opname=discard1:nopname=pass1:ndfltact=pass

chg-gsms-opcode:opname=sri:nopname=irs

chg-gsms-opcode:opname=fwd139:nopname=fwd1000:npci=4-38-1
:nssn=50
```

When each of these commands has successfully completed, this message appears.

```
rlghncxa03w 04-03-10 11:43:04 GMT EAGLE5 31.4.0
GSM Map Op-Code Table is (8 of 256) 3% full
CHG-GSMS-OPCODE: MASP A - COMPLTD
```

NOTES:

1. **If the npc/npca/npci/npcn/npcn24, nssn, ndfltact=forward, ndfltact=duplicate, or ndfltact=dupdisc parameters are specified with the chg-gsms-opcode command, and the npc/npca/npci/npcn/npcn24 and nssn values are not in the mated application table (see step 2), the force=yes parameter must be specified with the chg-gsms-opcode command.**
2. **The ndfltact=atierr parameter cannot be specified unless the value of the operation code (opcode) referenced by the nopname parameter value is 71.**
3. **If the npc/npca/npci/npcn/npcn24 or nssn parameters are specified with the chg-gsms-opcode command, the resulting dfltact parameter value, either the current value or new value, must be either forward, duplicate, or dupdisc.**
4. **If the dfltact parameter value is being changed to either forward, duplicate, or dupdisc, the npc/npca/npci/npcn/npcn24 and nssn parameters must be specified with the chg-gsms-opcode command.**
5. **If the dfltact parameter value is being changed to either pass, discard, route, or atierr, the npc/npca/npci/npcn/npcn24 and nssn parameters cannot be specified with the chg-gsms-opcode command.**
6. **The word "none" cannot be used as a value for the opname or nopname parameters.**
7. **The npc/npca/npci/npcn/npcn24 value must be shown in the rtrv-rte output as the DPC of a route (see step 3). The npc/npca value must be a full point code value. The npc/npca value can be a member of a cluster point code when that cluster point code is the DPC of a route.**
8. **To specify the npc/npca parameter, the Enhanced GSM MAP Screening feature must be enabled and on (see step 4).**

6. Verify the changes using the **rtrv-gsms-opcode** command with the **opname** parameter value specified in step 5. If the **opname** parameter value was changed in step 5, the new **opname** parameter value should be specified with the **rtrv-gsms-opcode** command. For this example, enter these commands.

   rtrv-gsms-opcode:opanme=pass100

   This is an example of the possible output.

```
rlghncxa03w 04-03-10 11:43:04 GMT EAGLE5 31.4.0
OPCODE  OPNAME    DFLTACT
100     pass100   discard

GSMMS OPCODE Table (10 of 257) is 4% full
```

   rtrv-gsms-opcode:opname=pass1

   This is an example of the possible output.

```
rlghncxa03w 04-03-10 11:43:04 GMT EAGLE5 31.4.0
OPCODE  OPNAME    DFLTACT
150     pass1     pass

GSMMS OPCODE Table (10 of 257) is 4% full
```

   rtrv-gsms-opcode:opname=irs

   This is an example of the possible output.

```
rlghncxa03w 04-03-10 11:43:04 GMT EAGLE5 31.4.0
OPCODE  OPNAME    DFLTACT
22      irs       disc

GSMMS OPCODE Table (10 of 257) is 4% full
```

   rtrv-gsms-opcode:opname=fwd1000

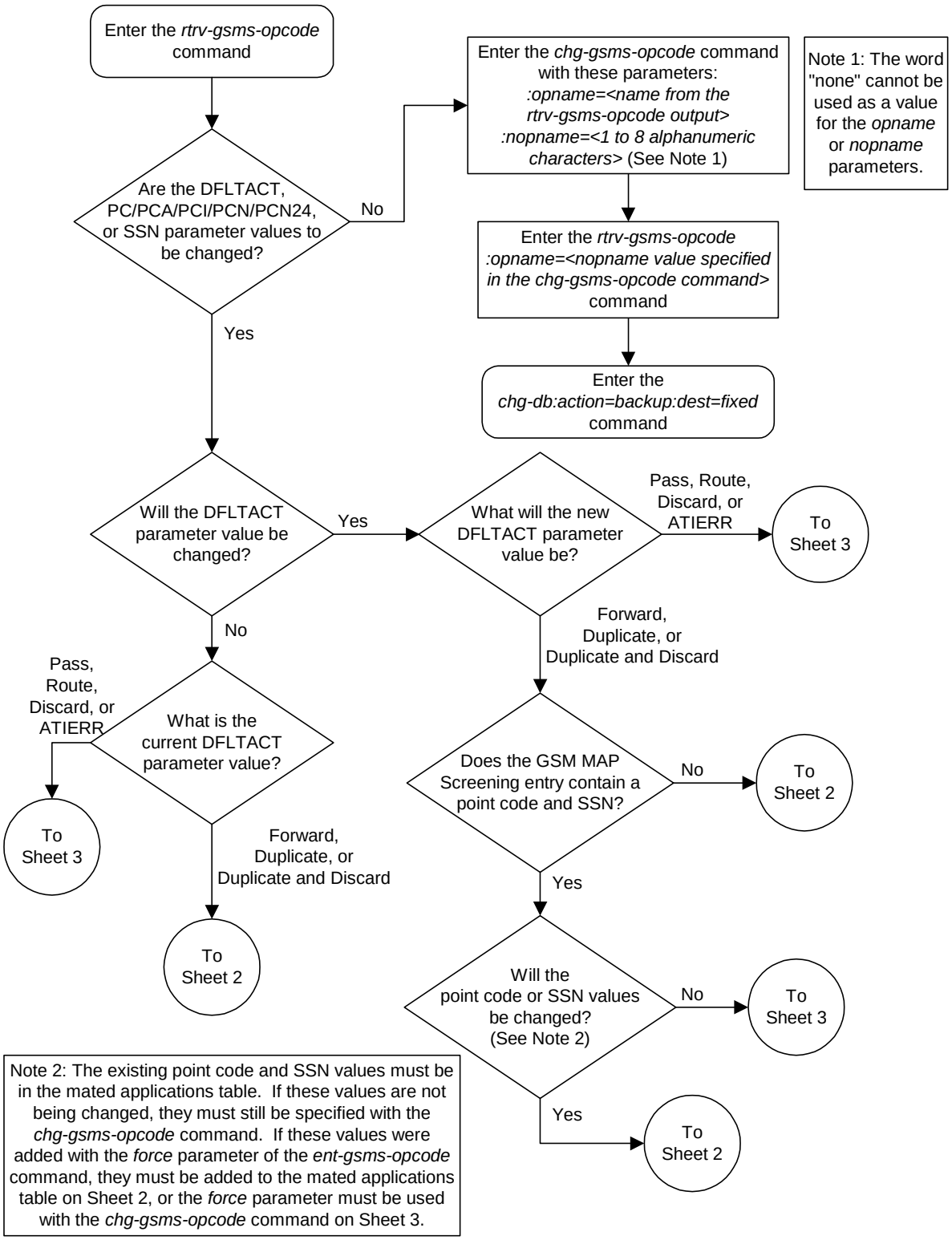
   This is an example of the possible output.

```
rlghncxa03w 04-03-10 11:43:04 GMT EAGLE5 31.4.0
OPCODE  OPNAME    DFLTACT    PCI          SSN
139     fwd1000   fwd        4-38-1       50

GSMMS OPCODE Table (10 of 257) is 4% full
```

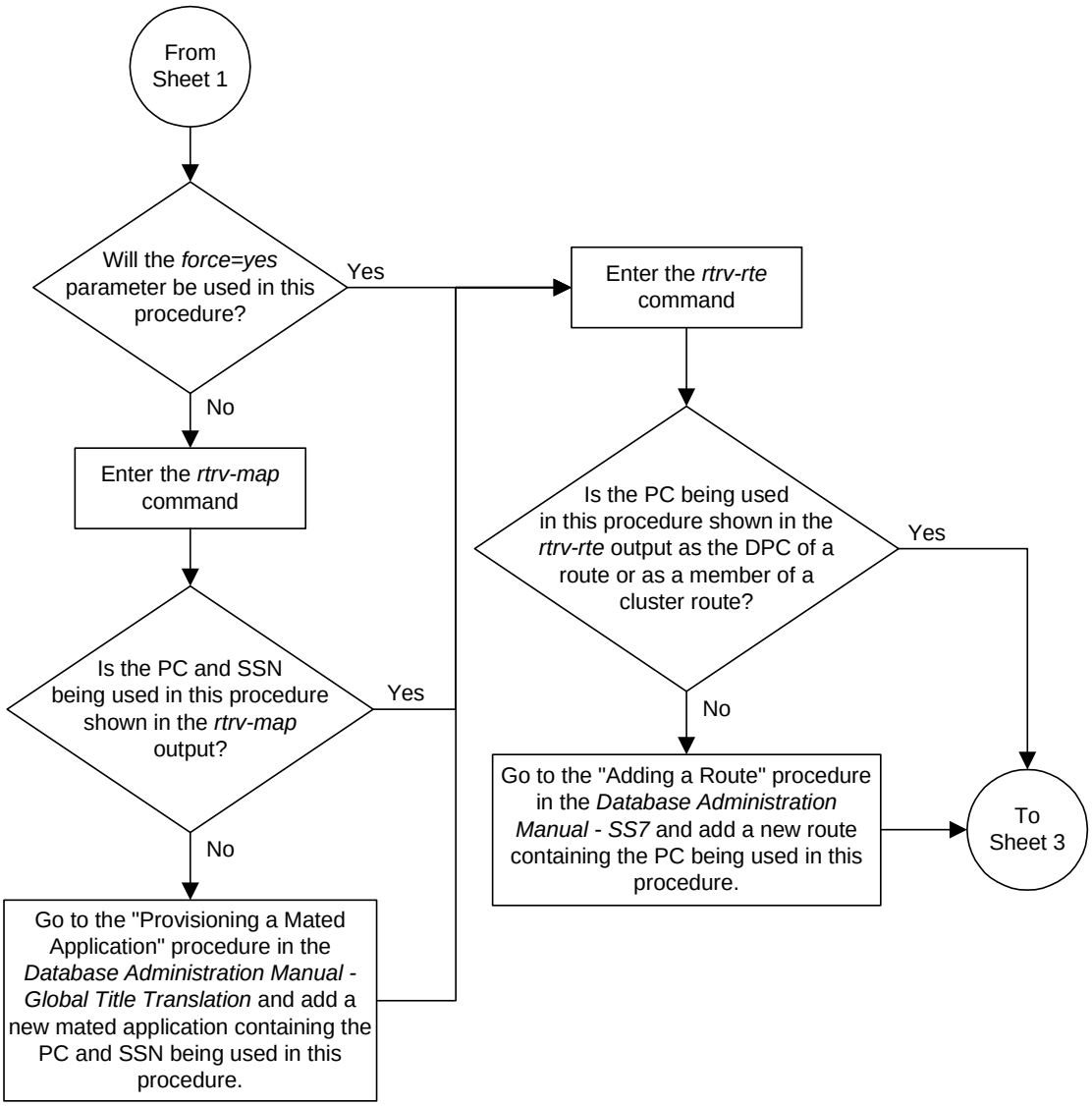
7. Backup the new changes using the **chg-db:action=backup:dest=fixed** command. These messages should appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
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.
```

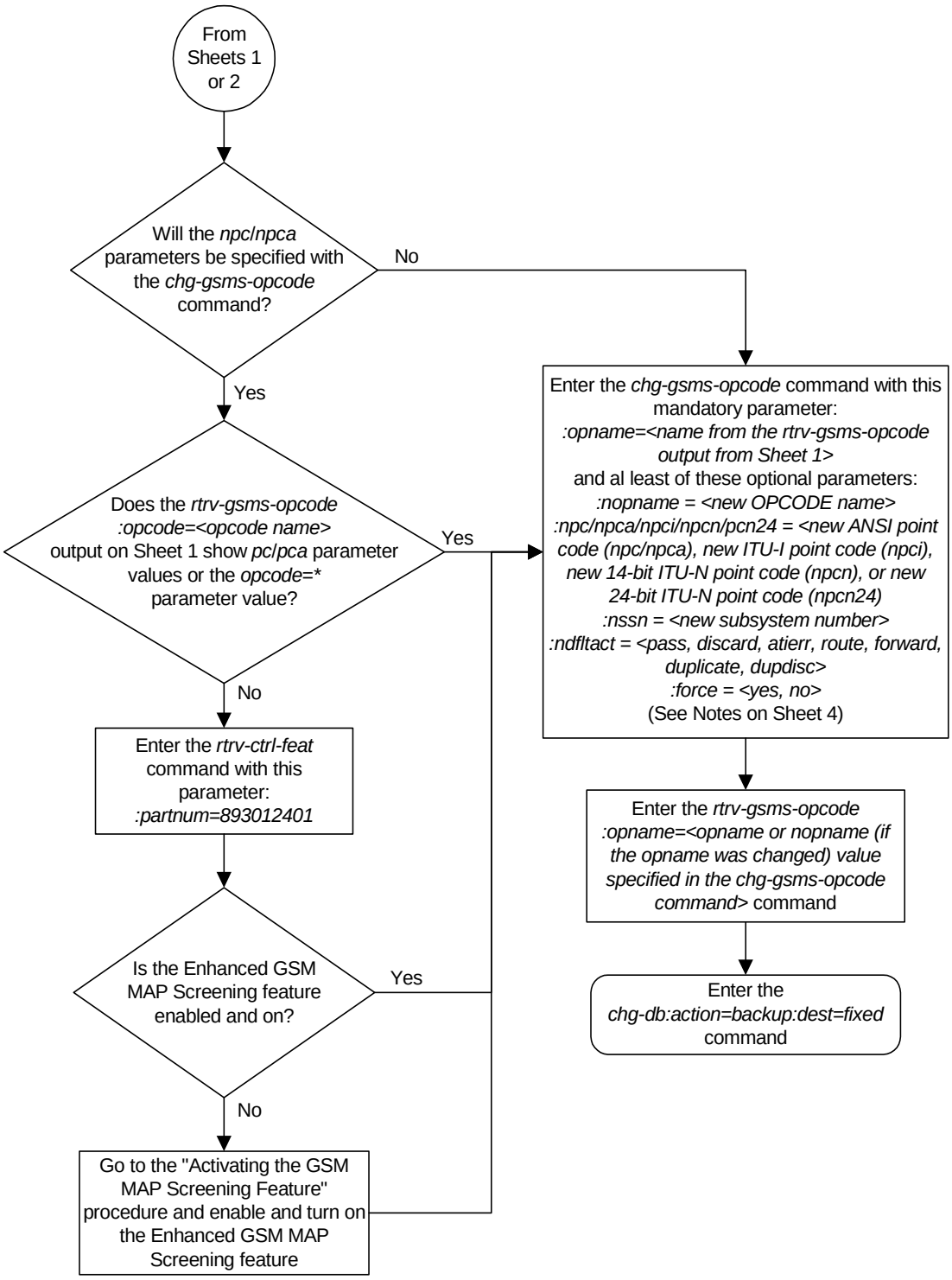
Flowchart 5-8. Changing a GSM MAP Screening Operation Code (Sheet 1 of 4)



Flowchart 5-8. Changing a GSM MAP Screening Operation Code (Sheet 2 of 4)



Flowchart 5-8. Changing a GSM MAP Screening Operation Code (Sheet 3 of 4)



Flowchart 5-8. Changing a GSM MAP Screening Operation Code (Sheet 4 of 4)

Notes:

1. The word "none" cannot be used as a value for the opname or nopname parameters.

2. If the *dfltact* parameter value is being changed to *atierr*, the OPCODE name must contain opcode 71. If the OPCODE name is being changed to a name that contains opcode 71, the *dfltact* parameter value must be *atierr*.

3. If the *npc/npca/npci/npcn/npcn24* or *nssn* parameters are specified in this procedure, the *dfltact* parameter value must be either *forward*, *duplicate*, or *dupdisc*.

4. The *npc/npca/npci/npcn/npcn24* and *nssn* values must be shown in the *rtrv-map* output on Sheet 2. If the *npc/npca/npci/npcn/npcn24* or *nssn* values are not shown in the *rtrv-map* output, the *force=yes* parameter must be specified.

5. The *npc/npca/npci/npcn/npcn24* value must be shown in the *rtrv-rte* output on Sheet 2 as the DPC of a route. The *npc/npca* value must be a full point code value. The *npc/npca* value can be a member of a cluster point code when that cluster point code is the DPC of a route.

6. If the *dfltact* parameter value is being changed to either *forward*, *duplicate*, or *dupdisc*, the *npc/npca/npci/npcn/npcn24* and *nssn* parameters must be specified.

7. If the *dfltact* parameter value is being changed to either *pass*, *discard*, *route*, or *atierr*, the *npc/npca/npci/npcn/npcn24* and *nssn* parameters cannot be specified.

8. The *force=yes* parameter can be specified only with the *npc/npca/npci/npcn/npcn24* or *nssn* parameters.

9. The system can contain 14-bit ITU-N point codes or 24-bit ITU-N point codes, but not both.

10. To specify the *npc/npca* parameters, the Enhanced GSM MAP Screening feature must be enabled and on.

11. If the new or current (if unchanged) *dfltact* parameter values are either *forward*, *duplicate*, or *dupdisc*, the point code and *nssn* parameters must be specified with the *chg-gsms-opcode* command. If the point code and subsystem number values are not being changed, the point code and subsystem number parameters must be specified with the current values for these parameters.

12. If only the point code or subsystem number value is being changed, the point code or subsystem number value being changed must be specified with the new value for the parameter being changed. The current value for the point code or subsystem number parameter not being changed must be specified. The *ndfltact* parameter does not have to be specified. For example, if the current point code is *pca=002-002-002* and the subsystem number is 50, and the point code is being changed to *pca=003-003-003* and the substem number is not changing, the *npca* parameter value would be the new point code value (003-003-003) and the *nssn* parameter value would be the current value (50).

Adding a GSM MAP Screening Entry

Use this procedure to provision the GSM MAP screening entries that filter or allow TCAP messages for certain MAP operation codes in the database using the **ent-gsmmap-scrn** command. The messages are filtered or allowed based on the origination addresses (**saddr**/**eaddr**), numbering plan value (**npv**), nature of address indicator value (**naiv**), MAP opnames (**opname**), and forbidden (**forbid**) parameters.

The **ent-gsmmap-scrn** command uses these parameters.

:saddr – The origination address (1 - 15 decimal digits, 1 - 15 hex digits, or *) for a single entry or the starting origination address for a range of entries of the CGPA/CDPA entry to be screened.

:eaddr – The ending origination address (1 - 15 decimal digits or 1 - 15 hex digits) for a range of entries of the CGPA/CDPA entry to be screened.

:action – The screening action to take if a message is forbidden as defined by the **forbid** parameter. One of these actions can be assigned.

- **pass** – Route the message as normal to the destination.
- **discard** – The MSU is to be discarded.
- **atierr** – An ATI (Any Time Interrogation) reject message is generated. This option is only valid for ATI MAP operation codes.
- **route** – Route the message as normal to the original destination node.
- **forward** – Route the original message to the forward node. The original message is not sent to the original node. If, however, the forwarded node is not available for routing then the MSU is routed to the original node.
- **duplicate** – Route the message as normal to the original destination and route a copy of the original message to the duplicate node.
- **dupdisc** – Duplicate and discard – Route the original message to the duplicate node. The original message is not sent to the original node.

:pc/pca/pci/pcn/pcn24 – The ANSI point code (**pc/pca**), ITU-I point code (**pci**), 14-bit ITU-N point code (**pcn**), or 24-bit ITU-N point code (**pcn24**) of the node that the MSU is routed to by the **forward**, **duplicate**, or **dupdisc** screening actions. The system can contain 14-bit ITU-N point codes or 24-bit ITU-N point codes, but not both. To specify the **pc/pca** parameters, the Enhanced GSM MAP Screening feature must be enabled and on.

:ssn – The subsystem number of the node that the MSU is routed to by the **forward**, **duplicate**, or **dupdisc** screening actions

:force – The mated application override. Is the GSM MAP screening operation code to be entered without a mated application in the database (**yes** or **no**)?

:forbid – The forbidden parameter value. If a forbidden parameter is detected, the message is rejected by the action defined by the **action** parameter. One of four forbidden parameter values can be specified.

- **all** – All parameters are forbidden. Take the specified screening action defined by the **action** parameter for incoming messages that contain the entered address and operation code combination.
- **none** – No parameters are forbidden. Take the specified screening action defined by the **action** parameter for incoming messages that contain the entered address and operation code combination.
- **state** – Take the specified screening action defined by the **action** parameter for incoming messages that contain **state** as the forbidden parameter for the entered address and operation code combination.
- **location** – Take the specified screening action defined by the **action** parameter for incoming messages that contain **location** as the forbidden parameter for the entered address and operation code combination.

NOTE: The state and location values are valid only for GSM ATI messages.

:naiv – The nature of address value (0 - 15 or *).

:npv – The numbering plan value (0 - 127 or *).

:opname – The user-defined name for the operation code. The **opname** value references the operation code (**opcode**) shown in the **rtrv-gsms-opcode** command. GSM MAP screening is performed on the specified address or addresses for the referenced operation code.

:cgsr – The CGPA screening reference name consisting of 1 alphabetic character and 3 optional alphanumeric characters.

:cdsr – The CDPA screening reference name consisting of 1 alphabetic character and 3 optional alphanumeric characters.

Table 5-6 shows the parameter combinations that can be used in this procedure.

Table 5-6. Add GSM MAP Screening Entry Parameter Combinations

Enhanced GSM MAP Screening Feature Enabled and On			GSM MAP Screening Feature Enabled and On Only		
Entry Containing a Point Code and SSN [1]	Entry Without a Point Code and SSN [1]	Entry containing the Action ATIERR [1]	Entry Containing a Point Code and SSN [1]	Entry Without a Point Code and SSN [1]	Entry containing the Action ATIERR [1]
Mandatory Parameters					
:opname = opname value [2]	:opname = opname value [2]	:opname = opname value containing opcode=71 [2]	:opname = opname value [2]	:opname = opname value [2]	:opname = opname value containing opcode=71 [2]
:cgsr = CSGR name [3]	:cgsr = CGSR name [3]	:cgsr = CGSR name [3]	:cgsr = CGSR name [3]	:cgsr = CGSR name [3]	:cgsr = CGSR name [3]
			saddr = 0 - 15 decimal digits [4, 5, 6]	saddr = 0 - 15 decimal digits [4, 5, 6]	saddr = 0 - 15 decimal digits [4, 5, 6]

Table 5-6. Add GSM MAP Screening Entry Parameter Combinations (Continued)

Enhanced GSM MAP Screening Feature Enabled and On			GSM MAP Screening Feature Enabled and On Only		
Entry Containing a Point Code and SSN [1]	**Entry Without a Point Code and SSN [1]**	**Entry containing the Action ATIERR [1]**	**Entry Containing a Point Code and SSN [1]**	**Entry Without a Point Code and SSN [1]**	**Entry containing the Action ATIERR [1]**
Optional Parameters					
:saddr = 0 - 15 hex digits, or * [4, 5, 6]	:saddr = 0 - 15 hex digits, or * [4, 5, 6]	:saddr = 0 - 15 hex digits, or * [4, 5, 6]	:eaddr = 0 - 15 decimal digits [4, 5, 6]	:eaddr = 0 - 15 decimal digits [4, 5, 6]	:eaddr = 0 - 15 decimal digits [4, 5, 6]
:eaddr = 0 - 15 hex digits [4, 5, 6, 7]	:eaddr = 0 - 15 hex digits [4, 5, 6, 7]	:eaddr = 0 - 15 hex digits [4, 5, 6, 7]	:forbid = all, none	:forbid = all, none	:forbid = state, location
:cdsr = CDSR name [3]	:cdsr = CDSR name [3]	:cdsr = CDSR name [3]	:action = forward, duplicate, dupdisc [9]	:action = pass, discard, route	:action = atierr
:forbid = all, none	:forbid = all, none	:forbid = state, location	:npv = 0 - 15, or * [8]	:npv = 0 - 15, or * [8]	:npv = 0 - 15, or * [8]
:action = forward, duplicate, dupdisc [9]	:action = pass, discard, route	:action = atierr	:naiv = 0 - 127, or * [8]	:naiv = 0 - 127, or * [8]	:naiv = 0 - 127, or * [8]
:npv = 0 - 15, or * [8]	:npv = 0 - 15, or * [8]	:npv = 0 - 15, or * [8]	:pci/pcn/pcn24 = point code value [10, 11, 12, 13]		
:naiv = 0 - 127, or * [8]	:naiv = 0 - 127, or * [8]	:naiv = 0 - 127, or * [8]	ssn = SSN value [13]		
:pc/pca/pci/pcn/ pcn24 = point code value [10, 11, 12, 13]			:force=yes [13]		
:ssn = SSN value [13]					
:force=yes [13]					

Notes:

1. When a CGPA entry (**cgsr** parameter is specified without the **cdsr** parameter) is added to the GSM MAP Screening table, a default wild card entry is created for the CGPA entry, thus adding two entries to the GSM MAP Screening table. The default wild card CDPA entry is not shown in the **rtrv-gsmmap-scrn** output. As a result, the GSM MAP Screening table must have at least two free entries in order to provision a CGPA entry in the GSM MAP Screening table. When the first provisioned wildcard (*) CDPA entry is added to a CGPA entry, the number of entries in the GSM MAP Screening table, shown in the GSM MAP Screening command outputs, does not change.
2. The **opname** parameter value must be shown in either the **rtrv-gsms-opcode** or **rtrv-gsmmap-scrn** output.
3. The **cgsr** and **cdsr** parameter values consist of 1 alphabetic character and up to 3 optional alphanumeric characters. If the **cdsr** parameter is not specified, a CGPA entry with a default wild card CDPA entry is created in the GSM MAP Screening table (see Note 1). If the **cdsr** parameter is specified, a CDPA entry is created in the GSM MAP Screening table.
4. If a single entry is specified for the CGPA/CDPA (that is, the **eaddr** parameter is not specified) then the **saddr/npv/naiv/opname** parameter combination cannot exist in the GSM MAP Screening table.
5. If a range of entries is specified for the CGPA/CDPA (that is, the **eaddr** parameter is specified) then the **saddr/eaddr/npv/naiv/opname** parameter combination cannot exist in the GSM MAP Screening table or overlap with another range entry in the GSM MAP Screening table.
6. The **eaddr** parameter value must contain the same number of digits as the **saddr** parameter value. The **eaddr** parameter value must be greater than the **saddr** parameter value. The **saddr** parameter must be specified with the **eaddr** parameter.
7. The **eaddr** parameter cannot be specified with the **saddr=*** parameter.
8. If the Enhanced GSM MAP Screening feature is not enabled or off, and either the **npv** or **naiv** parameters are specified, both the **npv** and **naiv** parameters must be specified. If the asterisk (*) is specified for either the **npv** or **naiv** parameters, the asterisk must be specified for both the **npv** and **naiv** parameters. If numbers are specified for either the **npv** or **naiv** parameters, numbers must be specified for both the **npv** and **naiv** parameters.
9. If the **action** parameter values are either **forward**, **duplicate**, or **dupdisc**, the point code and **ssn** parameters must be specified with the **ent-gsmmap-scrn** command.
10. The point code value must be the DPC of a route or a member of a cluster route. The **pc/pca** value must be a full point code, The **pc/pca** value can be a member of a cluster point code when that cluster point code is the DPC of a route. This can be verified with the **rtrv-rte** command. If the point code value is not shown in the **rtrv-rte** output as the DPC of a route, go to the "Adding a Route" procedure in the *Database Administration Manual - SS7* and add a new route containing the point code value.
11. The system can contain 14-bit ITU-N point codes or 24-bit ITU-N point codes, but not both at the same time.
12. If either the point code or **ssn** parameters are specified, then both the point code and **ssn** parameters must be specified.
13. The point code and subsystem number values specified with the **ent-gsmmap-scrn** command must be shown in the **rtrv-map** output, otherwise, the **force=yes** parameter must be specified. If the point code and subsystem number values are not shown in the **rtrv-map** output, and a new mated application is to be added, go to the "Provisioning a Mated Application" procedure in the *Database Administration Manual - Global Title Translation* and add the required mated application with the point code and subsystem number values.

GSM screening entries can either be single entries or range entries. Single entries have precedence in screening over range entries. Thus the single entry table is searched first and if a match is found, the range table is never searched. Range entries may overlap single entries.

If a message is screened and does not contain matching GTA, NPV, and NAIV values, the message is rejected. The message is rejected with the default action defined by the **ent-gsms-opcode** command for the operation code (**opcode**) parameter entry referenced by the operation name (**opname**) parameter.

This examples used in this procedure are based on the examples shown in Tables 5-7 and 5-8.

Table 5-7. Example CGPA GSM MAP Screening Configuration Table

CGSR	SADDR	EADDR	NPV	NAIV	OPNAME	FORBID	ACTION	PC/PCA/ PCI/PCN/ PCN24	SSN
cg01	9194600000	---	5	75	pass50	none	pass	N/A	N/A
cg02	252555100000	252700000000	12	37	discard1	all	discard	N/A	N/A
cg03	8284540000	8284600000	---	---	ati	state	atierr	N/A	N/A
cg04	2416546464	---	0	127	route25	none	route	N/A	N/A
cg05	854000000	857000000	3	99	dd93	all	forward	3-201-7	100
cg06	154363000000	155000000000	8	86	sri	all	duplicate	9384	30
cg07	368900000	369000000	9	111	dup187	none	dupdisc	4-102-6	150

Table 5-8. Example CDPA GSM MAP Screening Configuration Table

CGSR	CDSR	SADDR	EADDR	OPNAME	NPV	NAIV	FORBID	ACTION	PC/PCA/ PCI/PCN/ PCN24	SSN
cg01	cd01	---	---	pass50	6	15	all	pass	N/A	N/A
cg02	cd15	---	---	discard1	10	15	all	discard	N/A	N/A
cg07	cd10	---	---	dup187	11	57	all	dupdisc	5-97-2	135

Procedure

1. Display the GSM MAP screening operation codes in the database using the **rtrv-gsms-opcode** command. This is an example of the possible output.

```
rlghncxa03w 04-03-10 11:43:04 GMT EAGLE5 31.4.0

OPCODE  OPNAME    DFLTACT    PCA          SSN
 36     for1      fwd        002-002-002  10

OPCODE  OPNAME    DFLTACT    PCI          SSN
 93     dd93      dupdsc     5-25-3       200
 139    fwd139    fwd        3-159-7      128

OPCODE  OPNAME    DFLTACT    PCN          SSN
 187    dup187    dupl       11519        79

OPCODE  OPNAME    DFLTACT    PCN24        SSN


OPCODE  OPNAME    DFLTACT
 22     sri       disc
 25     route25   route
 50     pass50    pass
 71     ati       atierr
 150    discard1  disc
 *      star      pass

GSMMS OPCODE Table (10 of 257) is 4% full
```

NOTE: If the desired GSM MAP screening operation code entry is not shown in the rtrv-gsms-opcode output, go to the "Adding a GSM MAP Screening Operation Code" procedure on page 5-53 and add the required entry. Skip step 2 and go to step 3.

If either the forbid=state, forbid=location, or action=atierr parameters are to be assigned to the GSM MAP screening entry, the GSM MAP screening operation code table must contain an entry containing the operation code value 71.

2. Enter the **rtrv-gsmmap-scrn** command with an **opname** value shown in the **rtrv-gsms-opcode** command output in step 1 to display the GSM MAP screening entries in the database. For this example, enter these commands.

rtrv-gsmmap-scrn:opname=pass50

This is an example of the possible output.

```
rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0

Single CgPA Entries for OPNAME: pass50
----------------------------------
SADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           NPV NAIV FORBID ACTION CGSR


Range CgPA Entries for OPNAME: pass50
----------------------------------
SADDR           EADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION CGSR


GSM Map Screening table is (1500 of 4000) 38% full
```

rtrv-gsmmap-scrn:opname=discard1

This is an example of the possible output.

```
rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0

Single CgPA Entries for OPNAME: discard1
----------------------------------
SADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           NPV NAIV FORBID ACTION CGSR
```

```
Range CgPA Entries for OPNAME: discard1
---------------------------------
SADDR           EADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION CGSR


GSM Map Screening table is (1500 of 4000) 38% full
```

rtrv-gsmmap-scrn:opname=ati

This is an example of the possible output.

```
rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0

Single CgPA Entries for OPNAME: ati
-----------------------------------
SADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           NPV NAIV FORBID ACTION CGSR
919462000000005 1   0    locat  atierr ati1


Range CgPA Entries for OPNAME: ati
---------------------------------
SADDR           EADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION CGSR
919461888888888 919461900000000 4   1    locat  atierr ati2
919462000000000 919463000000000 *   *    locat  atierr ati3


GSM Map Screening table is (1500 of 4000) 38% full
```

rtrv-gsmmap-scrn:opname=route25

This is an example of the possible output.

```
rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0

Single CgPA Entries for OPNAME: route25
-----------------------------------
SADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           NPV NAIV FORBID ACTION CGSR

Range CgPA Entries for OPNAME: route25
---------------------------------
SADDR           EADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION CGSR

GSM Map Screening table is (1500 of 4000) 38% full
```

rtrv-gsmmap-scrn:opname=dd93

This is an example of the possible output.

```
rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0

Single CgPA Entries for OPNAME: dd93
-----------------------------------
SADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           NPV NAIV FORBID ACTION CGSR

Range CgPA Entries for OPNAME: dd93
---------------------------------
SADDR           EADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION CGSR

GSM Map Screening table is (1500 of 4000) 38% full
```

rtrv-gsmmap-scrn:opname=sri

This is an example of the possible output.

```
rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0

Single CgPA Entries for OPNAME: sri
-----------------------------------
SADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           NPV NAIV FORBID ACTION CGSR

Range CgPA Entries for OPNAME: sri
----------------------------------
SADDR           EADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION CGSR

GSM Map Screening table is (1500 of 4000) 38% full
```

rtrv-gsmmap-scrn:opname=dup187

This is an example of the possible output.

```
rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0

Single CgPA Entries for OPNAME: dup187
-----------------------------------
SADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           NPV NAIV FORBID ACTION CGSR

Range CgPA Entries for OPNAME: dup187
----------------------------------
SADDR           EADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION CGSR

GSM Map Screening table is (1500 of 4000) 38% full
```

NOTE: If the `action` parameter value will be either `pass`, `discard`, `route`, or `atierr`, skip steps 3 and 4, and go to step 5.

3. The point code and subsystem number being assigned to the GSM MAP screening entry must be in the mated application table. Enter the **`rtrv-map`** command with the **`pci/pcn/pcn24`** and **`ssn`** values that will be specified with the **`ent-gsmmap-scrn`** command in step 6. For this example, enter these commands.

   `rtrv-map:pci=3-201-7:ssn=100`

   This is an example of the possible output.

```
rlghncxa03w  04-03-25 09:42:31  GMT  EAGLE5 31.4.0

MAP TABLE IS   2 % FULL    (20 of 1024)

PCI           SSN   RC MULT MPCI           MSSN  MATERC MULT SRM  MRC  GRP NAME SSO
3-201-7       100   10 SOL                                   YES  YES  GRP01    ON
```

   `rtrv-map:pcn=9384:ssn=30`

   This is an example of the possible output.

```
rlghncxa03w  04-03-25 09:42:31  GMT  EAGLE5 31.4.0

MAP TABLE IS   2 % FULL    (20 of 1024)

PCN           SSN   RC MULT MPCN           MSSN  MATERC MULT SRM  MRC  GRP NAME SSO
9384           30   10 SOL                                   YES  YES  GRP01    ON
```

   `rtrv-map:pci=4-102-6:ssn=150`

   This is an example of the possible output.

```
rlghncxa03w  04-03-25 09:42:31  GMT  EAGLE5 31.4.0

MAP TABLE IS   2 % FULL    (20 of 1024)

PCI           SSN   RC MULT MPCI           MSSN  MATERC MULT SRM  MRC  GRP NAME SSO
4-102-6       150   10 SOL                                   YES  YES  GRP01    ON
```

   If the point code and subsystem number is not shown in the **`rtrv-map`** output, go to the "Provisioning a Mated Application" procedure in the *Database Administration Manual - Global Title Translation* and add the required point code and subsystem number to the mated application table.

   NOTE: If the point code and subsystem number is not shown in the `rtrv-map` output, and is not added to the database in one of these procedures, the `force=yes` parameter must be specified with the `ent-gsmmap-scrn` command in step 6.

4. The point code specified with the **ent-gsmmap-scrn** command must be the DPC of a route. If the point code specified with the **ent-gsmmap-scrn** command is an ANSI point code, the point code can be a member of a cluster point code when that cluster point code is the DPC of a route. Enter the **rtrv-rte** command with the **dpc** parameter specifying the point code to be used with the **ent-gsmmap-scrn** command to verify whether or not the point code is the DPC of a route. For this example, enter these commands.

   rtrv-rte:dpci=3-201-7

   This is an example of the possible output.

```
rlghncxa03w 04-03-07 11:43:04 GMT  EAGLE5 31.4.0
DPCI         ALIASN      ALIASA      CLLI         LSN      RC APCI
3-201-7       12111      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
```

   rtrv-rte:dpcn=9384

   This is an example of the possible output.

```
rlghncxa03w 04-03-07 11:43:04 GMT  EAGLE5 31.4.0
DPCN         ALIASA      ALIASI      CLLI         LSN      RC APCN
9384         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
```

   rtrv-rte:dpci=4-102-6

   This is an example of the possible output.

```
rlghncxa03w 04-03-07 11:43:04 GMT  EAGLE5 31.4.0
DPCI         ALIASN      ALIASA      CLLI         LSN      RC APCI
4-102-6        7659      240-039-150 idp1         ls100001 10 5-25-3
                                                  ls100002 10 3-250-6
                                                  ls100003 20 7-34-7
                                                  ls100004 30 6-98-1
                                                  ls100005 40 3-142-2
                                                  ls100006 50 1-178-3
```

   If the point code is not shown in the **rtrv-rte** output, if the point code is an ANSI point code, the point code is not a member of a cluster point code when that cluster point code is the DPC of a route, go to the "Adding a Route" procedure in the *Database Administration Manual - SS7* and add the required route to the database.

NOTE: If any of the following parameters or values are not being used in this procedure, skip step 5 and go to step 6.

- **saddr=***
- **cdsr**
- **pc/pca**
- **The saddr or eaddr parameter values containing hex digits.**

If the rtrv-gsmmap-scrn output in step 2 shows any of the parameters or values listed above, skip step 5, and go to step 6.

5. Verify that the Enhanced GSM MAP Screening feature is enabled and on by entering the **rtrv-ctrl-feat** command with the part number of the Enhanced GSM MAP Screening feature. Enter this command.

   rtrv-ctrl-feat:partnum=893012401

   The following is an example of the possible output.

```
rlghncxa03w 04-03-28 21:15:37 GMT EAGLE5 31.4.0
The following features have been permanently enabled:
Feature Name              Partnum    Status  Quantity
Enhanced GMS (EGMS)       893012401  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
Zero entries found.
```

   If the Enhanced GSM MAP screening feature is not enabled or off, go to the "Activating the GSM MAP Screening Feature" procedure on page 5-20 to enable and turn on the Enhanced GSM MAP screening feature.

NOTE: If a CDPA entry is being added to an existing CGPA entry, skip steps 6 and 7, and go to step 8.

6. Add the new CGPA GSM MAP screening entries to the database with the **ent-gsmmap-scrn** command. See Table 5-6 on page 5-82 for the parameter combinations that can be used with the **ent-gsmmap-scrn** command.

   For this example, enter these commands:

   ent-gsmmap-scrn:saddr=9194600000:npv=5:naiv=75:opname=pass50
   :forbid=none:action=pass:cgsr=cg01

   ent-gsmmap-scrn:saddr=252555100000:eaddr=252700000000:npv=12
   :naiv=37:opname=discard1:forbid=all:action=discard
   :cgsr=cg02

   ent-gsmmap-scrn:saddr=8284540000:eaddr=8284600000:opname=ati
   :forbid=state:action=atierr:cgsr=cg03

   ent-gsmmap-scrn:saddr=2416546464:opname=route25
   :forbid=none:action=route:npv=0:naiv=127:cgsr=cg04

ent-gsmmap-scrn:saddr=854000000:eaddr=857000000:opname=dd93
:forbid=all:action=forward:npv=3:naiv=99:pci=3-201-7
:ssn=100:cgsr=cg05

ent-gsmmap-scrn:saddr=154363000000:eaddr=155000000000
:opname=sri:forbid=all:action=duplicate:npv=8:naiv=86
:pcn=9384:ssn=30:cgsr=cg06

ent-gsmmap-scrn:saddr=368900000:eaddr=369000000:opname=dup187
:forbid=none:action=dupdisc:npv=9:naiv=111:pci=4-102-6
:ssn=150:cgsr=cg07

When each of these commands has successfully completed, this message appears.

```
rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0
GSM Map Screening table is (1512 of 4000) 38% full
ENT-GSMMAP-SCRN: MASP A - COMPLTD
```

7. Verify the changes using the **rtrv-gsmmap-scrn** command and specifying the **opname** and **cgsr** parameter values specified in step 6. For this example, enter these commands:

rtrv-gsmmap-scrn:opname=pass50

This is an example of the possible output.

```
rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0

Single CgPA Entries for OPNAME: pass50
----------------------------------
SADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           NPV NAIV FORBID ACTION CGSR
9194600000      5   75   none   pass   cg01


Range CgPA Entries for OPNAME: pass50
----------------------------------
SADDR           EADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION CGSR


GSM Map Screening table is (1512 of 4000) 38% full
```

rtrv-gsmmap-scrn:opname=discard1

This is an example of the possible output.

```
rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0

Single CgPA Entries for OPNAME: discard1
-----------------------------------
SADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           NPV NAIV FORBID ACTION CGSR

Range CgPA Entries for OPNAME: discard1
-----------------------------------
SADDR           EADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION CGSR
252555100000    252700000000    12  37   all    discard cg02

GSM Map Screening table is (1512 of 4000) 38% full
```

rtrv-gsmmap-scrn:opname=ati

This is an example of the possible output.

```
rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0

Single CgPA Entries for OPNAME: ati
-----------------------------------
SADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           NPV NAIV FORBID ACTION CGSR

Range CgPA Entries for OPNAME: ati
-----------------------------------
SADDR           EADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION CGSR
8284540000      8284600000      *   *    state  atierr cg03

GSM Map Screening table is (1512 of 4000) 38% full
```

rtrv-gsmmap-scrn:opname=route25

This is an example of the possible output.

```
rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0

Single CgPA Entries for OPNAME: route25
-----------------------------------
SADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           NPV NAIV FORBID ACTION CGSR
2416546464      0   127  none   route  cg04

Range CgPA Entries for OPNAME: ati
----------------------------------
SADDR           EADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION CGSR

GSM Map Screening table is (1512 of 4000) 38% full
```

rtrv-gsmmap-scrn:opname=dd93

This is an example of the possible output.

```
rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0

Single CgPA Entries for OPNAME: dd93
-----------------------------------
SADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           NPV NAIV FORBID ACTION CGSR

Range CgPA Entries for OPNAME: dd93
----------------------------------
SADDR           EADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR
854000000       857000000       3   99   all    fwd    3-201-7     100 cg05

SADDR           EADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION CGSR

GSM Map Screening table is (1512 of 4000) 38% full
```

rtrv-gsmmap-scrn:opname=sri

This is an example of the possible output.

```
rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0

Single CgPA Entries for OPNAME: sri
-----------------------------------
SADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           NPV NAIV FORBID ACTION CGSR

Range CgPA Entries for OPNAME: sri
----------------------------------
SADDR           EADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR
1534363000000   155000000000    8   86   all    dupl   9384        30  cg06

SADDR           EADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION CGSR

GSM Map Screening table is (1512 of 4000) 38% full
```

rtrv-gsmmap-scrn:opname=dup187

This is an example of the possible output.

```
rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0

Single CgPA Entries for OPNAME: dup187
-----------------------------------
SADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           NPV NAIV FORBID ACTION CGSR

Range CgPA Entries for OPNAME: dup187
----------------------------------
SADDR           EADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR
368900000       369000000       9   111  none   dupdsc 4-102-6     150 cg07

SADDR           EADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION CGSR

GSM Map Screening table is (1512 of 4000) 38% full
```

NOTE: If a CDPA entry is not being added, or if the Enhanced GSM MAP Screening feature is not enabled or off (see the `rtrv-ctrl-feat` output in step 5), skip steps 8 and 9, and go to step 10.

8. Add the new CDPA GSM MAP screening entries to the database with the **`ent-gsmmap-scrn`** command. See Table 5-6 on page 5-82 for the parameter combinations that can be used with the **`ent-gsmmap-scrn`** command.

   For this example, enter these commands:

   ```
   ent-gsmmap-scrn:opname=pass50:npv=6:naiv=15:forbid=all
      :action=pass:cgsr=cg01:cdsr=cd01

   ent-gsmmap-scrn:opname=discard1:npv=10:naiv=15:forbid=all
      :action=discard:cgsr=cg02:cdsr=cd15

   ent-gsmmap-scrn:opname=dup187:npv=11:naiv=57:forbid=all
      :pci=5-97-2:ssn=135:action=dupdisc:cgsr=cg07:cdsr=cd10
   ```

   When each of these commands has successfully completed, this message appears.

   ```
   rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0
   GSM Map Screening table is (1512 of 4000) 38% full
   ENT-GSMMAP-SCRN: MASP A - COMPLTD
   ```

9. Verify the changes using the **`rtrv-gsmmap-scrn`** command and specifying the **`opname`**, **`cgsr`**, and **`cdsr`** parameter values specified in step 8. For this example, enter these commands:

   ```
   rtrv-gsmmap-scrn:opname=pass50:cgsr=cg01:cdsr=cd01
   ```

   This is an example of the possible output.

   ```
   rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0

   SADDR           NPV NAIV FORBID ACTION CDSR
   *               6   15   all    pass   cd01

   GSM Map Screening table is (1512 of 4000) 38% full
   ```

   ```
   rtrv-gsmmap-scrn:opname=discard1:cgsr=cg02:cdsr=cd15
   ```

   This is an example of the possible output.

   ```
   rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0

   SADDR           NPV NAIV FORBID ACTION CDSR
   *               10  15   all    disc   cd15

   GSM Map Screening table is (1512 of 4000) 38% full
   ```

ent-gsmmap-scrn:opname=dup187:npv=11:naiv=57:forbid=all
:pci=5-97-2:ssn=135:action=dupdisc:cgsr=cg07:cdsr=cd10

rtrv-gsmmap-scrn:opname=dup187:cgsr=cg07:cdsr=cd10

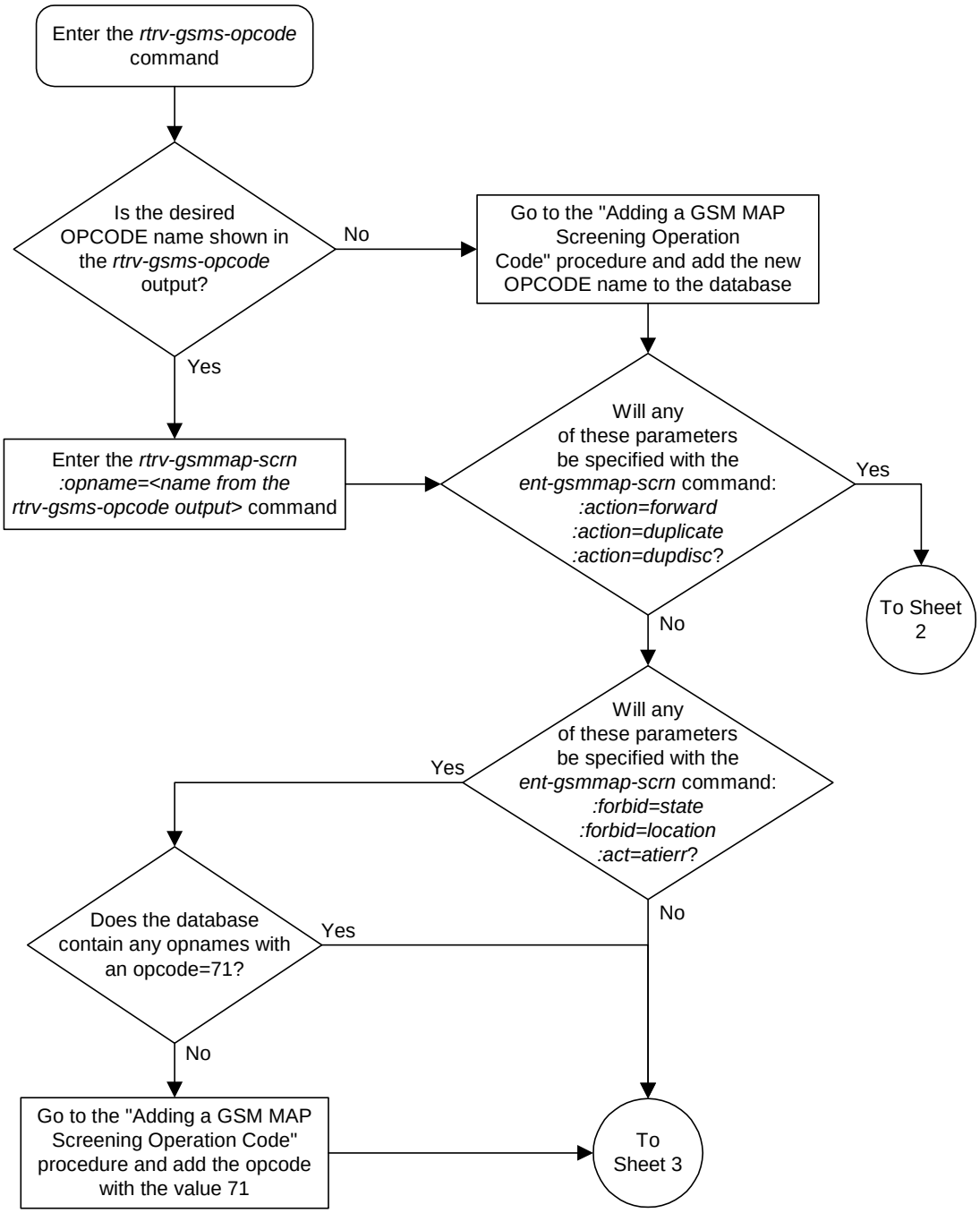
This is an example of the possible output.

```
rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0

SADDR           NPV NAIV FORBID ACTION PCI         SSN CDSR
*               11  57   all    dupdsc 5-97-2      135 cd10

GSM Map Screening table is (1512 of 4000) 38% full
```

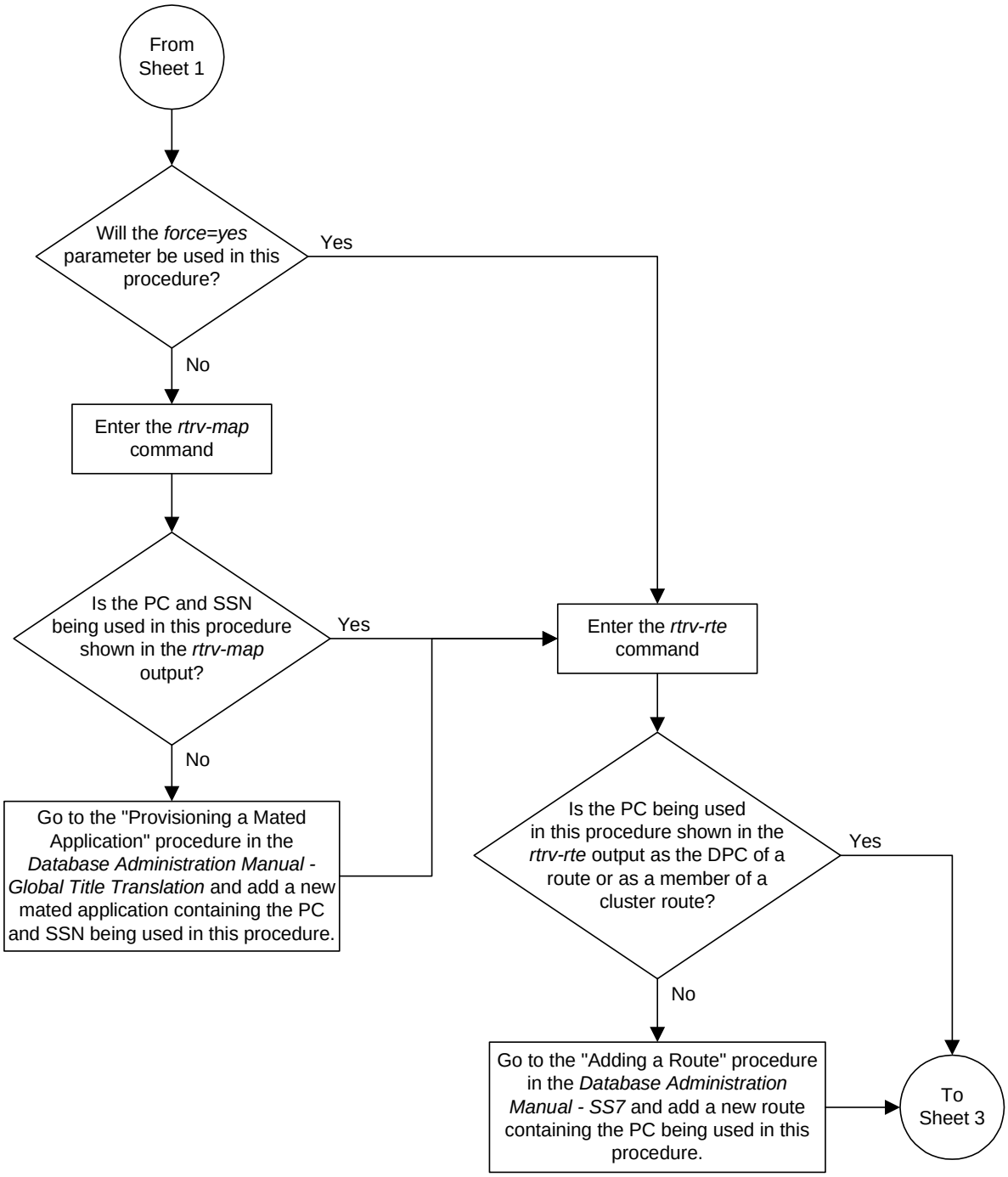
10. Backup the new changes using the **chg-db:action=backup:dest=fixed** command. These messages should appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
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.
```

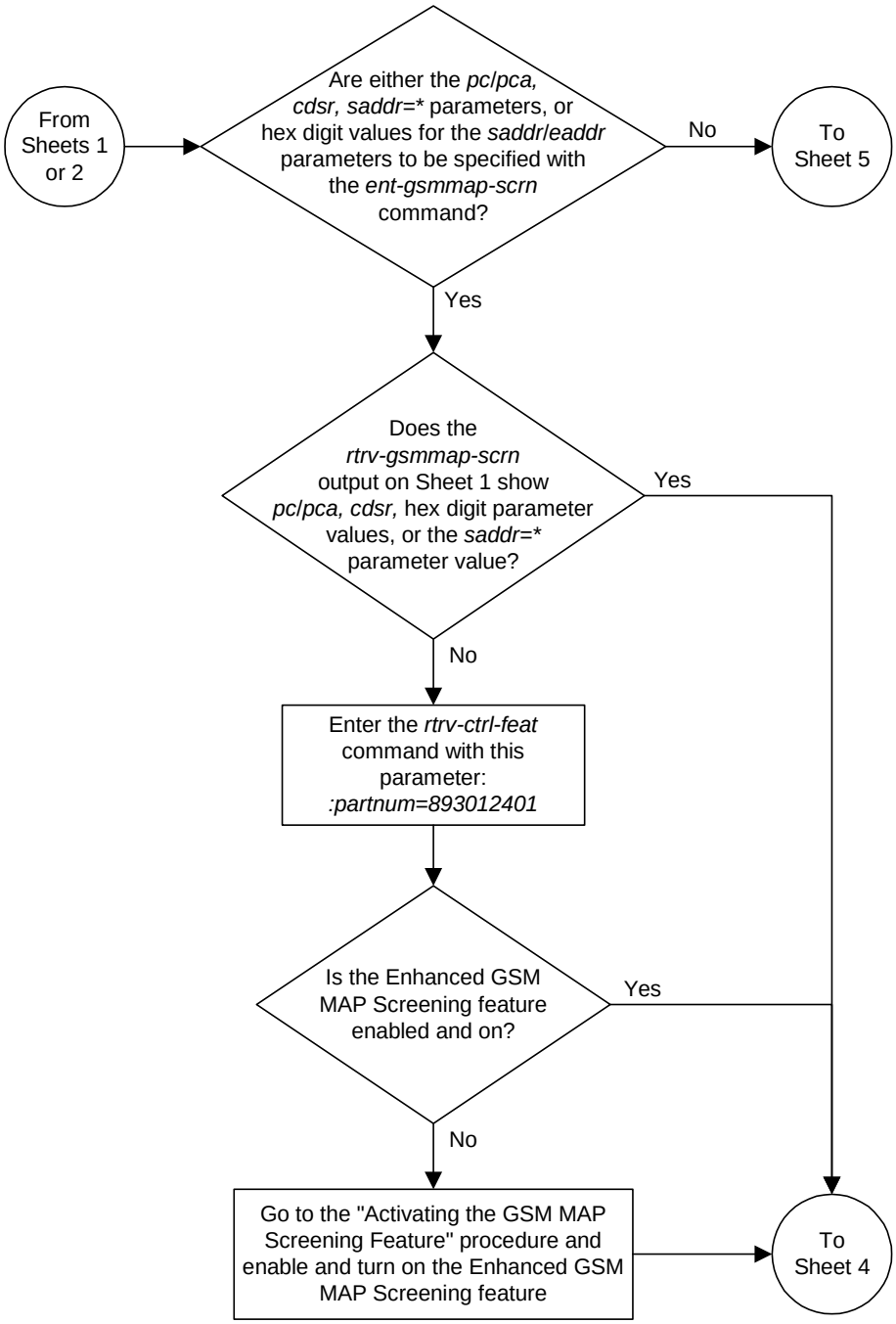
Flowchart 5-9. Adding a GSM MAP Screening Entry (Sheet 1 of 5)



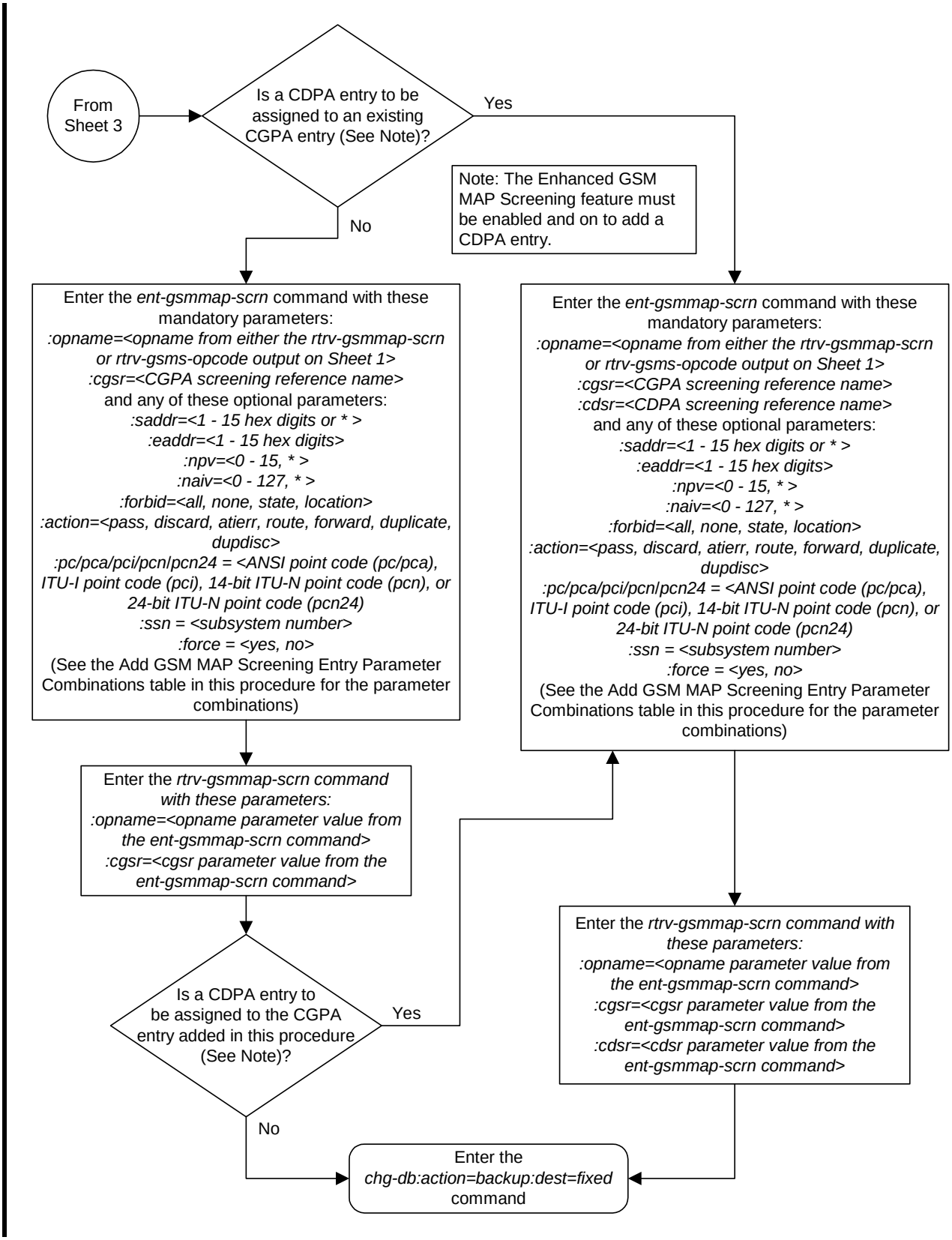
Flowchart 5-9. Adding a GSM MAP Screening Entry (Sheet 2 of 5)



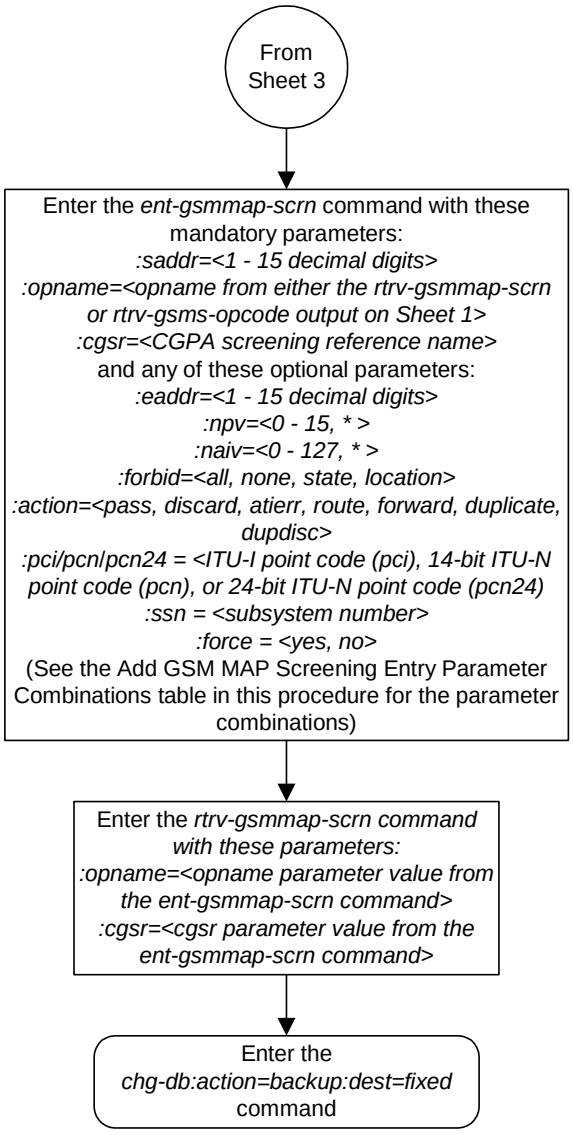
Flowchart 5-9. Adding a GSM MAP Screening Entry (Sheet 3 of 5)



Flowchart 5-9. Adding a GSM MAP Screening Entry (Sheet 4 of 5)



Flowchart 5-9. Adding a GSM MAP Screening Entry (Sheet 5 of 5)



Removing a GSM MAP Screening Entry

Use this procedure to remove the GSM MAP screening entries that filter or allow TCAP messages containing MAP operation codes, origination addresses, and forbidden parameters using the **dlt-gsmmap-scrn** command. The **dlt-gsmmap-scrn** command uses these parameters:

:opname – The user-defined name for the operation code. The **opname** value references the operation code (**opcode**) shown in the **rtrv-gsms-opcode** command output.

:cgsr – The CGPA screening reference name

:cdsr – The CDPA screening reference name

If the GSM MAP Screening entry contains CDPA entries, the individual CDPA entries can be removed without removing the CGPA entry. However, if you wish to remove the CGPA entry, all CDPA entries assigned to the CGPA entry must be removed before the CGPA entry can be removed.

To remove CDPA entries, the **opname**, **cgsr**, and **cdsr** parameters must be specified with the **dlt-gsmmap-scrn** command. To remove CGPA entries, the **opname** and **cgsr** parameters must be specified with the **dlt-gsmmap-scrn** command.

Unlike GTT (Global Title Translation) entries, the GSM MAP screening commands do not support splits of ranges during removing or changing entries.

Procedure

1. Display the GSM MAP screening operation codes in the database using the **rtrv-gsms-opcode** command. This is an example of the possible output.

```
rlghncxa03w 04-03-10 11:43:04 GMT EAGLE5 31.4.0

OPCODE  OPNAME    DFLTACT    PCA          SSN
 36     for1      fwd        002-002-002  10

OPCODE  OPNAME    DFLTACT    PCI          SSN
 93     dd93      dupdsc     5-25-3       200
 139    fwd139    fwd        3-159-7      128

OPCODE  OPNAME    DFLTACT    PCN          SSN
 187    dup187    dupl       11519        79

OPCODE  OPNAME    DFLTACT    PCN24        SSN


OPCODE  OPNAME    DFLTACT
 22     sri       disc
 25     route25   route
 50     pass50    pass
 71     ati       atierr
 150    discard1  disc
 *      star      pass

GSMMS OPCODE Table (10 of 257) is 4% full
```

2. Enter the **rtrv-gsmmap-scrn** command with an **opname** value shown in the **rtrv-gsms-opcode** command output in step 1 to display the CGPA GSM MAP screening entries. For this example, enter these commands.

rtrv-gsmmap-scrn:opname=pass50

```
rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0

Single CgPA Entries for OPNAME: pass50
----------------------------------
SADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           NPV NAIV FORBID ACTION CGSR
9194600000      5   75   none   pass   cg01

Range CgPA Entries for OPNAME: pass50
----------------------------------
SADDR           EADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION CGSR

GSM Map Screening table is (1512 of 4000) 38% full
```

rtrv-gsmmap-scrn:opname=ati

This is an example of the possible output.

```
rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0

Single CgPA Entries for OPNAME: ati
----------------------------------
SADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           NPV NAIV FORBID ACTION CGSR
919462000000005 1   0    locat  atierr ati1


Range CgPA Entries for OPNAME: ati
----------------------------------
SADDR           EADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION CGSR
```

```
8284540000      8284600000      *   *    state  atierr cg03
919461888888888 919461900000000 4   1    locat  atierr ati2
919462000000000 919463000000000 *   *    locat  atierr ati3

GSM Map Screening table is (1512 of 4000) 38% full
```

rtrv-gsmmap-scrn:opname=sri

This is an example of the possible output.

```
rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0

Single CgPA Entries for OPNAME: sri
-----------------------------------
SADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           NPV NAIV FORBID ACTION CGSR


Range CgPA Entries for OPNAME: sri
-----------------------------------
SADDR           EADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR


SADDR           EADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR
1534363000000   155000000000    8   86   all    dupl   9384        30  cg06

SADDR           EADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION CGSR


GSM Map Screening table is (1512 of 4000) 38% full
```

NOTE: The `rtrv-gsmmap-scrn` output in step 2 shows only the CGPA entries in the MAP screening table for the specified OPNAME. The CGPA entries in step 2 could contain CDPA entries that would have to be removed before the CGPA entry could be removed. CDPA entries can be in the MAP screening table only if the Enhanced GSM MAP Screening feature is enabled and on.

If any of the following parameters or values are shown in the `rtrv-gsmmap-scrn` output in step 2, the Enhanced GSM MAP Screening feature is enabled and on. Skip step 3 and go to step 4.

- **`saddr=*`**
- **`pc/pca`**
- **The `saddr` or `eaddr` parameter values containing hex digits.**

If the `rtrv-gsmmap-scrn` output in step 2 does not show any of these parameters or values, it is possible that the Enhanced GSM MAP Screening feature is enabled and on. Perform step 3 to verify the status of the Enhanced GSM MAP Screening feature.

3. Enter the **`rtrv-ctrl-feat`** command with the part number of the Enhanced GSM MAP Screening feature. Enter this command.

   `rtrv-ctrl-feat:partnum=893012401`

   The following is an example of the possible output.

```
rlghncxa03w 04-03-28 21:15:37 GMT EAGLE5 31.4.0
The following features have been permanently enabled:
Feature Name              Partnum    Status  Quantity
Enhanced GMS (EGMS)       893012401  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
Zero entries found.
```

NOTE: If step 3 shows that the Enhanced GSM MAP Screening feature is not enabled or off, CDPA entries cannot be in the MAP screening table. Skip step 4 and go to step 5.

4. To display the CDPA entries assigned to the CGPA entry shown in step 2, enter the **rtrv-gsmmap-scrn** command with the **opname** and **cgsr** parameter values specified shown in step 2. For this example, enter these commands.

rtrv-gsmmap-scrn:opname=pass50:cgsr=cg01

```
rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0

Single CdPA Entries for OPNAME: pass50 and CGSR: cg01
-----------------------------------------------------
SADDR           NPV NAIV FORBID ACTION PCA         SSN CDSR

SADDR           NPV NAIV FORBID ACTION PCI         SSN CDSR

SADDR           NPV NAIV FORBID ACTION PCN         SSN CDSR

SADDR           NPV NAIV FORBID ACTION PCN24       SSN CDSR

SADDR           NPV NAIV FORBID ACTION CDSR
*               6   15   all    pass   cd01


Range CdPA Entries for OPNAME: pass50 and CGSR: cg01
-----------------------------------------------------
SADDR           EADDR           NPV NAIV FORBID ACTION PCA         SSN CDSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCI         SSN CDSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN         SSN CDSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN24       SSN CDSR

SADDR           EADDR           NPV NAIV FORBID ACTION CDSR


GSM Map Screening table is (1512 of 4000) 38% full
```

rtrv-gsmmap-scrn:opname=ati:cgsr=cg03

This is an example of the possible output.

```
rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0

Single CdPA Entries for OPNAME: ati and CGSR: cg03
-----------------------------------------------------
SADDR           NPV NAIV FORBID ACTION PCA         SSN CDSR

SADDR           NPV NAIV FORBID ACTION PCI         SSN CDSR

SADDR           NPV NAIV FORBID ACTION PCN         SSN CDSR

SADDR           NPV NAIV FORBID ACTION PCN24       SSN CDSR

SADDR           NPV NAIV FORBID ACTION CDSR
919461000000130 2   16   locat  atierr ati5
```

```
Range CdPA Entries for OPNAME: ati and CGSR: cg03
-----------------------------------------------------
SADDR           EADDR           NPV NAIV FORBID ACTION PCA         SSN CDSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCI         SSN CDSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN         SSN CDSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN24       SSN CDSR

SADDR           EADDR           NPV NAIV FORBID ACTION CDSR
4329290000      5450000000      *   *    state  atierr cd15
919463000000000 919464000000000 11  95   locat  atierr ati7
803549000000000 803650000000000 *   *    locat  atierr ati9


GSM Map Screening table is (1512 of 4000) 38% full
```

rtrv-gsmmap-scrn:opname=sri:cgsr=cg06

This is an example of the possible output.

```
rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0

Single CgPA Entries for OPNAME: sri and CGSR: cg06
------------------------------------------------------
SADDR           NPV NAIV FORBID ACTION PCA         SSN CDSR

SADDR           NPV NAIV FORBID ACTION PCI         SSN CDSR

SADDR           NPV NAIV FORBID ACTION PCN         SSN CDSR

SADDR           NPV NAIV FORBID ACTION PCN24       SSN CDSR

SADDR           NPV NAIV FORBID ACTION CDSR


Range CgPA Entries for OPNAME: sri and CGSR: cg06
-------------------------------------------------------
SADDR           EADDR           NPV NAIV FORBID ACTION PCA         SSN CDSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCI         SSN CDSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN         SSN CDSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN24       SSN CDSR

SADDR           EADDR           NPV NAIV FORBID ACTION CDSR


GSM Map Screening table is (1512 of 4000) 38% full
```

5. Remove the GSM MAP screening entries from the database with the **dlt-gsmmap-scrn** command.

If CDPA entries are being removed, these parameters must be specified with the **dlt-gsmmap-scrn** command: **opname**, **cgsr**, and **cdsr**.

If the GSM MAP Screening entry contains CDPA entries, the individual CDPA entries can be removed without removing the CGPA entry. However, if you wish to remove the CGPA entry, all CDPA entries assigned to the CGPA entry must be removed before the CGPA entry can be removed.

To remove a CGPA entry, enter the **dlt-gsmmap-scrn** command with the **opname**, and **cgsr** parameter values.

For this example, enter these commands:

dlt-gsmmap-scrn:opname=pass50:cgsr=cg01:cdsr=cd01

dlt-gsmmap-scrn:opname=ati:cgsr=cg03:cdsr=cd15

dlt-gsmmap-scrn:opname=sri:cgsr=cg06

To remove the CGPA entry **cg01** from the opname **pass50** (now that CGPA entry **cg01** has no CDPA entries assigned), enter this command:

dlt-gsmmap-scrn:opname=pass50:cgsr=cg01

When each of these commands has successfully completed, this message appears.

```
rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0
GSM Map Screening table is (1508 of 4000) 38% full
DLT-GSMMAP-SCRN: MASP A - COMPLTD
```

6. Verify the changes using the **rtrv-gsmmap-scrn** command with the **opname** parameter value used in step 5. If CDPA entries were removed from CGPA entries without removing the CGPA entry, specify the **opname** and **cgsr** parameter values used in step 5 with the **rtrv-gsmmap-scrn** command.

For this example, enter these commands:

rtrv-gsmmap-scrn:opname=pass50

This is an example of the possible output.

```
rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0

Single CgPA Entries for OPNAME: pass50
----------------------------------
SADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           NPV NAIV FORBID ACTION CGSR
```

```
Range CgPA Entries for OPNAME: pass50
---------------------------------
SADDR           EADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION CGSR


GSM Map Screening table is (1508 of 4000) 38% full
```

rtrv-gsmmap-scrn:opname=ati:cgsr=cg03

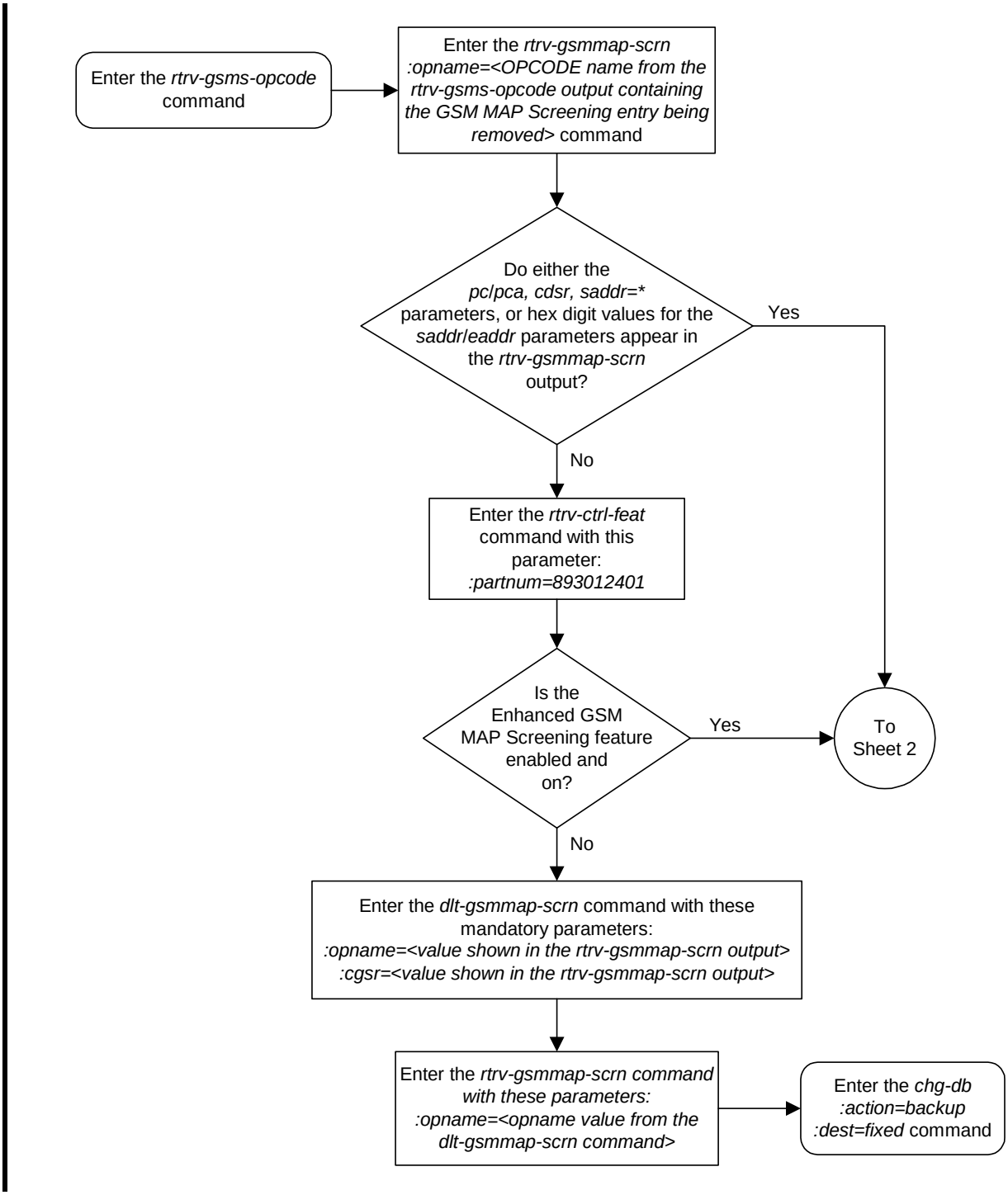
This is an example of the possible output.

```
rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0

Single CdPA Entries for OPNAME: ati and CGSR: cg03
------------------------------------------------------
SADDR           NPV NAIV FORBID ACTION PCA         SSN CDSR

SADDR           NPV NAIV FORBID ACTION PCI         SSN CDSR

SADDR           NPV NAIV FORBID ACTION PCN         SSN CDSR

SADDR           NPV NAIV FORBID ACTION PCN24       SSN CDSR

SADDR           NPV NAIV FORBID ACTION CDSR
919461000000130 2   16   locat  atierr ati5


Range CdPA Entries for OPNAME: ati and CGSR: cg03
-----------------------------------------------------
SADDR           EADDR           NPV NAIV FORBID ACTION PCA         SSN CDSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCI         SSN CDSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN         SSN CDSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN24       SSN CDSR

SADDR           EADDR           NPV NAIV FORBID ACTION CDSR
919463000000000 919464000000000 11  95   locat  atierr ati7
803549000000000 803650000000000 *   *    locat  atierr ati9


GSM Map Screening table is (1508 of 4000) 38% full
```

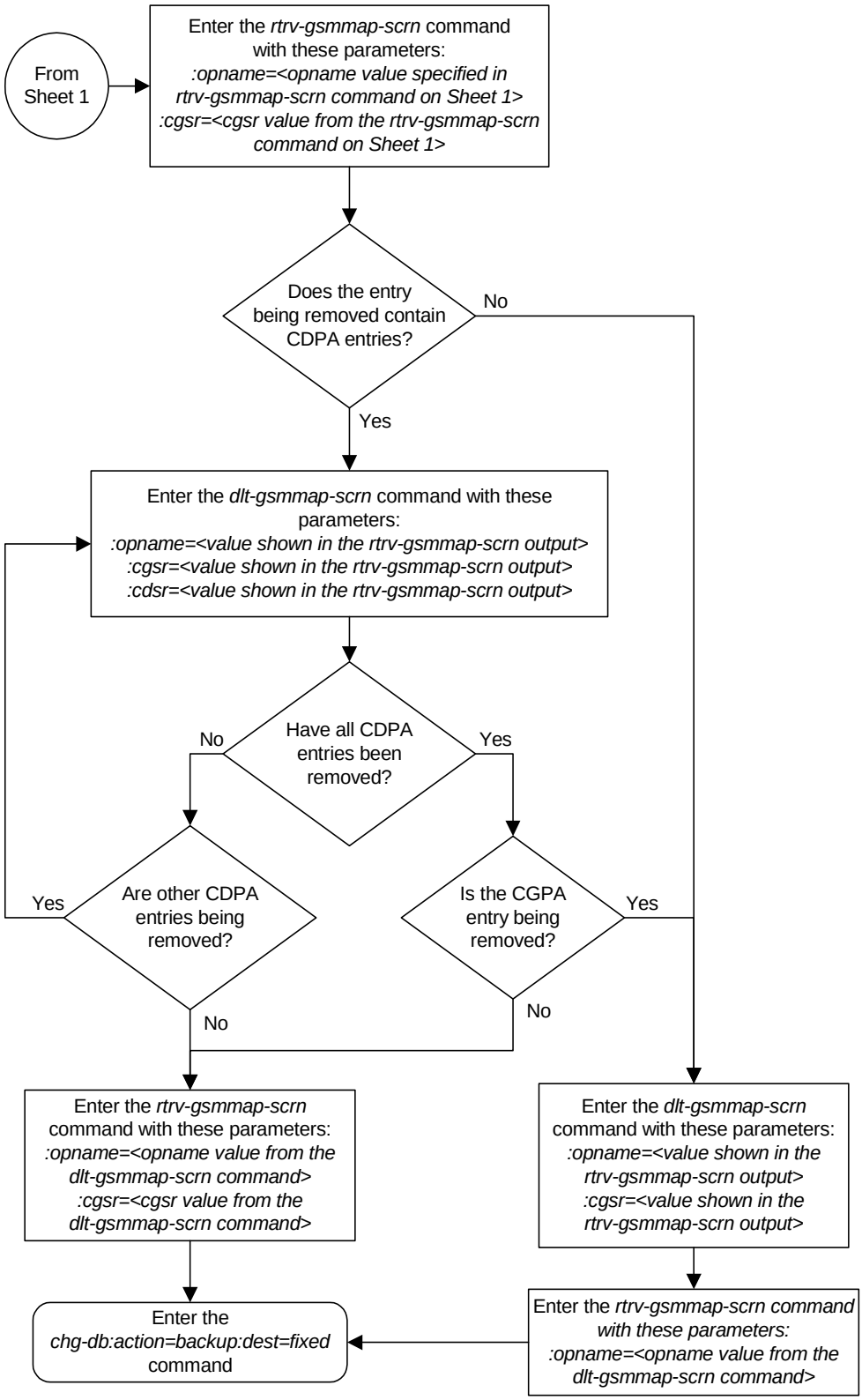
7. Backup the new changes using the **chg-db:action=backup:dest=fixed** command. These messages should appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
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.
```

Flowchart 5-10. Removing a GSM MAP Screening Entry (Sheet 1 of 2)



Flowchart 5-10. Removing a GSM MAP Screening Entry (Sheet 2 of 2)



Changing a GSM MAP Screening Entry

Use this command to change the attributes of the GSM MAP screening entries that filter or allow TCAP messages for certain MAP operation codes using the **chg-gsmmap-scrn** command. The SCCP messages contain MAP operation codes, origination addresses, numbering plan values, nature of address indicator values, and forbidden parameters.

The **chg-gsmmap-scrn** command uses these parameters.

:opname – The user-defined name for the operation code. The opname value references the operation code (opcode) defined with the **ent-gsms-opcode** command. GSM MAP screening is performed on the specified address or addresses for the referenced operation code.

:naction – The new screening action to take if a message is forbidden as defined by the **forbid** parameter value. One of these actions can be assigned.

- **pass** – Route the message as normal to the destination.
- **discard** – The MSU is to be discarded.
- **atierr** – An ATI (Any Time Interrogation) reject message is generated. This option is only valid for ATI MAP operation codes.
- **route** – Route the message as normal to the original destination node.
- **forward** – Route the original message to the forward node. The original message is not sent to the original node. If, however, the forwarded node is not available for routing then the MSU is routed to the original node.
- **duplicate** – Route the message as normal to the original destination and route a copy of the original message to the duplicate node.
- **dupdisc** – Duplicate and discard – Route the original message to the duplicate node. The original message is not sent to the original node.

:npc/npca/npci/npcn/npcn24 – The new ANSI point code (**npc/npca**), ITU-I point code (**npci**), new 14-bit ITU-N point code (**npcn**), or new 24-bit ITU-N point code (**npcn24**) of the node that the MSU is routed to by the **forward**, **duplicate**, or **dupdisc** screening actions. The system can contain 14-bit ITU-N point codes or 24-bit ITU-N point codes, but not both.

:nssn – The new subsystem number of the node that the MSU is routed to by the **forward**, **duplicate**, or **dupdisc** screening actions

:force – The mated application override. Is the GSM MAP screening operation code to be entered without a mated application in the database (**yes** or **no**)?

:nforbid – The new forbidden parameter value. If a forbidden parameter is detected, the message is rejected by the action defined by the **action** parameter value. One of four forbidden parameter values can be specified.

- **all** – All parameters are forbidden. Take the specified screening action defined by the **naction** parameter for incoming messages that contain the entered address and operation code combination.
- **none** – No parameters are forbidden. Take the specified screening action defined by the **naction** parameter for incoming messages that contain the entered address and operation code combination.
- **state** – Take the specified screening action defined by the **naction** parameter for incoming messages that contain **state** as the forbidden parameter for the entered address and operation code combination.
- **location** – Take the specified screening action defined by the **naction** parameter for incoming messages that contain **location** as the forbidden parameter for the entered address and operation code combination.

:cgsr – The current CGPA screening reference name.

:cdsr – The current CDPA screening reference name.

:ncgsr – The new CGPA screening reference name consisting of 1 alphabetic character and 3 optional alphanumeric characters.

:ncdsr – The new CDPA screening reference name consisting of 1 alphabetic character and 3 optional alphanumeric characters.

If a message is screened and does not contain matching **npv** and **naiv** values, the message is rejected. The message is rejected with the default action defined by the **chg-gsms-opcode** command for the operation code (**opcode**) parameter entry referenced by the operation name (**opname**) parameter.

Table 5-9 on page 5-116 shows the parameter combinations that can be used in this procedure.

Table 5-9. Change GSM MAP Screening Entry Parameter Combinations

Enhanced GSM MAP Screening Feature Enabled and On			GSM MAP Screening Feature Enabled and On Only		
Entry Containing a Point Code and SSN	**Entry Without a Point Code and SSN**	**Entry containing the Action ATIERR**	**Entry Containing a Point Code and SSN**	**Entry Without a Point Code and SSN**	**Entry containing the Action ATIERR**
Mandatory Parameters					
:opname = current opname value [2]	:opname = current opname value [2]	:opname = current opname value containing opcode=71 [2]	:opname = current opname value [2]	:opname = current opname value [2]	:opname = current opname value containing opcode=71 [2]
:cgsr = current CGSR value	:cgsr = current CGSR value	:cgsr = current CGSR value	:cgsr = current CGSR value	:cgsr = current CGSR value	:cgsr = current CGSR value
Optional Parameters[1]					
:cdsr = current CDSR value [3, 4]	:cdsr = current CDSR value [3, 4]	:cdsr = current CDSR value [3, 4]	:nforbid = all, none	:nforbid = all, none	:nforbid = state, location
:nforbid = all, none	:nforbid = all, none	:nforbid = state, location	:naction = forward, duplicate, dupdisc [6]	:naction = pass, discard, route	:naction = atierr
:naction = forward, duplicate, dupdisc [6]	:naction = pass, discard, route	:naction = atierr	:ncgsr = new CGSR value	:ncgsr = new CGSR value	:ncgsr = new CGSR value
:ncgsr = new CGSR value [4, 5]	:ncgsr = new CGSR value [4, 5]	:ncgsr = new CGSR value [4, 5]	:npci/npcn/npcn24 =point code value[7, 8, 9, 10]		
:ncdsr = new CDSR value [3, 5]	:ncdsr = new CDSR value [3, 5]	:ncdsr = new CDSR value [3, 5]	nssn = SSN value[7, 8, 9, 10]		
:npc/npca/npci/npcn/ npcn24 = point code value [7, 8, 9, 10]			:force=yes[9]		
:nssn = SSN value [7, 8, 9, 10]					
:force=yes [9]					

Notes:

1. At least one optional parameter must be specified with the **chg-gsmmap-scrn** command. If the **cdsr** parameter is specified, at least one other optional parameter must be specified with the **chg-gsmmap-scrn** command.
2. The **opname** parameter value must be shown in the **rtrv-gsms-opcode** output.
3. The **cdsr** parameter must be specified when the **ncdsr** parameter is specified.
4. The **ncgsr** parameter should not be specified when the **cdsr** parameter is specified.
5. The **ncgsr** and **ncdsr** parameters cannot be specified together.
6. If the new or current (if unchanged) **action** parameter values are either **forward**, **duplicate**, or **dupdisc**, the point code and **nssn** parameters must be specified with the **chg-gsmmap-scrn** command. If the point code or subsystem number values are not being changed, the point code and subsystem number parameters must be specified with the current values for these parameters.
7. If only the point code or subsystem number value is being changed, the point code or subsystem number value being changed must be specified with the new value for the parameter being changed. The current value for the point code or subsystem number parameter not being changed must be specified. The **naction** parameter does not have to be specified. For example, if the current point code is **pca=002-002-002** and the subsystem number is 50, and the point code is being changed to **pca=003-003-003** and the subsystem number is not changing, the **npca** parameter value would be the new point code value (003-003-003) and the **nssn** parameter value would be the current value (50).
8. The point code value must be the DPC of a route or a member of a cluster route. The **npc**/**npca** value must be a full point code, The **npc**/**npca** value can be a member of a cluster point code when that cluster point code is the DPC of a route. This can be verified with the **rtrv-rte** command. If the point code value is not shown in the **rtrv-rte** output as the DPC of a route, go to the "Adding a Route" procedure in the *Database Administration Manual - SS7* and add a new route containing the point code value.
9. The system can contain 14-bit ITU-N point codes or 24-bit ITU-N point codes, but not both at the same time.
10. The point code and subsystem number values specified with the **chg-gsmmap-scrn** command must be shown in the **rtrv-map** output, otherwise, the **force=yes** parameter must be specified. If the point code and subsystem number values are not shown in the **rtrv-map** output, and a new mated application is to be added, go to the "Provisioning a Mated Application" procedure in the *Database Administration Manual - Global Title Translation* and add the required mated application with the point code and subsystem number values.

Procedure

1. Display the GSM MAP screening operation codes in the database using the **rtrv-gsms-opcode** command. This is an example of the possible output.

```
rlghncxa03w 04-03-10 11:43:04 GMT EAGLE5 31.4.0

OPCODE  OPNAME    DFLTACT    PCA          SSN
 36     for1      fwd        002-002-002  10

OPCODE  OPNAME    DFLTACT    PCI          SSN
 93     dd93      dupdsc     5-25-3       200
 139    fwd139    fwd        3-159-7      128

OPCODE  OPNAME    DFLTACT    PCN          SSN
 187    dup187    dupl       11519        79

OPCODE  OPNAME    DFLTACT    PCN24        SSN


OPCODE  OPNAME    DFLTACT
 22     sri       disc
 25     route25   route
 50     pass50    pass
 71     ati       atierr
 150    discard1  disc
 *      star      pass

GSMMS OPCODE Table (10 of 257) is 4% full
```

If the default action for the GSM MAP screening entry will be **atierr**, or the **forbid** parameter value will be **location** or **state**, the **opname** value must contain an **opcode** value of 71.

2. Enter the **rtrv-gsmmap-scrn** command with an **opname** value shown in the **rtrv-gsms-opcode** command output in step 1 to display the CGPA GSM MAP screening entries to change. For this example, enter this command.

rtrv-gsmmap-scrn:opname=ati

This is an example of the possible output.

```
rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0

Single CgPA Entries for OPNAME: ati
-----------------------------------
SADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           NPV NAIV FORBID ACTION CGSR
919462000000005 1   0    locat  atierr ati1
```

```
Range CgPA Entries for OPNAME: ati
----------------------------------
SADDR           EADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION CGSR
8284540000      8284600000      *   *    state  atierr cg03
9194618888888888 9194619000000000 4   1    locat  atierr ati2
9194620000000000 9194630000000000 *   *    locat  atierr ati3


GSM Map Screening table is (1512 of 4000) 38% full
```

rtrv-gsmmap-scrn:opname=dd93

This is an example of the possible output.

```
rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0

Single CgPA Entries for OPNAME: dd93
------------------------------------
SADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           NPV NAIV FORBID ACTION CGSR


Range CgPA Entries for OPNAME: dd93
-----------------------------------
SADDR           EADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR
854000000       857000000       3   99   all    fwd    3-201-7     100 cg05

SADDR           EADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION CGSR


GSM Map Screening table is (1512 of 4000) 38% full
```

NOTE: If the npc/npca or ncdsr parameters are being specified in this procedure, the Enhanced GSM MAP Screening feature must be enabled and on. If these parameters are not being specified in this procedure, skip step 3 and go to step 4.

If any of the following parameters or values are shown in the rtrv-gsmmap-scrn output in step 2, the Enhanced GSM MAP Screening feature is enabled and on. Skip step 3 and go to step 4.

- **saddr=***
- **pc/pca**
- **The saddr or eaddr parameter values containing hex digits.**

If the rtrv-gsmmap-scrn output in step 2 does not show any of these parameters or values, it is possible that the Enhanced GSM MAP Screening feature is enabled and on. If you wish to use the npc/npca or ncdsr parameters, perform step 3 to verify the status of the Enhanced GSM MAP Screening feature.

3. Verify that the Enhanced GSM MAP Screening feature is enabled and on by entering the **rtrv-ctrl-feat** command with the part number of the Enhanced GSM MAP Screening feature. Enter this command.

   rtrv-ctrl-feat:partnum=893012401

   The following is an example of the possible output.

```
rlghncxa03w 04-03-28 21:15:37 GMT EAGLE5 31.4.0
The following features have been permanently enabled:
Feature Name              Partnum    Status  Quantity
Enhanced GMS (EGMS)       893012401  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
Zero entries found.
```

   If the Enhanced GSM MAP screening feature is not enabled or off, and you wish to use the **npc/npca** or **ncdsr** parameters, go to the "Activating the GSM MAP Screening Feature" procedure on page 5-20 to enable and turn on the Enhanced GSM MAP screening feature.

NOTE: If the Enhanced GSM MAP Screening feature is not enabled or off, or if CDPA entries are not being changed, skip step 4 and go to step 5.

4. Enter the **rtrv-gsmmap-scrn** command with an **opname** and **cgsr** values shown in the **rtrv-gsmmap-scrn** command output in step 2 to display the CDPA GSM MAP screening entries to change. For this example, enter this command.

rtrv-gsmmap-scrn:opname=ati:cgsr=cg03

This is an example of the possible output.

```
rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0

Single CdPA Entries for OPNAME: ati and CGSR: cg03
------------------------------------------------------
SADDR           NPV NAIV FORBID ACTION PCA         SSN CDSR

SADDR           NPV NAIV FORBID ACTION PCI         SSN CDSR

SADDR           NPV NAIV FORBID ACTION PCN         SSN CDSR

SADDR           NPV NAIV FORBID ACTION PCN24       SSN CDSR

SADDR           NPV NAIV FORBID ACTION CDSR
919461000000130 2   16   locat  atierr ati5

Range CdPA Entries for OPNAME: ati and CGSR: cg03
------------------------------------------------------
SADDR           EADDR           NPV NAIV FORBID ACTION PCA         SSN CDSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCI         SSN CDSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN         SSN CDSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN24       SSN CDSR

SADDR           EADDR           NPV NAIV FORBID ACTION CDSR
4329290000      5450000000      *   *    state  atierr cd15
919463000000000 919464000000000 11  95   locat  atierr ati7
803549000000000 803650000000000 *   *    locat  atierr ati9

GSM Map Screening table is (1512 of 4000) 38% full
```

rtrv-gsmmap-scrn:opname=dd93:cgsr=cg05

This is an example of the possible output.

```
rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0

Single CdPA Entries for OPNAME: dd93 and CGSR: cg05
------------------------------------------------------
SADDR           NPV NAIV FORBID ACTION PCA         SSN CDSR

SADDR           NPV NAIV FORBID ACTION PCI         SSN CDSR

SADDR           NPV NAIV FORBID ACTION PCN         SSN CDSR

SADDR           NPV NAIV FORBID ACTION PCN24       SSN CDSR

SADDR           NPV NAIV FORBID ACTION CDSR
```

```
Range CgPA Entries for OPNAME: dd93 and CGSR: cg05
------------------------------------------------------
SADDR           EADDR           NPV NAIV FORBID ACTION PCA         SSN CDSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCI         SSN CDSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN         SSN CDSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN24       SSN CDSR

SADDR           EADDR           NPV NAIV FORBID ACTION CDSR

GSM Map Screening table is (1512 of 4000) 38% full
```

NOTE: If the `action` parameter value will be either `pass`, `discard`, `route`, or `atierr`, or the `pci/pcn/pcn24` and `ssn` values will not be changed, skip steps 3 and 4, and go to step 5.

5. The point code and subsystem number being assigned to the GSM MAP screening entry must be in the mated application table. Enter the **`rtrv-map`** command with the **`npc/npca/npci/npcn/npcn24`** and **`nssn`** values that will be specified with the **`chg-gsmmap-scrn`** command in step 5. For this example, enter these commands.

   `rtrv-map:pci=5-79-2:ssn=89`

   This is an example of the possible output.

```
rlghncxa03w  04-03-25 09:42:31  GMT  EAGLE5 31.4.0

MAP TABLE IS   2 % FULL    (20 of 1024)

PCI           SSN   RC MULT MPCI           MSSN  MATERC MULT SRM  MRC  GRP NAME SSO
5-79-2         89   10 SOL                                   YES  YES  GRP01    ON
```

   If the point code and subsystem number is not shown in the **`rtrv-map`** output, go to the "Provisioning a Mated Application" procedure in the *Database Administration Manual - Global Title Translation* and add the required point code and subsystem number to the mated application table.

   NOTE: If the point code and subsystem number is not shown in the `rtrv-map` output, and is not added to the database in one of these procedures, the `force=yes` parameter must be specified with the `chg-gsmmap-scrn` command in step 5.

6. The point code specified with the **chg-gsmmap-scrn** command must be the DPC of a route. Enter the **rtrv-rte** command with the **dpc** parameter specifying the point code to be used with the **chg-gsmmap-scrn** command to verify whether or not the point code is the DPC of a route. For this example, enter these commands.

   rtrv-rte:dpci=5-79-2

   This is an example of the possible output.

```
rlghncxa03w 04-03-07 11:43:04 GMT  EAGLE5 31.4.0
DPCI         ALIASN      ALIASA      CLLI          LSN       RC APCI
5-79-2         1501      230-101-191 idp9          ls100001 10 1-234-5
                                                   ls100002 10 3-65-4
```

   If the point code is not shown in the **rtrv-rte** output, go to the "Adding a Route" procedure in the *Database Administration Manual - SS7* and add the required route to the database.

---

7. Change the GSM MAP screening entry with the **chg-gsmmap-scrn** command. Table 5-9 on page 5-116 shows the parameter combinations that can be used with the **chg-gsmmap-scrn** command.

   For this example, the Enhanced GSM MAP Screening feature is enabled and on. Enter these commands:

   chg-gsmmap-scrn:opname=ati:cgsr=cg03:cdsr=cd15:nforbid=none :naction=pass

   chg-gsmmap-scrn:opname=dd93:cgsr=cg05:nforbid=none:npci=5-79-2 :nssn=89

   When this command has successfully completed, this message appears.

```
rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0
GSM Map Screening table is (1512 of 4000) 38% full
CHG-GSMMAP-SCRN: MASP A - COMPLTD
```

---

8. Verify the changes using the **rtrv-gsmmap-scrn** command, specifying the **opname** parameter value used in step 7. If the **cdsr** parameter was specified in step 7, specify the **cgsr**, and **cdsr** parameter values used in step 7 with the **opname** parameter value.

   For this example, the Enhanced GSM MAP Screening feature is enabled and on. Enter these commands:

   rtrv-gsmmap-scrn:opname=ati:cgsr=cg03:cdsr=cd15

   This is an example of the possible output.

```
rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0

SADDR           EADDR           NPV NAIV FORBID ACTION CDSR
8284540000      8284600000      *   *    none   pass   cd15

GSM Map Screening table is (1512 of 4000) 38% full
```

rtrv-gsmmap-scrn:opname=dd93

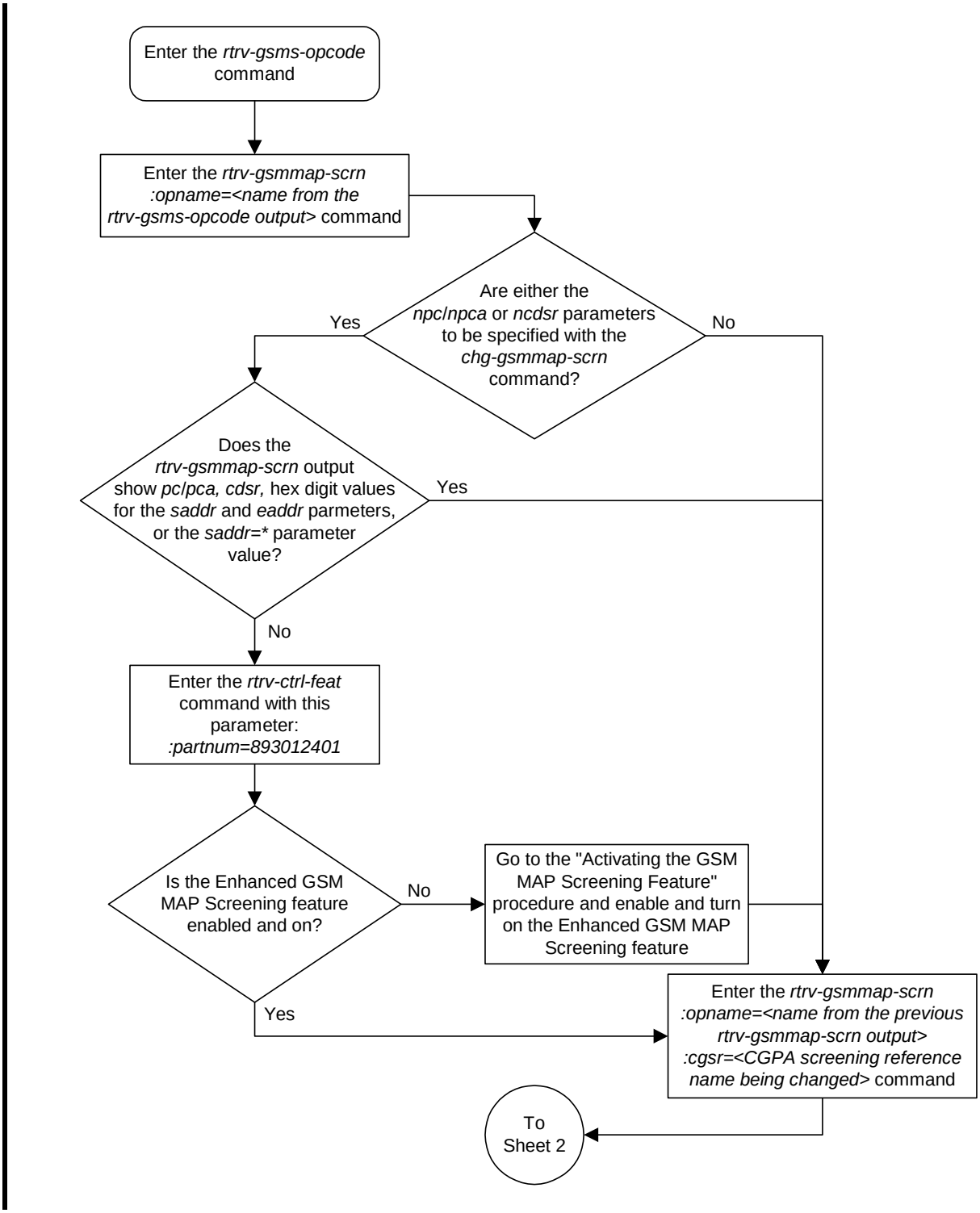
This is an example of the possible output.

```
rlghncxa03w 04-03-20 09:07:58 GMT  EAGLE5 31.4.0

Single CgPA Entries for OPNAME: dd93
------------------------------------
SADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           NPV NAIV FORBID ACTION CGSR


Range CgPA Entries for OPNAME: dd93
-----------------------------------
SADDR           EADDR           NPV NAIV FORBID ACTION PCA         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCI         SSN CGSR
854000000       860000000       3   99   none   fwd    5-79-2      89  cg05

SADDR           EADDR           NPV NAIV FORBID ACTION PCN         SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION PCN24       SSN CGSR

SADDR           EADDR           NPV NAIV FORBID ACTION CGSR


GSM Map Screening table is (1512 of 4000) 38% full
```

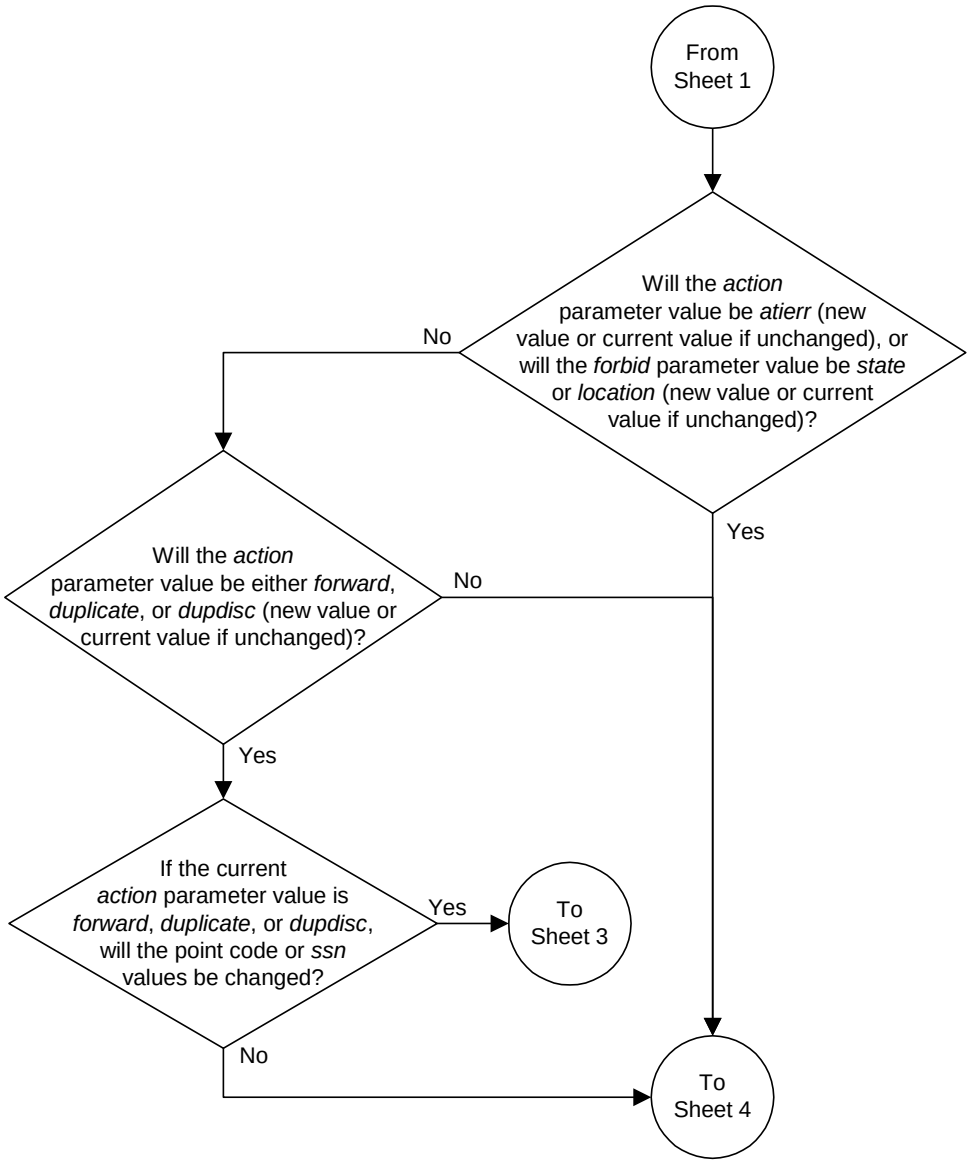
9. Backup the new changes using the **chg-db:action=backup:dest=fixed** command. These messages should appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
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.
```

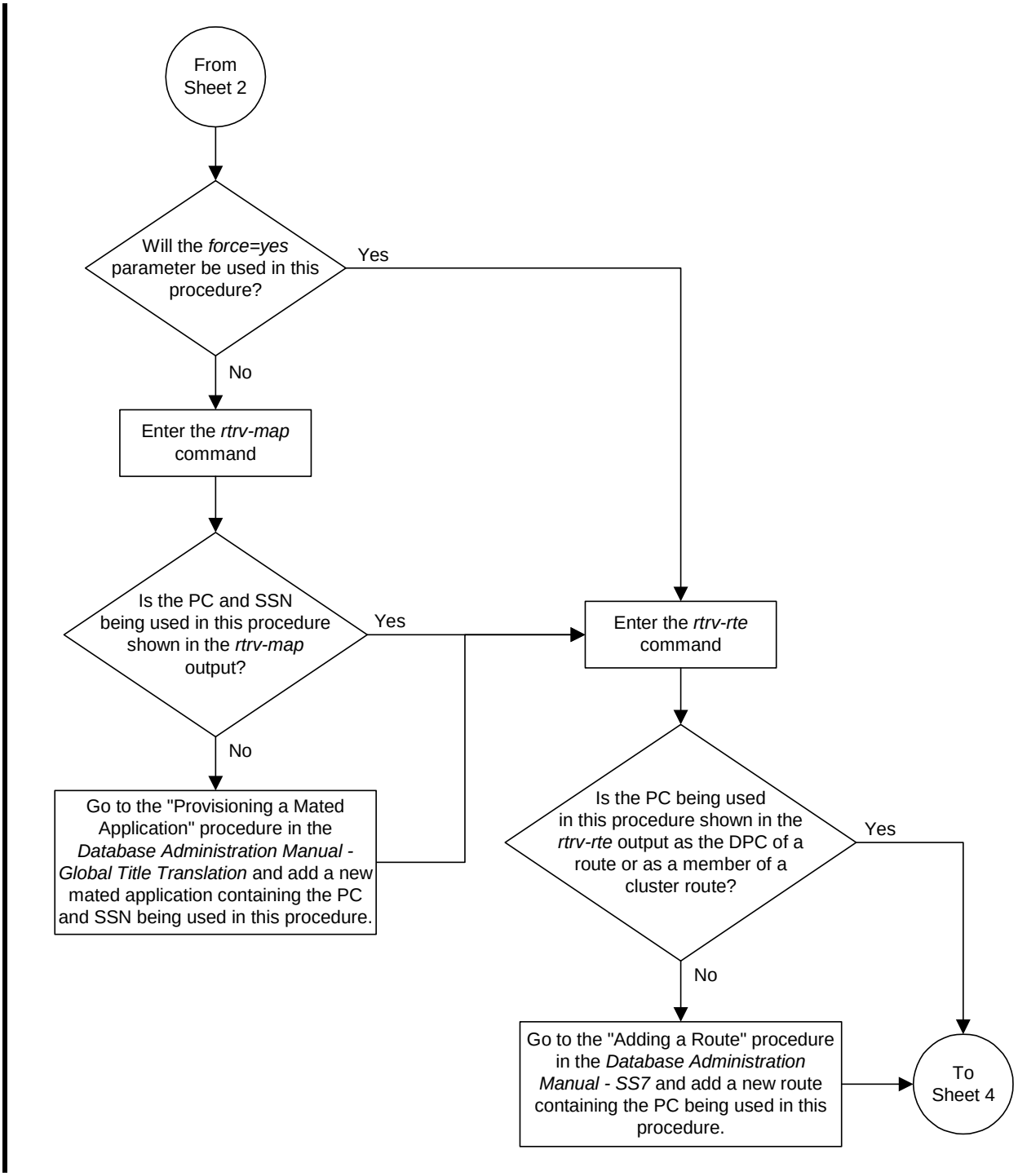
Flowchart 5-11. Changing a GSM MAP Screening Entry (Sheet 1 of 5)



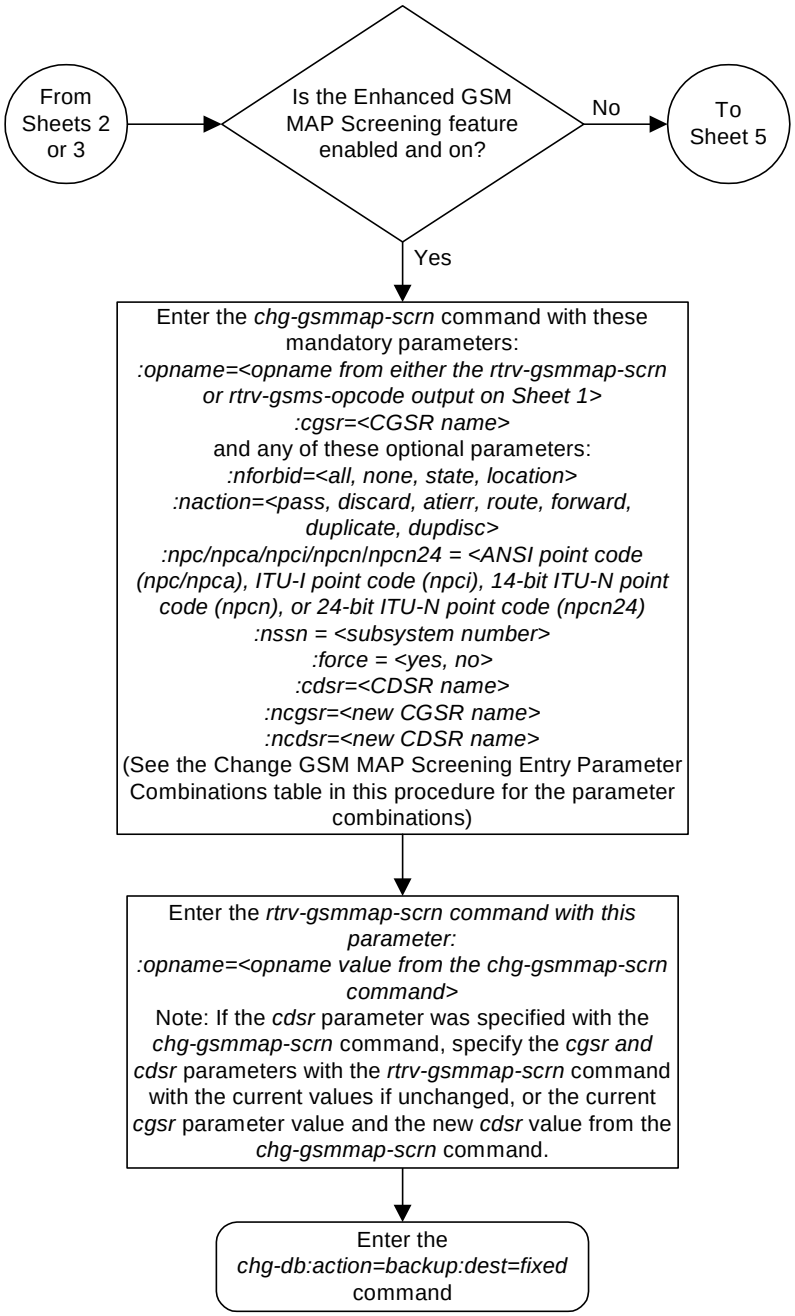
Flowchart 5-11. Changing a GSM MAP Screening Entry (Sheet 2 of 5)



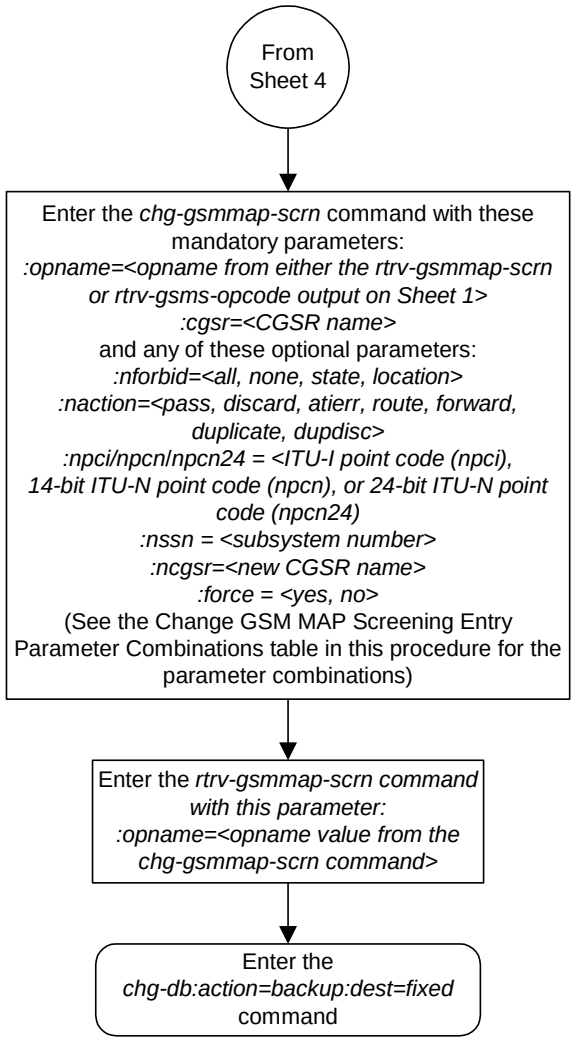
Flowchart 5-11. Changing a GSM MAP Screening Entry (Sheet 3 of 5)



Flowchart 5-11. Changing a GSM MAP Screening Entry (Sheet 4 of 5)



Flowchart 5-11. Changing a GSM MAP Screening Entry (Sheet 5 of 5)



6

Eagle Support for Integrated Sentinel Configuration

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Enabling the Time Slot Counter Synchronization (TSCSYNC) and Eagle Support for Integrated Sentinel (E5IS) Features 6-9

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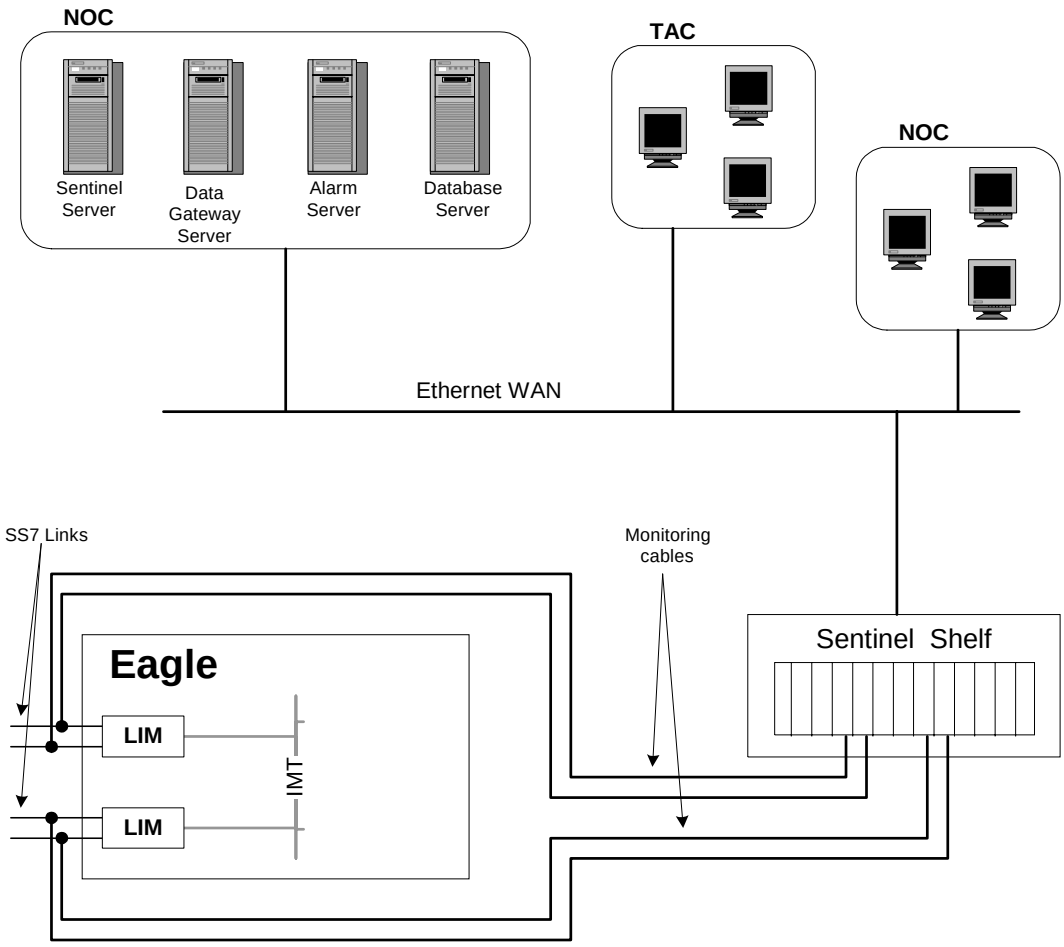
Introduction

The Eagle Support for Integrated Sentinel feature allows the network traffic on the Eagle's signaling links to be monitored by an ESP (extended services platform) without additional intrusive cabling.

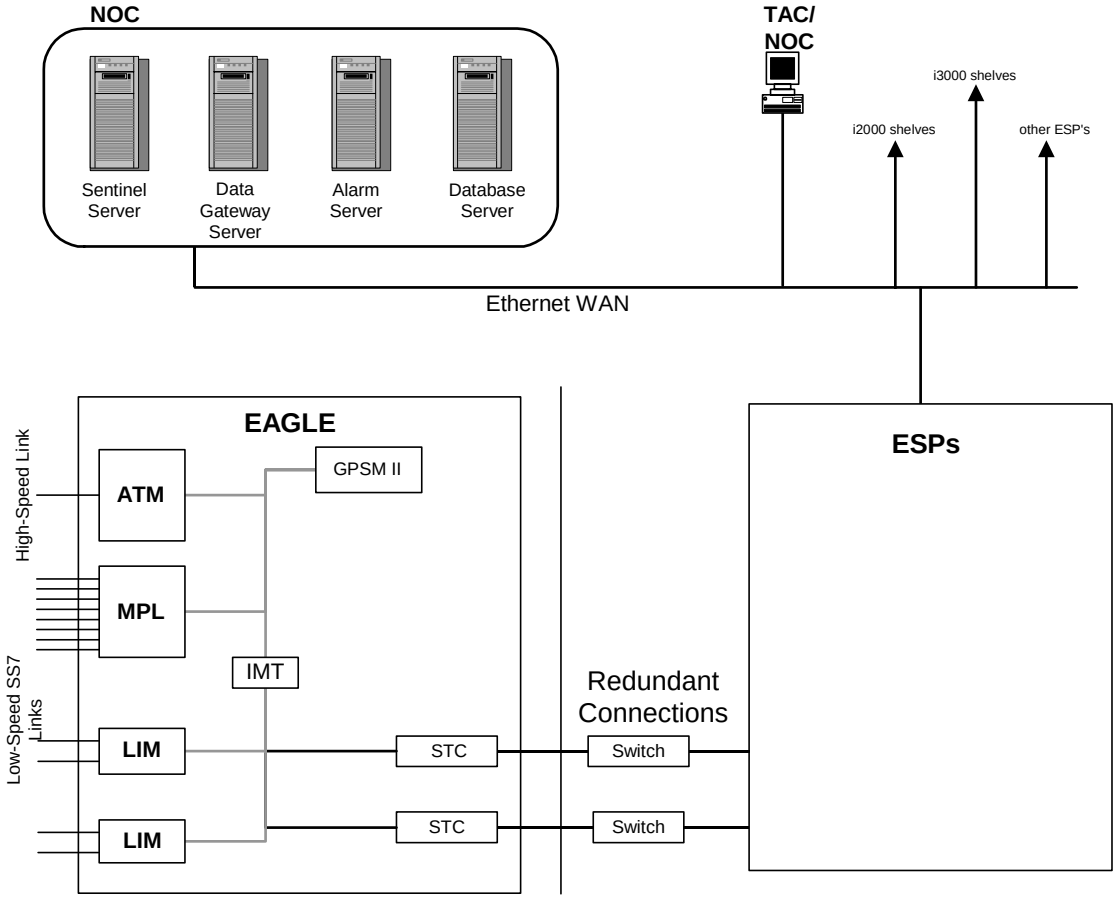
For an ESP to monitor the network traffic on the Eagle's signaling links without this feature requires physical, clamp-on connections to the Eagle's SS7 signaling links in order to monitor SS7 traffic (see Figure 6-1). This monitoring method involves costs for cable installation and maintenance for each SS7 link that is to be monitored.

Figure 6-1. Sentinel Monitoring via Hardware Connection



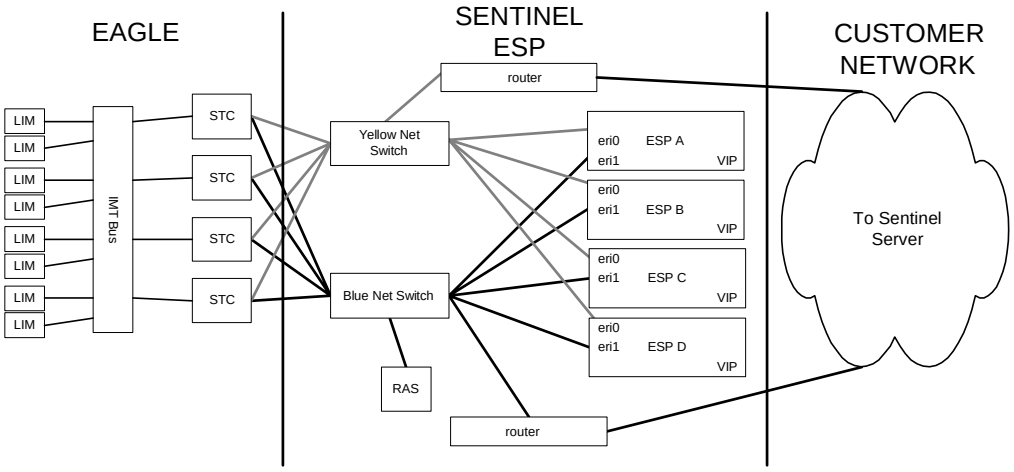
This feature eliminates the need to have intrusive hardware for each link that is to be monitored. The monitoring is performed by an Ethernet connection from an STC (Sentinel Transport Card) to the ESP (see Figure 6-2). Message Signaling Units (MSUs), alarms, and events may be copied to the ESP subsystem over the Ethernet link to provide the network traffic monitoring

Figure 6-2. Eagle Support for Integrated Sentinel Network Connectivity



As can be seen in Figure 6-2, this new method of connectivity removes the cabling and clamps from each monitored SS7 link. By incorporating a TCP/IP stack on each LIM and having the STCs serve as IP routers, the ESP subsystem may communicate directly with the SS7 LIMs. Figure 6-3 shows the logical communications pathway.

Figure 6-3. ESP/Eagle Network



Notes:
- Ethernet port on routers are demarcation points
- Two routers provide full redundancy
- Routers filter traffic and provide isolation
- NetGear RAS (RM356) is used for remote access
- Traffic is routed to the VIP so the Sentinel server knows about only one IP address for each ESP server.

The STC communicates to the LIM by the IMT bus; the IP messages are simply encapsulated in an IMT wrapper between the cards. The STCs are provisioned in an *n+1* configuration for redundancy. Each STC Ethernet port has a separate connection path to each Ethernet switch in order to provide an alternate path in the event of an Ethernet link failure. Note that the figure depicts a redundant network; this assures that a single network failure will not halt Eagle or ESP operations. As shown in Figure 6-3, one or more ESPs may be connected to a single Ethernet switch. The number of STCs required corresponds to the number of SS7 links that are to be associated with the Eagle Support for Integrated Sentinel feature, plus an additional STC for redundancy.

A dual-slot STC can support and monitor up to 32 low-speed SS7 signaling links at one (1) erlang of traffic. To provision dual-slot STCs in an *n+1* configuration to monitor a 500 low-speed SS7 signaling link system, 17 dual-slot STCs are required to monitor all 500 signaling links (500 / 32 = 16 dual-slot STCs, plus 1 for redundancy).

A single-slot STC can support and monitor up to 40 low-speed SS7 signaling links at one (1) erlang of traffic. To provision single-slot STCs in an *n+1* configuration to monitor a 500 low-speed SS7 signaling link system, 14 single-slot STCs are required to monitor all 500 signaling links (500 / 40 = single-slot 13 STCs, plus 1 for redundancy).

The LIMs are assigned private network addresses. The IP message origination address specified is that of the LIM. The IP message destination address is that of the VIP (virtual IP address) contained within the ESP server. The STC serves as a router from the LIM to the ESP servers.

TCP/IP Link Provisioning

The IP communications link, used to transmit copied MSUs between the Eagle and the ESP subsystem, is dynamically configured by the Sentinel. This is performed automatically as part of the operations for coming into service. A special function, part of the card's application software, is to establish communications with the ESP subsystem by sending a service request message (see Figure 6-4).

Figure 6-4. Ethernet Link Establishment - EMP Link Data

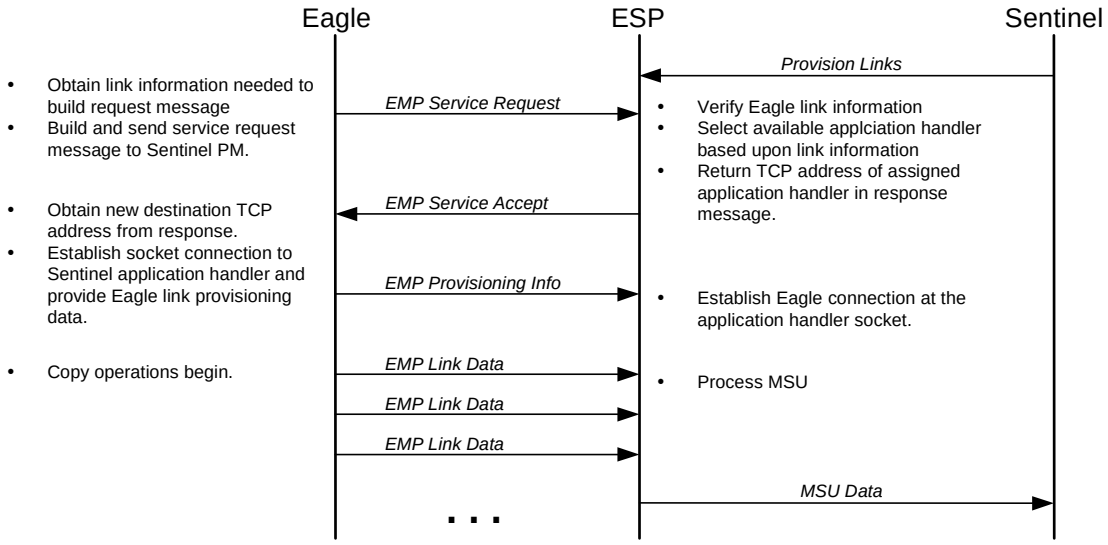


Diagram depicts example of normal link data message flow.

The LIM receiving the service accept response then opens a new socket using the specified IP address and port as the destination using standard TCP/IP socket messaging. The ESP server configured to service the port responds to the connect request and the socket is now available for normal operations. MSUs are copied from the LIM through the STC to the ESP server, then to the Sentinel.

If the LIM is unsuccessful with its initial link service request, it will reattempt link establishment with the ESP subsystem after delaying for a short period (that is, approximately 15 seconds). The LIM continuously repeats the link establishment procedure until it is successful. If the LIM ever loses its IP connection to the ESP server, the LIM will automatically begin reestablishment operations.

The STCs use DHCP (Dynamic Host Configuration Protocol) to provision themselves with IP addresses. The ESP subsystem contains a DHCP server and a DHCP client resides on the STC. The STC receives its IP address from the DHCP server in accordance with the DHCP standard.

A custom routing protocol, TRP (Tekelec Routing Protocol) manages the multiple redundant links and provides a faster network convergence than is possible with standard routing protocols.

Time Stamping

The MSU information will be delivered to the ESP subsystem with an accurate time stamp (± 5 milliseconds). This allows the Sentinel to correlate a call's messages for CDR (Call Detail Record) operations.

Eagle Provisioning

To provision this feature, these items are required:

- STCs are installed in the Eagle
- The TSC (Time Slot Counter) Synchronization feature is enabled in the Eagle. TSC synchronization is supplied by the GPSM-II cards in card locations 1113 and 1115.
- An external BITS clock used by the Eagle as a timing source for the signaling links
- A Network Time Protocol (NTP) timing source from the ESP server

An “n + 1" STC configuration is required to provide redundancy for this feature.

The connection from the Eagle to the ESP is an Ethernet connection with a minimum bandwidth of 10 Mbps. The dual-slot STC contains two 10 Mbps Ethernet ports. The single-slot STC contains two 100 Mbps Ethernet ports.

Refer to the *Installation Manual* for more information about the GPSM-II and STCs.

A dual-slot STC can support and monitor up to 32 low-speed SS7 signaling links at one (1) erlang of traffic. To provision dual-slot STCs in an *n+1* configuration to monitor a 500 low-speed SS7 signaling link system, 17 dual-slot STCs are required to monitor all 500 signaling links (500 / 32 = 16 dual-slot STCs, plus 1 for redundancy).

A single-slot STC can support and monitor up to 40 low-speed SS7 signaling links at one (1) erlang of traffic. To provision single-slot STCs in an *n+1* configuration to monitor a 500 low-speed SS7 signaling link system, 14 single-slot STCs are required to monitor all 500 signaling links (500 / 40 = single-slot 13 STCs, plus 1 for redundancy).

The *n+1* STC configuration requires that a minimum of two STCs must be provisioned in the database. If single-slot STCs are being provisioned in the database, a minimum of two single-slot STCs must be provisioned.

Table 6-1 shows the signaling links on these cards can be monitored by this feature.

Table 6-1. Monitored Card Types

Card Application (`APPL` Value Used by the `ent-card` Command	Card Type (`TYPE` Value Used by the `ent-card` Command)	Card Name
SS7ANSI, CCS7ITU	LIMDS0	LIM-DS0, EILA, ILA, MPL
	LIMOCU	LIM-OCU, EILA, ILA, MPL
	LIMV35	LIM-V.35, EILA, ILA, MPL
	LIME1	E1/T1 MIM, LIM-E1
	LIMT1	E1/T1 MIM
	LIMCH	E1/T1 MIM, LIM-E1
ATMANSI	LIMATM	LIM-ATM
ATMITU	LIME1ATM	E1-ATM

The signaling links assigned to the cards running either the **`ss7ansi`** or **`ccs7itu`** applications are low-speed signaling links transmitting at either 56 kbps or 64 kbps. Signaling links assigned to the **`atmansi`** and **`atmitu`** applications are high-speed signaling links transmitting at 1.544 Mbps (**`atmansi`**) or 2.048 Mbps (**`atmitu`**).

Because the performance of a single-slot STC is higher than a dual-slot STC, a dual-slot STC cannot replace a single-slot STC. If a single-slot STC replaces a dual-slot STC, and it is the only single-slot STC in the system, another single-slot STC must be added to the system. To add the additional single-slot STC, go to the "Adding a Sentinel Transport Card (STC)" procedure on page 6-18.

In order to perform the necessary IP routing within the Eagle switch, a private virtual network (PVN) is incorporated; the PVN represents the internal IP addressing scheme for every card within the Eagle switch. Each card has an auto-assigned, default, Class B private IP address (for example, 172.28.60.16).

NOTE: The Eagle uses a default value of 172.20.50.0 for the PVN address. The crafts person may change the default value by specifying a new network portion of an IP address and a network mask; the host portion is auto-configured. The Eagle requires use of the lower 10 bits of address space for auto-configuration of internal networking schemes. The entered mask value may be up to 255.255.252.0

Network Considerations

There are three networks used to connect the Eagle to the ESP subsystem (see Figure 6-3, "ESP/Eagle Network," on page 6-4:

- The Eagle containing the STCs
- The two Ethernet switches
- The ESP servers

The monitored information is sent from the Eagle to the ESP servers through the Ethernet switches, then forwarded to the Sentinel by the isolation routers. Each router will have one Ethernet port designated as the physical demarcation point between the customer network and the ESP subsystem.

IP Address Provisioning

The ESP subsystem requires IP addresses for these items:

- ESP external network:
  - Three IP addresses on the customer network for the ESP isolation routers, one IP address for HSRP, one IP address for each router (two total)
  - One netmask
  - One IP address for the default router.
- ESP internal network -- Contiguous IP block routed within their network (last octet range 1-67 for 17 servers). The Sentinel considers each ESP server a separate processing element, therefore each ESP server needs its own IP address.
- Routes to their network to route to the VIP network already defined within ESP subsystem.

CAUTION: These IP addresses can be changed, as well as the PVN IP address in the Eagle, contact Tekelec Technical Services (see "Tekelec Technical Services" on page 1-9) before attempting to change these IP addresses.

Route Configuration

No explicit routing tables are provisioned in the ESP subsystem. Use of the single customer provided default router address is assumed for outgoing traffic. All incoming traffic will use the HSRP address provided by the isolation routers.

Network Limitations

The maximum length of the network cables between the ESP server frame and the STC cards is limited to 328 feet (100 meters). This limitation is the maximum length that any 10/100BaseT cable can be run.

Enabling the Time Slot Counter Synchronization (TSCSYNC) and Eagle Support for Integrated Sentinel (E5IS) Features

The Eagle Support for Integrated Sentinel feature requires that the Time Slot Counter Synchronization (TSCSYNC) and Eagle Support for Integrated Sentinel (E5IS) features are enabled with the **chg-feat** command using the **tscsync** and **e5is** parameters. This procedure is used to enable these features.

NOTE: Once the Time Slot Counter Synchronization and Eagle Support for Integrated Sentinel features are turned on with the chg-feat command, they cannot be turned off.

The Time Slot Counter Synchronization and Eagle Support for Integrated Sentinel features must be purchased before turning on these features. If you are not sure whether you have purchased the Time Slot Counter Synchronization or Eagle Support for Integrated Sentinel features, contact your Tekelec Sales Representative or Account Representative.

Procedure

1. Verify that the Eagle Support for Integrated Sentinel feature and Time Slot Counter Synchronization features are on, by entering the **rtrv-feat** command. If the Eagle Support for Integrated Sentinel feature is on, the **E5IS** field should be set to **on**. If the Time Slot Counter Synchronization feature is on, the **TSCSYNC** field should be set to **on**. For this example, the Eagle Support for Integrated Sentinel feature and Time Slot Counter Synchronization features are off.

   NOTE: The rtrv-feat command output contains other fields that are not used by this procedure. If you wish to see all the fields displayed by the rtrv-feat command, see the rtrv-feat command description in the *Commands Manual*.

   NOTE: If both the Eagle Support for Integrated Sentinel feature and Time Slot Counter Synchronization features are on, then no further action is necessary. If you wish to change the EISCOPY or PVN IP address options, go to the "Configuring the Eagle Support for Integrated Sentinel Options" procedure on page 6-12. If you wish to add STCs to the database, go to the "Adding a Sentinel Transport Card (STC)" procedure on page 6-18.

   NOTE: If the Time Slot Counter Synchronization feature is on, go to step 2.

2. Turn the Time Slot Counter Synchronization and Eagle Support for Integrated Sentinel features on by entering one of these commands, depending on whether or not the **rtrv-feat** output in step 1 shows that the Time Slot Counter Synchronization feature is on.

   If the Time Slot Counter Synchronization feature is not on, enter this command.

   chg-feat:tscsync=on:e5is=on

   If the Time Slot Counter Synchronization feature is on, enter this command.

   chg-feat:e5is=on

   NOTE: Once the Time Slot Counter Synchronization and Eagle Support for Integrated Sentinel features are turned on with the chg-feat command, they cannot be turned off.

   The Time Slot Counter Synchronization and Eagle Support for Integrated Sentinel features must be purchased before turning on these features. If you are not sure whether you have purchased the Time Slot Counter Synchronization or Eagle Support for Integrated Sentinel features, contact your Tekelec Sales Representative or Account Representative.

   When the **chg-feat** has successfully completed, this message should appear.

   ```
   rlghncxa03w 04-03-20 21:18:37 GMT EAGLE5 31.4.0
   CHG-FEAT: MASP A - COMPLTD
   ```

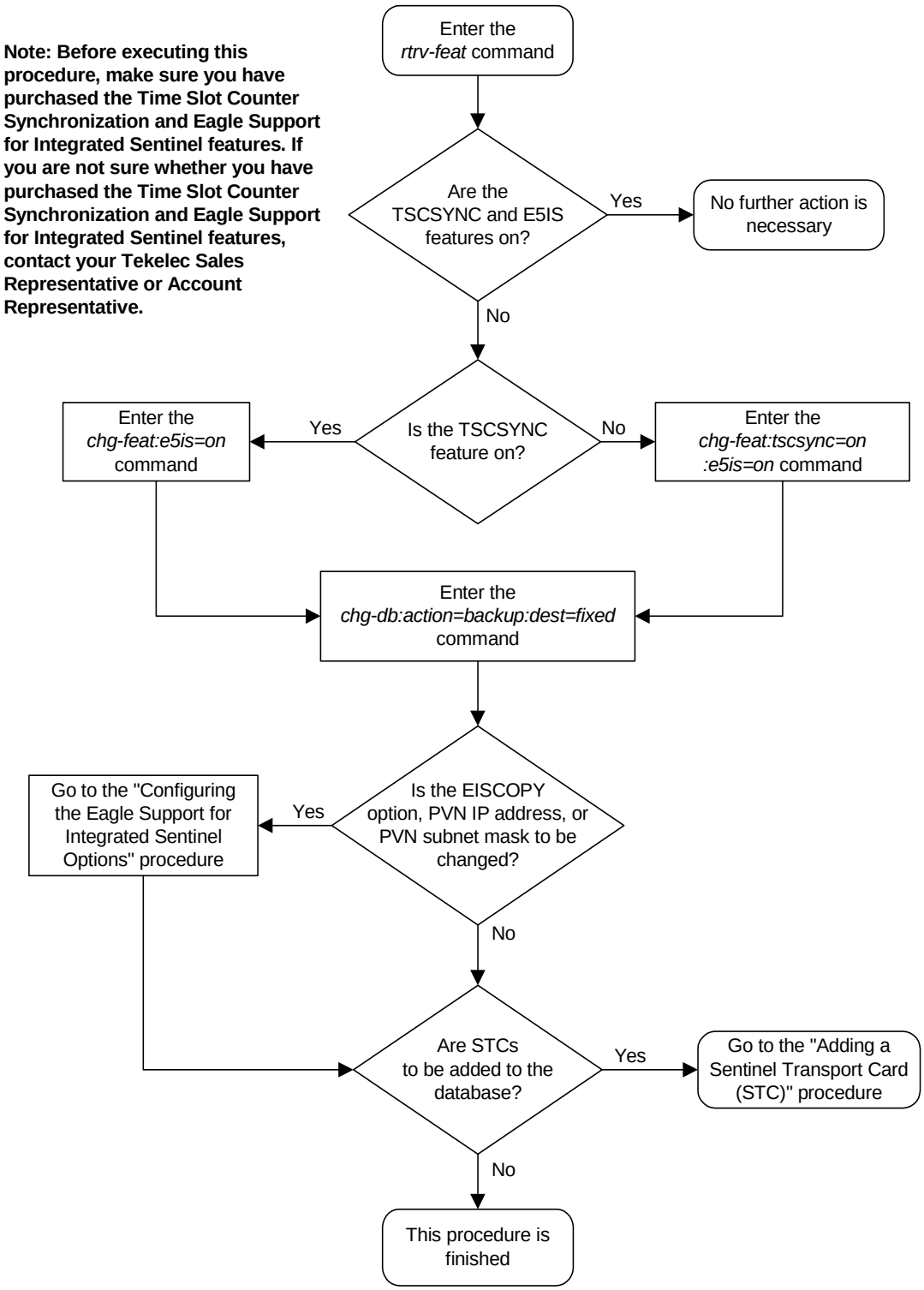
3. Back up the new changes using the **chg-db:action=backup:dest=fixed** command. These messages should appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

   ```
   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.
   ```

4. If the EISCOPY or PVN IP address options are to be changed, go to the "Configuring the Eagle Support for Integrated Sentinel Options" procedure on page 6-12.

   If STCs are to be added to the database, Go to the "Adding a Sentinel Transport Card (STC)" procedure on page 6-18 to provision the Eagle with the required number of STCs.

Flowchart 6-1. Enabling the TSCSYNC and E5IS Features



Configuring the Eagle Support for Integrated Sentinel Options

This procedure is used to configure the EISCOPY option and the PVN IP address options for the Eagle Support for Integrated Sentinel feature.

To set the EISCOPY function for the Eagle Support for Integrated Sentinel feature, the **eiscopy** parameter is specified with the **chg-eisopts** command. The **eiscopy=on** parameter enables the EISCOPY function for the Eagle Support for Integrated Sentinel feature. The **eiscopy=off** parameter turns off the EISCOPY function for the Eagle Support for Integrated Sentinel feature. The EISCOPY function allows the Eagle to copy MSUs to the ESP subsystem. The default value for the **eiscopy** parameter is **off**.

The IP communications link, used to transmit copied MSUs between the Eagle and the ESP subsystem, is dynamically configured by the Sentinel. The LIMs are assigned Class B private network IP addresses (for example, 172.28.60.16), creating a private virtual network (PVN). The IP message origination address is the address of the LIM. The IP message destination address is that of the VIP (virtual IP address) contained within the ESP server.

The Eagle uses a default value of 172.20.50.0 for the PVN address. The default value may be changed by specifying a new network portion of an IP address and a network mask. The host portion of these PVN addresses are configured automatically.

To change the network portion of the PVN address and the PVN submask used by the PVN addresses within the Eagle, enter the **chg-netopts** command with the **pvn** and **pvnmask** parameters. The EISCOPY function must be disabled (**eiscopy=off**) in order to make these changes.

To change either the EISCOPY option or the PVN IP address options, the Eagle Support for Integrated Sentinel feature (**E5IS**) must be enabled.

CAUTION: Contact Tekelec Technical Services (see "Tekelec Technical Services" on page 1-9) before performing this procedure.

Procedure

1. Verify that the Eagle Support for Integrated Sentinel feature is on, by entering the **rtrv-feat** command. If the Eagle Support for Integrated Sentinel feature is on, the **E5IS** field should be set to **on**.

   NOTE: The rtrv-feat command output contains other fields that are not used by this procedure. If you wish to see all the fields displayed by the rtrv-feat command, see the rtrv-feat command description in the *Commands Manual*.

   NOTE: If the Eagle Support for Integrated Sentinel feature is not on, go to the "Enabling the Time Slot Counter Synchronization (TSCSYNC) and Eagle Support for Integrated Sentinel (E5IS) Features" procedure on page 6-9 and enable the Eagle Support for Integrated Sentinel feature.

2. Display the EISCOPY option by entering the **rtrv-eisopts** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 09:12:36 GMT EAGLE5 31.4.0
EISOPTION           STATUS
-------------------------

EISCOPY                OFF
```

   NOTE: If the EISCOPY option is off, skip step 3 and go to step 4.

   NOTE: If the EISCOPY option is on and the PVN IP address of the Eagle and the PVN subnet mask are not being changed, skip steps 3 through 7, and go to step 8.

   CAUTION: Changing the EISCOPY option to off will disable the Eagle Support for Integrated Sentinel feature.

3. Turn the EISCOPY option off by entering the **chg-eisopts** command with the **eiscopy=off** parameter.

   When the **chg-eisopts** has successfully completed, this message should appear.

```
rlghncxa03w 04-03-20 21:18:37 GMT EAGLE5 31.4.0
CHG-EISOPTS: MASP A - COMPLTD
```

4. Display the cards in the database using the **rtrv-card** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 09:12:36 GMT EAGLE5 31.4.0
CARD   TYPE      APPL      LSET NAME     PORT SLC LSET NAME     PORT SLC
1101   ASM       SCCP      ------------  --   --  ------------  --   --
1102   ASM       GLS       ------------  --   --  ------------  --   --
1113   GPSM      EOAM
1114   TDM-A
1115   GPSM      EOAM
1116   TDM-B
1117   MDAL
1201   LIMDS0    SS7ANSI   sp2           A    0   sp1           B    0
1203   LIMDS0    SS7ANSI   sp3           A    0   ------------  --   --
1204   LIMDS0    SS7ANSI   sp3           A    1   ------------  --   --
1206   LIMDS0    SS7ANSI   nsp3          A    1   nsp4          B    1
1207   LIMV35    SS7GX25   nsp1          A    0   ------------  --   --
1208   LIMV35    SS7GX25   nsp1          A    1   ------------  --   --
1216   ACMENET   STPLAN    ------------  --   --  ------------  --   --
1301   ASM       SCCP      ------------  --   --  ------------  --   --
1308   LIMDS0    SS7ANSI   sp6           A    1   sp7           B    0
1314   LIMDS0    SS7ANSI   sp7           A    1   sp5           B    1
1317   ACMENET   STPLAN    ------------  --   --  ------------  --   --
```

If the **rtrv-card** output shows no STCs, shown by the entries **STC** in the **TYPE** column and **EROUTE** in the **APPL** column, go to the "Adding a Sentinel Transport Card (STC)" procedure on page 6-18.

NOTE: If the PVN IP address of the Eagle and the PVN subnet mask are not being changed, skip steps 5, 6, and 7, and go to step 8.

5. Display the PVN IP address of the Eagle and the PVN subnet mask by entering the **rtrv-netopts** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 09:12:36 GMT EAGLE5 31.4.0
NET OPTIONS      STATUS
-----------------------
PVN          172.20.50.0
PVNMASK      255.255.252.0
```

---

6. Change the PVN IP address of the Eagle and the PVN subnet mask by entering the **chg-netopts** command with the **pvn** and **pvnmask** parameters. For this example, enter this command.

chg-netopts:pvn=198.30.75.133:pvnmask=255.255.252.0

When the **chg-netopts** has successfully completed, this message should appear.

```
rlghncxa03w 04-03-20 21:18:37 GMT EAGLE5 31.4.0
CHG-NETOPTS: MASP A - COMPLTD
```

---

7. Verify the changes using the **rtrv-netopts** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 09:12:36 GMT EAGLE5 31.4.0
NET OPTIONS      STATUS
-----------------------
PVN          198.30.75.133
PVNMASK      255.255.252.0
```

CAUTION: If the EISCOPY option is not being enabled, skip this step and go to step 9. The Eagle Support for the Integrated Sentinel feature will be disabled if this step is not performed.

8. Turn the EISCOPY option on by entering the **chg-eisopts** command with the **eiscopy=on** parameter.

   When the **chg-eisopts** has successfully completed, this message should appear.

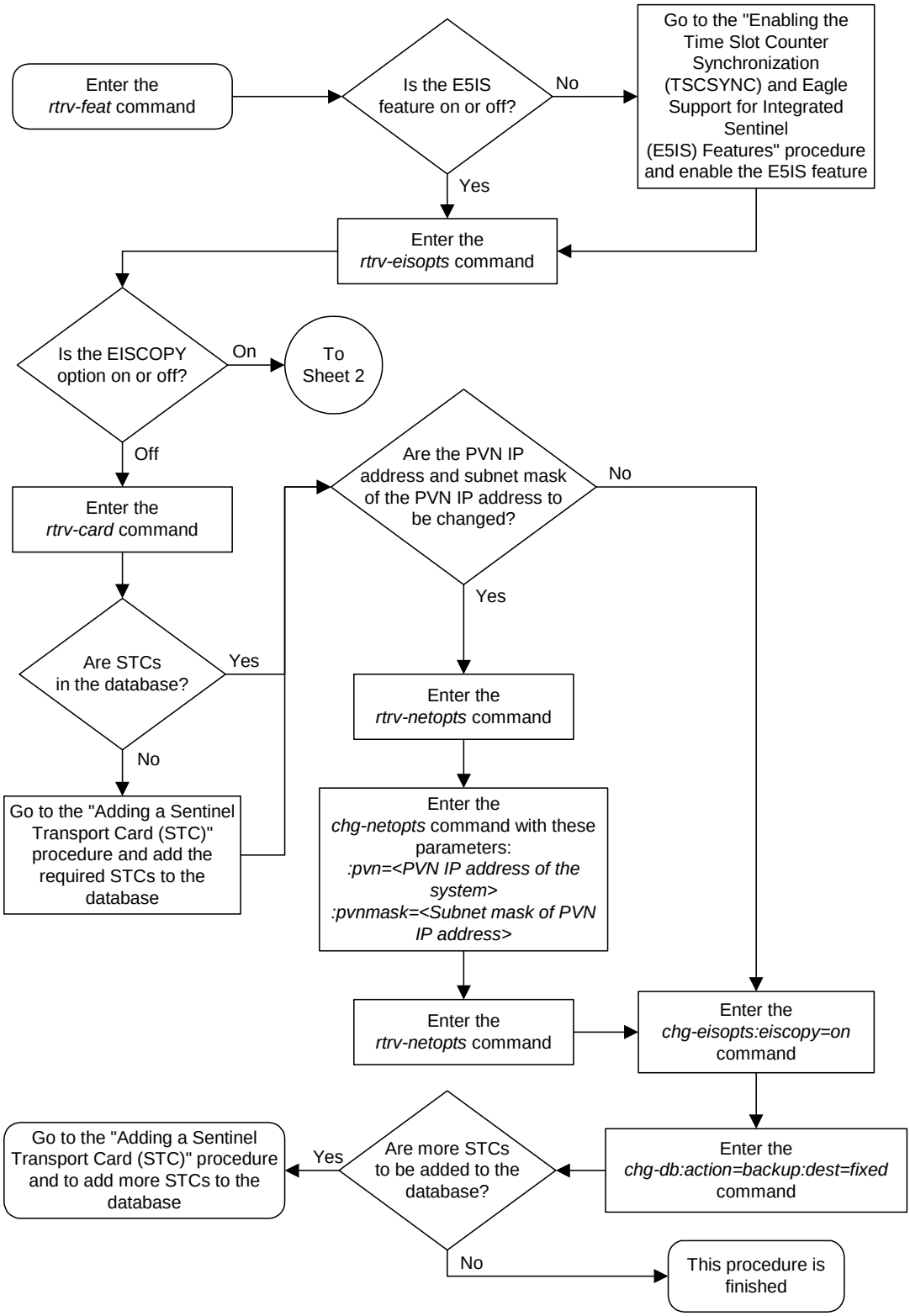
```
rlghncxa03w 04-03-20 21:18:37 GMT EAGLE5 31.4.0
CHG-EISOPTS: MASP A - COMPLTD
```

9. Back up the new changes using the **chg-db:action=backup:dest=fixed** command. These messages should appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

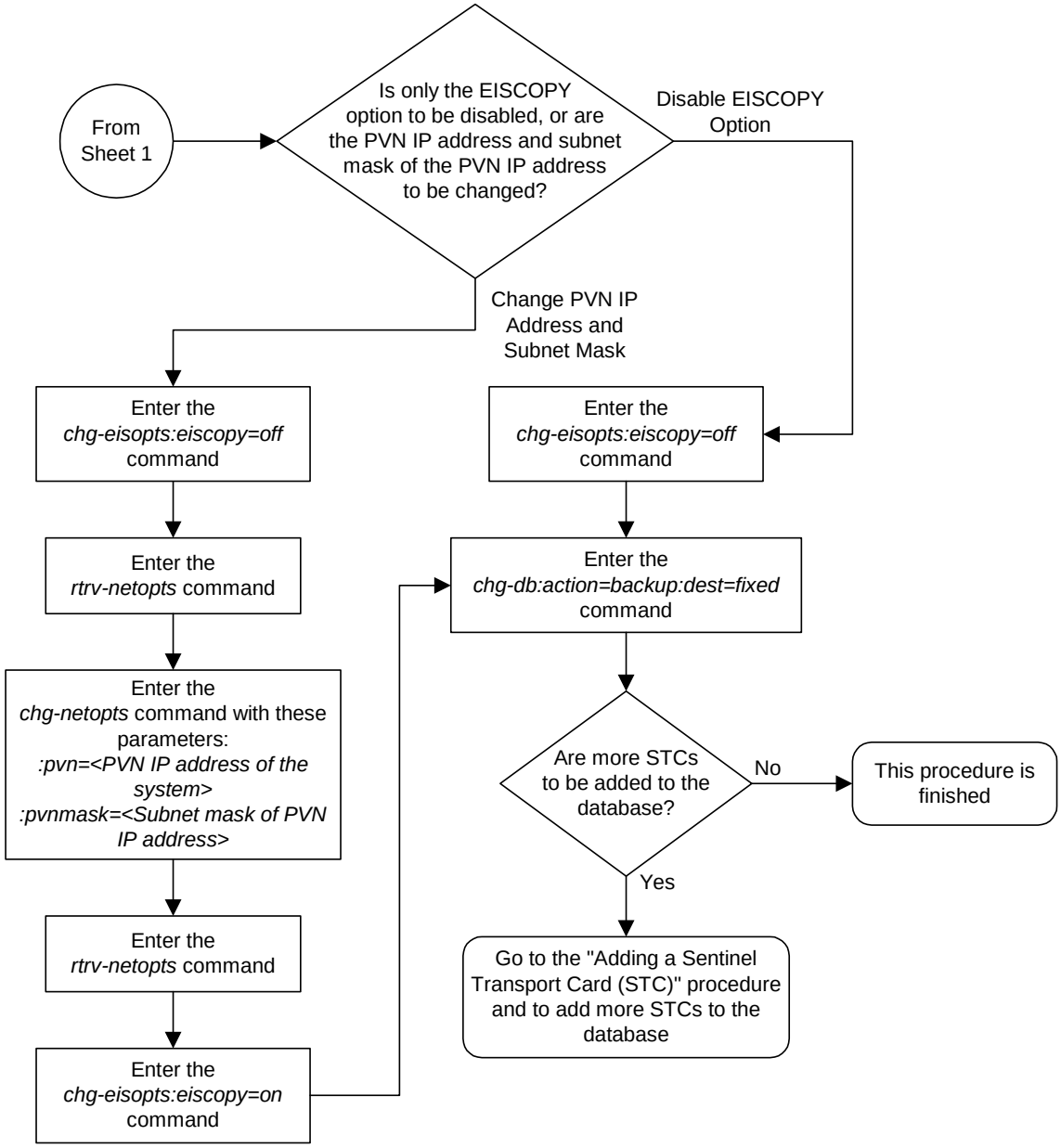
```
BACKUP (FIXED) : MASP A - Backup starts on active MASP.
BACKUP (FIXED) : MASP A - Backup on active MASP to fixed disk complete.
BACKUP (FIXED) : MASP A - Backup starts on standby MASP.
BACKUP (FIXED) : MASP A - Backup on standby MASP to fixed disk complete.
```

10. If more STCs are to be added to the database, go to the "Adding a Sentinel Transport Card (STC)" procedure on page 6-18 to provision the Eagle with the increased number of STCs.

Flowchart 6-2. Configuring the Eagle Support for Integrated Sentinel Options (Sheet 1 of 2)



Flowchart 6-2. Configuring the Eagle Support for Integrated Sentinel Options (Sheet 2 of 2)



Adding a Sentinel Transport Card (STC)

This procedure is used to add an STC (Sentinel Transport Card) to the database using the **ent-card** command. The STC provides an interface between the Eagle and the ESP (extended services platform) used to monitor network traffic on the Eagle's signaling links for the Eagle Support for Integrated Sentinel feature. The STC allows the ESP subsystem to monitor the Eagle's signaling links without additional intrusive cabling.

The **ent-card** command uses these parameters.

:loc – The location of the card being added to the database.

:type – The type of card being added to the database. For this procedure, the value of this parameter is **stc**.

:appl – The application software or GPL that is assigned to the card. For this procedure, the value of this parameter is **eroute**.

:force – Allow the LIM to be added to the database even if there are not enough SCCP cards to support the number of LIMs in the Eagle. This parameter does not apply to configuring STCs and should not be used.

The STC can be either a single-slot STC or a dual-slot STC.

The dual-slot STC can be inserted only in the odd numbered card slots of the extension shelf. Slot 09 of each shelf contains the HMUX card, thus the dual-slot STC cannot be inserted in slot 09. The dual-slot STC can be inserted in the control shelf, but only in slots 1101, 1103, 1105, 1107, and 1111. Slots 1113, 1115 and 1117 are reserved for MASPs A and B and the MDAL card. The dual-slot STC occupies two card slots, so the even numbered card slot must be empty and not provisioned in the database, as shown in Table 6-2. The dual-slot STC is connected to the network through the odd numbered card slot connector.

Table 6-2. Dual-Slot STC Locations

Location of the STC	Empty Card Location	Location of the STC	Empty Card Location
Slot 01	Slot 02	Slot 11	Slot 12
Slot 03	Slot 04	Slot 13	Slot 14
Slot 05	Slot 06	Slot 15	Slot 16
Slot 07	Slot 08	Slot 17	Slot 18

The single-slot STC can be inserted into any card slot, except an even numbered card slot adjacent to a dual-slot card, shown in Table 6-2, slots 09 and 10 in each shelf, and slots 1113 through 1118.

The shelf to which the card is to be added, must already be in the database. This can be verified with the **rtrv-shlf** command. If the shelf is not in the database, see the "Adding a Shelf" procedure in the *Database Administration Manual - System Management*.

In order to enable the EISCOPY option, with the **chg-eisopts** command, and to comply with the *n+1* STC configuration requirement, a minimum of two STCs must be provisioned in the database. If single-slot STCs are being provisioned in the database, a minimum of two single-slot STCs must be provisioned.

The number of SS7 signaling links that can be monitored by an STC varies depending the following criteria:

- Whether the STC is a dual-slot STC or single-slot STC
- The type of signaling link (defined by the application running on the card the signaling link is assigned to)
- The amount of traffic and the size of the MSUs being handled by the system

The number of SS7 signaling links that can be monitored by an STC is shown in Tables 6-3 and 6-4.

Table 6-3. Maximum Number of Low-Speed Signaling Links Monitored by an STC (either Dual-Slot or Single-Slot)

Card Type	Card Application	Traffic Rate and Average MSU Size	Maximum Number of Signaling Links
Dual-Slot STC	SS7ANSI, CCS7ITU (low-speed signaling links)	1 erlang of traffic with 20-byte average MSU size	32
		0.8 erlang of traffic with 20-byte average MSU size	40
		0.8 erlang of traffic with 40-byte average MSU size	48
Single-Slot STC	SS7ANSI, CCS7ITU (low-speed signaling links)	1 erlang of traffic with 20-byte average MSU size	40
		0.8 erlang of traffic with 20-byte average MSU size	50
		0.8 erlang of traffic with 40-byte average MSU size	60

Table 6-4. Maximum Number of High-Speed Signaling Links Monitored by an STC (either Dual-Slot or Single-Slot) at 1 erlang of Traffic

Card Application	MSU Size	Maximum Number of Signaling Links
ATMANSI	20 - 207	2
	208 - 272	1
ATMITU	20 - 207	2
	208 - 272	1

A dual-slot STC can support and monitor up to 32 low-speed SS7 signaling links at one (1) erlang of traffic. To provision dual-slot STCs in an *n+1* configuration to monitor a 500 low-speed SS7 signaling link system, 17 dual-slot STCs are required to monitor all 500 signaling links (500 / 32 = 16 dual-slot STCs, plus 1 for redundancy).

A single-slot STC can support and monitor up to 40 low-speed SS7 signaling links at one (1) erlang of traffic. To provision single-slot STCs in an *n+1* configuration to monitor a 500 low-speed SS7 signaling link system, 14 single-slot STCs are required to monitor all 500 signaling links (500 / 40 = single-slot 13 STCs, plus 1 for redundancy).

Each shelf can contain up to three STCs.

The examples in this procedure are used to add an STC in these card locations: 1303, 2101, and 2102.

Procedure

1. Display the cards in the database using the **rtrv-card** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 09:12:36 GMT EAGLE5 31.4.0
CARD   TYPE      APPL      LSET NAME     PORT SLC LSET NAME     PORT SLC
1101   ASM       SCCP      ------------  --   --  ------------  --   --
1102   ASM       GLS       ------------  --   --  ------------  --   --
1113   GPSM      EOAM
1114   TDM-A
1115   GPSM      EOAM
1116   TDM-B
1117   MDAL
1201   LIMDS0    SS7ANSI   sp2           A    0   sp1           B    0
1203   LIMDS0    SS7ANSI   sp3           A    0   ------------  --   --
1204   LIMDS0    SS7ANSI   sp3           A    1   ------------  --   --
1206   LIMDS0    SS7ANSI   nsp3          A    1   nsp4          B    1
1207   LIMV35    SS7GX25   nsp1          A    0   ------------  --   --
1208   LIMV35    SS7GX25   nsp1          A    1   ------------  --   --
1216   ACMENET   STPLAN    ------------  --   --  ------------  --   --
1301   ASM       SCCP      ------------  --   --  ------------  --   --
1308   LIMDS0    SS7ANSI   sp6           A    1   sp7           B    0
1314   LIMDS0    SS7ANSI   sp7           A    1   sp5           B    1
1317   ACMENET   STPLAN    ------------  --   --  ------------  --   --
```

   The cards should be distributed throughout the Eagle for proper power distribution. Refer to the *Installation Manual* for the shelf power distribution.

2. Verify that the Eagle Support for Integrated Sentinel feature is on, by entering the **rtrv-feat** command. If the Eagle Support for Integrated Sentinel feature is on, the **E5IS** field should be set to **on**.

   NOTE: The rtrv-feat command output contains other fields that are not used by this procedure. If you wish to see all the fields displayed by the rtrv-feat command, see the rtrv-feat command description in the *Commands Manual*.

   NOTE: If the Eagle Support for Integrated Sentinel feature is not on, go to the "Enabling the Time Slot Counter Synchronization (TSCSYNC) and Eagle Support for Integrated Sentinel (E5IS) Features" procedure on page 6-9 and enable the Eagle Support for Integrated Sentinel feature.

3. Add the STC using the **ent-card** command. For this example, enter these commands. A dual-slot STC can be inserted only in an odd numbered slot and the adjacent even card slot must be empty, as shown in Table 6-2 on page 6-18. A single-slot STC can be inserted into any card slot except an even numbered card slot adjacent to a dual-slot card, slots 09 and 10 in each shelf, and slots 1113 through 1118.

   ent-card:loc=1303:type=stc:appl=eroute

   ent-card:loc=2101:type=stc:appl=eroute

   ent-card:loc=2102:type=stc:appl=eroute

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

```
rlghncxa03w 04-03-12 09:12:36 GMT  EAGLE5 31.4.0
ENT-CARD: MASP A - COMPLTD
```

4. Verify the changes using the **rtrv-card** command with the card location specified in step 3. For this example, enter these commands.

   rtrv-card:loc=1303

   This is an example of the possible output.

```
rlghncxa03w 04-03-28 09:12:36 GMT EAGLE5 31.4.0
CARD   TYPE      APPL      LSET NAME     PORT SLC LSET NAME     PORT SLC
1303   STC       EROUTE    ------------  --   --  ------------  --   --
```

   rtrv-card:loc=2101

   This is an example of the possible output.

```
rlghncxa03w 04-03-28 09:12:36 GMT EAGLE5 31.4.0
CARD   TYPE      APPL      LSET NAME     PORT SLC LSET NAME     PORT SLC
2101   STC       EROUTE    ------------  --   --  ------------  --   --
```

   rtrv-card:loc=2101

   This is an example of the possible output.

```
rlghncxa03w 04-03-28 09:12:36 GMT EAGLE5 31.4.0
CARD   TYPE      APPL      LSET NAME     PORT SLC LSET NAME     PORT SLC
2102   STC       EROUTE    ------------  --   --  ------------  --   --
```

5. Verify that the card to be entered has been physically installed into the card location specified in step 3.

   CAUTION: If the version of the BP GPL on the STC does not match the BP GPL version in the database when the STC is inserted into the card slot, UAM 0002 is generated indicating that these GPL versions do not match. If UAM 0002 has been generated, perform the alarm clearing procedure for UAM 0002 in the *Maintenance Manual* before proceeding with this procedure.

---

6. Put the STC added in step 3 into service using the **alw-card** command specifying the card location specified in step 3. For this example, enter this command.

   alw-card:loc=1303

   alw-card:loc=2101

   alw-card:loc=2102

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

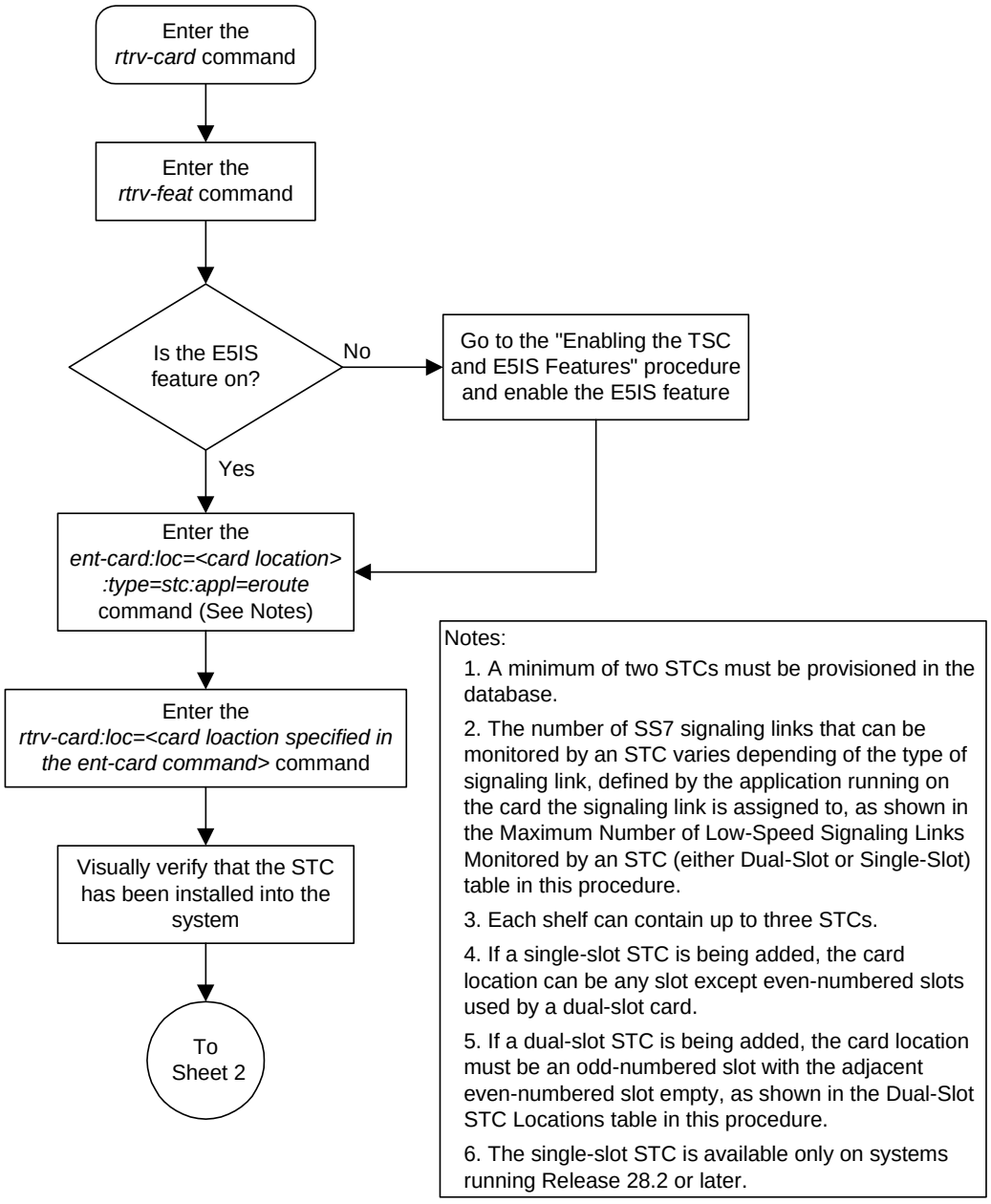
   ```
   rlghncxa03w 04-03-28 09:12:36 GMT EAGLE5 31.4.0
   Card has been allowed.
   ```

---

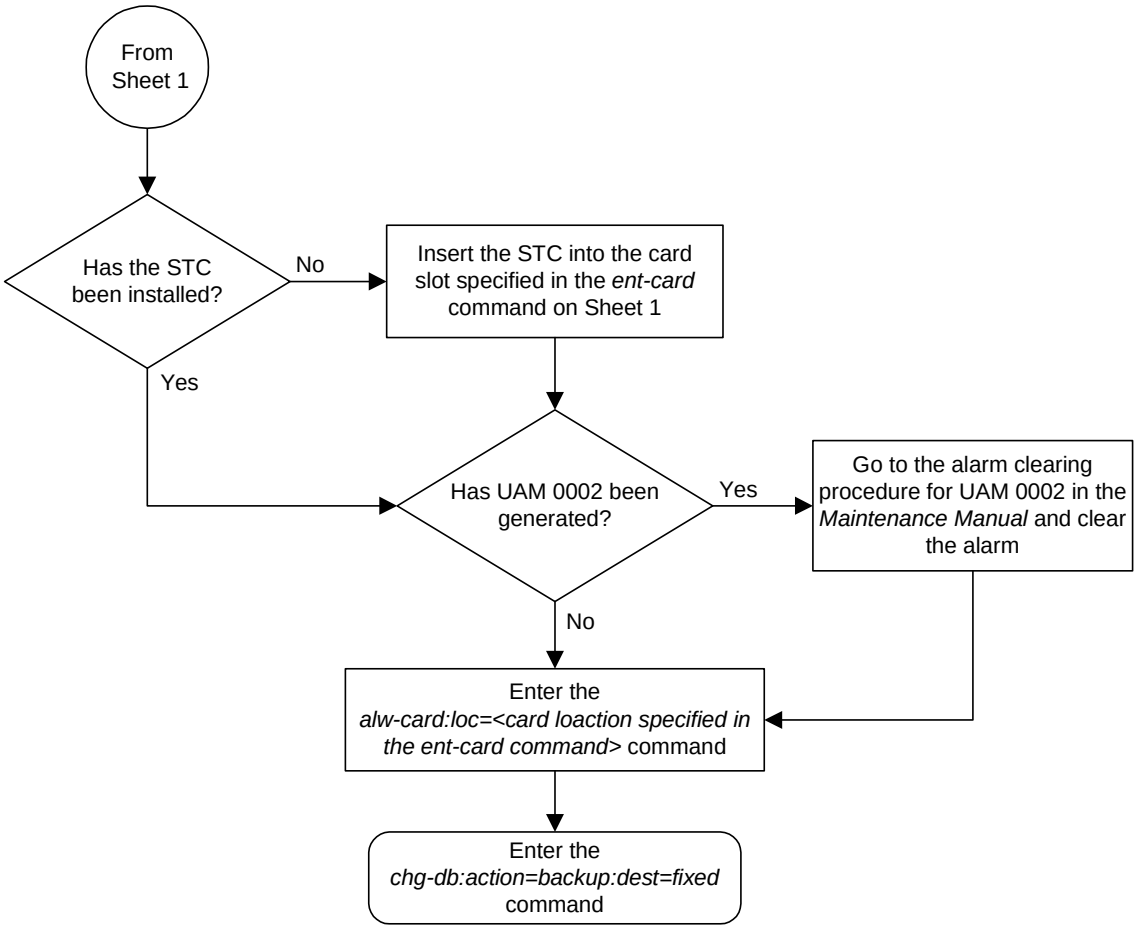
7. Back up the new changes using the **chg-db:action=backup:dest=fixed** command. These messages should appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

   ```
   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.
   ```

Flowchart 6-3. Adding a Sentinel Transport Card (STC) (Sheet 1 of 2)



Flowchart 6-3. Adding a Sentinel Transport Card (STC) (Sheet 2 of 2)



Removing a Sentinel Transport Card (STC)

This procedure is used to remove an STC from the database using the **dlt-card** command.

CAUTION: If the STC is the last STC in service, removing this card from the database will disable the Eagle Support for Integrated Sentinel feature.

CAUTION: If removing the STC reduces the quantity of STCs in the Eagle below number of STCs required by the ESP subsystem, the performance of the Eagle Support for Integrated Sentinel feature will be degraded.

The examples in this procedure are used to remove the STC in card location 1303.

Canceling the REPT-STAT-CARD Command

Because the **rept-stat-card** command used in this procedure can output information for a long period of time, the **rept-stat-card** command can be canceled and the output to the terminal stopped. There are three ways that the **rept-stat-card** command can be canceled.

- Press the **F9** function key on the keyboard at the terminal where the **rept-stat-card** command was entered.
- Enter the **canc-cmd** without the **trm** parameter at the terminal where the **rept-stat-card** command was entered.
- Enter the **canc-cmd:trm=<xx>**, where **<xx>** is the terminal where the **rept-stat-card** command was entered, from another terminal other that the terminal where the **rept-stat-card** command was entered. To enter the **canc-cmd:trm=<xx>** command, the terminal must allow Security Administration commands to be entered from it and the user must be allowed to enter Security Administration commands. The terminal's permissions can be verified with the **rtrv-secu-trm** command. The user's permissions can be verified with the **rtrv-user** or **rtrv-secu-user** commands.

For more information about the **canc-cmd** command, go to the *Commands Manual*.

Procedure

1. Display the cards in the database using the **rtrv-card** command. This is an example of the possible output.

```
rlghncxa03w 04-03-28 09:12:36 GMT EAGLE5 31.4.0
CARD   TYPE      APPL      LSET NAME     PORT SLC LSET NAME     PORT SLC
1101   ASM       SCCP      ------------  --   --  ------------  --   --
1102   ASM       GLS       ------------  --   --  ------------  --   --
1103   DCM       VXWSLAN   ------------  --   --  ------------  --   --
1113   GPSM      EOAM
1114   TDM-A
1115   GPSM      EOAM
1116   TDM-B
1117   MDAL
1201   LIMDS0    SS7ANSI   sp2           A    0   sp1           B    0
1202   LIMDS0    SS7ANSI   sp2           A    1   nsp3          B    0
1202   LIMV35    SS7GX25   lsngwy        A    0   ------------  --   --
1203   LIMDS0    SS7ANSI   sp3           A    0   ------------  --   --
1204   LIMDS0    SS7ANSI   sp3           A    1   ------------  --   --
1205   LIMOCU    CCS7ITU   itu1          A    0   ------------  --   --
1206   LIMDS0    SS7ANSI   nsp3          A    1   nsp4          B    0
1207   LIMV35    SS7GX25   nsp1          A    0   ------------  --   --
1208   LIMV35    SS7GX25   nsp1          A    1   ------------  --   --
1212   ASM       SCCP      ------------  --   --  ------------  --   --
1214   ASM       GLS       ------------  --   --  ------------  --   --
1215   DCM       VXWSLAN   ------------  --   --  ------------  --   --
1301   LIMATM    ATMANSI   lsnatm1       A    0   ------------  --   --
1303   STC       EROUTE    ------------  --   --  ------------  --   --
1305   DCM       VXWSLAN   ------------  --   --  ------------  --   --
1308   LIMDS0    SS7ANSI   sp6           A    0   sp7           B    0
1311   LIMDS0    SS7ANSI   sp2           A    2   sp1           B    1
                           sp7           A1   1   sp3           B1   2
                           ------------  --   --  ------------  --   --
                           ------------  --   --  ------------  --   --
1315   LIMDS0    SS7ANSI   sp7           A    2   sp5           B    0
1318   LIMATM    ATMANSI   lsnatm1       A    1   ------------  --   --
2101   STC       EROUTE    ------------  --   --  ------------  --   --
2102   STC       EROUTE    ------------  --   --  ------------  --   --
2105   STC       EROUTE    ------------  --   --  ------------  --   --
```

An STC is identified by the entries **STC** in the **TYPE** field and **EROUTE** in the **APPL** field.

2. Display the status of the STC being removed with the **rept-stat-card** command with the location of the STC. For this example, enter this command.

   rept-stat-card:loc=1303

   This is an example of the possible output.

```
rlghncxa03w 04-03-27 16:43:42 GMT  EAGLE5 31.4.0
CARD   VERSION      TYPE      APPL       PST            SST        AST
1303   113-003-000  STC       EROUTE     IS-NR          Active     -----
  ALARM STATUS       = No Alarms.
  BP GPL version  = 002-108-000
  IMT BUS A          = Conn
  IMT BUS B          = Conn
  PORT A Connection  = Conn
  PORT B Connection  = Conn
```

3. Inhibit the card using the **rmv-card** command, specifying the card location. For this example, enter these commands.

   rmv-card:loc=1303

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

```
rlghncxa03w 04-03-12 09:12:36 GMT  EAGLE5 31.4.0
Card has been inhibited.
```

4. Remove the card 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=1303

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

```
rlghncxa03w 04-03-12 09:12:36 GMT  EAGLE5 31.4.0
DLT-CARD: MASP A - COMPLTD
```

5. Verify the changes using the **rtrv-card** command specifying the card that was removed in step 4. For this example, enter these commands.

   rtrv-card:loc=1303

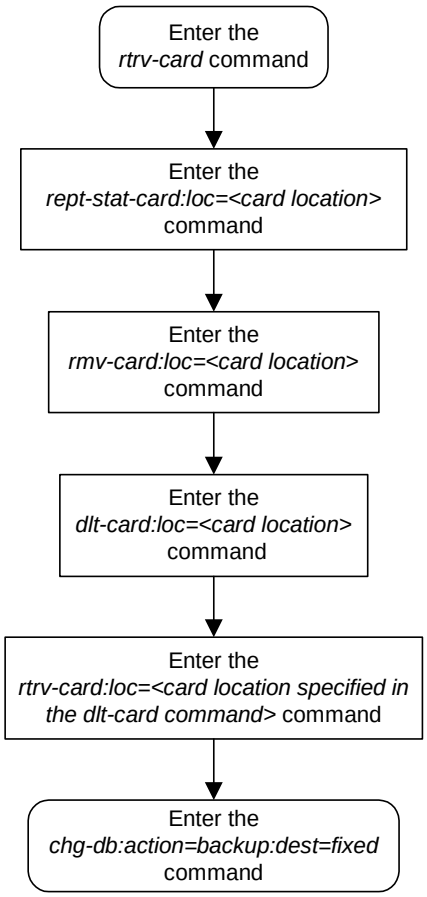
   When this command has successfully completed, this message should appear.

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

6. Back up the new changes using the **chg-db:action=backup:dest=fixed** command. 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.
```

Flowchart 6-4. Removing a Sentinel Transport Card (STC)



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