Tekelec EAGLE® 5 Integrated Signaling System

Feature Manual - MO SMS

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Patents

This product is covered by one or more of the following U.S. and foreign patents:
U.S. Patent Numbers:
5,732,213; 5,953,404; 6,115,746; 6,167,129; 6,324,183; 6,327,350; 6,456,845; 6,606,379; 6,639,981; 6,647,113; 6,662,017; 6,735,441; 6,745,041; 6,765,990; 6,795,546; 6,819,932; 6,836,477; 6,839,423; 6,885,872; 6,901,262; 6,914,973; 6,940,866; 6,944,184; 6,954,526;6,954,794; 6,959,076; 6,965,592; 6,967,956; 6,968,048; 6,970,542; 6,987,781; 6,987,849; 6,990,089; 6,990,347; 6,993,038; 7,002,988; 7,020,707; 7,031,340; 7,035,239; 7,035,387; 7,043,000; 7,043,001; 7,043,002; 7,046,667; 7,050,456; 7,050,562; 7,054,422; 7,068,773; 7,072,678; 7,075,331; 7,079,524; 7,088,728; 7,092,505; 7,108,468; 7,110,780; 7,113,581; 7,113,781; 7,117,411; 7,123,710; 7,127,057; 7,133,420; 7,136,477; 7,139,388; 7,145,875; 7,146,181; 7,155,206; 7,155,243; 7,155,505; 7,155,512; 7,181,194; 7,190,702; 7,190,772; 7,190,959; 7,197,036; 7,206,394; 7,215,748; 7,219,264; 7,222,192; 7,227,927; 7,231,024; 7,242,695; 7,254,391; 7,260,086; 7,260,207; 7,283,969; 7,286,516; 7,286,647; 7,286,839; 7,295,579; 7,299,050; 7,301,910; 7,304,957; 7,318,091; 7,319,857; 7,327,670
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EP1062792; EP1308054; EP1247378; EP1303994; EP1252788; EP1161819; EP1177660; EP1169829; EP1135905; EP1364520; EP1192758; EP1240772; EP1173969; CA2352246

Ordering Information

Your Tekelec Sales Representative can provide you with information about how to order additional discs.

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Chapter 1

Introduction

Topics:

This chapter contains a brief overview of the Mobile Originated Short Message Service (MO SMS) features. This chapter also includes the scope, audience, and organization of the manual; how to find related publications; and how to contact Tekelec for assistance.

Overview

This manual provides feature descriptions, along with commands, maintenance, measurements, and configuration details associated with the Mobile Originated Short Message Service (MO SMS) features of the EAGLE 5 Integrated Signaling System (EAGLE 5 ISS). The MO SMS features allow wireless network operators to route Short Message Service (SMS) messages within number portability environments for GSM, IS41, and IS41-to-GSM Migration.

Wireless operator SMSCs typically use the SMS destination subscriber address to route an SMS message. Information about whether the destination subscriber is within the operator's network or belongs to a foreign network, and about the network protocol to be used (GSM or IS41) is required to correctly route the SMS message. Before the implementation of number portability, operators could determine the destination subscriber's network by comparing the called party number against the predefined number ranges allocated to network operators. With number portability, the SMSC cannot make this determination based solely on the called party number.

The MO SMS features provide the routing information for the called subscriber to the SMSC, enabling the SMSC to correctly route the SMS message.

Refer to *Database Administration Manual - Global Title Translation* for information about MO SMS B-Party Routing (GSM and IS41) features and Prepaid SMS Intercept feature for GSM B-Party.

Scope and Audience

This manual is intended for anyone responsible for installing, maintaining, and using the MO SMS features of the EAGLE 5 ISS. Users of this manual must have a working knowledge of telecommunications and network installations.

Manual Organization

This document is organized into the following chapters:

- *Introduction* on page 1 contains general information about the Mobile Originated Short Message Service (MO SMS) documentation, the organization of this manual, and how to request technical assistance.
- *Feature Description* on page 9 provides a functional description of the MO SMS features which include: MO-Based GSM SMS NP, MO-Based IS41 SMS NP, MO SMS IS41-to-GSM Migration, and Portability Check for MO SMS. The chapter also includes MO SMS feature options, considerations, and call flows.
- *Commands* on page 45 describes the commands that support the MO SMS features.
- *Configuration of Features* on page 59 contains procedures to configure the MO SMS features.
- *Maintenance and Measurements* on page 75 describes maintenance and measurements for MO SMS features: status and alarms, hardware verification messages,system status reports and commands, code and application data loading, and alarms.

Documentation Admonishments

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

Table 1: Admonishments

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

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The Customer Care Center is available 24 hours a day, 7 days a week, 365 days a year, and is linked to TAC Engineers around the globe.

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Tekelec Technical Assistance Centers are located around the globe in the following locations:

Tekelec - Global

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TAC Regional Support Office Hours:

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

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

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

Related Publications

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

Documentation Availability, Packaging, and Updates

Tekelec provides documentation with each system and in accordance with contractual agreements. For General Availability (GA) releases, Tekelec publishes a complete EAGLE 5 ISS documentation set. For Limited Availability (LA) releases, Tekelec may publish a documentation subset tailored to specific feature content or hardware requirements. Documentation Bulletins announce a new or updated release.

The Tekelec EAGLE 5 ISS documentation set is released on an optical disc. This format allows for easy searches through all parts of the documentation set.

The electronic file of each manual is also available from the Tekelec Customer Support site (*support.tekelec.com*). This site allows for 24-hour access to the most up-to-date documentation, including the latest versions of Feature Notices.

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

- Hardware or Installation manuals are printed without the linked attachments found in the electronic version of the manuals.
- The Release Notice is available only on the Customer Support site.

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

Documentation is updated when significant changes are made that affect system operation. Updates resulting from Severity 1 and 2 PRs are made to existing manuals. Other changes are included in the documentation for the next scheduled release. Updates are made by re-issuing an electronic file to the customer support site. Customers with printed documentation should contact their Sales Representative for an addendum. Occasionally, changes are communicated first with a Documentation Bulletin to provide customers with an advanced notice of the issue until officially released in the documentation. Documentation Bulletins are posted on the Customer Support site and can be viewed per product and release.

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2. Click the **Product Support** tab.
3. Use the Search field to locate a document by its part number, release number, document name, or document type. The Search field accepts both full and partial entries.
4. Click a subject folder to browse through a list of related files.
5. To download a file to your location, right-click the file name and select **Save Target As**.

Chapter 2

Feature Description

Topics:

This chapter describes the Mobile Originated Short Message Service (MO SMS) features which include:

- Mobile Originated Based GSM SMS Number Portability (MO-Based GSM SMS NP)
- Mobile Originated Based IS41 SMS Number Portability (MO-Based IS41 SMS NP)
- Mobile Originated SMS IS41-to-GSM Migration (MO SMS IS-41-to-GSM Migration)
- Portability Check for Mobile Originated SMS (MNP SMS)
- Prepaid Short Message Service Intercept (PPSMS)
- MO SMS Additional Subscriber Data (MO SMS ASD)
- MO SMS Generic Routing Number (MO SMS GRN)

Introduction

The Mobile Originated Short Message Service (MO SMS) features address the number portability requirements of wireless network operators for delivery of Mobile Originated SMS messages. The EAGLE 5 ISS MO SMS features apply number portability database lookup to SMS messages for IS41 and GSM networks, migrates subscribers from IS41 to GSM networks, validates subscriber use of the correct Short Message Service Center, and delivers messages to Prepaid Servers if either the Calling Party Number or Called Party Number is associated with a prepaid subscriber.

These features include:

- Mobile Originated Based GSM SMS Number Portability (MO-Based GSM SMS NP)
- Mobile Originated Based IS41 SMS Number Portability (MO-Based IS41 SMS NP)
- Mobile Originated SMS IS41-to-GSM Migration (MO SMS IS41-to-GSM Migration)
- Portability Check for Mobile Originated SMS (MNP SMS)
- Prepaid Short Message Service Intercept (PPSMS)
- Mobile Originated SMS Additional Subscriber Data (MO SMS ASD)
- Mobile Originated SMS Generic Routing Number (MO SMS GRN)

The MO SMS features are based on the EAGLE 5 ISS platform with EPAP. Numbering Plan Processor (NPP) is used by the MO SMS features for number conditioning and service logic execution.

Mobile Originated Based GSM SMS Number Portability

The Mobile Originated Based GSM SMS Number Portability (MO-Based GSM SMS NP) feature provides network information to the Short Message Service Center (SMSC) for subscribers in the GSM network. This ported information allows the SMSC to distribute the messages to the correct operating network for the Called Party Number.

The MO-Based GSM SMS NP feature:

- Intercepts SMS messages after they have undergone Prepaid Short Message Service Intercept (PPSMS) and Portability Check for Mobile Originated SMS (MNP SMS) processing and before they reach the SMSC.

  Note: The MO-Based GSM SMS NP feature does not require the PPSMS or MNP SMS features to be enabled.

- Decodes the TCAP/MAP message destination address and performs lookup in the number portability (NP) database
- Modifies the destination address in the TCAP message with dialed number (DN) porting information,
- Relays the message to the SMSC

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

The MO-Based GSM SMS NP feature applies to GSM MAP ForwardSM MSUs for either ITU or ANSI MTP messages.

Mobile Originated Based IS41 SMS Number Portability

The Mobile Originated Based IS41 SMS Number Portability (MO-Based IS41 SMS NP) feature allows wireless operators to route Short Message Service (SMS) messages originating from a mobile subscriber within a number portability environment. The MO-Based IS41 SMS NP feature:

- Intercepts SMS messages before they reach the Home Short Message Service Center (SMSC)
- Decodes the TCAP/MAP message destination address and performs lookup in the Real-time Database (RTDB) to identify whether the destination number is ported.
- Modifies the destination address in the TCAP message with DN (dialed number) porting information
- Relays the SMS message to its original destination

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

The MO-Based IS-41 SMS NP feature applies to ANSI IS41 SMDPP MSUs for either ITU or ANSI MTP messages.

MO SMS IS41-to-GSM Migration

The MO SMS IS41-to-GSM Migration feature allows IS41 to GSM migration. This feature migrates subscribers based on Called Party Number from IS41 networks to GSM networks, and also allows the IS412GSM Migration Prefix to be used instead of the Routing Number (RN) obtained from the Real-time Database (RTDB). The MO SMS IS41-to-GSM Migration feature:

The MO SMS IS41-to-GSM Migration feature applies to ANSI TCAP/MAP and ANSI or ITU transport (MTP and SCCP).

- Intercepts SMS messages before they reach the Home Short Message Service Center (SMSC)
- Decodes the TCAP/MAP message destination address and performs lookup in the Real-time Database (RTDB)
- Modifies the destination address in the TCAP message with DN (dialed number) porting information or the IS412GSM Migration Prefix.
- Relays the SMS message to its original destination

Portability Check for Mobile Originated SMS

When the Portability Check for Mobile Originated SMS (MNP SMS) feature is enabled and turned on, the EAGLE 5 ISS filters incoming messages based on the MAP Operation Code. If the message is an MO Forward Short Message (MO FSM), the MSISDN number of the originating subscriber is used to search the G-Port Mobile Number Portability database. If a match is found indicating the subscriber has been ported-out, the EAGLE 5 ISS uses the destination SMSC address obtained from the SCCP CdPA to search a list of home network SMSC addresses. If a match is found, indicating the ported-out subscriber is fraudulently attempting to send SMS using the SMSC of the old network, the message is discarded and an error message is generated and returned to the originating MSC.

Prepaid Short Message Service Intercept

The Prepaid Short Message Service Intercept (PPSMS) feature applies to only mobile originated SMS, which are messages sent from a mobile handset through an Mobile Switching Center (MSC) to the Short Message Service Center (SMSC). PPSMS screens incoming messages from the MSC based on the MAP operation code. Message Discrimination determines whether the MSISDN of

the sender is retrieved and a database lookup performed. Database lookup determines if the MSISDN belongs to a contract subscriber or a prepaid subscriber. If the MSISDN belongs to a contract subscriber, the message is routed to the SMSC. If the MSISDN belongs to a prepaid subscriber, the message is diverted to a Prepaid SMS Server for a credit check before allowing the message to be delivered to the SMSC.

MO SMS Additional Subscriber Data

The MO SMS Additional Subscriber Data (MO SMS ASD) feature allows for the insertion of Additional Subscriber Data (ASD) values into the outgoing message. The MO SMS ASD feature supports the ASDLKUP or CGPNASDRQD NPP Service Actions for GSM or IS41 MO SMS NPP Services. The ASDLKUP and CGPNASDRQD NPP Service Actions are mutually exclusive within the same NPP Rule.

The ASDLKUP Service Action populates the ASD digits retrieved from an RTDB lookup of the individual or range DN table. The ASD digits are used with the Formatting Action. ASDLKUP supports both Calling Party and Called Party NPP Services for GSM and IS41: MOSMSGCDPN, MOSMSGCGPN, MOSMSICDPN, MOSMSICGPN. If no ASD digits are found, no action is taken.

The CGPNASDRQD Service Action retrieves the ASD digits from the RTDB lookup of the Calling Party Number. The ASD digits are used with the Formatting Action for the Called Party Number. CGPNASDRQD supports Called Party NPP Services for GSM or IS41: MOSMSGCDPN, MOSMSICDPN.

MO SMS Generic Routing Number

The MO SMS Generic Routing Number (MO SMS GRN) feature allows for the insertion of a Generic Routing Number (GRN) digit string into the outgoing message. The MO SMS GRN feature supports the GRNLKUP or CGPNGRNRQD NPP Service Actions in GSM or IS41 MO SMS NPP Services. The GRNLKUP and CGPNGRNRQD NPP Service Actions are mutually exclusive within the same NPP Rule.

The GRNLKUP Service Action populates the GRN digits retrieved from an RTDB lookup of the individual or range DN table. The GRN digits are used with the Formatting Action. GRNLKUP supports both Calling Party and Called Party NPP Services for GSM and IS41: MOSMSGCDPN, MOSMSGCGPN, MOSMSICDPN, MOSMSICGPN. If no GRN digits are found, no action is taken.

The CGPNGRNRQD Service Action retrieves the GRN digits from the RTDB lookup of the Calling Party Number. The GRN digits are used with the Formatting Action for the Called Party Number. CGPNGRNRQD supports Called Party NPP Services for GSM or IS41: MOSMSGCDPN, MOSMSICDPN.

TCAP Segmented SMS Support Phase 1

The TCAP Segmented SMS Support Phase 1 enhancement allows the Portability Check for Mobile Originated SMS and Mobile-Originated Based GSM SMS NP features to correctly process TCAP Segmented SMS messages. If a segmented message is subjected to the service associated with either of these features, then the EAGLE 5 ISS routes the initial TC_Begin message using standard GTT processing. The subsequent TC_Continue message is subjected to the specified service. The GTT feature and either the Portability Check for Mobile Originated SMS or the Mobile-Originated Based GSM SMS NP feature must be turned on before the TCAP Segmented SMS Support Phase 1 enhancement can be provisioned. The `MOSMSTCAPSEG` parameter of the `chg-gsmsmsopts` command is used to provision TCAP Segmented SMS Support Phase 1.

HomeSMSC Match with Digits

The HomeSMSC Match with Digits option enhances the ability of the EAGLE 5 ISS to compare the Home Short Message Service Center (HomeSMSC) digits in the SCCP CdPA of incoming Mobile Originated Forward Short Messages (MO_FSM) or the SMDPP message to HomeSMSCs that are stored in the database. If the beginning digits of the incoming HomeSMSC matches a stored HomeSMSC, then the HomeSMSCs are considered a match, even if additional digits are attached to the end of the incoming HomeSMSC. If a match is found, then the message is rejected.

This option can be used with these features:

- MO-Based GSM SMS NP
- MO-Based IS41 SMS NP
- MO SMS IS41-to-GSM Migration
- Portability Check for Mobile Originated SMS

The HomeSMSC Match with Digits option is provisioned with the `MOSMSDIGMAT` parameter of commands `chg-is41smsopts` and `chg-gsmsmsopts`. The possible values of the parameter are:

- `GSMSMSOPTS:MOSMSDIGMAT= exact, bestfit`
- `IS41SMSOPTS:MOSMSDIGMAT= exact, bestfit, bypass`

If a message is subjected to multiple SMS-related features that require matching with the provisioned HomeSMSCs, a single HomeSMSC address lookup in the HomeSMSC table is performed; the result is used for subsequent processing by all features which need the HomeSMSC address result.

HomeSMSC Check Bypass

The HomeSMSC Check Bypass option allows the HomeSMSC address check to not be performed. In some IS41 networks, the SCCP CdPA digits do not contain the SMSC address used by the HoneSMSC check. This bypass option applies to only the MO-Based IS41 SMS NP and MO SMS IS41-to-GSM Migration features; the bypass option is not needed in GSM networks.

System Options for MO SMS Features in GSM Networks

The system level options stored in the GSMSMSOPTS table are used to perform number conditioning, response generation, and other feature-specific options. *Table 2: System Options - MO SMS Features in GSM Networks* on page 14 shows the MO SMS options in the GSMSMSOPTS table, possible values, and the actions taken for each value.

The MO-Based GMS SMS NP, MO SMS ASD, MO SMS GRN, Portability Check for MO SMS, or Prepaid SMS Intercept feature must be enabled before these options can be specified in the GSMSMSOPTS table. Refer to `chg-gsm41smsopts` in *EAGLE 5 ISS GSM SMS Options Commands* on page 47 and in *Commands Manual* for associations and limitations.

Table 2: System Options - MO SMS Features in GSM Networks

GSMSMSOPTS Option	Value	Action in the EAGLE 5 ISS
MOSMSACLEN	0-8 (default =0)	The value is the number of digits from the MO SMS CgPA used as the Area Code in the MO SMS CdPA.
MOSMSDIGMAT	BESTFIT	When the HomeSMSC Match with Digits option is set to *BESTFIT*, an exact match is attempted on the incoming SCCP CdPA digits in the Home SMSC table. If an exact match is not found, a best fit match of the leading digits of the incoming SCCP CdPA digits is attempted to the Home SMSC table entries.
	EXACT (default)	When the HomeSMSC Match with Digits option is set to *EXACT*, an exact match must be made of the incoming SCCP CdPA digits in the Home SMSC table.
MOSMSFWD	NO (default)	No MO-SMS forward will be performed.
	YES	If the MO-SMS TCAP Called Party Number is modified, then the MO-SMS message will be redirected by modifying the SCCP CdPA, to the GTA value identified in the MOSMSGTA field. This option cannot be set to YES unless the MOSMSGTA option has a valid value specified.
MOSMSGTA	5-21 digits, NONE (default)	This option is used to replace the SCCP CdPA in the MO-SMS message. If the MO-SMS TCAP Called Party Number is modified, then the MO-SMS message will be redirected by modifying the SCCP. This option cannot be specified unless a GTA with the same value has been provisioned in the GTT translation table. For more information about the GTT translation table, refer to the *Database Administration Manual - GTT*.
MOSMSNAI	INTL (default)	When SNAI=INTL, no number conditioning is required before lookup in the Number Portability database.
	NAI	The NAI from the MO_SMS message is used for conditioning before lookup in database. • If the NAI is INTL, then Number Portability lookup is performed immediately. • If the NAI is any other value, then the number is considered to be in national format. The CC is added before Number Portability lookup is performed.

GSMSMSOPTS Option	Value	Action in the EAGLE 5 ISS
	NAT	The CdPN is treated as National number for lookup in the Number Portability database. When SNAI=NAT, the CC will be added to the DN before lookup in the Number Portability database.
	UNKNOWN	When this value is set, the NAI will be treated as Unknown for the purposes of Number Conditioning.
MOSMSSA	NO (default)	No subaddress is searched for in the B party number from the TCAP part.
	YES	The subaddress is searched in the B party number. If the subaddress (identified by "#" present in the B party number) is found, the subaddress is removed before Number Portability database lookup is performed.
MOSMSTCAPSEG	OFF (default)	Mobile Originated Segmented TCAP messages are not supported.
	ON	Mobile Originated Segmented TCAP messages are supported.
MOSMSTYPE	ALL	When the lookup in the Number Portability database has entitytype=SP or RN or no_entity, then the lookup is considered successful.
	RN	When the lookup in the Number Portability database has entitytype=RN, then the lookup is considered successful.
	SP	When the lookup in the Number Portability database has entitytype=SP, then the lookup is considered successful.
	SPRN (default)	When the lookup in the Number Portability database has entitytype=SP or RN, then the lookup is considered successful.

System Options for for MO SMS Features in IS41 Networks

The system level options stored in the IS41SMSOPTS table are used to perform number conditioning, response generation, and other feature-specific options. *Table 3: System Options - MO SMS Features in IS41 Networks* on page 16 shows the MO SMS options in the IS41SMSOPTS table, possible values, and the actions taken for each value.

The MO-Based IS41 SMS NP, MO SMS IS41-to-GSM Migration, MO SMS ASD, or MO SMS GRN feature must be enabled before these options can be specified in the IS41SMSOPTS table. Refer to `chg-is41smsopts` in *EAGLE 5 ISS IS41 SMS Options Commands* on page 49 and in *Commands Manual* for associations and limitations.

Table 3: System Options - MO SMS Features in IS41 Networks

IS41SMSOPTS Option	Value	Action in the EAGLE 5 ISS
MODAPARAM	DA (default)	The SMS_Destination_Address from the IS41 SMDPP message is used for conditioning, lookup, and modification.
	ODA	The SMS_Original_Destination_Address from the IS41 SMDPP message is used for conditioning, lookup, and modification.
MOIGMPFX	IS412GSM	IS412GSM digits are used as a prefix to modify the destination address in the outgoing SMDPP.
	NE (default)	Digits from the RTDB network entity (NE) associated with the B number are used as a prefix to modify the destination address in the outgoing SMDPP.
MOSMSACLEN	0-8 (default = 0)	The value is the number of digits from the MO SMS CgPA used as the Area Code in the MO SMS CdPA.
MOSMSDIGMAT	BESTFIT	When the HomeSMSC Match with Digits option is set to *BESTFIT*, an exact match is attempted on the incoming SCCP CdPA digits in the Home SMSC table. If an exact match is not found, a best fit match of the leading digits of the incoming SCCP CdPA digits is attempted to the Home SMSC table entries.
	BYPASS	When the HomeSMSC Match with Digits option is set to *BYPASS*, the HomeSMSC Match with Digits look up is not performed.
	EXACT (default)	When the HomeSMSC Match with Digits option is set to *EXACT*, an exact match must be made of the incoming SCCP CdPA digits in the Home SMSC table.
MOSMSNAI	INTL (default)	When SNAI=INTL, no number conditioning is required before lookup in the Number Portability database.
	NAI	The NAI from the SMDPP (short message delivery point to point) message is used for conditioning before lookup in the Number Portability database.

IS41SMSOPTS Option	Value	Action in the EAGLE 5 ISS
		• If the NAI is INTL, then Number Portability database lookup is performed immediately. • If the NAI is any other value, then the number is considered to be in national format. DEFCC is added before Number Portability database lookup is performed.
	NAT	The CdPN is treated as National number for lookup in the Number Portability database. DEFCC will be added to the DN before lookup in the NP database.
	UNKNOWN	When this value is set, the NAI is treated as Unknown for the purposes of Number Conditioning.
MOSMSTYPE	ALL	When the lookup in the Number Portability database has entitytype=SP or RN or no_entity, then the lookup is considered successful.
	RN	When the lookup in the Number Portability database has entitytype=RN, then the lookup is considered successful.
	SP	When the lookup in the Number Portability database has entitytype=SP, then the lookup is considered successful.
	SPRN (default)	When the lookup in the Number Portability database has entitytype=SP or RN, then the lookup is considered successful.

MO SMS Considerations

1. GTT must be turned on before enabling the MO-Based GSM SMS NP, MO-Based IS41 SMS NP, and MO SMS IS41-to-GSM Migration features.
2. The MO-Based GSM SMS NP and MO-Based IS41 SMS NP features can be turned on, but not turned off.
3. The MO SMS IS41-to-GSM Migration feature can be turned on or off; however, after the feature is enabled, it cannot be disabled.
4. No Temporary Feature Access Key is provided for the MO SMS features with the exception of the MNP SMS feature.
5. The enabling or turning on of the MO SMS features is not dependent upon the A-Port or G-Port feature being enabled or turned on.
6. All MO SMS features can co-exist with other EPAP-related EAGLE 5 ISS features, including G-Port, A-Port, INP, G-Flex, and EIR.

7. All MO SMS features are mutually exclusive with all features that require ELAP, such as LNP and TLNP.
8. The MO SMS features require Service Module cards running the VSCCP application.
9. The MO SMS features cannot be enabled if TSM cards running the SCCP application are provisioned. If any of the MO SMS features is enabled, TSM cards cannot be provisioned.
10. The MO SMS features require that the Service Module cards have a minimum of 4 GB of memory. If the MO SMS features are enabled and a Service Module card with less than 4 GB of memory is inserted, the Service Module card will be auto-inhibited. If a Service Module card with less than 4 GB of memory is provisioned and installed, then the MO SMS features will not be allowed to be enabled. Service Module cards include DSM-4G cards and E5-SM4G cards.

MO-Based GSM SMS NP

The MO-Based GSM SMS NP feature provides network information to the Short Message Service Center (SMSC) for subscribers using the GSM network. This information allows the SMSC to select a protocol to deliver SMS messages to the called party.

The MO-Based GSM SMS NP feature:

- Intercepts SMS messages after they have undergone Prepaid Short Message Service Intercept (PPSMS) and Portability Check for Mobile Originated SMS (MNP SMS) processing and before they reach the SMSC

  Note: The MO-Based GSM SMS NP feature does not require the PPSMS or MNP SMS features to be enabled.

- Decodes the TCAP/MAP message destination address and performs lookup in the number portability (NP) database
- Modifies the destination address in the TCAP message with directory number (DN) porting information
- Relays the message to the SMSC

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

The MO-Based GSM SMS NP feature applies to ForwardSM SMS MSUs with ITU TCAP/MAP for either ITU or ANSI MTP messages.

Options

The MO-Based GSM SMS NP feature provides the following configurable options for controlling the processing of GSM SMS messages:

- Modifying SMS destination address information for processing
- Outbound digit format
- When an NP DB lookup is considered to be successful
- Handling of sub address field in destination address

Feature Control Requirements

The MO-Based GSM SMS NP feature has the following feature control requirements:

- The part number is 893-0194-01.
- The feature cannot be enabled if LNP is enabled.
- A temporary FAK cannot be used to enable the feature.
- The feature cannot be turned off after it has been turned on.

MO-Based GSM SMS NP Protocol Handling

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

- The MO-Based GSM SMS NP feature traps the MO_SMS message and performs NPDB lookup based on the B number from the TCAP SM-RP-UI parameter. If the entity type is the same as the value of the MOSMSTYPE option in the GSMSMSOPTS table, then this feature modifies the outgoing MO_SMS based on the value of the MOSMSDNFMT option.
- When the outgoing MO-SMS is modified, the NAI is based on the value of the MOSMSDNNAI parameter in the GSMSMSOPTS table.
- The MO-Based GSM SMS NP feature performs SCCP CdPA GTA lookup against the SMSC list maintained by the STP. If the lookup is not successful, the MSU falls through to GTT handling.
- When both the MO-Based GMS SMS NP feature and the Portability Check for MO-SMS feature are enabled:
  - Both features must have the same service-selector service.
  - The MO-Based GSM SMS NP feature processes an MSU only when the MSU has passed the processing by the Portability Check for MO_SMS feature and no NACK has been sent.
- The MO-Based GSM SMS NP feature is required only for MO_SMS messages with SMS-Submit and SMS-Command.
- The number conditioning is based on the Conditioning Actions provisioned in the NPP Rule Set.
- For messages handled within this feature, the SCCP CdPA is always used to route the message.
- If the MOSMSTYPE=ALL, MOSMSDNFMT=RN, and the NPDB lookup has no entity assigned to the DN, then the MO_SMS message is not modified.
- The MAP Called Party Number is modified by the formatted digits computed by the Formatting Actions in the NPP Rule Set.
- If the MOSMSSA=YES, then the subaddress is searched and removed from MAP called Party number for NPDB lookup. The subaddress is not removed from the final MO_SMS message.
- If the number of called party digits in the modified MO_SMS message is greater than 20, then the digits are not modified and the original message is routed to the SMSC based on SCCP CdPA.
- If the MOSMSFWD=Yes and the MO-SMS TCAP called-party number is modified after successful RTDB lookup, then the MO-SMS message is redirected to the GTA identified in the MOSMSGTA field by modifying the SCCP CdPA.

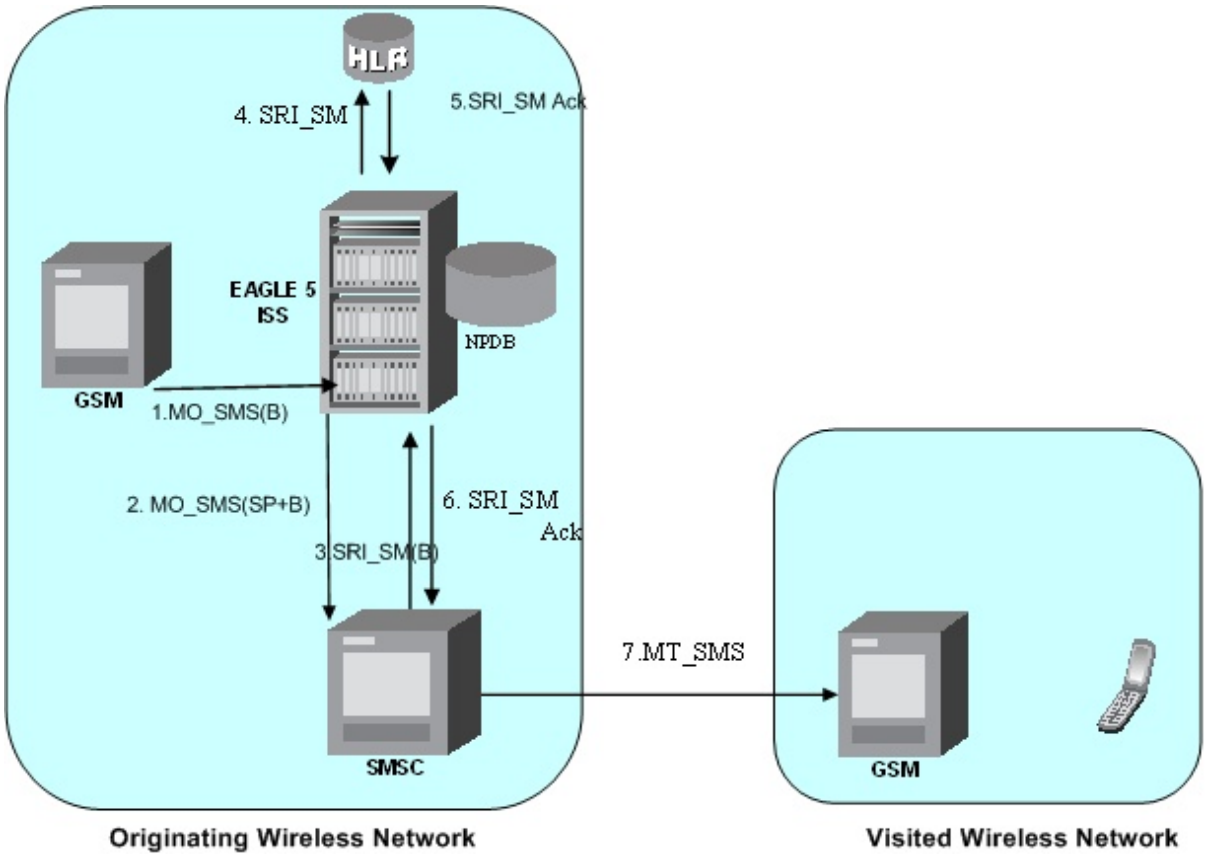
MO-Based GSM SMS NP Call Flows

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

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

Note: The MO-Based GSM SMS NP feature must be enabled and turned on before messages are processed as shown in this section.

Figure 1: MO-Based GSM SMS NP Call Flow for In-Network Subscriber



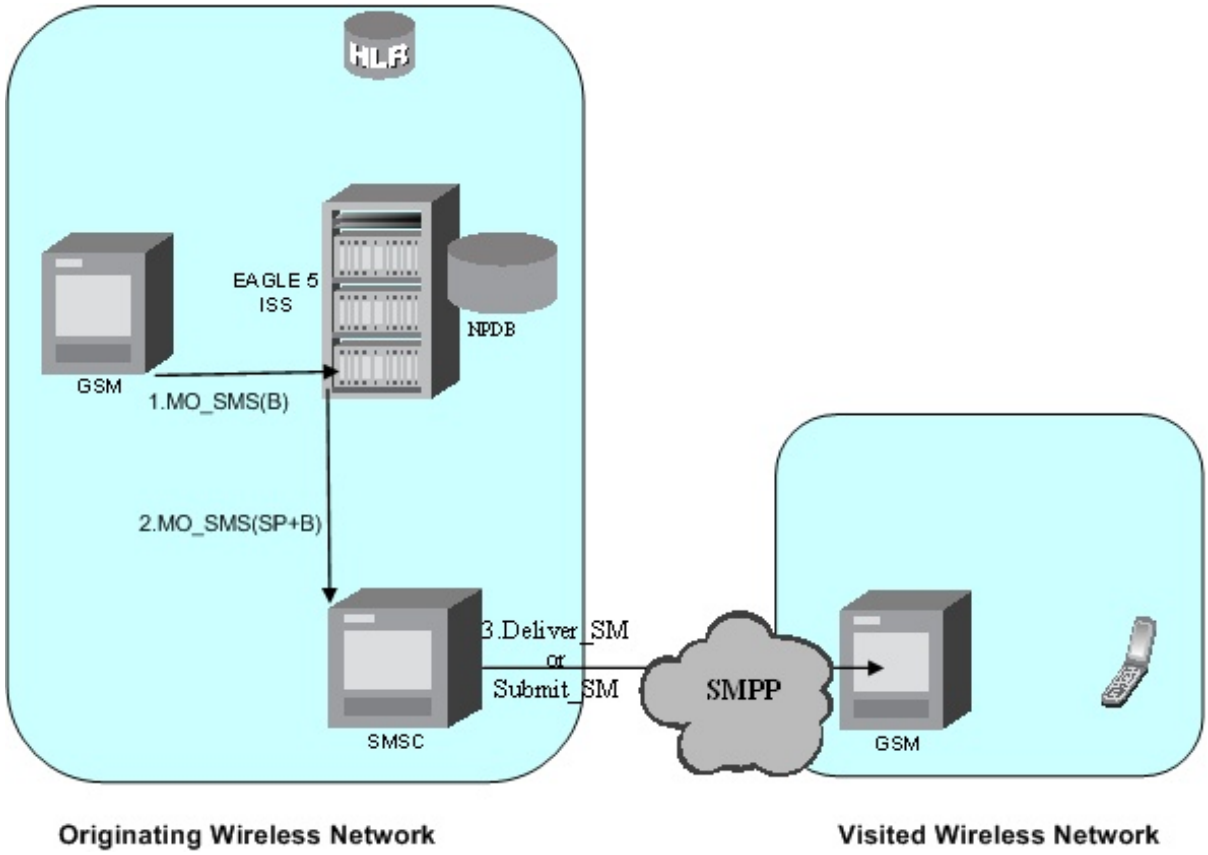
Call considerations:

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

Message Flow:

1. MO_SMS(B) - EAGLE 5 ISS intercepts SMS messages after they have undergone Prepaid Short Message Service Intercept (PPSMS) and Portability Check for Mobile Originated SMS (MNP SMS) processing and decodes the TCAP/MAP message destination address.
2. MO_SMS(SP+B) - If successful, modify B-party Number and relay to SMSC.
3. SRI_SM(B) - Send message to HLR to find B-party.
4. SRI_SM - Send message to HLR to locate B-party.
5. SRI_SM Ack - HLR sends message to EAGLE 5 ISS.
6. SRI_SM Ack - EAGLE 5 ISS routes message to SMSC.
7. MT_SMS - Deliver message to in-network subscriber.

Figure 2: MO-Based GSM SMS NP Call Flow for Other-Network Subscriber



Call considerations:

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

Message Flow:

1. MO_SMS(B) - EAGLE 5 ISS intercepts SMS messages after they have undergone Prepaid Short Message Service Intercept (PPSMS) and Portability Check for Mobile Originated SMS (MNP SMS) processing and decodes the TCAP/MAP message destination address.
2. MO_SMS(SP+B) - If successful, modify B-party Number and relay to SMSC.
3. Deliver_SM - Forward message or submit message other network.

MO-Based IS41 SMS NP

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

The MO-Based IS41 SMS NP feature:

- Intercepts SMDPP messages before they reach the SMSC
- Decodes the TCAP/MAP message destination address and performs lookup in the number portability (NP) database
- Modifies the destination address in the TCAP message with Directory Number (DN) porting information
- Relays the message to the SMSC

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

The MO-Based IS41 SMS NP feature applies to TCAP SMDPP and ANSI or ITU transport (MTP and SCCP) messages.

Options

The MO-Based IS41 SMS NP feature provides configurable options for controlling the processing of SMDPP messages. These options specify the following:

- How to consider SMDPP destination address for processing
- Outbound digit format
- When an RTDB lookup is considered to be successful

Feature Control

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

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

MO-Based IS41 SMS NP Protocol Handling

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

- The MO-Based IS41 SMS NP feature traps the SMDPP message and performs RTDB lookup based on the TCAP SMS_Destination_Address or SMS_Original_Destination_Address parameter. If MODAPARAM=DA, then SMS_Destination_Address is chosen. If MODAPARAM=ODA, then SMS_Original_Destination_Address is chosen. If the entity type is the same as the value of the MOSMSTYPE option in the IS41SMSOPTS table (see *Table 3: System Options - MO SMS Features in IS41 Networks* on page 16), then the MO-Based IS41 SMS NP feature modifies the outgoing MO_SMS based on the value of the MOSMSDNFMT option.
- When the outgoing SMDPP is modified, the NAI is based on the value of the MOSMSNAI parameter in the IS41SMSOPTS table.
- The MO-Based IS41 SMS NP feature performs SCCP CDPA GTA lookup against the SMSC list maintained by the STP. If the lookup is not successful, the MSU falls through to GTT handling.
- The number conditioning is based on the value of the MOSMSNAI option:
  - If MOSMSNAI=NAT, then the number is treated like a national number: DEFCC is prepended before performing lookup in the RTDB.
  - If MOSMSNAI=INTL, then the number is treated like an international number: this number is used for lookup in the RTDB.
  - If MOSMSNAI=NAI, then the conditioning is based on the NAI value from the TCAP part.
  - If MOSMSNAI=UNKNOWN, then a lookup in the CSL table is performed. The matching leading digits are deleted from the incoming digits, and the number is treats as a national number.
- For messages handled within this feature, the SCCP CDPA is always used to route the message.
- If the MOSMSTYPE=ALL and MOSMSDNFMT=RN and the RTDB lookup has no entity assigned to the DN, then the message is not modified.
- If the modified SMDPP message SMS_Destination_Address or SMS_Original_Destination_Address digits are greater than 21, then the digits are not modified and the original message is routed to the SMSC based on SCCP CDPA.
- The MO-Based IS41 SMS NP feature considers a successful RTDB lookup with entity_type=RN and portability-type=0 to be entity_type=SP, if the IS41-GSM Migration feature is enabled. When the IS41-GSM Migration feature is enabled, entity_type=RN, and portability-type=0, the subscriber is considered to be migrated, and therefore is considered to be local (in-network, SP) for the MO-Based IS41 SMS NP feature.

MO-Based IS41 SMS NP Call Flows

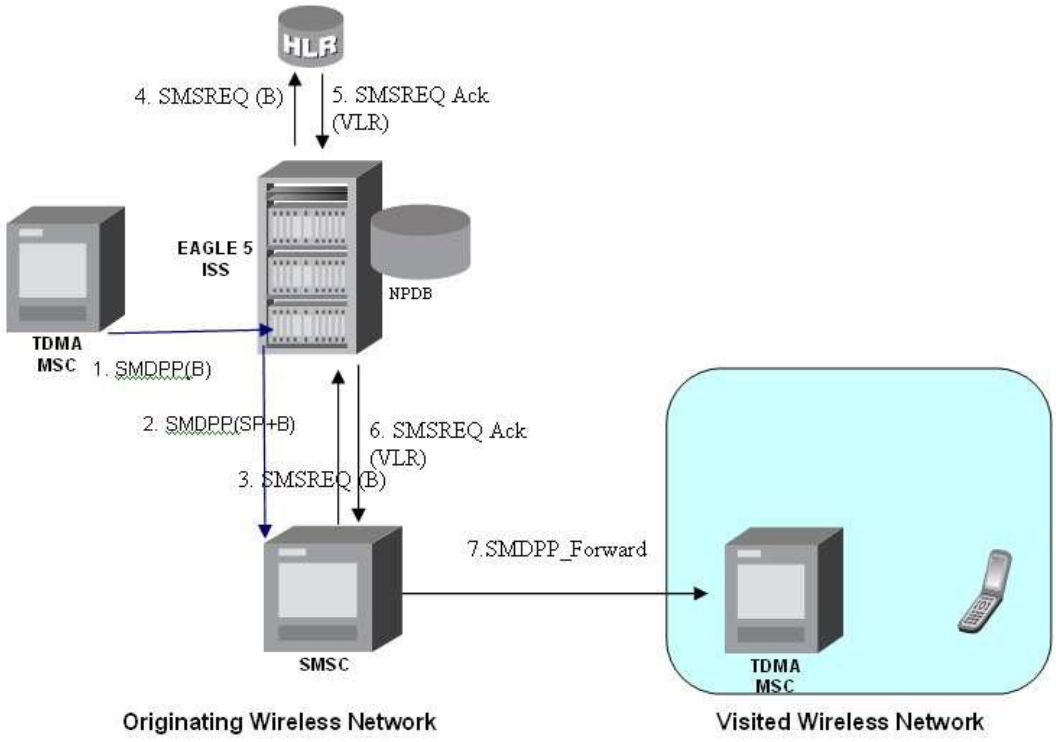
This section illustrates the sequence of messages that occur when a mobile operator delivers SMS messages in a number portability environment to:

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

MO-Based IS41 SMS NP Call Flow for In-Network Subscriber

Figure 3: MO-Based IS41 SMS NP Call Flow for In-Network Subscriber on page 24 depicts the message and control flows for a called subscriber who is in the same network as the calling subscriber.

Figure 3: MO-Based IS41 SMS NP Call Flow for In-Network Subscriber



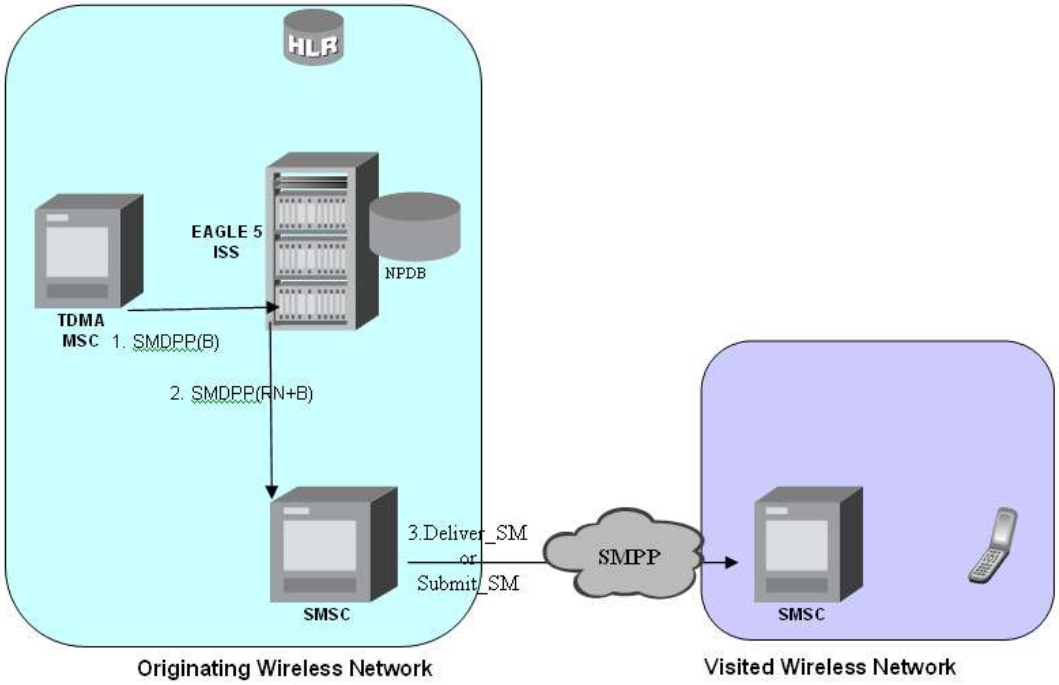
Call considerations:

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

MO-Based IS41 SMS NP Call Flow for Other-Network Subscriber

Figure 4: MO-Based IS41 SMS NP Call Flow for Other-Network Subscriber on page 24 depicts the message and control flows for a called subscriber who is in a different network from the calling subscriber.

Figure 4: MO-Based IS41 SMS NP Call Flow for Other-Network Subscriber



Call considerations:

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

MO SMS IS41-to-GSM Migration

The MO SMS IS41-to-GSM Migration feature provides network information to the Short Message Service Center (SMSC) for subscribers using the IS41 network. This information allows the SMSC to select a protocol to deliver Short Message Service Delivery Point-to-Point (SMDPP) messages to the called party.

The MO SMS IS41-to-GSM Migration feature:

- Intercepts SMDPP messages before they reach the SMSC
- Decodes the TCAP/MAP message destination address and performs lookup in the number portability (NP) database

- Modifies the destination address in the TCAP message with Directory Number (DN) porting information or the IS412GSM Migration Prefix
- Relays the message to the SMSC

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

The MO SMS IS41-to-GSM Migration feature applies to ANSI TCAP/MAP and ANSI or ITU transport (MTP and SCCP) messages.

Options

The MO SMS IS41-to-GSM Migration feature provides configurable options for controlling the processing of SMDPP messages. These options specify the following:

- How to consider SMDPP destination address for processing
- Outbound digit format
- When an RTDB lookup is considered to be successful

Feature Control

The MO SMS IS41-to-GSM Migration feature has the following feature control requirements:

- The feature part number is 893-0262-01
- The feature cannot be enabled if the LNP feature is enabled.
- A temporary FAK cannot be used to enable the feature.
- The feature can be turned off after it has been turned on.

System Options for MO SMS IS41-to-GSM Migration

The system level options in the IS41SMSOPTS table are used to perform number conditioning, response generation, and other feature-specific options. *Table 3: System Options - MO SMS Features in IS41 Networks* on page 16 shows the options stored in the IS41SMSOPTS table, their possible values, and the action taken for each value for the MO SMS IS41-to-GSM Migration feature.

MO SMS IS41-to-GSM Migration Protocol Handling

After the MO SMS IS41-to-GSM Migration feature has been enabled and turned on, it provides the following protocol handling:

- The MO SMS IS41-to-GSM Migration feature traps the SMDPP message and performs RTDB lookup based on the TCAP SMS_Destination_Address or SMS_Original_Destination_Address parameter. If MODAPARAM=DA, then SMS_Destination_Address is chosen. If MODAPARAM=ODA, then SMS_Original_Destination_Address is chosen. If the entity type = SP and the Portability Type = 5 (migrated), then the MO SMS IS41-to-GSM Migration feature modifies the outgoing MO_SMS based on the value of the MOSMSDNFMT option.
- When the outgoing SMDPP is modified, the NAI is based on the value of the MOSMSNAI parameter in the IS41SMSOPTS table.
- The MO SMS IS41-to-GSM Migration feature performs SCCP CDPA GTA lookup against the SMSC list maintained by the STP. If the lookup is not successful, the MSU falls through to GTT handling.

- The number conditioning is based on the value of the MOSMSNAI option:
  - If MOSMSNAI=NAT, then the number is treated like a national number: DEFCC is prepended before performing lookup in the RTDB.
  - If MOSMSNAI=INTL, then the number is treated like an international number: this number is used for lookup in the RTDB.
  - If MOSMSNAI=NAI, then the conditioning is based on the NAI value from the TCAP part.
  - If MOSMSNAI=UNKNOWN, then a lookup in the CSL table is performed. The matching leading digits are deleted from the incoming digits, and the number is treated as a national number.
- For messages handled within this feature, the SCCP CDPA is always used to route the message.
- If the modified SMDPP message SMS_Destination_Address or SMS_Original_Destination_Address digits are greater than 21, then the digits are not modified and the original message is routed to the SMSC based on SCCP CDPA.

Portability Check for Mobile Originated SMS

The Portability Check for Mobile Originated SMS (MNP SMS) feature is designed to prevent subscriber use of an incorrect Short Message Service Center by filtering incoming messages based on MAP Operation Code. If the message is a MO Forward Short Message (MOFSM), the Mobile Subscriber Integrated Services Digital Network (MSISDN) number of the originating subscriber, or subscriber phone number, is used to search the G-Port Mobile Number Portability database.

When a mobile subscriber sends a Mobile Originated Short Message Service message (MOSMS) using a GSM handset, the message is first deposited in a Short Message Service Center (SMSC). The SMSC determines where the intended recipient, who is also a mobile subscriber, is located by querying the Home Location Register (HLR) of the recipient to determine the current Mobile Switching Center (MSC) of the recipient.

The SMSC address to which a message is routed is programmed into the GSM mobile handset. After a subscriber ports to another network, the handset is reprogrammed with the SMSC address for the new network; however, the subscriber could change the SMSC address to the address of the former network, causing Short Message Service (SMS) messages to be sent incorrectly to the former network SMSC of the subscriber. Because the former network would not have billing records for the ported-out subscriber, the subscriber would receive free SMS service.

If a match is found in the G-Port Mobile Number Portability database to indicate that the subscriber has been ported-out, the EAGLE 5 ISS uses the destination SMSC address obtained from the SCCP CdPA to search a list of home network SMSC addresses. If a match is found to indicate that the ported-out subscriber is attempting to send a short message using the SMSC of the subscriber's former network, the message is discarded. An error message is generated and returned to the originating MSC.

HomeSMSC Match with Digits option (HomeSMSC Match)

The HomeSMSC Match with Digits option for Portability Check for Mobile Originated SMS (HomeSMSC Match) enhances the ability of the EAGLE 5 ISS to compare the Home Short Message Service Center (HomeSMSC) digits in the SCCP CdPA of incoming GSM MAP Mobile Originated Forward Short Messages (MO_FSM) to HomeSMSCs that are stored in the database. If the beginning digits of the incoming HomeSMSC matches a stored HomeSMSC, then the HomeSMSCs are

considered a match, even if additional digits are attached to the end of the incoming HomeSMSC. If a match is found, then the message is rejected. The Portability Check for Mobile Originated SMS feature must be turned on before the HomeSMSC Match with Digits option can be provisioned.

Portability Check for Mobile Originated SMS Call Flow

The MAP_FORWARD_SHORT_MESSAGE (FSM), in the following Call Flow example is used to carry a text message (short message) being transmitted from the mobile handset of one subscriber to the mobile handset of another subscriber. In practice, the short message is delivered first to the Short Message Service Center (SMSC) of the sending subscriber, and then the SMSC is responsible for sending the short message to the intended recipient.

Refer to the following steps in the flow for this call.

The EAGLE 5 ISS will perform the following with respect to MNP SMS Feature functionality.

1. The EAGLE 5 ISS receives an UDT message.
2. EAGLE 5 ISS checks whether the service selector value is `smsmr`. If the service selector matches `smsmr`, continue to the next step. If the service selector is not `smsmr`, the message falls through to GTT (#12 *List item.* on page 29).
3. The MAP OpCode is examined. If the OpCode is MO_FSM, PPSMS processing continues with the next step. If the OpCode is not MO_FSM, the message falls through to GTT (#12 *List item.* on page 29).
4. If the PPSMS feature is on, the message falls through to PPSMS processing (#8 *List item.* on page 28). If the PPSMS feature is not on, processing continues with the next step.
5. If the MNP SMS feature is on, the Mobile Subscriber Integrated Services Digital Network (MSISDN) number is used to search the G-Port Mobile Number Portability subscriber database. If the MNP SMS feature is not on, the message falls through to GTT (#12 *List item.* on page 29).
6. If the MSISDN Number is found in the PDB/DN table, then the portability type of the subscriber is checked for *Not Known to be Ported (0) / Ported-out (1) / FNPTFN (2) /Not identified to be ported (36)* and processing continues. If the MSISDN Number is not found in the PDB/DN table, the message falls through to GTT (#12 *List item.* on page 29). If the portability type is in the range of *Prepaid1 (3)* to *Prepaid32 (35)*, the message falls through to GTT (#12 *List item.* on page 29).
7. The SCCP CdPA Address is used to search the list of home network SMSC addresses. If a match is found, the ported-out subscriber is fraudulently attempting to send SMS using the SMSC of the old network. The message is discarded; UIM #1129 is issued; an error message is generated and returned to the originating MSC, and the message falls through to #15 *List item.* on page 29. If the message is not on the list, the message falls through to GTT (#12 *List item.* on page 29).
8. If the message is from one of the IN Platforms (PPSMS Servers), The message exits from MNP SMS feature functionality and falls through to PPSMS processing (#14 *List item.* on page 29). If the message is not from one of the PPSMS Servers, processing continues to the next step.
9. The MSISDN number (phone number) of the originating subscriber is used to search the G-Port Mobile Number Portability subscriber database. If the MSISDN Number is found in the PDB/DN table, then continue to the next step. Otherwise, exit from MNP SMS feature functionality and continue with Normal GTT processing (#12 *List item.* on page 29).
10. Check the portability type of the subscriber. If the Portability Type matches the range of *Prepaid1 (3)* to *Prepaid32 (35)*, go to #14 *List item.* on page 29; otherwise, continue with the next step.

11. If the subscriber portability type is *Not Known to be Ported (0) /Ported-out (1) / FNPTFN (2) /Not identified to be ported (36)* and MNP SMS feature is also ON, then go to #7 *List item.* on page 28. Otherwise, exit from MNP SMS feature functionality and continue with Normal GTT processing.
12. Exit from MNP SMS feature functionality and continue with existing processing for other services or GTT.
13. Exit from MNP SMS feature functionality and continue with existing processing for G-Port.
14. Exit from MNP SMS feature functionality and continue with existing processing for PPSMS.
15. Exit from MNP SMS feature functionality.

Prepaid Short Message Service Intercept

Prepaid Short Message Service Intercept (PPSMS) is applicable to the A-Party (MSISDN) and B-Party (TP-DA of SM-RP-UI) sides of the GSM Forward Short Message. Refer to *Database Administration Manual - Global Title Translation* for information about the Prepaid Short Message Service Intercept feature for B-Party.

PPSMS performs the following main functions:

Message Discrimination

PPSMS uses the G-Port message selection methods to determine whether the message should receive PPSMS/G-Port service versus GTT.

If the incoming selectors match a SRVSEL entry and the entry has SERV=SMSMR, PPSMS is performed. If no match is found in SRVSEL table then GTT is performed. If the SSN is for HLR, G-Port is performed. If the SSN is for MSC, PPSMS is performed, and if the SSN is for neither, GTT is performed. Next, the MAP Operation Code received in the message is examined. Only Mobile originated forward short message calls receive PPSMS service. Other messages fall through to GTT. After MAP operation code discrimination, PPSMS provides discrimination based on SCCP CgPA GTA digits. This allows the operator to decide whether messages from certain CgPAs will receive PPSMS service or fall through to GTT, even if the messages meet all of the previous service selection criteria.

Number Conditioning

The RTDB stores international MSISDNs only. The received MSISDN number or SCCP CdPA digits may need to be converted to an international number to do a database lookup.

When PPSMS is required to be performed on a message and the number is not international (that is, the NAI of MSISDN number is “National (Significant) Number” or “Subscriber Number)”, the National/Local to International number conditioning is triggered.

For a National (Significant) Number, the received MSISDN digits are prepended with the default country code and for a Subscriber number, the MSISDN digits are prepended with the default country code and the default network code. If the NAI is neither International or Subscriber, the message is treated as National.

Prepaid Screening

Once the number is conditioned, the PPSMS feature performs a database search to determine if the MSISDN belongs to a prepaid subscriber. This is determined by the portability type field associated with the database entry for the MSISDN. PPSMS performs the database lookup using the international MSISDN. The individual number database is searched first, and if the number is not found, then the number range database is searched. If a match is not found in individual nor range-based database, then GTT is performed on the message. In case of MSISDN numbers in the PPSMS database being odd and the last digit of the decoded MSISDN from the FSM being 'zero', PPSMS first performs a database lookup once using the even number. If no match is found, then PPSMS performs the database lookup again, now using the odd number (without last digit).

Message Relay to IN Platform

If the database search determines that the subscriber is prepaid, the message is redirected to one of the two IN platforms using the translation data in the PPSOPTS table. If the routing indicator in the IN platform translation data is route-on-SSN, the mated application table is accessed to determine the point code/subsystem status for the IN platform, and if it has a mate. The SCCP CdPA GTA should not be changed as a result of this operation. If the RI in the translation data indicates route-on-GT, and if the Intermediate GTTLoad Sharing feature is turned on, the Mated Relay Node (MRN) table is accessed to determine the point code status and if the IN platform has a mate. Subsystem status is not maintained in the mated relay node.

Prepaid Short Message Service Intercept Message Handling

Prepaid Short Message Service Intercept (PPSMS) performs message handling in the following steps.

1. The message arrives at the EAGLE 5 ISS route-on-gt. The EAGLE 5 ISS decodes the SCCP portion and uses the data to perform the G-Port selection based on the CdPA NP, NAI, TT, SSN, and GTI. The result of the selection provides a service indicator. The service indicator is SMSMR if PPSMS is required. If a SMSMR selector does not match the incoming GT fields, the message is passed on for GTT selection.
2. If #1(*List item.* on page 30) indicates PPSMS is required, and the message is not a UDTS generated by EAGLE 5 ISS, the EAGLE 5 ISS performs PPSMS service.
3. If the message is a UDTS generated by the EAGLE 5 ISS, then regular GTT is performed on the message.
4. If the EAGLE 5 ISS receives a UDTS message from another node, it is treated in the same manner as any other message. If GTT is indicated, then the UDTS translation is based on the CdPAGTA, and the message is routed to the translated address. If GTT is not indicated, the UDTS is through switched via MTP routing. The one exception is that if translation fails on the UDTS, the EAGLE 5 ISS will not generate another UDTS to send to the originator of the UDTS that failed.
5. The TCAP/MAP portion of the message is decoded by PPSMS. If the message is not a TC_BEGIN, the message falls through to GTT.
6. If the message is a TC_BEGIN, PPSMS decodes the Operation Code of the MAP message to distinguish MO_FSMs from the rest. If the OpCode is not FSM (MAP version 1 or 2) or MO_FSM (MAP version 3), the message falls through to GTT.
7. If the OpCode is FSM (MAP version 1 or 2) or MO_FSM (MAP version 3), the MAP portion of the message is decoded and searched for a MSISDN tag. If a MSISDN tag is not found, the message falls through to GTT. For version 3 MO_FSMs, the SMRPOA parameter would contain the MSISDN tag. For version 1 or 2 FSMs, a MSISDN tag is found if the message is mobile

originated. If it is mobile terminated, a MSISDN tag is not found and the message falls through to GTT.

8. If the MSISDN is found in #7 (*List item.* on page 30), the SCCP CgPA GTA is compared to the IN platform GTAs provisioned in the PPSOPTS table. If the decoded GTA matches one of the IN platform Gas, the message falls through to GTT.
9. If the SCCP CgPA GTA in #8 (*List item.* on page 31) does not match any of the IN platform GTAs, the MSISDN from the MAP portion is decoded and conditioned to an international number before performing the lookup. The number conditioning is based on NAI of MSISDN parameter. The number is converted to an international number, if necessary.
10. The database lookup is performed in two parts:
    - The exception or individual number database is searched for a match. If the match is found, the data associated with this entry is considered.
    - If the conditioned number is absent in the exception database, the number range database is searched. If the match is found, the data associated with this range entry is considered. If the search is unsuccessful, the result is no match.

    In case of MSISDN numbers in the PPSMS database being odd and the last digit of the decoded MSISDN from the FSM being 'zero', PPSMS first performs database lookup once using the even number. If no match is found then PPSMS performs the database lookup again, using the odd number (without last digit).
11. If a number match is found as a result of the search, the portability type field associated with the entry is examined.
    - If the portability type is in the range of *Prepaid1* to *Prepaid32*, the IN platform translation information (PC and RI) associated with that type is retrieved from the GSM options. If the RI is SSN, the information is used to access the mated application (MAP) table for point code status and to see if the selected IN platform is in a load sharing relationship with another. If the RI is GT, and if the IGTTLoad Sharing feature is on, the mated relay node table is used for this purpose. If the point code is available, the message is routed the IN platform. If the point code is in a load sharing relationship with other point codes, messages are equally divided between them.
    - If the portability type is not in the range of *Prepaid1* to *Prepaid32*, the message falls through to GTT.
12. If a number match is not found as a result of the search in #10 (*List item.* on page 31), the message falls through to GTT.

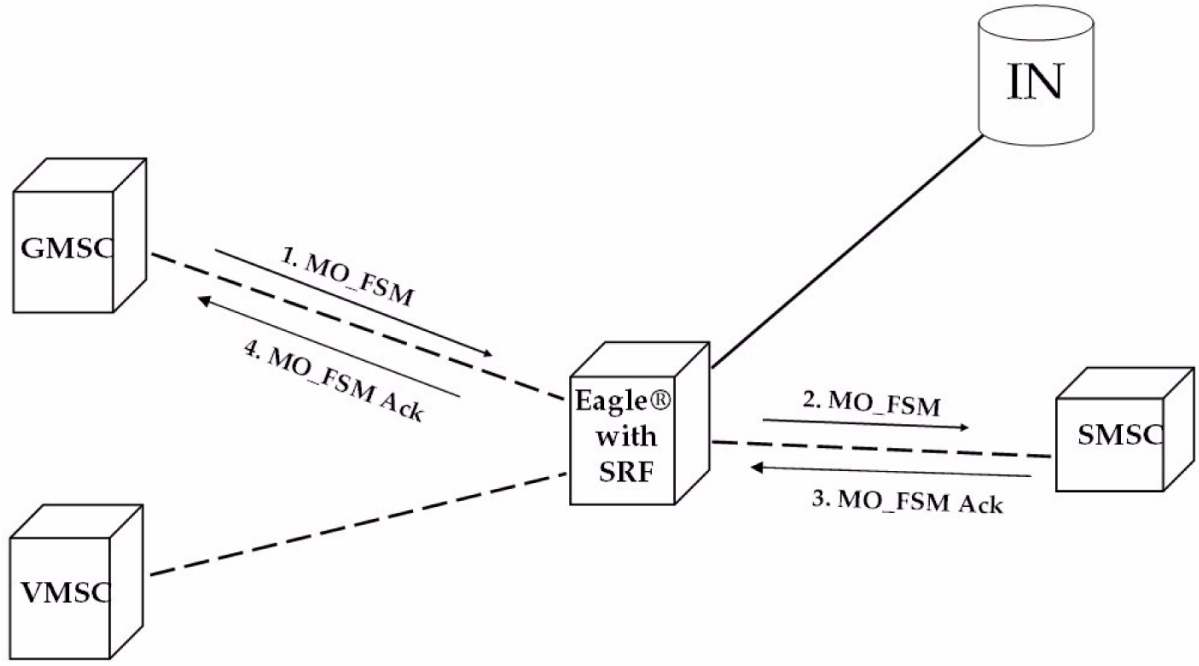
Prepaid Short Message Service Intercept Call Flows

The MAP_FORWARD_SHORT_MESSAGE (FSM), in the following Call Flow examples is used to carry a text message (short message) being transmitted from the mobile handset of one subscriber to the mobile handset of another subscriber. In practice, the short message is delivered first to the Short Message Service Center (SMSC) of the sending subscriber, and then the SMSC is responsible for sending the short message to the intended recipient.

Successful Delivery of Mobile Originated FSM from Contract/Postpaid Subscriber

Refer to *Figure 5: Successful Delivery of MO_FSM from Contract Subscriber* on page 32 for the steps in the flow for this call.

Figure 5: Successful Delivery of MO_FSM from Contract Subscriber



1. The Gateway Mobile Switching Center (GMSC) sends the Mobile Originated Forward Short Message (MO_FSM) to the EAGLE 5 ISS with PPSMS (TCBEGIN).

   Based on MTP DPC = EAGLE 5 ISS point code and SCCP CdPA TT, NP, NAI, SSN, and GTI, the message is pre-selected for PPSMS service. If service is not PPSMS, the message falls through to GTT.)

   Next, the MAP OpCode and SCCP CgPA GTA are examined. The OpCode is MO_FSM and the CgPA GTA is not from one of the IN platforms, therefore, PPSMS processing continues. (If the OpCode is not MO_FSM, or if CgPA GTA is for one of the IN platforms, the message falls through to GTT.)

   The EAGLE 5 ISS queries the DB using the sender's MSISDN from the OA field in the MAP portion of message.

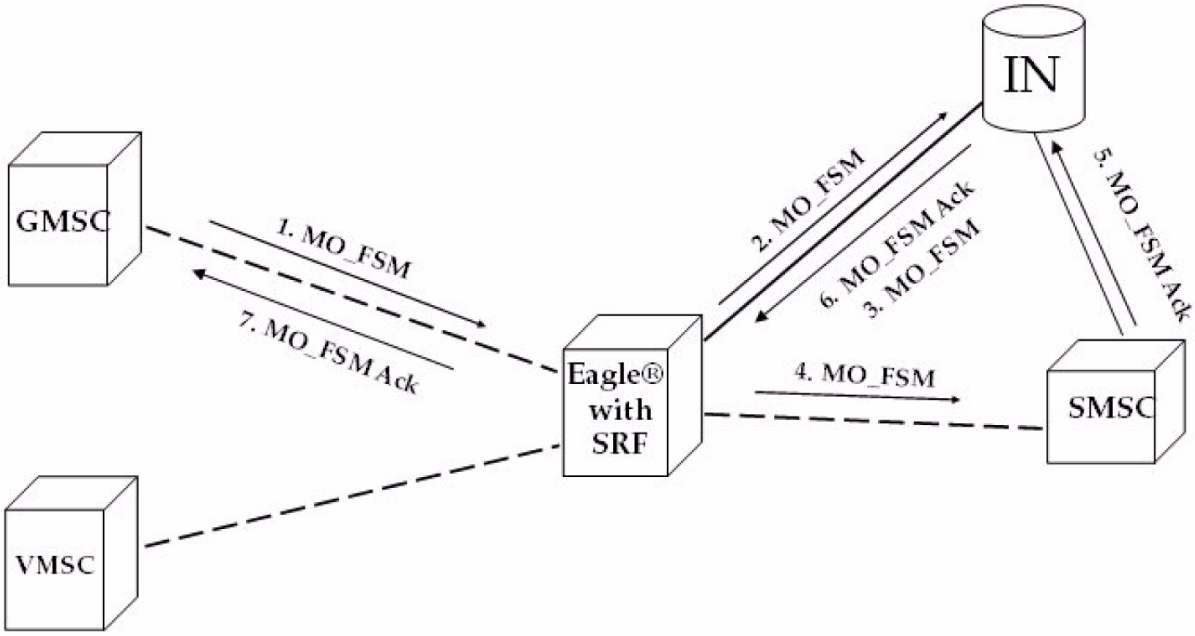
   MSISDN is present in the database, but Portability Type is not in the range of *prepaid1* to *prepaid32*, meaning the sender is not a prepaid subscriber.
2. The EAGLE 5 ISS therefore GTT-routes the MO_FSM to the SMSC (TCBEGIN).
3. The SMSC returns the MO_FSM_ack (TCEND).
4. One of two possibilities:
   a. The SMSC sends the MO_FSM_ack route-on-SSN to the GMSC, then the SRF will simply MTP route the MO_FSM_ack to the GMSC. G-Port is not involved.
   b. The SMSC sends the MO_FSM_ack route-on-GT, and the service selectors indicate G-Port/PPSMS. CdPA SSN = GMSC, which is same as SMSC, so PPSMS is selected. As

PPSMS decodes message, it discovers it is a TCEND. Therefore, the message falls through to normal GTT and is routed to the GMSC.

Successful Delivery of Mobile Originated FSM from Prepaid Subscriber

Refer to *Figure 6: Successful Delivery of Mobile Originated FSM from Prepaid Subscriber* on page 33 for the steps in the flow for this call.

Figure 6: Successful Delivery of Mobile Originated FSM from Prepaid Subscriber



1. The Gateway Mobile Switching Center (GMSC) sends the Mobile Originated Forward Short Message (MO_FSM) to the EAGLE 5 ISS with PPSMS (TC BEGIN).

   Based on MTPDPC = EAGLE 5 ISS's point code and SCCP CdPA TT, NP, NAI, SSN, and GTI, the message is pre-selected for PPSMS service. If service is not PPSMS, the message falls through to GTT).

   Next, the MAP OpCode and SCCP CgPA GTA are examined. The OpCode is MO_FSM and the CgPAGTA is not from one of the IN platforms, therefore, PPSMS processing continues. (If OpCode is not MO_FSM, or if CgPA GTA is for one of the IN platforms, the message falls through to GTT).

   The EAGLE 5 ISS queries the DB using sender's MSISDN from SM RP OA field in MAP portion of message.

   MSISDN is present in the database, and the Portability Type is *prepaid1*, meaning the sender is a prepaid subscriber.

2. The EAGLE 5 ISS forwards the MO_FSM to the IN Platform (TCBEGIN) associated with *prepaid1*, after checking mated application or mated relay node table

   Note:

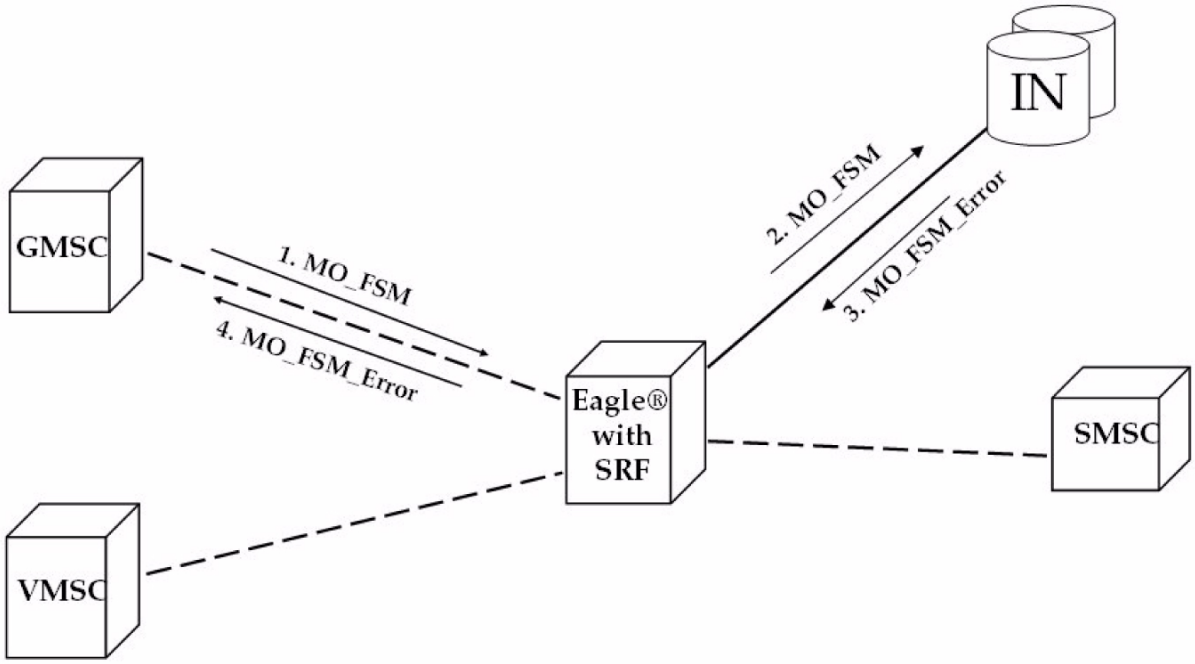
The Portability Types *prepaid1* through *prepaid32* are used to select which of the IN platforms the message should be sent.

3. The IN Platform checks the account, finds there is enough credit to send the message, opens a new TCAP dialogue, and returns the MO_FSM to the SRF (TCBEGIN-2).
4. The message arrives at EAGLE 5 ISS and is again selected for PPSMS service based on CdPATT, NP, NAI, GTI, and CdPA SSN = SMSC. The OpCode is MO_FSM but the SCCP CgPA GTA is IN platform, therefore, PPSMS service is not indicated and the message falls through to GTT and is routed to the SMSC.
5. The SMSC returns the MO_FSM_ack to the IN platform (TCEND-2). There are two possibilities:
   a. The SMSC sends the MO_FSM_ack route-on-SSN to the IN platform, then the SRF will simply MTP route the MO_FSM_ack to the IN platform. G-Port is not involved.
   b. The SMSC sends the MO_FSM_ack route-on-GT, and the service selectors indicate G-Port/PPSMS. CdPA SSN = GMSC, which is same as SMSC, so PPSMS is selected. As PPSMS decodes the message, it discovers it is a TCEND. Therefore, the message falls through to normal GTT and is routed to the GMSC.
6. The IN Platform transfers the MO_FSM_ack to the first transaction and returns the MO_FSM_ack to the SRF (TCEND).
7. One of two possibilities:
   a. The IN platform sends the MO_FSM_ack route-on-SSN to the GMSC, then the SRF will simply MTP route the MO_FSM_ack to the GMSC. G-Port is not involved.
   b. The IN platform sends the MO_FSM_ack route-on-GT, and the service selectors indicate G-Port/PPSMS. CdPA SSN = GMSC, which is same as SMSC, so PPSMS is selected. PPSMS decodes message, discovers it is a TCEND, and the message falls through to normal GTT and is routed to the GMSC.

Unsuccessful Delivery of Mobile Originated FSM from Prepaid Subscriber - Credit Check Failure

Refer to *Figure 7: Unsuccessful Delivery of Mobile Originated FSM from Prepaid Subscriber at SCP* on page 34 for the steps in the flow for this call.

Figure 7: Unsuccessful Delivery of Mobile Originated FSM from Prepaid Subscriber at SCP



1. The Gateway Mobile Switching Center (GMSC) sends the Mobile Originated Forward Short Message (MO_FSM) to the EAGLE 5 ISS with PPSMS (TCBEGIN).

   Based on MTPDPC = EAGLE 5 ISS's point code and SCCP CdPA TT, NP, NAI, and GTI, the message is pre-selected for PPSMS service. If service is not PPSMS, the message falls through to GTT).

   Next, the MAP OpCode and SCCP CgPA GTA are examined. The OpCode is MO_FSM and the CgPAGTA is not from one of the IN platforms, therefore, PPSMS processing continues. (If the OpCode is not MO_FSM, or if CgPA GTA is for one of the IN platforms, the message falls through to GTT).

   The EAGLE 5 ISS queries the DB using sender's MSISDN from the SM RP OA field in the MAP portion of message.

   MSISDN is present in the database, and the Portability Type is *prepaid1*, meaning the sender is a prepaid subscriber.

2. The EAGLE 5 ISS forwards the MO_FSM to the IN Platform (TCBEGIN) associated with *prepaid1*.

   Note:

   The Portability Types *prepaid1* through *prepaid32* are used to select which of the IN platforms the message should be sent to.

3. The IN Platform checks the account, finds there is not enough credit to send the message, and rejects the message by returning a MO_FSM_Neg_Response to the SRF (TCEND).
4. One of two possibilities:

   a. The IN platform sends the MO_FSM_Neg_Response route-on-SSN, then the SRF will simply MTP route the MO_FSM_Neg_Response to the GMSC. G-Port is not involved.

   b. The IN platform sends the MO_FSM_Neg_Response route-on-GT, and the service selectors indicate G-Port/PPSMS. CdPA SSN = GMSC, which is same as SMSC, so PPSMS service is

selected. PPSMS decodes message, discovers it is a TCEND, and the message falls through to normal GTT and is routed to the GMSC.

Numbering Plan Processor for MO SMS Features

Numbering Plan Processor for MO SMS features (MO SMS NPP) provides comprehensive NPP number conditioning and service logic execution for MO SMS features that support the GSM and IS41 protocols. The MO SMS features can be selected and sequenced as required without repetitive number conditioning functions. NPP resolves complex number conditioning using a flexible provisioning logic. For detailed information about NPP, refer to *Numbering Plan Processor (NPP) Overview*.

Numbering Plan Processor for MO SMS features (MO SMS NPP) supports the following features:

- MO-Based GSM SMS NP
- MO-Based IS41 SMS NP
- MO SMS IS41-to-GSM Migration
- Portability Check for MO SMS (MNP SMS)
- Prepaid SMS Intercept (PPSMS)
- MO SMS Additional Subscriber Data (MO SMS ASD)
- MO SMS Generic Routing Number (MO SMS GRN)

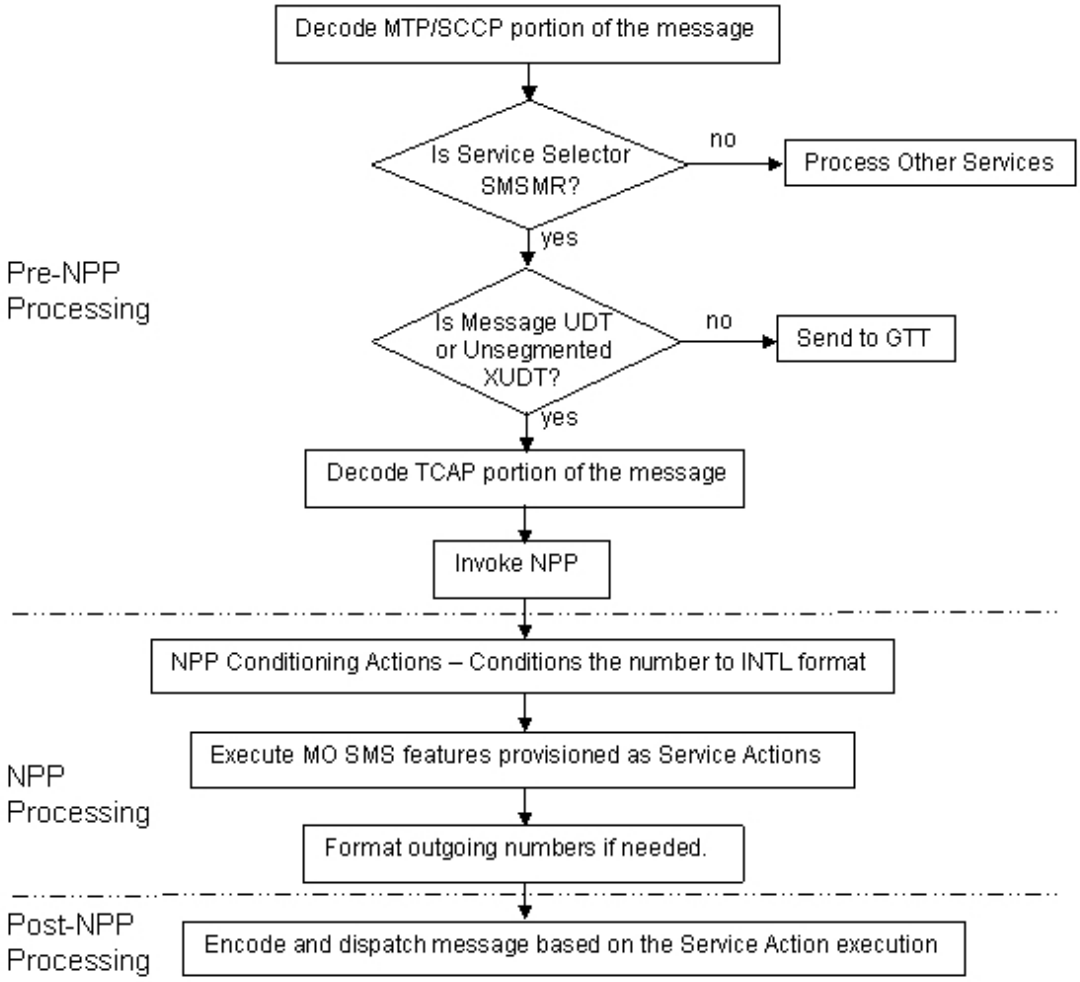
MO SMS NPP Message Processing

After decoding the MTP and SCCP portion of the MSU, the system verifies whether the SCCP parameters of the message match any of the provisioned Service Selectors. If the Service Selector = `smsmr`, MO SMS processing begins. The TCAP portion of the message is decoded.

NPP-related functions are performed next. The incoming Called Party Number or Calling Party Number is conditioned to international format using Conditioning Actions. All Service Actions provisioned for the NPP Services are performed after verifying whether the feature is enabled and turned on.

After the NPP service functions are completed, the message is directed to post-NPP processing. The message is encoded and dispatched. If the message is redirected to Global Title Translation (GTT), translation can be performed based on the SCCP Called Party Address digits or the TCAP Called Party Number.

Figure 8: MO SMS NPP Message Processing



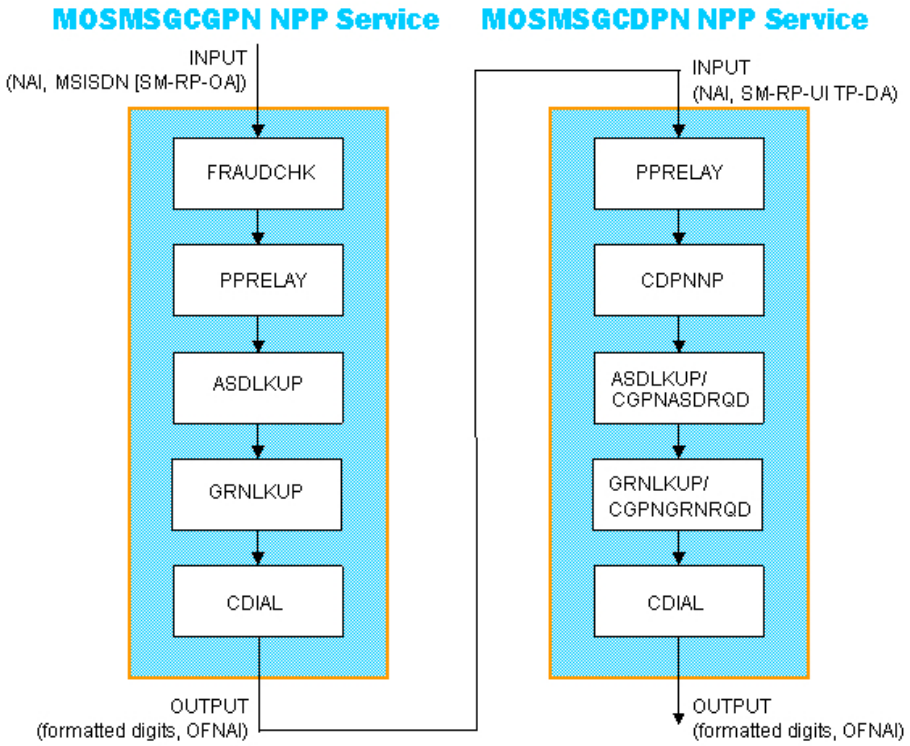
NPP Processing

NPP processing supports both GSM Forward Short Message Mobile Originated (MO) messages and IS41 SMDPP messages. GSM protocol supports MO-Based GSM SMS NP, Portability Check for MO SMS, and Prepaid SMS Intercept. IS41 protocol supports MO-Based IS41 SMS NP and MO SMS IS41-to-GSM Migration features.

NPP processing for GSM

NPP processing performed for GSM protocol and possible Service Actions that can be provisioned are shown in *Figure 9: MO SMS NPP - GSM NPP Processing* on page 37. GSM protocol supports two NPP Services: MOSMSGCDPN for processing Called Party Numbers and MOSMSGCGPN for processing Calling Party Numbers. The Calling Party Number is processed first. The Calling Party Number is the MSISDN digits of the SM-RP-OA parameter of the Forward Short Message. The Called Party Number is processed second. The Called Party Number is the TP-DA digits of the SM-RP-UI parameter of the message being processed.

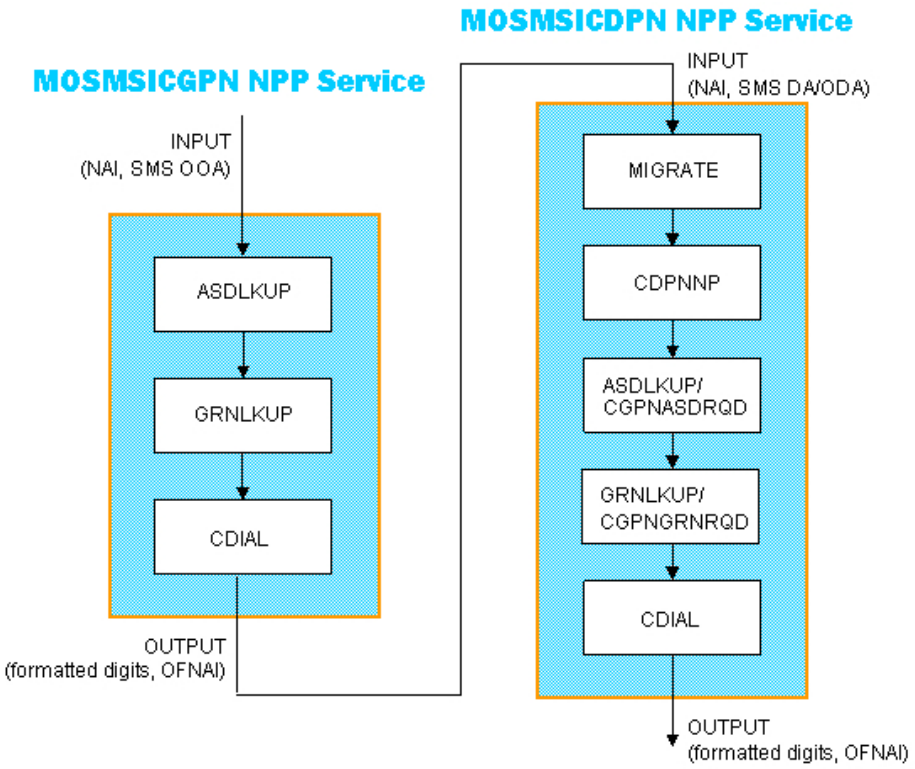
Figure 9: MO SMS NPP - GSM NPP Processing



NPP processing for IS41

NPP processing performed for IS41 protocol and possible Service Actions that can be provisioned are shown in *Figure 10: MO SMS NPP - IS41 Processing* on page 38. IS41 protocol supports two NPP Services: MOSMSICDPN for processing Called Party Numbers and MOSMSICGPN for processing Calling Party Numbers. The Calling Party Number is processed first. The Calling Party Number is the Original Originating Address (OOA) digits of the message. The Called Party Number is processed second. The Called Party Number can be either the Destination Address (DA) or Original Destination Address (ODA) parameter of the message being processed.

Figure 10: MO SMS NPP - IS41 Processing

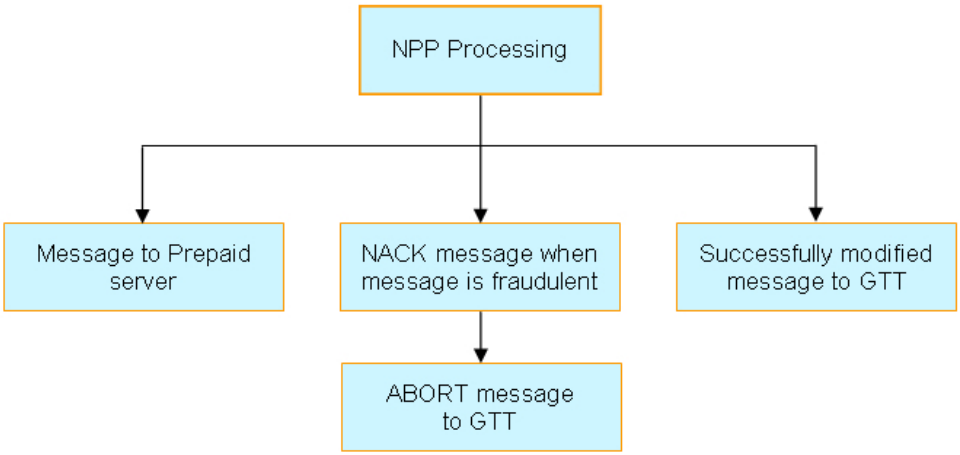


Post-NPP Processing

After conditioning the number, performing Service Actions, and formatting the number passed to NPP, the decoded message is encoded and sent to the correct module or destination for further processing. For IS41 protocol, only two features are supported and the message falls through to GTT. For GSM protocol, several dispositions are possible:

- The message can be sent to a Prepaid Server after PPRELAY Service Action processing.
- The message can be NACK if the FRAUDCHK Service Action determines that the message is fraudulent.
- The message can fall through to GTT after CDPNNP Service Action processing.

Figure 11: Post-NPP Processing



RTDB Lookup for NPP Services

An entry for a conditioned number can be found in either an Individual DN RTDB Table or a range DN RTDB Table. If an entry is found in the Individual DN RTDB Table, the range DN table is not searched. An Individual DN Table entry has precedence over a range DN Table entry. Most NPP Service Actions require an RTDB Lookup result. For a given NPP Service, RTDB Lookup is performed only once. This RTDB Lookup is performed by the first Service Action that needs an RTDB Lookup result.

NPP Provisioning

Numbering Plan Processing (NPP) provides number conditioning and service logic execution for the following MO SMS-related features:

- Mobile Originated Based GSM SMS Number Portability (MO-Based GSM SMS NP)
- Mobile Originated Based IS41 SMS Number Portability (MO-Based IS41 SMS NP)
- Mobile Originated SMS IS41-to-GSM Migration (MO SMS IS-41-to-GSM Migration)
- Portability Check for Mobile Originated SMS (MNP SMS)
- Prepaid Short Message Service Intercept (PPSMS)
- Mobile Originated Additional Subscriber Data (MO SMS ASD)
- Mobile Originated Generic Routing Number (MO SMS GRN)

NPP Services

The NPP Service in the first column of *Table 4: Required NPP Services* on page 40 must be provisioned before turning on the MO SMS-related feature in the second column for the feature to be functional.

Table 4: Required NPP Services

Feature	NPP Service
MO-Based GSM SMS NP	MOSMSGCDPN
MO-Based IS41 SMS NP	MOSMSICDPN

Feature	NPP Service
MO SMS IS-41-to-GSM Migration	MOSMSICDPN
MNP SMS	MOSMSGCGPN
PPSMS	MOSMSGCDPN and MOSMSGCGPN
MO SMS ASD	MOSMSGCDPN, MOSMSGCGPN, MOSMSICDPN, and MOSMSICGPN
MO SMS GRN	MOSMSGCDPN, MOSMSGCGPN, MOSMSICDPN, and MOSMSICGPN

The NPP Services to process Called Party and Calling Party Numbers in GSM and IS41protocols are described below:

- MOSMSGCDPN - NPP Service to process the Called Party Number of the SM-RP-UI TP-DA parameter of SMS-SUBMIT or SMS-COMMAND GSM Forward Short Message.
- MOSMSGCGPN - NPP Service to process the Calling Party Number MSISDN SM-RP-OA parameter of SMS-SUBMIT or SMS-COMMAND GSM Forward Short Message.
- MOSMSICDPN - NPP Service to process the Called Party Number SMS-DA or SMS-ODA parameter of the IS41 SMDPP message.
- MOSMSiCGPN - NPP Service to process the Calling Party Number SMS-OOA parameter of the IS41 SMDPP message. Currently, no MO SMS features exist which use this NPP Service.

Service Actions

The NPP Service Actions supported by MO SMS NPP are shown in *Table 5: Supported Service Actions* on page 41. The precedence and applicability of the service actions are specified for each NPP Service.

Table 5: Supported Service Actions

Service Action	MOSMSGCDPN	MOSMSGCGPN	MOSMSICDPN	MOSMSICGPN
ASDLKUP	50	50	50	50
CDIAL	10	10	10	10
CDPNNP	60	n/a	60	n/a
CGPNASDRQD	50	n/a	50	n/a
CGPNGRNRQD	50	n/a	50	n/a
FRAUDCHK	n/a	90	n/a	n/a
GRNLKUP	50	50	50	50
MIGRATE	n/a	n/a	70	n/a
PPRELAY	80	80	n/a	n/a

Table 6: Service Action Value Definitions by NPP Service

Service Action Value	MOSMSGCDPN	MOSMSGCGPN	MOSMSICDPN	MOSMSICGPN
ASDLKUP	Populates ASD FA with ASD data received from DN RTDB Lookup	Populates ASD FA with ASD data received from DN RTDB Lookup	Populates ASD FA with ASD data received from DN RTDB Lookup	Populates ASD FA with ASD data received from DN RTDB Lookup
CDIAL	Performs corrective dialing	Performs corrective dialing	Performs corrective dialing	Performs corrective dialing
CDPNNP	Performs CdPN RTDB Lookup and determines whether ported	-	Performs CdPN RTDB Lookup and determines whether ported	-
CGPNASDRQD	Populates ASD FA with CgPN ASD data if available from CgPN RTDB Lookup by MOSMSGCGPN	-	Populates ASD FA with CgPN ASD data if available from CgPN RTDB Lookup by MOSMSICGPN	-
CGPNGRNRQD	Populates GRN FA with CgPN GRN data if available from CgPN RTDB Lookup by MOSMSGCGPN	-	Populates GRN FA with CgPN GRN data if available from CgPN RTDB Lookup by MOSMSICGPN	-
FRAUDCHK	-	Performs CgPN RTDB Lookup and discards message if the subscriber is fraudulent	-	-
GRNLKUP	Populates GRN FA with GRN data received from DN RTDB Lookup	Populates GRN FA with GRN data received from DN RTDB Lookup	Populates GRN FA with GRN data received from DN RTDB Lookup	Populates GRN FA with GRN data received from DN RTDB Lookup
MIGRATE	-	-	Performs CdPN RTDB Lookup and determines whether migrated	-
PPRELAY	Performs CdPN RTDB Lookup and redirects message to prepaid subscriber if CdPN is prepaid	Performs CdPN RTDB Lookup and redirects message to prepaid subscriber if CdPN is prepaid	-	-

Conditioning Actions

In addition to the general Conditioning Actions available in the NPP feature, the following Conditioning Action is used to store the location area code from the area code information of the Calling Party Number as the Area Code:

- ACCGPN (Area Code from CgPN) is supported by the MOSMSGCDPN and MOSMSICDPN NPP Services. to store the location area code from the area code information of the Calling Party Number is stored as the Area Code.

Formatting Actions

In addition to the general Formatting Actions available in the NPP feature, the following Formatting Actions support MO SMS NPP.

- RNOSPODN - RN or SP value, if RN or SP was found in RTDB Lookup; Otherwise, the Conditioning Action DN*x* is used for this Formatting Action value.
- RNOSPOZN - RN or SP value, if RN or SP was found in RTDB Lookup; Otherwise, the Conditioning Action SN*x* is used for this Formatting Action value.
- RNOSPOSN - RN or SP value, if RN or SP was found in RTDB Lookup; Otherwise, the Conditioning Action ZN*x* is used for this Formatting Action value.

Chapter 3

Commands

Topics:

This chapter contains brief descriptions of the EAGLE 5 ISS commands that are used for the configuration, control, maintenance, and measurements of the Mobile Originated Short Message Service (MO SMS) features.

EAGLE 5 ISS STP System Options Commands

The STP system options commands (`stpopts`) change and display the STP node level processing options in the EAGLE 5 ISS database. The following sections describe the two variations: `chg-stpopts` and `rtrv-stpopts`. For further details on these commands, refer to *Commands Manual*.

chg-stpopts

Change STP System Options Command – The `chg-stpopts` command changes STP system options in the database. This command updates the STPOPTS table. The `defcc` and `defndc` parameters are used to convert non-international numbers received in the MSU to an international number.

Table 7: chg-stpopts Parameters - Class = DATABASE

Parameter	Optional/ Mandatory	Range	Description
defcc	Optional	1-3 digits, none	Default country code
defndc	Optional	1-5 digits, none	Default network destination code

Command example:

- `chg-stpopts:defcc=33:defndc=22345`

rtrv-stpopts

Retrieve STP System Options Command – The `rtrv-stpopts` command is used to retrieve all STP options from the database. The options that appear in the output vary, depending on the features that are enabled or turned on.

EAGLE 5 ISS GSM System Options Commands

The GSM system options (`gsmopts`) commands change and display GSM system options in the EAGLE 5 ISS database. The following sections describe the two variations: `chg-gsmopts` and `rtrv-gsmopts`. For details about these commands, refer to *Commands Manual*.

chg-gsmopts

Change GSM System Options Command – The `chg-gsmopts` command changes GSM system options in the database. This command updates the GSMOPTS table. The default parameters are always overwritten when specified.

Table 8: `chg-gsmopts` Parameters - Class = DATABASE

Parameter	Optional/ Mandatory	Range	Description
defmapvr	Optional	1-3	Default MAP version. The G-Port or IS41-toGSM Migration (IGM) feature must be enabled before this parameter can be specified.

Command example:

- `chg-gsmopts:defmapvr=2`

rtrv-gsmopts

Retrieve GSM System Options Command

The `rtrv-gsmopts` command displays all GSM system options from the database. The G-Port, EIR, IGM, MO-based GSM SMS NP, MO-based IS41 SMS NP, MO SMS IS41-to-GSM Migration, or V-Flex feature must be enabled or G-Flex feature must be turned on before the command output is displayed.

EAGLE 5 ISS GSM SMS Options Commands

The GSM SMS options (`gsmsmsopts`) commands change and display specific SMS options in the EAGLE 5 ISS database for the MO SMS ASD, MO SMS GRN, MO-based GSM SMS NP, Prepaid SMS Intercept, and Portability Check for MO SMS features. The following sections describe the two variations: `chg-gsmsmsopts` and `rtrv-gsmsmsopts`. For details about these commands, refer to the *Commands Manual*.

The MO SMS ASD, MO SMS GRN, or MO-based GSM SMS NP feature must be enabled to specify the parameters: `mosmsfwd, mosmsgta, mosmssa, mosmstype.`

The MO-based GSM SMS NP or Portability Check for MO SMS feature must be enabled to specify the `mosmsdigmat` parameter.

The MO-based GSM SMS NP or Portability Check for MO SMS feature must be turned on to specify the `mosmstcapseg` parameter.

The MO SMS ASD, MO SMS GRN, MO-based GSM SMS NP, or PPSMS feature must be enabled to specify the parameters: `mosmsaclen, mosmsnai`.

chg-gsmsmsopts

Change GSM SMS Options Command – The `chg-gsmsmsopts` command changes GSM SMS system options in the database. This command updates the GSMSMSOPTS table. The default parameters are always overwritten when specified.

Table 9: `chg-gsmsmsopts` Parameters - Class = DATABASE

Parameter	Optional / Mandatory	Range	Description	Applies to
mosmsaclen	Optional	0-8	Area Code length. This parameter specifies the number of digits taken from the MO SMS CgPA parameter and used as the Area Code in the MO SMS CdPA parameter.	This parameter applies to only messages modified by the MO SMS ASD, MO SMS GRN, MO-based GSM SMS NP, or PPSMS feature.
mosmsdigmat	Optional	exact, bestfit	MO-based SMS HomeSMSC match.	This parameter applies to only messages processed by the MO-based GSM SMS NP feature or the Portability Check for MO SMS feature.
mosmsfwd	Optional	yes, no	MO-based SMS forward	This parameter applies to only messages modified by the MO SMS ASD, MO SMS GRN, or MO-based GSM SMS NP feature.
mosmsgta	Optional	5-21 digits, none	MO-based SMS GTA	This parameter applies to only messages modified by the MO SMS ASD, MO SMS GRN, or MO-based GSM SMS NP feature.
mosrnsnai	Optional	intl, nai, nat, unknown	MO-based SMS NAI	This parameter applies to only messages modified by the MO SMS ASD, MO SMS GRN, MO-based GSM SMS NP, or PPSMS feature.
mosmssa	Optional	yes, no	MO-based SMS sub-address	This parameter applies to only messages modified by the MO SMS ASD, MO SMS GRN, or MO-based GSM SMS NP, or PPSMS feature.
mosmstcapseq	Optional	on, off	MO-based SMS TCAP Segmentation for GSM	This parameter applies to only messages that are modified by the Portability

Parameter	Optional / Mandatory	Range	Description	Applies to
				Check for MO SMS feature or the MO-based GSM SMS NP feature.
mosmstype	Optional	sp, rn, sprn, all	MO-based SMS type	This parameter applies to only messages modified by the MO-based GSM SMS NP feature.

Command example for setting the GSM SMS options when the MO-based GSM SMS NP feature is enabled:

- `chg-gsmsmsopts:mosmsnai=intl:mosmstype=sp:mosmssa=no`

Command example for setting the GSM SMS options when the MO-based GSM SMS NP or Portability Check for MO SMS feature is enabled and turned on:

- `chg-gsmsmsopts:mosmsdigmat=bestfit`

rtrv-gsmsmsopts

Retrieve GSM SMS Options Command

The `rtrv-gsmsmsopts` command displays all GSM SMS options from the database when at least one GSM SMS-related feature is enabled.

EAGLE 5 ISS IS41 SMS Options Commands

The IS41 SMS options (`is41smsopts`) commands change and display SMS options in the EAGLE 5 ISS database for the MO SMS ASD, MO SMS GRN, MO-based IS41 SMS NP, and MO SMS IS41-to-GSM Migration features. The following sections describe the two variations: `chg-is41smsopts` and `rtrv-is41smsopts`. For details about these commands, refer to *Commands Manual*.

The MO SMS ASD, MO SMS GRN, MO-based IS41 SMS NP, or MO SMS IS41-to-GSM Migration feature must be enabled to specify the parameters: `modaparam, mosmsaclen, mosmsnai`.

The MO-based IS41 SMS NP or MO SMS IS41-to-GSM Migration feature must be enabled to specify the `mosmsdigmat` parameter.

The MO-based IS41 SMS NP feature must be enabled to specify the `mosmstype` parameter.

The MO SMS IS41-to-GSM Migration feature must be enabled to specify the `moigmpfx` parameter.

chg-is41smsopts

Change IS41 SMS Options Command - The `chg-is41smsopts` command changes the IS41 SMS system options in the database. This command updates the IS41SMSOPTS table. The default parameters are always overwritten when specified.

Table 10: `chg-is41smsopts` Parameters - Class = DATABASE

Parameter	Optional / Mandatory	Range	Description	Applies to
modaparam	Optional	da, oda	Specifies whether the SMS_DestinationAddress or SMS_Original DestinationAddress from the IS41 SMDPP message is used for conditioning, lookup, and modification.	This parameter applies to only messages modified by the MO SMS ASD, MO SMS GRN, MO-based IS41 SMS NP, or MO SMS IS41-to-GSM Migration feature.
moigmpfx	Optional	ne, is412gsm	MO SMS IS41-to-GSM Migration prefix. This parameter specifies whether the MO SMS IS41-to-GSM Migration feature uses digits from the RTDB network entity (NE) associated with the B number or the `is412gsm` parameter as a prefix to modify the destination address in the outgoing SMDPP.	This parameter applies to only messages modified by the MO SMS IS41-to-GSM Migration feature.
mosmsaclen	Optional	0-8	Area Code length. This parameter specifies the number of digits taken from the MO SMS CgPA parameter and used as the Area Code in the MO SMS CdPA parameter.	This parameter applies to only messages modified by the MO SMS ASD, MO SMS GRN, MO-based IS41 SMS NP, or MO SMS IS41-to-GSM Migration feature.
mosmsdigmat	Optional	exact, bestfit, bypass	HomeSMSC Match with Digits search option	This parameter applies to only messages modified by the MO-based IS41 SMS NP or MO SMS IS41-to-GSM Migration feature.
mosmsnai	Optional	intl, nai, nat, unknown	MO-based SMS Nature Address Indicator	This parameter applies to only messages modified by the MO SMS ASD, MO SMS

Parameter	Optional / Mandatory	Range	Description	Applies to
				GRN, MO-based IS41 SMS NP, or MO SMS IS41-to-GSM Migration feature..
mosmstype	Optional	sp, rn, sprn, all	MO-based SMS Type.	This parameter applies to only messages modified by the MO-based IS41 SMS NP feature.

Command example for setting the IS41 SMS options when the MO-based IS41 SMS NP feature is enabled:

- `chg-is41smsopts:mosmstype=sp:mosmsnai=intl:mosmsdigmat=exact:modaparam=da:mosmsaclen=3`

rtrv-is41smsopts

Retrieve IS41 SMS Options Command

The `rtrv-is41smsopts` command displays all IS41 SMS options from the database when at least one IS41 SMS-related feature is enabled.

EAGLE 5 ISS Prepaid SMS Options Commands

The Prepaid SMS options (`ppsopts`) commands change and display specific SMS options in the EAGLE 5 ISS database for the Prepaid Short Message Service Intercept (PPSMS) feature. The following sections describe the two variations: `chg-ppsopts` and `rtrv-ppsopts`. For details about these commands, refer to the *Commands Manual*.

The Prepaid Short Message Service Intercept (PPSMS) feature must be enabled to use this command.

chg-ppsopts

Change Prepaid SMS Options Command – The `chg-ppsopts` command changes Prepaid SMS system options in the database. This command updates the PPSOPTS table with entries that correspond to Intelligent Network (IN) platforms. The default parameters are always overwritten when specified.

Table 11: `chg-ppsopts` Parameters - Class = DATABASE

Parameter	Optional/ Mandatory	Range	Description
pci	Optional	s-. 0-255, none	ITU international point code with subfields zone-area-id. The prefix

Parameter	Optional/ Mandatory	Range	Description
			subfield indicates a spare point code (prefix-zone-area-id).
pcn	Optional	s-, 0-16383. aa-zz, none	ITU national point code in the format of • a 5-digit number *(nnnnn)*, or • two to four numbers (members) separated by dashes *(m1-m2-m3-m4)* The `prefix` subfield indicates a spare point code.
ppt	Optional	1-32	Prepaid portability type. This parameter specifies the IN platform where the incoming message is sent.
ri	Optional	gt, ssn	Routing indicator. This parameter specifies the IN platform routing indicator.
setid	Optional	1-36000, none, dflt	Set ID. This parameter specifies the MAP set ID if `ri=ssn`, or MRN set ID if `ri=gt`. The Set ID is used by a loadsharing IN platform.
ssn	Optional	2-255, none	Subsystem number. This value is used as the CdPA `ssn` when routing the message to a Prepaid server. If `ssn=none` and `ri=ssn`, the subsystem number is populated using the `ssn` value from the incoming message CdPA parameter. If subsystem number value is not in the CdPA, then `ssn=8` is used to route the message. If a value is specfied for `ssn` , then the `pci` or `pcn` must be provisioned for the corresponding Prepaid server.

Command example for setting the Prepaid SMS options when the Prepaid SMS Intercept feature is enabled:

- `chg-ppsopts:ppt=1:pci=1-1-1:ssn=1:ri=gt`

rtrv-ppsopts

Retrieve Prepaid SMS Options Command

The `rtrv-ppsopts` command displays all Prepaid SMS options from the database.

EAGLE 5 ISS Feature Control Commands

These commands are used to enable, update, view, and control features. A feature must be purchased to have access to the Feature Access Key (FAK). Two steps are required to activate a feature.

1. A Feature Access Key and feature part number are used to enable a feature with the `enable-ctrl-feat` command.
2. The feature part number is used to turn on a feature with the `chg-ctrl-feat` command.

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

chg-ctrl-feat

Change Controlled Feature command - The `chg-ctrl-feat` command is used with controlled features that have been purchased and enabled with the `enable-ctrl-feat` command. The chg-ctrl-feat command requires a feature to be enabled as a prerequisite. The chg-ctrl-feat command is used to:

- Turn on or turn off On/Off features
- Turn on Permanently On features, which are features that cannot be turned off after being turned on
- Clear an expired temporary key alarm without purchasing a permanent Feature Access Key

Command example:

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

enable-ctrl-feat

Enable Controlled Feature command - The `enable-ctrl-feat` command is used to enable a purchased feature. Additional verifications are performed before enabling certain features. These checks include verifying that GTT is turned on and that no TSM cards running the SCCP application are provisioned before enabling the MO-Based GSM SMS NP, MO-Based IS41 SMS NP, MO SMS IS41-to-GSM Migration, Portability Check for MO SMS, Prepaid SMS Intercept, MO SMS ASD, or MO SMS GRN feature.

Command example:

- `enable-ctrl-feat:partnum=893009301:fak=<Feature Access Key>`

rtrv-ctrl-feat:

Retrieve Controlled Feature Command - The `rtrv-ctrl-feat` command is used display the on/off status of the features and to show the remaining trial period if features are temporarily enabled.

EAGLE 5 ISS Numbering Plan Processor Commands

The Numbering Plan Processor (NPP) commands enter, change, delete, and display specific NPP components and options in the EAGLE 5 ISS database. *Numbering Plan Processor for MO SMS Features* on page 36 and the following sections describe the NPP command parameters and values specific to the MO SMS features.

For details about these commands, refer to *Commands Manual*. Refer to *Numbering Plan Processor (NPP) Overview* for comprehensive descriptions of NPP components: Service Actions, Conditioning Actions, Formatting Actions, Action Sets, Rules, and Service Rule Sets.

ent/chg/dlt/rtrv-npp-as

These commands are used to enter, change, delete, and display Numbering Plan Processor (NPP) Actions Sets that contain Service Actions, Conditioning Actions, and Formatting Actions. An Action Set is used by NPP to assist with digit string filtering, conditioning, and encoding. The default parameters are overwritten when specified.

Table 12: NPP Action Set Parameters for MO SMS NPP - Class = DATABASE

Parameter	Optional/ Mandatory	Range	Description
fa1 through fa12	Optional	rnospodn, rnospozn, rnosposn	Formatting Action
sa1 through sa8	Optional	asdlkup, cdial, cdpnnp, cgpnasdrqd, cgpngrnrqd, fraudchk, grnlkup, migrate, pprelay	Service Action

ent/chg/dlt/rtrv-npp-serv

These commands are used to enter, change, delete, and display a Numbering Plan Procesor (NPP) Service entry. An NPP Service is any EAGLE 5 ISS application that uses NPP to assist with processing of digit strings.

Table 13: NPP Service Entries for MO SMS NPP

Parameter	Optional/ Mandatory	Range	Description
srvn	Mandatory	mosmsgcdpn, mosmsgcgpn, mosmigcdpn, mosmigcgpn	NPP Service name

ent/chg/dlt/rtrv-npp-srs

These commands are used to enter, change, delete, and display a Numbering Plan Procesor (NPP) Service Rules Set. A Service Rules Set is a collection of NPP Rules associated with an NPP Service. An NPP Rule is an association between a single NPP filter and a single NPP Action Set.

Table 14: NPP Service Rules Set

srvn	Mandatory	mosmsgcdpn, mosmsgcgpn, mosmigcdpn, mosmigcgpn	NPP Service name

MO SMS NPP Test Tool Commands

The MO SMS NPP Test Tool is used to send a test message to a specified NPP service to verify the call flow behavior when message information is injected into the call path without permitting an effect on actual traffic. Refer to *MO SMS NPP Test Tool* on page 71 for a description of the provisionable table parameters. Refer to *Commands Manual* for a complete description of the MO SMS NPP Test Tool commands, parameters, and parameter values.

The `tst-msg` command invokes the test for the specified ISUP test message from the TESTMSG table, and displays the results.

chg/rtrv-gsm-msg

These commands are used with the MO SMS NPP Test Tool to change and display provisioned parameters for MO SMS GSM test messages. These messages test the flow of MO SMS GSM feature processing.

chg/rtrv-is41-msg

These commands are used with the MO SMS NPP Test Tool to change and display provisioned parameters for MO SMS IS41 test messages. These messages test the flow of MO SMS IS41 feature processing.

tst-msg

This command invokes the Test Tool to test the feature call flow for the message specified from the TESTMSG table. The command sends the specified message from the TESTMSG table to an EAGLE 5 ISS Service Feature. The test message that is sent does not create a new raw MSU. The test message is used to modify the internal data structures to analyze call flow behavior when a message with the specified parameters is injected into the call path. The test message is not transmitted to the network.

EAGLE 5 ISS Service Selector Commands

The service selector (`srvsel`) commands are used to provision service selectors for DSM services. The following sections describe the four variants: `chg-srvsel`, `dlt-srvsel`, `ent-srvsel` and `rtrv-srvsel`. Refer to *Commands Manual* for further details on the EAGLE 5 ISS service selector commands

The `smsmr` value for the `nserv` or `serv` parameters specifies the features:

- MO-based GSM SMS NP
- MO-based IS41 SMS NP
- MO SMS IS41-to-GSM Migration
- Portability Check for Mobile Originated SMS (MNP SMS)
- Prepaid Short Message Service Intercept (PPSMS)
- Mobile Originated SMS Additional Subscriber Data (MO SMS ASD)
- Mobile Originated SMS Generic Routing Number (MO SMS GRN)

chg-srvsel

Change Service Selector Command – The `chg-srvsel` command command assigns the applicable service selectors required to change a service entry for Service Module card services.

Table 15: chg-srvsel Parameters - Class = DATABASE

Parameter	Optional/ Mandatory	Range	Description
gti, gtia, gtii, gtin, gtin24	Mandatory	2, 4	Global Title Indicator
ssn	Mandatory	0-255, *	Subsystem Number
tt	Mandatory	0-255	Translation Type
nai	Optional	sub, rsvd, natl, intl	Nature of Address Indicator
naiv	Optional	0-127	NAI Value
np	Optional	e164, generic, x121, f69, e210, e212, e214, private	Numbering Plan
npv	Optional	0-15	Numbering Plan Value
nserv	Optional	eir, gflex, gport, inpq, inpmr, smsmr, idpr, idps, mnp, vflex, atinp	New service
nsnai	Optional	sub, natl, intl, rnidn, rnndn, rnsdn, ccrndn, none	New Service Nature of Address Indicator
nsnp	Optional	e164, e212, e214, none	New Service Numbering Plan

dlt-srvsel

Delete Service Selector Command – The `dlt-srvsel` command deletes a service selector.

ent-srvsel

Enter Service Selector command – The `ent-srvsel` command assigns the applicable service selectors required to specify a service entry for DSM services.

rtrv-srvsel

Retrieve Service Selector Command – The `rtrv-srvsel` command displays a list of the administered service selectors combinations. Output is sorted first by service, then by global title domain, GTI, translation type, numbering plan, and nature of address indicator. The output can be filtered using various optional parameter combinations.

Maintenance Commands

The maintenance commands provide system status, measurement information, and database management. Command parameter descriptions, valid parameter values, and output examples for these commands and additional commands needed for EAGLE 5 ISS maintenance are fully described in the *Commands Manual*.

rept-stat-sys

This command displays a summary report of the status of the main system entities. This summary report is used to determine the location of troubles in the system. The display shows the number of items that are in service (IS-NR) or in another state (IS-ANR, OOS-MT, OOS-MT-DSBLD).

rept-stat-sccp

This command displays the status of the Service Module cards (DSM and E5-SM4G), the TSM cards running the SCCP application and the services executing on those cards: ANSI-41 Mobile Number Portability (A-Port), ATI Number Portability Query (ATINPQ), Equipment Identity Register (EIR), GSM Flexible Numbering (G-Flex), GSM Mobile Number Portability (G-Port), Global Title Translation (GTT), INAP-based Number Portability (INP), Prepaid IDP Query Relay (IDP Relay), IS41 GSM Migration (IGM), MO-based GSM SMS NP, MO-based IS41 SMS NP, MO SMS IS41-to-GSM Migration, Prepaid Short Message Service Intercept (PPSMS), and Voice Mail Router (V-Flex). This command also displays any cards that are denied SCCP service.

If the MO-based GSM SMS NP, MO-based IS41 SMS NP, MO SMS IS41-to-GMS Migration, Portability Check for Mobile Originated SMS (MNP SMS), or Prepaid Short Message Service Intercept (PPSMS) feature is turned on, the display title for the statistic status is *SMSMR*.

rept-meas

This command generates measurements reports on demand. The reports are displayed on the user interface terminal and are not transferred the the FTP server when the Measurements Platform is enabled.

chg-measopts / rtrv-measopts

The `chg-measopts` command enables or disables the automatic generation and FTP transfer of scheduled measurement reports to the FTP server.

The `rtrv-measopts` command displays the enabled or disabled status of all FTP scheduled reports.

rept-stat-meas

This command reports the status of the Measurements Subsystem, including card location and state, alarm level, and subsystem state.

rept-ftp-meas

This command manually initiates generation and FTP transfer of a measurements report from the MCPM to the FTP server.

rept-stat-trbl

This command displays a summary report of all device trouble notifications logged in the OAM RAM storage area.

rept-stat-db

This command displays a report of various status indicators for the active and standby OAM database, and the status of the database on each network card. The status of the MPS databases and Service Module cards is displayed if specific features are enabled and turned on.

dlt-card / ent-card / rtrv-card

The `dlt-card` command removes a card entry from the system database.

The `ent-card` command adds a card entry to the database. The card type and application specifies the function assigned to the card.

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

dlt-home-smsc / ent-home-smsc / rtrv-home-smsc

One of these features must be enabled to enter any of the `home-smsc` commands:

- MO-based GSM SMS NP
- MO-based IS41 SMS NP
- MO SMS IS41-to-GSM Migration
- MT-based GSM SMS NP
- MT-based IS41 SMS NP
- Portability Check for MO SMS (enabled and turned on)

The `dlt-home-smsc` command deletes Home Short Message Service Center (SMSC) specific addresses from the database. This command updates the HOME SMSCADDR table.

The `ent-home-smsc` command enters Home SMSC specific addresses in the database. This command updates the HOME SMSCADDR table which can contain a maximum of 500 entries.

The `rtrv-home-smsc` command displays Home SMSC specific addresses in the database. This command reads the HOME SMSCADDR table.

Chapter 4

Configuration of Features

Topics:

This chapter provides procedures for configuring the Mobile Originated Short Message Service (MO SMS) features of the EAGLE 5 ISS which include:

- Mobile Originated Based GSM SMS Number Portability (MO-Based GSM SMS NP)
- Mobile Originated Based IS41 SMS Number Portability (MO-Based IS41 SMS NP)
- Mobile Originated SMS IS41-to-GSM Migration (MO SMS IS-41-to-GSM Migration)
- Portability Check for Mobile Originated SMS (MNP SMS)
- Prepaid Short Message Service Intercept (PPSMS)

Introduction

This chapter contain feature activation procedures for the following features:

- Mobile Originated Based GSM SMS Number Portability (MO-Based GSM SMS NP)
- Mobile Originated Based IS41 SMS Number Portability (MO-Based IS41 SMS NP)
- Mobile Originated SMS IS41-to-GSM Migration (MO SMS IS-41-to-GSM Migration)
- Portability Check for Mobile Originated SMS (MNP SMS)
- Prepaid Short Message Service Intercept (PPSMS)
- MO SMS Additional Subscriber Data (MO SMS ASD)
- MO SMS Generic Routing Number (MO SMS GRN)

Summary of Feature Activation

This table summarizes activation information about the features.

Table 16: Feature Activation Summary

Feature Name	Part Number	Temporary FAK Available?	Permanently-On?
MO-Based GSM SMS NP	893019401	No	Yes
MO-Based IS41 SMS NP	893019501	No	Yes
MO SMS IS-41-to-GSM Migration	893026201	No	No, the feature can be turned on or turned off with the `chg-ctrl-feat` command.
MNP SMS	893009301	Yes	No, the feature can be turned on or turned off with the `chg-ctrl-feat` command.
PPSMS	893006701	No	No, the feature can be turned on or turned off with `chg-ctrl-feat` command.
MO SMS ASD	893026701	No	No, the feature can be turned on or turned off with `chg-ctrl-feat` command.
MO SMS GRN	893026601	No	No, the feature can be turned on or turned off with `chg-ctrl-feat` command.

Feature Activation Considerations

- All MO SMS features are mutually exclusive with all features that require ELAP.

- MO-Based GSM SMS NP and MO-Based IS41 SMS NP can be enabled and turned on at the same time; however, an incoming MSU will be processed by either MO-Based GSM SMS NP or MO-Based IS41 SMS NP based on certain MSU characteristics.
- MO SMS IS-41-to-GSM Migration can be enabled and turned on independently of the MO-Based GSM SMS NP and MO-Based IS41 SMS NP features.
- MO-Based GSM SMS NP may co-exist with the MNP SMS and PPSMS features. MO-Based GSM SMS NP intercepts SMS messages after the MNP SMS and PPSMS features process the message.
- Feature activation procedures described in this chapter can be performed only if the Global Title Translation (GTT) feature is turned on.
- With the exception of PPSMS, the MO SMS features described in this chapter cannot be enabled if STPOPTS:ANSIGFLEX is enabled.

CAUTION:

After a permanently-on feature has been enabled and turned on with the `enable-ctrl-feat` and `chg-ctrl-feat` commands, the feature cannot be turned off. Because features may overwrite other features or create changes in the database, confirm that you have a license and full technical support from Tekelec before turning on this or any feature. If you are not sure whether you have purchased a specific feature, contact your Tekelec Sales or Account Representative.

The MO SMS features require Service Module cards running the VSCCP application. Systems with TSM cards running the SCCP application need to be upgraded to Service Module cards (DSM cards or E5-SM4G cards) before enabling an MO SMS feature. Contact the Customer Care Center before replacing the TSM cards running the SCCP application. Refer to *Customer Care Center* on page 3 for contact information.

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

MO-Based GSM SMS NP Feature Activation Procedure

This procedure activates the MO-Based GSM SMS NP feature.

Note: The MO-Based GSM SMS NP feature must be enabled before the Service Action value `cdpnnp` can be specified for the MOSMSGCDPN NPP service. The MOSMSGCDPN NPP service must be provisioned before the MO-Based GSM SMS NP feature is turned on for the feature to be functional.

For details about the commands used in this procedure, see *Commands Manual*.

1. Enter the `enable-ctrl-feat` command to enable the MO-Based GSM SMS NP feature.
   ```
   enable-ctrl-feat:partnum=893019401:fak=<Feature Access Key>
   ```
2. Enter the the `chg-stpopts` command to set the default country code and, if desired, the default network destination code to convert the nature of address indicator (NAI) of MDNs to the international format (`nai=intl`).
   The parameters in this command are used for number conditioning.

Command example:

```
chg-stpopts:defcc=49:defndc=177
```

where:

defcc

The default country code.

defndc

The default network destination code.

3. Verify the new country code and network destination code using the `rtrv-stpopts` command.
4. Enter the `rtrv-gsmsmsopts` command to view the values of the GSMSMSOPTS table options.
5. If desired, change the GSM SMS options in the database for the MO-Based GSM SMS NP feature.

   Command example:

   ```
   chg-gsmsmsopts:mosmstype=sp:mosmsnai=intl:mosmssa=no
   ```

   where:

   mosmstype

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

   mosmsnai

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

   mosmssa

   Specifies whether the MO-based SMS sub-address is searched in the SMS called party (destination) address.

6. Verify the changes using the `rtrv-gsmsmsopts` command.

   This command displays all GSM SMS options from the database.

7. Provision NPP components for this feature. Refer to *Numbering Plan Processor (NPP) Overview* and *Provisioning NPP for MO SMS Features* on page 71 for provisioning information and procedures. After provisioning NPP components for this feature, return to this procedure and continue with the next step.
8. Enter the `chg-ctrl-feat` command to turn on the MO-Based GSM SMS NP feature.

   ```
   chg-ctrl-feat:partnum=893019401:status=ON
   ```

The MO-Based GSM SMS NP feature is enabled, turned on, and operating in the system. The MO-Based GSM SMS NP feature cannot be turned off and cannot be disabled.

MO-Based IS41 SMS NP Feature Activation Procedure

This procedure is used to activate the MO-Based IS41 SMS NP feature.

Note: The MO-Based IS41 SMS NP feature must be enabled before the Service Action value `cdpnnp` can be specified for the MOSMSICDPN NPP service. The MOSMSICDPN NPP service

must be provisioned before the MO-Based IS41 SMS NP feature is turned on for the feature to be functional.

For details about the commands used in this procedure, see *Commands Manual*.

1. Enter the `enable-ctrl-feat` command to enable the MO-Based IS41 SMS NP feature.

   ```
   enable-ctrl-feat:partnum=893019501:fak=<Feature Access Key>
   ```

2. Enter the `ent-srvsel` command to assign the service selector with service feature `serv=smsmr`.

   This command assigns the service selectors required to specify the service entry for the Service Module card services.

   Command example:

   ```
   ent-srvsel:gtia=2:tt=10:serv=smsmr:snp=e164:snai=intl:ssn=255
   ```

   where

   gtia

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

   tt

   Specifies the translation type

   serv

   Specifies the service feature

   snp

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

   snai

   Specifies the international Service Nature of Address Indicator

   ssn

   Defines the subsystem number

3. Enter the the `chg-stpopts` command to set the default country code and, if desired, the default network destination code to convert the nature of address indicator (NAI) of MDNs to the international format (`nai=intl`).

   The parameters in this command are used for number conditioning.

   Command example:

   ```
   chg-stpopts:defcc=49:defndc=177
   ```

   where:

   defcc

   The default country code.

   defndc

   The default network destination code.

4. Verify the new country code and, if changed, network destination code using the `rtrv-stpopts` command.
5. Enter the `rtrv-is41smsopts` command to view the values of the IS41SMSOPTS table options.

6. If desired, change the IS41 SMS options in the database for the MO-Based IS41 SMS NP feature.

   Command example:

   ```
   chg-is41smsopts:mosmstype=sp:mosmsnai=intl
   ```

   where:

   mosmstype

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

   mosmsnai

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

7. Verify the changes using the `rtrv-is41smsopts` command.

   This command displays all IS41 SMS options from the database.

8. Provision NPP components for this feature. Refer to *Numbering Plan Processor (NPP) Overview* and *Provisioning NPP for MO SMS Features* on page 71 for provisioning information and procedures. After provisioning NPP components for this feature, return to this procedure and continue with the next step.
9. Enter the `chg-ctrl-feat` command to turn on the MO-Based IS41 SMS NP feature.

   ```
   chg-ctrl-feat:partnum=893019501:status=ON
   ```

The MO-Based IS41 SMS NP feature is enabled, turned on, and operating in the system. The MO-Based IS41 SMS NP feature cannot be turned off and cannot be disabled.

MO SMS IS41-to-GSM Migration Feature Activation Procedure

This procedure is used to activate the MO SMS IS41-to-GSM Migration feature. This procedure assumes that GTT is enabled and turned on.

Note: The MO SMS IS41-to-GSM Migration feature must be enabled before the Service Action value `migrate` can be specified for the MOSMSICDPN NPP service. The MOSMSICDPN NPP service must be provisioned before the MO SMS IS41-to-GSM Migration feature is turned on for the feature to be functional.

For details about the commands used in this procedure, see *Commands Manual*.

1. Enter the `enable-ctrl-feat` command to enable the MO SMS IS41-to-GSM Migration feature.

   ```
   enable-ctrl-feat:partnum=893026201:fak=<Feature Access Key>
   ```

2. Enter the `ent-srvsel` command to assign the service selector with service feature `serv=smsmr`.

   This command assigns the service selectors required to specify the service entry for the Service Module card services.

   Command example:

   ```
   ent-srvsel:gtia=2:tt=10:serv=smsmr:snp=e164:snai=intl:ssn=255
   ```

   where

gtia

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

tt

Specifies the translation type

serv

Specifies the service feature

snp

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

snai

Specifies the international Service Nature of Address Indicator

ssn

Defines the subsystem number

3. Enter the the `chg-stpopts` command to set the default country code and, if desired, the default network destination code to convert the nature of address indicator (NAI) of MDNs to the international format (`nai=intl`). The parameters in this command are used for number conditioning.

   Command example:

   ```
   chg-stpopts:defcc=49:defndc=177
   ```

   where:

   defcc

   The default country code.

   defndc

   The default network destination code.

4. Verify the new country code and, if changed, network destination code using the `rtrv-stpopts` command.
5. Enter the `rtrv-is41smsopts` command to view the values of the IS41SMSOPTS table options.
6. If desired, change the IS41 SMS options in the database for the MO SMS IS41-to-GSM Migration feature with the chg-is41smsopts command.

   Command example:

   ```
   chg-is41smsopts:mosmsnai=nat:moigmpfx=is412gsm:modaparam=da
   ```

   where:

   mosmsnai

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

   moigmpfx

   Specifies the MO SMS IS41-to-GSM Migration prefix

   modaparam

Specifies whether the SMS_Destination_Address or SMS_Original_Destination_Address from the IS41 SMDPP message is used for conditioning, lookup, and modification

7. Verify the changes using the `rtrv-is41smsopts` command.

   This command displays all IS41 SMS options from the database.

8. Provision NPP components for this feature. Refer to *Numbering Plan Processor (NPP) Overview* and *Provisioning NPP for MO SMS Features* on page 71 for provisioning information and procedures. After provisioning NPP components for this feature, return to this procedure and continue with the next step.
9. Enter the `chg-ctrl-feat` command to turn on the MO SMS IS41-to-GSM Migration feature.

   ```
   chg-ctrl-feat:partnum=893026201:status=ON
   ```

The MO SMS IS41-to-GSM Migration feature is enabled, turned on, and operating in the system. The MO SMS IS41-to-GSM Migration feature can be turned off, but cannot be disabled.

MO SMS ASD Activation Procedure

This procedure is used to activate the MO SMS ASD feature. This procedure assumes that GTT is enabled and turned on, and that the NT serial number has been entered and locked.

- The MOSMSGCDPN and MOSMSGCGPN NPP services must be provisioned before the MO SMS ASD feature is turned on for the feature to be functional.
- The MO SMS ASD feature must be enabled and turned on before the ASDLKUP and CGPNASDRQD Service Actions can execute. The ASDLKUP Service Action is used by the NPP Services: MOSMSGCDPN, MOSMSGCGPN, MOSMSICDPN, MOSMSICGPN . The CGPNASDRQD Service Action is used by the NPP Services: MOSMSGCDPN and MOSMSICDPN.
- The MO SMS ASD feature cannot be enabled if any TSM cards running the SCCP application are installed in the system.

For details about the commands used in this procedure, see *Commands Manual*.

1. Enter the `enable-ctrl-feat` command to enable the MO SMS ASD feature.

   ```
   enable-ctrl-feat:partnum=893026701:fak=<Feature Access Key>
   ```

2. Provision NPP components for this feature. Refer to *Numbering Plan Processor (NPP) Overview* and *Provisioning NPP for MO SMS Features* on page 71 for provisioning information and procedures. After provisioning NPP components for this feature, return to this procedure and continue with the next step.
3. Enter the `chg-ctrl-feat` command to turn on the MO SMS ASD feature.

   ```
   chg-ctrl-feat:partnum=893026701:status=ON
   ```

The MO SMS ASD feature is now enabled, turned on, and operating in the system. The MO SMS ASD feature can be turned off, but cannot be disabled.

MO SMS GRN Activation Procedure

This procedure is used to activate the MO SMS GRN feature. This procedure assumes that GTT is enabled and turned on, and that the NT serial number has been entered and locked.

- The MOSMSGCDPN and MOSMSGCGPN NPP services must be provisioned before the MO SMS GRN feature is turned on for the feature to be functional.
- The MO SMS GRN feature must be enabled and turned on before the GRNLKUP and CGPNGRNRQD Service Actions can execute. The GRNLKUP Service Action is used by the NPP Services: MOSMSGCDPN, MOSMSGCGPN, MOSMSICDPN, MOSMSICGPN . The CGPNGRNRQD Service Action is used by the NPP Services: MOSMSGCDPN and MOSMSICDPN.
- The MO SMS GRN feature cannot be enabled if any TSM cards running the SCCP application are installed in the system.

For details about the commands used in this procedure, see *Commands Manual*.

1. Enter the `enable-ctrl-feat` command to enable the MO SMS GRN feature.
   ```
   enable-ctrl-feat:partnum=893026601:fak=<Feature Access Key>
   ```
2. Provision NPP components for this feature. Refer to *Numbering Plan Processor (NPP) Overview* and *Provisioning NPP for MO SMS Features* on page 71 for provisioning information and procedures. After provisioning NPP components for this feature, return to this procedure and continue with the next step.
3. Enter the `chg-ctrl-feat` command to turn on the MO SMS GRN feature.
   ```
   chg-ctrl-feat:partnum=893026601:status=ON
   ```

The MO SMS GRN feature is now enabled, turned on, and operating in the system. The MO SMS GRN feature can be turned off, but cannot be disabled.

Portability Check for MO SMS Activation Procedure

This procedure is used to activate the Portability Check for MO SMS feature. This procedure assumes that GTT is enabled and turned on, and that the NT serial number has been entered and locked.

Note: The Portability Check for MO SMS feature must be enabled before the Service Action value `fraudchk` can be specified for the MOSMSGCGPN NPP service. The MOSMSGCGPN NPP service must be provisioned before the Portability Check for MO SMS feature is turned on for the feature to be functional.

For details about the commands used in this procedure, see *Commands Manual*.

1. Enter the `enable-ctrl-feat` command to enable the Portability Check for MO SMS feature.
   ```
   enable-ctrl-feat:partnum=893009301:fak=<Feature Access Key>
   ```
2. Provision NPP components for this feature. Refer to *Numbering Plan Processor (NPP) Overview* and *Provisioning NPP for MO SMS Features* on page 71 for provisioning information and

procedures. After provisioning NPP components for this feature, return to this procedure and continue with the next step.

3. Enter the `chg-ctrl-feat` command to turn on the Portability Check for MO SMS feature.

   ```
   chg-ctrl-feat:partnum=893009301:status=ON
   ```

4. Enter the `ent-srvsel` command to assign the service selector with service feature `serv=smsmr`. This command assigns the service selectors required to specify the service entry for the Service Module card services.

   Command example:

   ```
   ent-srvsel:gtii=4:tt=10:serv=smsmr:snp=e164:snai=intl:ssn=255
   ```

   where

   :gtii

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

   :tt

   Specifies the translation type

   :serv

   Specifies the DSM service

   :snp

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

   :snai

   Specifies the service nature of address indicator

   :ssn

   Defines the subsystem number

5. Enter the `rtrv-gsmsmsopts` command to view the values of the GSMSMSOPTS table options.
6. Change the GSM SMS options in the database for the Portability Check for MO SMS feature.

   Command example:

   ```
   chg-gsmsmsopts:mosmsdigmat=bestfit:mosmstcapseg=on
   ```

   where:

   :mosmsdigmat

   Specifies the method used by Portability Check for MO SMS feature to find a Home SMSC match

   :mosmstcapseg

   Specifies whether Mobile-Originated segmented TCAP messages are supported

7. Verify the changes using the `rtrv-gsmsmsopts` command.

   This command displays all GSM SMS options from the database.

8. Enter the `chg-stpopts` command to set the value for the default country code and default network destination code to convert the Nature of Address Indicator (NAI) of MDNs to the international format (nai=intl). The parameters in this command are used for number conditioning.

Command example:

chg-stpopts:defcc=49:defndc=177

:defcc

Specifies the default country code

defndc

Specifies the default network destination code

9. Verify the new values for the default country code and default network destination code using the `rtrv-stpopts` command.

The Portability Check for MO SMS feature is enabled, turned on, and operating in the system. The Portability Check for Mobile Originated SMS feature cannot be turned off if the HomeSMSC Match with Digits option is set to `MOSMSDIGMAT = BESTFIT` or if the TCAP Segmented SMS Support is set to `MOSMSTCAPSEG = ON`. The Portability Check for MO SMS feature cannot be disabled.

Prepaid Short Message Service Intercept Activation Procedure

This procedure is used to activate the Prepaid Short Message Service Intercept feature. This procedure assumes that GTT is enabled and turned on, and that the NT serial number has been entered and locked.

Note: The Prepaid Short Message Service Intercept feature must be enabled before the Service Action value `pprelay` can be specified for the MOSMSGCDPN NPP service. The MOSMSGCDPN and MOSMSGCGPN NPP services must be provisioned before the Prepaid Short Message Service Intercept feature is turned on for the feature to be functional.

For details about the commands used in this procedure, see *Commands Manual*.

1. Enter the `enable-ctrl-feat` command to enable the Prepaid Short Message Service Intercept feature.

   ```
   enable-ctrl-feat:partnum=893006701:fak=<Feature Access Key>
   ```

2. Provision NPP components for this feature. Refer to *Numbering Plan Processor (NPP) Overview* and *Provisioning NPP for MO SMS Features* on page 71 for provisioning information and procedures. After provisioning NPP components for this feature, return to this procedure and continue with the next step.
3. Enter the `chg-ctrl-feat` command to turn on the Prepaid Short Message Service Intercept feature.

   ```
   chg-ctrl-feat:partnum=893006701:status=ON
   ```

4. Enter the `ent-srvsel` command to assign the service selector with service feature `serv=smsmr`.

   This command assigns the service selectors required to specify the service entry for the Service Module card services. The `serv=smsmr` parameter of the `ent-srvsel` command is used for PPSMS Service. This service can be assigned to ITU selectors only. The SNP parameter must be set to E.164 and all values of the SNAI parameter are supported. Refer to *EAGLE 5 ISS Service Selector Commands* on page 55 for more information.

   Command example:

```
ent-srvsel:gtii=4:tt=0:np=e164:nai=intl:serv=smsmr:snp=e164:snai=intl:ssn=8
```

where

:gtii

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

:tt

Specifies the translation type

:np

Specifies the numbering plan

:nai

Specifies the nature of nddress indicator

:serv

Specifies the DSM service

:snp

Defines the service numbering plan

:snai

Specifies the service nature of address indicator

:ssn

Defines the subsystem number

5. Use the `chg-ppsopts` command to enter Prepaid Short Message Service Intercept options. This command updates the PPSOPTS table.

   Command example:

   ```
   chg-ppsopts:ppt=1:ri=gt:pci=1-1-1:ssn=1
   ```

   where:

   :ppt

   Specifies the prepaid portability type

   :ri

   Specifies the routing indicator

   :pci

   Specifies the ITU international point code with subfields *zone-area-id*

   :ssn

   Specifies the subsystem number

6. Use the `ent-map` command to enter mated applications for use with SCCP network management and routing to mated nodes when outgoing RI = route-on-SSN.

   Command example:

   ```
   ent-map:pci=1-1-1:ssn=8:rc=10:mpci=3-3-3:mssn=8:materc=10:grp=smsc
   ```

   This example enters ITU international point code 1-1-1 and ITU international destination point code 3-3-3 as load shared mates. This entry is used only if the Prepaid Short Message Service Intercept RI is equal to the SSN in the PPSOPTS table.

7. Use the ent-mrn command to enter mated relay nodes for routing to the mated node when outgoing RI = route-on-GT.

   Command example:

   ent-mrn:pci=2-2-2:rc=10:pci1=3-3-3:rc1=10

   This example enters Prepaid Short Message Service ITU international point code 2-2-2 and node ITU international point code 3-3-3 as load shared mates. This entry is used only if the Prepaid Short Message Service Intercept RI is equal to the GT in the PPSOPTS table.

The Prepaid Short Message Service Intercept feature is now enabled, turned on, and operating in the system. The Prepaid Short Message Service Intercept feature can be turned off, but cannot be disabled.

Provisioning NPP for MO SMS Features

For detailed information about Numbering Plan Processor, refer to *Numbering Plan Processor (NPP) Overview*. For command specifics, refer to *Commands Manual*. NPP and the associated components for MO SMS features are described in *Numbering Plan Processor for MO SMS Features* on page 36.

NPP provisioning is performed in the following sequence:

1. Provision the FNAI mnemonic values required for filter matches on the NAI values for the service, using the `chg-npp-serv` command.
2. Provision the NPP Action Sets with the Conditioning Actions, Service Actions, Formatting Actions, and outgoing NAI value for the enabled MO SMS feature using the `ent-npp-as` command.
3. Provision the Service Rule Sets (Rules that specify the filter values and Action Sets) MO SMS feature with the `ent-npp-srs` command. Servive Rule Sets are Rules that specify the filter values and Action Sets.
4. Provision any delimiter values used in the outgoing digit string formatting using the `chg-npp-serv` command.
5. Change the Service Status to `on` to allow NPP processing for the specified service: `chg-npp-serv:srvn=<service name>:status=on`

MO SMS NPP Test Tool

The MO SMS NPP Test Tool sends GSM or IS41 messages to test MO SMS NPP provisioning and display information about all NPP filters, rules, and formatting applied to the messages. The GSM messages flow though NPP Services MOSMSGCDPN and MOSMSGCGPN. The IS41 messages flow though NPP Services MOSMSICDPN and MOSMSICGPN. The MO SMS NPP Test Tool is useful for debugging and tracing changes introduced by NPP to the incoming TCAP Called Party Number (CdPN) or Calling Party Number (CgPN) digits. An MO SMS NPP Test Tool message is not transmitted to the network. All test messages are stored in table TSTMSG.

The MO SMS NPP Test Tool provides the following capabilities:

- Define up to 10 GSM test messages (*Table 17: GSM Parameters for TSTMSG Table* on page 72)

- Define up to 10 IS41 test messages (*Table 18: IS41 Parameters for TSTMSG Table* on page 72)
- Invoke the feature with NPP to process the test message
- Generate a report of the actions taken and the results of the test

Differences between Test Messages and Actual MO SMS GSM/IS41 Message Flow:

- Test messages are executed from task Npp_Test.
- Test messages do not contribute to `rept-stat-sccp` counters displayed under SMSMR service.
- Test messages do not contribute to measurements.
- Test messages are not sent to the network.

Refer to *Commands Manual* and *MO SMS NPP Test Tool Commands* on page 55 for descriptions of the commands, parameter values, and output examples.

Note: The specified message must be set to `active=yes` before the test is invoked for the message.

Table 17: GSM Parameters for TSTMSG Table

Parameter	Range	Default
active	yes, no	no
cdpadgts	hexadecimal digit string of 1 to 15 digits	0123456789abcde
cdpagti	0-15	4 (GT with TT/NP/ES/NAI)
cdpagtnai	0-127	4 (International)
cdpndgts	hexadecimal digit string of 1 to 20 digits	0123456789abcde
cdpnnai	0-7	1 (International)
cdpnnp	0-15	1 (MAP_NUM_ISDN)
cgpadgts	hexadecimal digit string of 1 to 15 digits	0123456789abcde
cgpagti	0-15	4 (GT with TT/NP/ES/NAI)
cgpagtnai	0-127	4 (International)
cgpndgts	hexadecimal digit string of 1 to 21 digits	0123456789abcde
cgpnnai	0-7	1 (International)
cgpnnp	0-15	1 (MAP_NUM_ISDN)

Table 18: IS41 Parameters for TSTMSG Table

Parameter	Range	Default
active	yes, no	no

Parameter	Range	Default
cdpadgts	hexadecimal digit string of 1 to 15 digits	0123456789abcde
cdpagti	0-15	4 (GT with TT/NP/ES/NAI)
cdpagtnai	0-127	4 (International)
cdpndgts	hexadecimal digit string of 1 to 21 digits	0123456789abcde
cdpnes	0-15	1 (IS41_BCD_ECD)
cdpnnai	0-1	1 (International)
cdpnnp	0-15	2 (IS41_TELEPHONY_NUM)
cgpadgts	hexadecimal digit string of 1 to 15 digits	0123456789abcde
cgpagti	0-15	4 (GT with TT/NP/ES/NAI)
cgpagtnai	0-127	4 (International)
cgpndgts	hexadecimal digit string of 1 to 21 digits	0123456789abcde
cgpnes	0-15	1 (IS41_BCD_ECD)
cgpnnai	0-1	1 (International)
cgpnnp	0-15	2 (IS41_TELEPHONY_NUM)

The `tst-msg` command sends the message provisioned in table TSTMSG to the EAGLE 5 ISS Service Feature indicated by the `feat` parameter. The tst-msg format is:

```
tst-msg:loc=<loc>:prot=<gsm, is41,
ttr>:msgn=<message_number>:feat=<mosmsnpp, ttr>
```

loc Location of the network card where the test message is sent

prot Type of test message

msgn Message number of test message within the PROT=type messages

feat EAGLE 5 ISS Service Feature that processes the message on the network card. For `feat=mosmsnpp`, the only valid choice is `prot=gsm` or `prot=is41`.

Chapter 5

Maintenance and Measurements

Topics:

This chapter describes the maintenance and measurements information available from the EAGLE 5 ISS for the MO SMS features. The information includes status, alarms (UAMs), information messages (UIMs), and reports from the Measurements Platform.

Hardware Requirements

EPAP-based features require Service Module cards (DSM cards or E5-SM4G cards) running the VSCCP application. The EAGLE 5 ISS can be equipped with from 1 to 25 Service Module cards to support EPAP-based features.

CAUTION:

Having a mix of Service Module cards running the VSCCP application and TSM cards running the SCCP application is not permitted when EPAP-based features are enabled. All TSM cards that are running the SCCP application must be removed from the system before EPAP-based features can be enabled.

EPAP-based features require EPAP operating on a T1000 AS MPS system .

Alarms

Refer to *Unsolicited Alarm and Information Messages* for descriptions and corrective procedures for alarms related to EAGLE 5 ISS. Refer to *MPS Platform Software and Maintenance Manual - EAGLE 5 ISS with T1000 AS* for descriptions and corrective procedures for MPS-related alarms.

UIMs

This section lists the Unsolicited Information Messages (UIMs) used to support the MO SMS features. Refer to *Unsolicited Alarm and Information Messages* manual for a complete description of all UIM text and formats.

Table 19: Unsolicited Information Messages

UIM	Text	Description	Action
1374	SMS B-party Address decode failed	An error was detected during decode of the SMS message destination address.	The message should be analyzed to determine the error, and the originating node should be contacted to send a corrected message.
1375	SMS Failed to modify TCAP MSU	The formatted outbound digit string length generated by MO SMS features for encoding the TCAP message exceeded system limits.	The message and outbound digits formatting should be analyzed to determine the error, and the originating node or the requested outbound digits formatting option should be modified to correct the encoding error.

UIM	Text	Description	Action
1376	SMS Failed to modify B-party digits	During processing of the SMS message, the formatted outbound digit string length exceeded limit for number of digits.	The message and the digit format provisioning should be analyzed to determine the error, and the originating node or the requested outbound digit formatting option should modified to correct the encoding error.
1410	MOSMS: Migrated Subscriber with no entity	No entity is defined in the RTDB for the migrated subscriber. The subscriber is found to be migrated and the migration prefix must be the entity resulting from the RTDB Lookup.	Ensure that the subscriber has an entity in the RTDB or change the value for MOIGMPFX in Table IS41SMSOPTS.
1416	MAP Missing Mandatory Parameters	An MO SMS feature cannot decode the GSM MAP message because mandatory parameters (SM-RP-UI or SM-RP-OA) in the TCAP portion of the message are missing.	Ensure that the message contains all mandatory parameters.
1425	SMS A-party Address decode failed	Decoding of the SMS_OOA parameter fields of the IS41 SMDPP message failed. MSU encountered a decoding error.	Ensure that the SMDPP message contains a corrctly formatted SMS_OOA parameter.

Measurements

Refer to *Measurements* manual for detailed measurement usage information.

OAM and Measurements Platform

Both the OAM and Measurements Platform (MP) collect measurement pegs for the MO SMS features. The measurement pegs track events on the basis of system total and Service Switching Point (SSP).

Both System Total (SYSTOT) pegs and Service Switching Point (SSP) pegs are updated as described in the following table.

Table 20: Measurements Pegs for MO SMS Features

Event Name	Description	Feature	Unit
SMSMOGRCV	Total number of MO-SMS messages received that result in a modification of the outgoing MO-SMS	MO-based GSM SMS NP	Peg count
SMSMOGERR	Total number of MO-SMS messages received that result in an error	MO-based GSM SMS NP	Peg count
SMSMOIRCV	Total number of SMDPP messages received that result in a modification of the outgoing SMDPP	MO-based IS41 SMS NP, MO SMS IS41-to-GSM Migration	Peg count
SMSMOIERR	Total number of SMDPP messages received that result in an error	MO-based IS41 SMS NP, MO SMS IS41-to-GSM Migration	Peg count
GPNOCL	Number of non-call related messages relayed by G-Port; Number of MO Forward Short Messages (MO FSMs) relayed by Prepaid SMS Intercept to an IN platform	G-Port, Prepaid SMS Intercept	Peg count
GPNOCLGT	Number of non-call related messages that fell through to GTT; Number of messages subject to Prepaid SMS Intercept to processing that fell through to GTT	G-Port, Prepaid SMS Intercept	Peg count

Measurement Reports

Scheduled and on-demand measurements reports are available by the following administrative commands. Refer to *Commands Manual* for detailed usage information.

For Measurements Platform:

- *chg-measopts* - used to enable or disable the automatic generation and FTP transfer of scheduled measurement reports to the FTP server
- *rept-stat-meas* - reports the status of the measurements subsystem including card location and state, Alarm level, and Subsystem State
- *rept-ftp-meas* - manually initiates generation and FTP transfer of a measurements report from the MCPM to the FTP server
- *rtrv-measopts* - generates a user interface display showing the enabled/disabled status of all FTP scheduled reports

Daily	`rept-ftp-meas:type=mtcd:enttype=np`
Hourly	`rept-ftp-meas:type=mtch:enttype=np`

For OAM Platform:

- *chg-meas* - used to change both the report and collecting status of the OAM-based measurement subsystem

- *rept-meas* - used to generate on-demand measurement reports which are displayed on the user interface terminal and are not transferred to the customer FTP server

Daily	`rept-meas:type=mtcd:enttype=np`
Hourly	`rept-meas:type=mtch:enttype=np`

Glossary

A

ANSI-41 Mobile Number Portability	A feature that enables IS-41 subscribers to change their service provider while retaining the same Mobile Dialed Number (MDN).
A-Port	ANSI-41 Mobile Number Portability
ATINPQ	ATI Number Portability Query (Name of the local subsystem)

C

CdPA	Called Party Address The portion of the MSU that contains the additional addressing information of the destination of the MSU. Gateway screening uses this additional information to determine if MSUs that contain the DPC in the routing label and the subsystem number in the called party address portion of the MSU are allowed in the network where the EAGLE 5 ISS is located.
CgPA	Calling Party Address The point code and subsystem number that originated the MSU. This point code and subsystem number are contained in the calling party address portion of the signaling information field of the MSU. Gateway screening uses this information to determine if MSUs that contain this point code and subsystem number area allowed in the network where the EAGLE 5 ISS is located.

D

D

DB	Database Daughter Board Documentation Bulletin
DEFCC	Default Country Code
DN	Directory number A DN can refer to any mobile or wireline subscriber number, and can include MSISDN, MDN, MIN, or the wireline Dialed Number.
DPC	Destination Point Code DPC refers to the scheme in SS7 signaling to identify the receiving signaling point. In the SS7 network, the point codes are numeric addresses which uniquely identify each signaling point. This point code can be adjacent to the EAGLE 5 ISS, but does not have to be.
DSM	Database Service Module. The DSM provides large capacity SCCP/database functionality. The DSM is an application card that supports network specific functions such as EAGLE Provisioning Application Processor (EPAP), Global System for Mobile Communications (GSM), EAGLE Local Number Portability (ELAP), and interface to Local Service Management System (LSMS).

E

EIR	Equipment Identity Register A network entity used in GSM networks, as defined in the 3GPP Specifications for mobile networks. The entity stores lists of

E

International Mobile Equipment Identity (IMEI) numbers, which correspond to physical handsets (not subscribers). Use of the EIR can prevent the use of stolen handsets because the network operator can enter the IMEI of these handsets into a 'blacklist' and prevent them from being registered on the network, thus making them useless.

F

FAK — Feature Access Key

The feature access key allows the user to enable a controlled feature in the system by entering either a permanent feature access key or a temporary feature access key. The feature access key is supplied by Tekelec.

FSM — Finite State Machine

FTP — File Transfer Protocol

A client-server protocol that allows a user on one computer to transfer files to and from another computer over a TCP/IP network.

G

G-Flex — GSM Flexible numbering

A feature that allows the operator to flexibly assign individual subscribers across multiple HLRs and route signaling messages, based on subscriber numbering, accordingly.

GMSC — Gateway MSC

G

G-Port — GSM Mobile Number Portability

A feature that provides mobile subscribers the ability to change the GSM subscription network within a portability cluster, while retaining their original MSISDN(s).

GSM — Global System for Mobile Communications

GTA — Global Title Address

GTI — Global Title Indicator

GTT — Global Title Translation

A feature of the signaling connection control part (SCCP) of the SS7 protocol that the EAGLE 5 ISS uses to determine which service database to send the query message when an MSU enters the EAGLE 5 ISS and more information is needed to route the MSU. These service databases also verify calling card numbers and credit card numbers. The service databases are identified in the SS7 network by a point code and a subsystem number.

H

HLR — Home Location Register

I

IGM — IS41 GSM Migration

IN — Intelligent Network

A network design that provides an open platform for developing, providing and managing services.

I

INP	INAP-based Number Portability Tekelec's INP can be deployed as a stand-alone or an integrated signal transfer point/number portability solution. With Tekelec's stand-alone NP server, no network reconfiguration is required to implement number portability. The NP server delivers a much greater signaling capability than the conventional SCP-based approach. Intelligent Network (IN) Portability
IS41 GSM Migration	A feature that adds GSM IS-41 migration functions to the existing IS-41 to GSM feature. This enhancement provides flexibility in the encoding and decoding of parameters of LOCREQ messages and responses to number migration from one mobile protocol to another.
IS-ANR	In Service - Abnormal The entity is in service but only able to perform a limited subset of its normal service functions.
IS-NR	In Service - Normal
ISS	Integrated Signaling System

M

MAP	Mobile Application Part
MCPM	Measurement Collection and Polling Module The Measurement Collection and Polling Module (MCPM) provides

M

	comma delimited core STP measurement data to a remote server for processing. The MCPM is an EDSM with 2 GB of memory running the MCP application.
MNP SMS	Portability Check for Mobile Originated SMS
MO	Magneto Optical Managed Object Mobile Originated Refers to a connection established by a mobile communication subscriber. Everything initiated by the mobile station is known as mobile originated.
MP	Measurement Platform Message Processor The role of the Message Processor is to provide the application messaging protocol interfaces and processing. However, these servers also have OAM&P components. All Message Processors replicate from their System OAM's database and generate faults to a Fault Management System.
MSC	Mobile Switching Center
MSISDN	Mobile Station International Subscriber Directory Number The MSISDN is thenetwork specific subscriber number of a mobile communications subscriber. This is normally the phone number that is used to reach the subscriber.

M

MSU — Message Signaling Unit

The SS7 message that is sent between signaling points in the SS7 network with the necessary information to get the message to its destination and allow the signaling points in the network to set up either a voice or data connection between themselves. The message contains the following information:

- The forward and backward sequence numbers assigned to the message which indicate the position of the message in the traffic stream in relation to the other messages.
- The length indicator which indicates the number of bytes the message contains.
- The type of message and the priority of the message in the signaling information octet of the message.
- The routing information for the message, shown in the routing label of the message, with the identification of the node that sent message (originating point code), the identification of the node receiving the message (destination point code), and the signaling link selector which the EAGLE 5 ISS uses to pick which link set and signaling link to use to route the message.

MTP — The levels 1, 2, and 3 of the SS7 protocol that control all the functions necessary to route an SS7 MSU through the network.

N

N

NAI	Nature of Address Indicator Standard method of identifying users who request access to a network.
NP	Number Plan
NPDB	Number Portability Database

O

OOS-MT	Out of Service - Maintenance The entity is out of service and is not available to perform its normal service function. The maintenance system is actively working to restore the entity to service.

P

PPSMS	Prepaid Short Message Service Prepaid Short Message Service Intercept
Prepaid IDP Query Relay	A feature (IDP Relay) that provides a mechanism to insure correct charging for calls from prepaid subscribers in a portability environment.

R

RTDB	Real Time Database

S

SCCP	Signaling Connection Control Part
SMS	Short Message Service
SMSC	Short Message Service Center

S

SSN	Subsystem Number The subsystem number of a given point code. The subsystem number identifies the SCP application that should receive the message or the subsystem number of the destination point code to be assigned to an X.25 address or the LNP subsystem of the EAGLE 5 ISS. A value of the routing indicator portion of the global title translation data commands indicating that no further global title translation is required for the specified entry.
STP	Signal Transfer Point STPs are ultra-reliable, high speed packet switches at the heart of SS7 networks, which terminate all link types except F-links. STPs are nearly always deployed in mated pairs for reliability reasons. Their primary functions are to provide access to SS7 networks and to provide routing of signaling messages within and among signaling networks.
Subsystem Number	See SSN.

T

TC	Table Copy Transaction Capabilities
TCAP	Transaction Capabilities Application Part
TSM	Translation Services Module

T

	Provides SCCP functionality or GLS functionality for Local Number Portability (LNP)/SCCP (GTT). The SCCP software allows the TSM to be used as a memory board for Global Title Translation (GTT).
TT	Translation Type. Resides in the Called Party Address (CdPA) field of the MSU and determines which service database is to receive query messages. The translation type indicates which Global Title Translation table determines the routing to a particular service database.

U

UDT	Unit Data Transfer

V

V-Flex	Voicemail Flexible Routing An advanced database application based on the industry proven EAGLE 5 ISS. Deployed as a local subsystem on the EAGLE platform, V-Flex centralizes voicemail routing.

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