Tekelec EAGLE® 5

# Feature Manual - IDP-Related Features

910-5906-001 Revision A
September 2010

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# Chapter 1

# Introduction

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This manual describes IDP-related features that provide mechanisms to process calls from prepaid subscribers to ensure correct charging and check credit status, and mechanisms for A-Party blacklist checking and routing of calls based on the Calling Party (A-Party).

# Introduction

This manual describes the following features:

- Prepaid IDP Query Relay (IDP Relay) - Provides a mechanism to ensure the correct charging for calls from prepaid subscribers in a portability environment.
  - Service Portability - Allows an own-network subscriber to port to a different network technology with the same service provider.
  - S-Port Subscriber Differentiation - Can be used with the Service Portability feature to allow use of ASD digits to provide an additional Routing Number per own-network subscriber. (ASD digits, if provisioned, are used in place of GRN digits).
- IDP Relay-related features: IDPR Additional Subscriber Data (IDPR ASD) and IDPR Generic Routing Number (GRN) - Provide RTDB lookup to obtain ASD and GRN data for message formatting.
- IDP A-Party Blacklist - Provides subscriber blacklist checking on the Calling Party (A-Party or CGPN) number in the IDP CAMEL or INAP message, and routing of the call to a predetermined number when the call is flagged as blacklisted.
- IDP A-Party Routing - Provides routing of the IDP message based on the A-Party (Calling Party) in the message instead of the SCCP CdPA.
- IDP Service Key Routing - Provides routing of the IDP message based on the Service Key and EventTypeBCSM parameters in the message instead of the SCCP CdPA.
- IDP Screening for Prepaid - Provides a mechanism to decide, before routing calls to the prepaid engine, whether checking the credit status of prepaid subscribers is required.

# Scope and Audience

This manual is intended for anyone responsible for installing, maintaining, and using Prepaid IDP Relay Query and IDP-related features in the EAGLE 5 ISS. Users of this manual and the others in the EAGLE 5 ISS family of documents must have a working knowledge of telecommunications and network installations.

# Manual Organization

This document is organized into the following chapters:

- *Introduction* contains general information about the documentation for IDP-related features, organization of this manual, and how to get technical assistance.
- *Prepaid IDP Query Relay Feature* describes the IDP Relay feature and related features for Additional Subscriber Data and Generic Routing Number. It describes the functions of IDP Relay, the user interface for IDP Relay-related features, and the message protocols for IDP Relay-related features.

- *IDP A-Party Blacklist Feature* describes the functions, user interface, and message protocols for the IDP A-Party Blacklist feature.
- *IDP A-Party Routing Feature* describes the functions, user interface, and message protocols for the IDP A-Party Routing feature and the IDP Service Key Routing feature.
- *IDP Screening for Prepaid Feature* explains how this feature provides a mechanism to decide, prior to routing the calls to the prepaid engine, whether checking the credit status of prepaid subscribers is required.
- *Feature Configuration* provides procedures for configuring the IDP Relay-related features for use in the EAGLE 5 ISS.

## 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. 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 Problem Reports (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.

## 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**:<br>(This icon and text indicate the possibility of *personal injury*.) |
|  | **WARNING**:<br>(This icon and text indicate the possibility of *equipment damage*.) |
|  | **CAUTION**:<br>(This icon and text indicate the possibility of *service interruption*.) |

## Customer Care Center

The Tekelec Customer Care Center is your initial point of contact for all product support needs. A representative takes your call or email, creates a Customer Service Request (CSR) and directs your requests to the Tekelec Technical Assistance Center (TAC). Each CSR includes an individual tracking number. Together with TAC Engineers, the representative will help you resolve your request.

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.

Tekelec TAC Engineers are available to provide solutions to your technical questions and issues 7 days a week, 24 hours a day. After a CSR is issued, the TAC Engineer determines the classification of the trouble. If a critical problem exists, emergency procedures are initiated. If the problem is not critical, normal support procedures apply. A primary Technical Engineer is assigned to work on the CSR and provide a solution to the problem. The CSR is closed when the problem is resolved.

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

**Tekelec - Global**

Email (All Regions): support@tekelec.com

- **USA and Canada**

  Phone:

1-888-FOR-TKLC or 1-888-367-8552 (toll-free, within continental USA and Canada)

1-919-460-2150 (outside continental USA and Canada)

TAC Regional Support Office Hours:

8:00 a.m. through 5:00 p.m. (GMT minus 5 hours), Monday through Friday, excluding holidays

- **Central and Latin America (CALA)**

  Phone:

  USA access code +1-800-658-5454, then 1-888-FOR-TKLC or 1-888-367-8552 (toll-free)

  TAC Regional Support Office Hours (except Brazil):

  10:00 a.m. through 7:00 p.m. (GMT minus 6 hours), Monday through Friday, excluding holidays

  - **Argentina**

    Phone:

    0-800-555-5246 (toll-free)
  - **Brazil**

    Phone:

    0-800-891-4341 (toll-free)

    TAC Regional Support Office Hours:

    8:30 a.m. through 6:30 p.m. (GMT minus 3 hours), Monday through Friday, excluding holidays
  - **Chile**

    Phone:

    1230-020-555-5468
  - **Colombia**

    Phone:

    01-800-912-0537
  - **Dominican Republic**

    Phone:

    1-888-367-8552
  - **Mexico**

    Phone:

    001-888-367-8552
  - **Peru**

    Phone:

    0800-53-087
  - **Puerto Rico**

    Phone:

    1-888-367-8552 (1-888-FOR-TKLC)

- **Venezuela**

  Phone:

  0800-176-6497

- **Europe, Middle East, and Africa**

  Regional Office Hours:

  8:30 a.m. through 5:00 p.m. (GMT), Monday through Friday, excluding holidays

  - **Signaling**

    Phone:

    +44 1784 467 804 (within UK)

  - **Software Solutions**

    Phone:

    +33 3 89 33 54 00

- **Asia**

  - **India**

    Phone:

    +91 124 436 8552 or +91 124 436 8553

    TAC Regional Support Office Hours:

    10:00 a.m. through 7:00 p.m. (GMT plus 5 1/2 hours), Monday through Saturday, excluding holidays

  - **Singapore**

    Phone:

    +65 6796 2288

    TAC Regional Support Office Hours:

    9:00 a.m. through 6:00 p.m. (GMT plus 8 hours), Monday through Friday, excluding holidays

## Emergency Response

In the event of a critical service situation, emergency response is offered by the Tekelec Customer Care Center 24 hours a day, 7 days a week. The emergency response provides immediate coverage, automatic escalation, and other features to ensure that the critical situation is resolved as rapidly as possible.

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

- A total system failure that results in loss of all transaction processing capability
- Significant reduction in system capacity or traffic handling capability

- Loss of the system's ability to perform automatic system reconfiguration
- Inability to restart a processor or the system
- Corruption of system databases that requires service affecting corrective actions
- Loss of access for maintenance or recovery operations
- Loss of the system ability to provide any required critical or major trouble notification

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

## Locate Product Documentation on the Customer Support Site

Access to Tekelec's Customer Support site is restricted to current Tekelec customers only. This section describes how to log into the Tekelec Customer Support site and locate a document. Viewing the document requires Adobe Acrobat Reader, which can be downloaded at www.adobe.com.

1. Log into the *Tekelec Customer Support* site.

   **Note:** If you have not registered for this new site, click the **Register Here** link. Have your customer number available. The response time for registration requests is 24 to 48 hours.

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

# Prepaid IDP Query Relay Feature

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The Prepaid IDP Query Relay feature (IDP Relay) provides a mechanism to ensure the correct charging for calls from prepaid subscribers in a portability environment.

## Feature Description

This chapter describes the Prepaid IDP Query Relay (IDP Relay) feature and the following IDP Relay-related features:

- *IDP Relay Additional Subscriber Data Feature*
- *IDP Relay Generic Routing Number Feature*

IDP Relay Interactions with the following features are described in this chapter; the features are described in separate chapters:

- *IDP A-Party Blacklist Feature*
- *IDP A-Party Routing Feature*

The Prepaid IDP Query Relay feature (IDP Relay) provides a mechanism to ensure the correct charging for calls from prepaid subscribers in a portability environment.

IDP Relay processes messages with ITU MTP/SCCP/TCAP parts that are GT-routed. It does not process MTP-routed messages.

IDP Relay provides functions that handle complex numbering schemes and number conditioning, such as the following examples:

- The Nature of Address Indicator (NAI) could be used in a non-compliant manner (the NAI is set to International and the number format is not international).
- The Local Area Code (LAC) 2- byte field of the Local Area Identification (LAI) information element is used in one of the following ways:
  - As the Area Code in cases where the AC is needed but not provided in the CdPN
  - To determine how to format the outgoing CdPN in the IDP query
- The collect call Escape Codes 90 and 90909 might need to be stripped and re-inserted after the RN.
- The Carrier Selection Point (CSP) can be removed from the incoming number and sometimes re-inserted (as when the LAC is not equal to the AC).
- The RN for the CgPN might be needed when the call is identified as a collect call.
- Service Key selection could vary, and could require a change in the number of bytes present the Service Key.
- Unsegmented XUDT messages might be required.
- Sometimes the RN but not the SP, or the SP but not the RN, or both the RN and SP are required in the outgoing number format.

When Mobile Switching Centers (MSCs) in the network are configured to send IDP prepaid query messages through the EAGLE 5 ISS, the EAGLE 5 ISS intercepts the IDP query based on a set of configurable criteria, performs a number portability (RTDB) lookup on the called number, inserts the portability information (Routing Number or HLR Address), and forwards the IDP query to a prepaid SCP for processing. When a respective entry is found in the RTDB, any processing is controlled by NPP Service Actions and configuration option provisioning in the TTROPTS table. The CdPN can be modified with the portability information (Routing Number or HLR address) and the CgPN.

Regardless of any actions performed on the IDP query by the IDP Relay feature, the query is always forwarded to the prepaid SCP (PPSCP) for processing.When the SCP receives the IDP query, all information necessary for call processing and billing is present. The IDP Relay feature alleviates the need to launch a separate number portability database query.

There are three types of Number Portability. IDP Relay supports all three types:

- Provider NP - the subscriber can move to another service provider and keep the same number
- Location NP - the subscriber can move to another location within the same service provider network and keep the same number

  This manual describes Provider NP and Location NP together as "NP".
- Service NP - the subscriber can move to another service technology (GSM or IS41) within the same service provider network and keep the same number

  This manual describes Service NP as "Service Portability" or "S-Port".

## IDP Relay High Level Message Flow

IDP Relay high-level message flow

- Service Selection
  - Component match
  - Service Selector IDPR or TTR
- Identify number type and context
  - ITU TCAP message with Op Code = IDP
  - SCCP CdPA found in CSL GT list
  - SK+BCSM present and found in CSL SKBCSM list
- NPP Pre-processing
  - TCAP DN present
  - Number conditioning
- NPP Processing
  - IDPRCDPN service called
    - Conditioning Actions
    - Service Actions
    - Formatting Actions
  - CgPN Lookup needed - IDPRCGPN service called
    - Conditioning Actions
    - Service Actions
    - Formatting Actions
- Post NPP Processing
  - Encode outgoing IDP message
- Peg measurements
- Pass to GTT for routing

## Call Flows

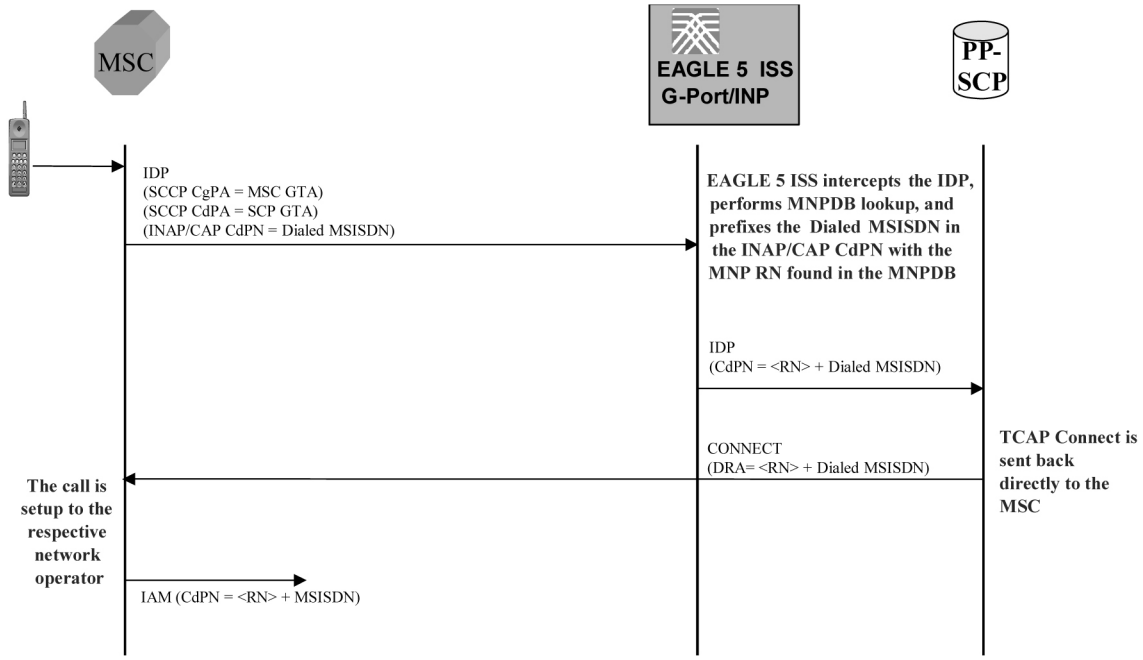
### Mobile Originated Prepaid Call to a Ported Out Subscriber

This scenario encompasses the following subscriber types:

- **Own Subscriber Ported Out** - Refers to an Own Subscriber who has ported to a Foreign Network.
- **Foreign Subscriber Ported to Foreign Network** - Refers to a Foreign Subscriber who has ported to a different Foreign Network.
- **Foreign Subscriber** (optional, dependent on how the RTDB is provisioned) - Refers to a subscriber whose number belongs to the number range of a Foreign Network, and who has not ported to another Foreign Network.
- **Foreign Subscriber Not Known to be Ported** (optional, dependent on how the RTDB is provisioned) - Refers to a Foreign Subscriber whose portability status is unknown by the querying network.

When a prepaid subscriber attempts to originate a call, the MSC/VLR must first query a prepaid SCP before attempting to complete the call, in order to determine if the subscriber has enough credit to complete the call.

**Figure 1: MO Prepaid Call to Ported Out Subscriber**




When a prepaid subscriber originates a call, the MSC/VLR serving that subscriber formulates an INAP or CAP IDP message and routes it to the Prepaid SCP. This message is routed by GTT (SCCP CdPA = PPSCP GTA), with the EAGLE 5 ISS serving as either the Intermediate or Final GTT service provider. In either case, the EAGLE 5 ISS is either an Intermediate or Final GTT service provider for the message in order for the IDP Relay service to be triggered (the message arriving at the EAGLE 5 ISS must have MTP DPC = Eagle PC, SCCP CdPA RI = route-on-GT, and SCCP CdPA GTA = PPSCP).

Upon receipt of the IDP message, the SCCP CdPA TT, SSN, NP, NAI, and GTI Service Selectors are examined to determine which EAGLE 5 ISS SCCP service is required . If the message parameters match

the provisioned Service Selector combination for IDP Relay service in general, the IDP Relay service determines whether this specific IDP message requires processing, based on examination of the SCCP CdPA GTA digits (which should be the GTA of a PPSCP), the TCAP Operation Code, and the combination of Service Key and EventTypeBCSM in the INAP/CAP layer. If the SCCP CdPA GTA matches one of the provisioned PPSCP addresses, the Operation Code signifies IDP, and the Service Key and EventTypeBCSM matches one of the provisioned service values for the IDP Relay service, then the message is processed by IDP Relay. Otherwise, the message continues through normal SCCP processing.

If the intercepted IDP message is selected for IDP Relay service, IDP Relay processing extracts the B-party number (CDPN, the number which was dialed by the prepaid subscriber) from the INAP/CAP CalledPartyNumber parameter or from the CAP CalledPartyBCDNumber parameter, and performs a lookup in the RTDB (after some number filtering and conditioning).

In this scenario, the EAGLE 5 ISS finds a match on the B-party DN in the RTDB with an association to a Routing Number (RN).

**Note:** Typically, an DN entered in the database with an association to an RN indicates that the number is either (a) an Own Number ported to another network, or (b) a Foreign Number which has been ported to another foreign network. In some cases (depending upon how the customer chooses to provision the database), this may also indicate a Foreign Number which is not known to be ported.

After finding a match on DN with an associated RN in the RTDB, the the INAP/CAP CDPN parameter is modified by prefixing the RN information to the DN. The CDPN NAI parameter will be copied from the incoming value, or changed to 'Unknown', based on the provisioned IDP Relay configuration options. The IDP Relay service may be configured to either send the same NAI as was received in the incoming CDPN, or to send the value 'Unknown' in all cases.

**Note:** The term CDPNNAI is used in this document to represent the value in the INAP/CAPCDPN parameter. In INAP, this parameter is known as “NAI”, while in CAP, it is known as “Type of Number”. CDPNNAI is used here to represent both for simplicity.

After the required modifications are performed, the modified IDP message is routed through GTT to the PPSCP indicated by the original GTA in the SCCP CdPA, which was not altered as a result of the IDP Relay operation. The PPSCP receives the modified IDP message, which contains the portability information needed to correctly charge for the call. The SCP then returns the appropriate response to the MSC/VLR, either allowing or denying the call.

In order for the IDP Relay feature to provide accurate portability information for all ported numbers, all ported numbers must be entered into the RTDB, including Own numbers ported out as well as Foreign numbers ported to foreign networks. If a foreign number ported to a foreign network is not entered in the database with a routing number (either in the individual or range entry tables), IDP Relay will not find a match, and will not be able to prefix the routing number information to the CDPN in the IDP message with the routing number of the current subscription network. Thus, the original IDP message unmodified is sent to the SCP with CDPN = dialed DN only. However, even in this case it is possible for the SCP to differentiate calls within the own network from calls to foreign networks very easily.

#### Mobile Originated Prepaid Call to Imported or Own Non-Ported Subscriber

This scenario encompasses the following subscriber types:

- **Own Subscriber** - Refers to a subscriber whose number belongs to the number range of the Own Network and who has not ported to another network.
- **Foreign Subscriber Ported In** - Refers to a Foreign Subscriber who has ported into the Own Network.

When a prepaid subscriber attempts to originate a call, the MSC/VLR must first query a Prepaid SCP before attempting to complete the call, in order to determine if the subscriber has enough credit to complete the call.

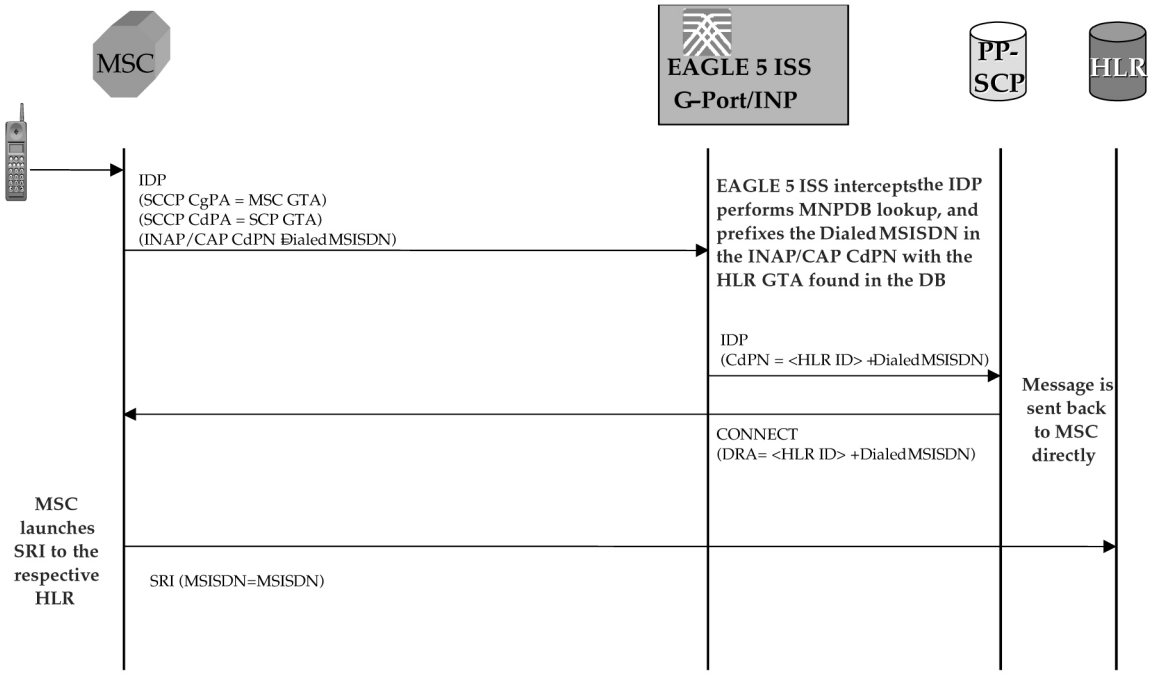
When a prepaid subscriber originates a call, the MSC/MSC/VLR serving that subscriber formulates an INAP or CAP IDP message and routes it to the Prepaid SCP. This message is routed by GTT (SCCP CdPA = PPSCP GTA), with the EAGLE 5 ISS serving as either the Intermediate or Final GTT service provider. In either case, the EAGLE 5 ISS is either an Intermediate or Final GTT service provider for the message in order for the IDP Relay service to be triggered (message arriving at the EAGLE 5 ISS must have MTP DPC = Eagle PC, SCCP CdPA RI = route-on-GT, and SCCP CdPA GTA = PPSCP).

Upon receipt of the IDP message, the the SCCP CdPA TT, SSN, NP, NAI, and GTI Service Selectors to are examined to determine which SCCP service is required . If the message parameters match the provisioned Service Selector combination for IDP Relay service in general, the SCCP CdPA GTA digits (which should be the GTA of a PPSCP), the TCAP Operation Code, and the combination of Service Key and EventTypeBCSM in the INAP/CAP layer are examined to determine whether this specific IDP message requires IDP Relay processing. If the SCCP CdPA GTA matches one of the provisioned PPSCP addresses, the Operation Code signifies IDP, and the Service Key and EventTypeBCSM matches one of the provisioned service values for the IDP Relay service, then the message enters IDP Relay processing. Otherwise, the message continues through normal SCCP processing.

If the intercepted IDP message is selected for IDP Relay service, IDP Relay processing extracts the B-party number (CDPN - the number which was dialed by the prepaid subscriber) from the INAP/CAP CalledPartyNumber parameter or from the CAP CalledPartyBCDNumber parameter, and performs a lookup in the RTDB (after some number filtering and conditioning).

In this scenario, a match is found on the DN in the RTDB with an association to an SP entity ID (HLR GTA).

**Figure 2: MO Prepaid Call to an Imported or Own-Non-Ported Subscriber**



In this case, the PPSCP always requires an SP ID to be prefixed to the DN in the CDPN - for both Foreign Numbers Ported In as well as Own Numbers never ported. Based on this, IDP Relay requires that all such numbers be entered in the RTDB with an association to an SP ID, either as individual numbers (which is likely the case for imported numbers), or in a number range (which is likely the case of own numbers not ported). This distinction is made because in a standard MNP node, it is often standard practice not to enter Own Subscribers never ported. For SP queries, the standard GTT translation normally suffices for these subscribers, and it is not required to enter them into the RTDB. If these numbers are not entered, IDP Relay will not find a match, and would simply transfer the IDP message without modification to the PPSCP (containing DN only in CDPN).

This may not be an issue if the PPSCP correctly interprets when the PPSCP receives an IDP without any RN or SP ID, it assumes the DN is an Own Subscriber, and acts accordingly. It is also beneficial to enter all own subscribers with the respective HLR-ID to streamline MNP processing in networks with a high prepaid subscriber base.

**Mobile Originated Prepaid Call to Foreign (Non-Ported) Subscriber**

In this scenario, an IDP message is received for a number which is a foreign (non-own-network) number and which has not been ported. Their are two options in this scenario, both configurable through provisioning. In one case, a number range for the foreign network is entered with a Generic Routing Number for the network. In this case, IDP Relay reacts in the same way as with a ported-out number, prefixing the CDPN with the RN taken from the number range entry. Although the number is technically not ported, the use of a range with an RN would still point to the correct network.

Alternatively, if the number is not provisioned in the RTDB at all, or is entered without an associated routing number/HLR ID, the IDP message is not modified and the message is simply be relayed to the SCP. In this scenario, the SCP returns the IDP response to the MSC without any prefix.

This method could also be used for Own Subscribers never ported (no entry in the RTDB), which would cause IDP Relay to send the unmodified IDP message to the PPSCP.

## CdPN Number Format Identification

The format of the incoming number and the context surrounding the call factor into both the conditioning of the number for the RTDB search and the manner in which the message is treated as a result. The following details about the number must be known:

- Is the call terminating to a subscriber in the home country? (Calls terminating to numbers outside the home country are not subject to IDP Relay because number portability does not cross international boundaries).
- Is the calling subscriber roaming or dialing from inside the home country? (Determines if numbers dialed as national numbers are treated as in-country or out-of-country terminated).
- Was the number dialed with Escape Codes? (These must be deleted for RTDB lookup, but might be re-inserted for transmission).

The INAP/CAP CDPN parameter includes a CDPN NAI parameter which indicates the Nature of Address for the dialed digits (International, National, Subscriber, or Unknown). This parameter alone cannot always be relied upon to determine the format of the CDPN. For example,

- The CDPN can contain a National number, but the CDPN NAI may be marked “Unknown”.
- A National number dialed while a subscriber is roaming must be treated differently than a National number dialed while a subscriber is in his/her home country/network. The condition of whether the calling subscriber is roaming or not cannot be determined from the CDPN NAI in the CDPN.

The following additional checks must be applied to the received IDP in order to determine how the message will be treated.

- **Escape Codes**

  Subscribers are normally required to enter an International Escape Code (IEC) before dialing the digits of an International number. For example, in some countries, the digits *00* must be dialed before dialing an International number.

  Subscribers are also normally required to enter a National Escape Code (NEC) to before dialing long distance National numbers. For example, many countries require a single *0* to be dialed before dialing a National number.

  Escape codes must be removed before IDP Relay performs the RTDB lookup, because the numbers in the RTDB are always provisioned in International format. When an Escape Code is used, the CDPN NAI will be *unknown*. Therefore, the presence or absence of an IEC or NEC will indicate whether the number is International or National.

  If a message is received with CDPN NAI = unknown, IDP Relay first checks the leading digits of the number for a match with a provisioned IEC or NEC, and treats the number accordingly. If CDPN NAI = unknown and no match is found on the IEC or NEC, the number is treated as National with no preceding NEC.

- **Calling Subscriber Roaming**

  Roaming is another factor in the structure of the incoming IDP message. Whether or not the calling subscriber is roaming when the call is placed determines how the message is treated.

  When a subscriber is roaming, all incoming IDP messages generated from calls made by that subscriber are CAMEL Application Part (CAP) rather than INAP message. When a roaming subscriber dials a National Number (number without a Country Code), the call is treated differently that when a non-roaming subscriber dials a National Number. This is because when a subscriber dials a National number while roaming Internationally, it is assumed that the subscriber is attempting to dial a number in the country where he or she is currently roaming, and not in the home country (if the subscriber wishes to dial a number in the home country, it must be dialed as an International number since the subscriber is roaming).

  Because RTDB checks are not conducted across International boundaries, calls from a roaming subscriber to a National number are subject to IDP Relay service. Calls from the same subscriber to a National number when the subscriber is not roaming are subject to IDP Relay service because these numbers are assumed to be terminating in the subscriber's home country, where portability applies. The National number digits could be identical in these two cases, although the actual destination is different.

  For these reasons, the IDP Relay function might need to be able to distinguish between an IDP received for a call generated by a roaming subscriber and one generated by a non-roaming subscriber. The IDP Relay service provides the CgPA Check configuration option to select whether IDP messages generated by roaming subscribers should be subjected to IDP Relay processing, or be routed through standard GTT processing.

  If the CgPA Check option is on, the roaming status of the calling subscriber is determined by comparing the Country Code in the SCCP CGPA parameter of the IDP message with the provisioned STPOPTS Default Country Code (DEFCC value). (The provisioned DEFCC value corresponds to the *home* network. If a subscriber is roaming, the CC of the visited MSC will not match the provisioned DEFCC value). If National roaming is allowed, the respective scenarios are treated as if the subscriber is not roaming. A roaming scenario is not detected by the CgPA Check and IDP Relay processing is performed. The the CgPA Check option is ON by default. If the operator wants

the IDP Relay feature to process IDP messages generated from roaming subscribers, the CgPA Check option must be turned OFF.

- **Call Placed to Country Other than Home Country**

  The IDP Relay CgPA Check does not apply if a subscriber dials a number in a country other than subscriber's home country. The INAP/CAP CdPN Country Code is checked against the provisioned DEFCC value. If a match is not found, it means the subscriber has dialed a number outside his home country and IDP Relay is not required. The message falls through to GTT processing or to another SCCP service.

## Service Selection

When an IDP is sent by an MSC, it is sent to the Prepaid SCP (PPSCP) through the EAGLE 5 ISS for GTT processing. As such, the message will contain MTP DPC = EAGLE 5 ISS PC and SCCP CdPA = PPSCP GTA with RI = GT. Because the MTP destination of the message is the EAGLE 5 ISS, the message is delivered to the EAGLE 5 ISS for SCCP processing.

The SCCP CdPA Translation Type (TT), Numbering Plan (NP), Nature of Address (NAI), Global Title Indicator (GTI), and Subsystem Number (SSN) parameters are examined to determine which SCCP service is being requested.

The parameters can match a Service Selector entry that indicates the IDPR service or the TTR service.

- If the service is IDPR, checking of additional IDPR service selection criteria continues for IDP Relay.
- If the service is TTR, the TCAP Type is examined.
  - If the TCAP Type is IS41, the message is passed to the Info Analyzed Relay Base (IAR Base) feature for processing. Refer to the *Feature Manual - Analyzed Information Features* for information about IAR-related features.
  - If the TCAP Type is GSM, checking of additional TTR service selection criteria continues for IDP Relay.

This combination of parameters may or may not be enough to determine that the message should receive IDP Relay service. (For example, if other IDP messages could be received that do not require IDP Relay, the Service Selectors could be identical for all IDP messages. Therefore, additional service selection criteria are required.

If the parameter combination is consistent with service selectors for the IDP Relay service, the SCCP CdPA GT digits are compared to a provisioned Common Screening List (CSL) of Prepaid SCP GTs. This list should contain all SCPs that could be the recipient of an IDP message for prepaid query.

If the SCCP CdPA GT matches one of the provisioned PPSCP GTs, service selection continues to determine if IDP Relay is required.

- The TCAP Operation Code is examined; if it is not "IDP", the IDP message is passed to standard GTT processing.
- The combination of INAP/CAP Service Key and EventTypeBCSM from the message is compared to a provisioned Common Screening List of Service Keys + Event Types. If the Service Key + EventTypeBCSM matches one of the provisioned SKBCSM combinations pointing to IDP Relay service, then the message is sent for IDP Relay service.

IDP messages not matching these criteria either fall through to standard GTT processing, or are sent to another SCCP service for which the criteria match.

## Number Conditioning

Once the format of the CDPN number has been determined, conditioning (if necessary) is performed before an RTDB lookup. The RTDB stores numbers in full International format only. Numbers not received in International format must first be converted (conditioned) before performing an RTDB lookup. *Table 2: IDP Relay Number Conditioning* summarizes the IDP Relay number conditioning process.

### CDPN Received in International Format

There are 2 number format determination cases which result in a number being declared in International format.

- CDPN Received in Correct International Format (CDPN NAI = "International")

  In the case that the INAP/CAP Called Party Number or Called Party BCD Number is already in International format (as determined by the CDPN NAI parameter set to "International") with no extra prefixes or suffixes, including no Escape Codes, no conditioning is required by IDP Relay prior to RTDB lookup.

- CDPN Received with IEC Prefixed to International Digits (CDPN NAI = "Unknown")

  If the CDPN NAI = Unknown, IDP Relay first searches for an International Escape Code (IEC). If an IEC is found, the received CDPN is conditioned prior to RTDB lookup by removing the IEC, leaving only the International digits (CC+DN).

### CDPN Received in National Format

There are 3 number format determination cases which result in a number being declared in National format.

- CDPN Received in Correct National Format (CDPN NAI = National)

  The INAP/CAP Called Party Number (or Called Party BCD Number) is received in correct National format (as determined by CDPN NAI parameter set to "National") with no extra prefixes or suffixes, including no Escape Codes. If the calling subscriber is not roaming, then IDP Relay conditions the CDPN by prefixing the provisioned DEFCC value to the DN prior to conducting the RTDB lookup.

- CDPN Received with NEC Prefixed to National Digits (CDPN NAI = Unknown)

  If the CDPN NAI = Unknown, IDP Relay first searches for an International Escape Code (IEC), and if no match, then searches for a National Escape Code (NEC). If an NEC is found, the received CDPN must be conditioned prior to RTDB lookup by first removing the NEC, then prefixing the provisioned DEFCC value to the remaining National digits (DN), resulting in an International number for lookup.

- CDPN Received without Prefix, but CDPN NAI = "Unknown"

  In this case, the CDPN is in a National format without a prefixed Escape Code, but the CDPN NAI is still marked "Unknown" rather than "National". After searching first for an IEC, then for a NEC prefixed to the CDPN and finding neither, IDP Relay assumes that the number is in National format. If the subscriber is not roaming, then IDP Relay conditions the number prior to RTDB lookup by adding the provisioned DEFCC value to the digits received in the CDPN, which are assumed to be DN without a prefix.

**Table 2: IDP Relay Number Conditioning**

| Incoming Address Format | | | Number Conditioning | Outgoing Address Format | |
|---|---|---|---|---|---|
| **TCAP DN NAI** | **Perform SCCP CGPA DEFCC Check?** | **TCAP DN Format** | | **NAI** | **Format** |
| International | No | CC DN | None.<br>Do RTDB lookup. | If PFX3=UNKN<br>NAI=unknown<br>Else<br>NAI=International | PFX1 CC RN DN |
| National | if PFX4=ON | DN | Add DEFCC.<br>Do RTDB lookup. | If PFX3=UNKN<br>NAI=unknown<br>Else<br>NAI=National | PFX2 RN DN |
| Unknown | No | IEC CC DN | CSL Delete prefix found, (P1=International),<br>remove it,<br>Do RTDB Lookup | NAI=unknown | IEC CC RN DN |
| Unknown | if PFX4=ON | NEC DN | CSL Delete prefix found, (P1=National),<br>remove it,<br>Add DEFCC,<br>Do RTDB Lookup | NAI=unknown | NEC RN DN |
| Unknown | if PFX4=ON | DN | No delete prefix found.<br>Add DEFCC,<br>Do RTDB Lookup | NAI=unknown | RN DN |
| **Legend** | | | | | |

| Incoming Address Format | | | Number Conditioning | Outgoing Address Format | |
|---|---|---|---|---|---|
| TCAP DN NAI | Perform SCCP CGPA DEFCC Check? | TCAP DN Format | | NAI | Format |
| **CC** Country Code<br>**PFX** Prefix Number<br>**DN** Directory Number<br>**IEC** International Escape Code<br>**RTDB** Real Time Database | | **CSL** Common Screening List<br>**CGPA** Calling Party Address<br>**UNKN** Unknown<br>**NEC** National Escape Code | | **DEFCC** Default Country Code<br>**NAI** Nature of Address Indicator<br>**SCCP** Signaling Connection Control Part<br>**TCAP** Transaction Capabilities Application Part | |

## NPP Processing for IDP Relay

When an IDP message had been identified as requiring IDP Relay processing, NPP processing of the message begins.

See the *Numbering Plan Processor (NPP) Overview* manual for more information about NPP components and processing.

**NPP Pre-Processing**

The message is decoded and verified.

**NPP Processing**

IDP Relay provides the IDPRCDPN and IDPRCGPN services to NPP for processing IDP messages. The filters and Action Sets in the NPP Service Rules that are provisioned for IDP Relay services are used to determine what NPP processing is required.

- The IDPRCDPN service is used to process TCAP Called Party Numbers (CdPN).
- The IDPRCGPN service is used to process Calling Party Numbers (CgPN).

The IDPRCDPN NPP service is called first, to begin NPP processing of the CdPN.

- NPP executes the provisioned Conditioning Actions to condition the number to International format for RTDB lookup, and to extract information that can be used to format the outgoing message.
- NPP executes the provisioned Service Actions to perform an RTDB lookup on the conditioned CdPN, to obtain data and populate Formatting Action values to be used for outgoing message formatting.
- NPP executes the provisioned Formatting Actions, if allowed by the Service Actions, to format the outgoing message.

If CgPN processing is needed, the IDPRCDPN service invokes the IDPRCGPN service.

- NPP executes the provisioned Conditioning Actions to condition the number to International format for RTDB lookup, and to extract information that can be used to format the outgoing message.
- NPP executes the provisioned Service Actions to perform an RTDB lookup on the conditioned CgPN. The following types of data can be searched for in the CgPN lookup:
  - CgPN Additional Subscriber Data (ASD)
  - CgPN Generic Routing Number (GRN)
  - Subscriber blacklist status (see *IDP A-Party Blacklist Feature*)
  - A-Party routing or Service Key routing requirements (see *IDP A-Party Routing Feature*)

## RTDB Lookup

The called IDP Relay Service Actions search the RTDB with the conditioned INAP/CAP CdPN or CgPN digits from the IDP message. The lookup results in one of 4 outcomes:

- **Match on Digits with RN (Routing Number)**

  The number belongs to a Foreign Network, and could be an Own Subscriber ported out, or a Foreign Subscriber. The IDP Relay prefixes the RN to the CdPN digits and relays to the PPSCP.

- **Match on Digits with SP (SP Address)**

  The number belongs to the Own Network, and could be an Own Subscriber, or a Foreign Subscriber ported in. IDP Relay prefixes the SP address to the CdPN digits and relays to the PPSCP.

- **Match on digits, but no associated RN or SP**

  A number was entered in the RTDB, but the portability status is unknown. Data might be entered in this format because it is an All Call Query solution based on SRF, but regulation does not allow prefixing of non-ported numbers. If IDP Relay finds such a match, the \ IDP Relay function is terminated and the message is routed through standard GTT to the PPSCP. The INAP/CAP portion of the message is not modified; only the MTP and SCCP CdPA are modified if required by standard GTT.

- **No Match on Digits**

  The number is not in the RTDB. Generally, this indicates that the number has never been ported (in or out), or is an unknown number. The IDP Relay function is terminated, and the message is routed though standard GTT to the PPSCP. The INAP/CAP portion of the message is not modified, and only the MTP and SCCP CdPA are modified if required by standard GTT.

The CgPN is modified only if the entity type matches the CGNPTYPE option value. If the CGNPTTYPE does not match or the CgPN lookup fails, the CgPN is not modified and processing continues for the CdPN.

## NPP Conditioning Actions

The IDP Relay services can use all Conditioning Actions provided by NPP.

The IDP Relay IDPRCDPN service uses the ACCGPN Conditioning Action.

IDP Relay provides and uses the ACLAC Conditioning Action.

IDP A-Party Routing adds the CCCGPN Conditioning Action to the Conditioning Actions used by IDP Relay.

**Table 3: IDP Relay Conditioning Actions**

| Name | Description | Function |
|---|---|---|
| ACLAC - Area Code from Location Area Code (LAC) | Area code is not included in the incoming DN and needs to be obtained from the Local Area Information (LAI) | The ACLAC Conditioning Action obtains the Area Code from the LAI and populates the AC Formatting Action value with the LAI Area Code. These digits will be used as the Area Code (AC) to condition the Called Party digits for any subsequent Service Action or Formatting Action. |
| CCCGPN - CgPN Country Code | The Country Code needs to be extracted from the Calling Party Number. | The number of digits specified in the SCCPOPTS CCLEN option are extracted from the CgPN and used to populate the value of the CC Formatting Action (if it is provisioned). The CC Formatting Action value is used in the formatting the resulting CdPN. |
| ACCGPN - CgPN Area Code | The Area Code needs to be extracted from the Calling Party Number. | If a match is found to the provisioned STPOPTS DEFCC value, the Country Code is skipped. The number of digits specified in the SCCPOPTS ACLEN option are extracted from the CgPN and used to populate the value of the CC Formatting Action (if it is provisioned). The CC Formatting Action value is used in the formatting the resulting CdPN. |

## NPP Service Actions

The NPP Service Actions listed in *Table 4: Service Actions used by the IDP Relay Feature* are used by the IDP Relay feature and related features. Before an NPP Rule can be provisioned with an Action Set containing a Service Action for the IDP Relay feature or a related feature, the feature must be enabled. The precedence indicates the sequence of execution if more than one Service Action is used by a service in a Service Rule.

**Table 4: Service Actions used by the IDP Relay Feature**

| Service Action | Description | Service | Precedence |
|---|---|---|---|
| ASDLKUP | Performs an RTDB lookup to obtain CdPN Additional Subscriber Data (ASD) that can | IDPRCDPN, IDPRCGPN | 50 |

| Service Action | Description | Service | Precedence |
|---|---|---|---|
| | be used when formatting the outgoing CdPN. | | |
| CCNCCHK | Used to match conditioned number to a CCNC Common Screening List entry; used only during upgrade. | IDPRCDPN | 100 |
| CDPNNP | Performs RTDB lookup on conditioned CdPN; populates provisioned RN and SP Formatting Action values from successful lookup. See *CDPNNP Service Action Handler*. | IDPRCDPN | 80 |
| CgPNASDRqd | Used to Invoke the IDPRCGPN service to obtain CgPN Additional Subscriber Data for use when formatting the CdPN. | IDPRCDPN | 50 |
| GRNLKUP | Use of CdPN Generic Routing Number when formatting CdPN | IDPRCDPN, IDPRCGPN | 50 |
| CgPNGRNRqd | Used to Invoke the IDPRCGPN service to obtain CgPN Generic Routing Number when formatting the CdPN. | IDPRCDPN | 90 |
| CGPNSVCRQD | Used to invoke the IDPRCGPN service for CgPN number conditioning and RTDB lookup. | IDPRCDPN | 80 |
| CGPNNP | Performs RTDB lookup on conditioned CgPN; populates provisioned RN and SP Formatting Action values from successful lookup. (Does not check for Service Portability requirement; does not use GRN data.) If the entity found is RN and PT=0, the entity is processed as an SP. See *CGPNNP Service Action Handler*. | IDPRCGPN | 80 |
| LACCK | Match LAI LAC with populated AC; on match, delete FPFX and PFXA digits. | IDPRCDPN | 80 |
| CDIAL | Corrective Dialing; can be invoked by any other Service Action to force Formatting Action execution even if the | IDPRCDPN, IDPRCGPN | 10 |

| Service Action | Description | Service | Precedence |
|---|---|---|---|
| | Service Action indicates that Formatting Action execution should not be performed. | | |

### *CDPNNP Service Action Handler*

The CDPNNP Service Action Handler performs an RTDB lookup on the conditioned CdPN. A successful lookup is one that returns an entity of the type defined by the NPTYPE configuration option.

The CDPNNP Service Action recognizes own-network IS41 and own-network GSM subscribers.

#### Configuration Options Used

The TTROPTS NPTYPE option is used to define the success of the RTDB lookup.

The TTROPTS SPFILL option controls the populating of the SP entity type if the DFLTRN option value or GRN data is used for NPP processing.

The TTROPTS RNSPFILL option controls the populating of the RN and SP entity types to the values of the digits from the RTDB lookup when specific conditions are met.

The TTROPTS SPORTTYPE option is used to specify the type of Service Portability processing that is applied if Service Portability is used with IDP Relay.

#### Action Performed

Before an RTDB lookup is performed, the conditioned TCAP DN is matched to the CSL CCNC list. If a match is not found in CCNC list, the MSU falls through to GTT handling.

The RTDB lookup is performed on the conditioned CdPN. If a match on the NPTYPE value is found, the following actions are performed:

- If the SRFIMSI value is present in an SP or RN entity, the SRFIMSI value is used to populate the SRFIMSI Formatting Action value.
- When the Service Portability feature is ON, CDPNNP populates the RN Formatting Action with the value of the GRN entity from the RTDB entry in the following cases:
  - RTDB lookup results in a successful entity type match with the NPTYPE option value, the subscriber is an own-network IS41 subscriber, and the TTROPTS SPORTTYPE option value is IS41 or ALL
  - RTDB lookup results in a successful entity type match with the NPTYPE option value, the subscriber is an own-network GSM subscriber, and the TTROPTS SPORTTYPE option value is GSM or ALL

  The RN populated with the GRN digits can be used during execution of the Formatting Actions for the outgoing message
- The TTROPTS SPFILL option value is used to control the population of RTDB RN and SP digits are populated under the control or the TTROPTS SPFILL option value and the TTROPTS RNSPFILL option value, as shown in *Table 5: RTDB Lookup Success Criteria and Results*.

If the IGM feature is ON or the Service Portability feature is enabled, then an entity type of RN and a portability type of 0 is considered to be SP when checking for an NPTYPE match.

The `tst-msg` output for the CDPNNP Service Action Handler indicates if a Service Portability match was encountered. See *TTR Test Tool*.

If the returned digit string value is less than 5 digits, the IDP Relay feature generates an error message and the message falls through to GTT.

If the returned digit string value is greater than 15 digits, only the first 15 digits are used.

**Terminating Action?**

This is not a terminating action.

**Table 5: RTDB Lookup Success Criteria and Results**

| Case | NPTYPE Value | RTDB "Effective" Entity Type | RN | SP |
|---|---|---|---|---|
| 1 | RN | RN | Use Network Entity digits. | Not set |
| 2 | RNSP, RNSPDN, ANY, ALWAYS | RN | Use Network Entity digits. | If SPFILL option is ON, and RNSPFILL option is ON, use Network Entity digits. |
| 3 | SP | SP | If match on Service Portability, use GRN digits. Otherwise, use DFLTRN value if provisioned. | If RN was not found, or SPFILL option is ON, use Network Entity digits. |
| 4 | RNSP, RNSPDN, ANY, ALWAYS | SP | If match on Service Portability, use GRN digits.<br>If no match on Service Portability, use DFLTRN value if provisioned.<br>If DFLTRN value is not provisioned, and RNSPFILL is ON, use Network Entity digits. | If RN was not found, or SPFILL option is ON, use Network Entity digits. |

### *CGPNNP Service Action Handler*

The CGPNNP Service Action Handler performs an RTDB lookup on the conditioned CgPN. A successful lookup is one that returns an entity of the type defined by the CGNPTYPE configuration option.

**Configuration Options Used**

The TTROPTS CGNPTYPE option is used to define the success of the RTDB lookup.

The TTROPTS SPFILL option controls the populating of the SP entity type if the DFLTRN option value is used for NPP processing.

The TTROPTS RNSPFILL option controls the populating of the RN and SP entity types to the values of the digits from the RTDB lookup when specific conditions are met.

**Action Performed**

Before an RTDB lookup is performed, the conditioned TCAP DN is matched to the CSL CCNC list. If a match is not found in CCNC list, the MSU falls through to GTT handling.

The RTDB lookup performed on the conditioned CgPN. If a match on the CGNPTYPE value is found, the following actions are performed:

- If the SRFIMSI value is present in an SP or RN entity, the SRFIMSI value is used to populate the SRFIMSI Formatting Action value.
- The TTROPTS SPFILL option value is used to control the population of RTDB RN and SP digits are populated under the control or the TTROPTS SPFILL option value and the TTROPTS RNSPFILL option value, as shown in *Table 5: RTDB Lookup Success Criteria and Results*.

  **Note:** This table notes that the Service Portability check is performed for CdPN, but not for CgPN.

If the IGM feature is ON or the Service Portability feature is enabled, then an entity type of RN and a portability type of 0 is considered to be SP when checking for an NPTYPE match.

If the returned digit string value is less than 5 digits, the IDP Relay feature generates an error message and the message falls through to GTT.

If the returned digit string value is greater than 15 digits, only the first 15 digits are used.

**Terminating Action?**

This is not a terminating action.

## NPP Formatting Actions

IDP Relay supports all Formatting Actions provided by NPP. IDP Relay does not provide any additional Formatting Actions.

## Service Portability for IDP Relay

With the Service Portability feature, the subscriber has ported to a different network technology with the same service provider. The Service Portability use case is very similar to number portability with the exception of what is used as the prefix for the Called Party digits. Service Portability is applicable to the CDPNNP Service Action, but not to the CGPNNP Service Action.

Service Portability is controlled by the Service Portability feature P/N 893-0343-01. The SPORTTYPE option in the TTROPTS table controls the mode of the Service Portability for IDP Relay. These options have the following values:

- NONE - Apply standard NP processing for own-network GSM and IS41 subscribers.
- GSM - Use the GSM Service Portability prefix for GSM own-network subscribers, and apply standard NP processing for own-network IS41 and OLO subscribers.

- IS41 - Use the IS41 Service Portability prefix for Is41 own-network subscribers, and apply standard NP processing for own-network GSM and OLO subscribers.
- ALL - Use the GSM Service Portability prefix for GSM own-network subscribers, use the IS41 Service Portability prefix for IS41 own-network subscribers, and apply standard NP processing for OLO subscribers.

The determination of whether or not to invoke Service Portability depends on the subscriber's Entity type and the Portability Type. The subscriber is considered as an own-network IS41 subscriber if the Entity type is RN and the Portability Type is 0 (RN/PT=0). The subscriber is considered as an own-network GSM subscriber if the Entity type is SP with any Portability Type. In the case of RN/PT=0, the RN for this subscriber is actually considered to be the SP (the IS-41 HLR address).

After the Service Portability feature is considered to be applicable, the Service Action attempts to use the subscriber GRN data in the RTDB as the Service Portability prefix. This GRN is populated in the RN Formatting Action value as the Service Portability prefix. The TTROPTS SPFILL option value and TTROPTS:RNSPFILL option value determine the content of the RN and SP, as shown in *Table 5: RTDB Lookup Success Criteria and Results*.

### *S-Port Subscriber Differentiation*

S-Port Subscriber Differentiation can be used with Service Portability to allow use of provisioned ASD digits in place of GRN digits as an alternative Routing Number for own-network subscribers. For example, the ASD can be used as the subscriber's private routing number (for message relay features) and the GRN as the subscriber's public routing number (for query/response features).

The S-Port Subscriber Differentiation controlled feature (Part Number P/N 893-0379-01) and the SCCPOPTS SUBDFRN configuration option control S-Port Subscriber Differentiation operation. The SUBDFRN option cannot be provisioned unless the S-Port Subscriber Differentiation feature is enabled and turned on.

When the Service Portability feature and option are on, the S-Port Subscriber Differentiation feature and option are on, and Service Portability is applicable, then provisioned ASD digits are used in place of GRN digits.Subscribers without ASD provisioned will follow standard Service Portability processing and will always use GRN.

### *Guidelines for S-Port and NPP Configuration Options*

Feature-specific configuration options, EPAP, and EAGLE 5 ISS data and NPP Formatting Actions work together to produce the "routing tag" that is used to modify digits in applicable messages. A "routing tag" is the Number Portability or Service Portability digits chosen to prefix the DN. Own-network GSM and IS41 subscribers can be tagged with the GRN (from EPAP entity data), the DFLTRN configuration option value, SP (EPAP entity digits), or no tag. OLO subscribers can be tagged with the RN (EPAP entity digits) or no tag.

*Table 6: Recommended Provisioning for "Routing Tags"* indicates the recommended provisioning for features that use NPP, based on how the subscriber numbers will be tagged. Service Portability provides the capability to use the GRN to tag own-network GSM and IS41 subscribers. A few potential combinations are not supported, because standard Number Portability processing does not differentiate between GSM and IS41 subscribers.

The following acronyms are used in the table header for feature-specific configuration options. The option names are not the same across all features that use NPP, but all NPP features do provide a similar option:

- NPTYPE - determines lookup success criterion
- SPORTTYPE - determines which own-network subscribers to tag with the GRN prefix (IS41, GSM, all, or none)

- DFLTRN – specifies feature-specific value for a default Routing Number
- SPFILL – specifies whether NPP should populate both SP and RN Formatting Action values even when DFLTRN or GRN is being used for local subscribers. In some scenarios, setting SPFILL to YES can cause double digits to be present. IS41 digits (RN/PT=0) are considered SP, because they should contain an E.164 HLR ID.

Because S-Port Subscriber Differentiation operates within the Service Portability call flow, when both are on and Service Portability is applicable, then ASD digits are used, if provisioned, in place of GRN digits. If ASD digits are not provisioned, then standard Service Portability processing is used. Wherever GRN appears in *Table 6: Recommended Provisioning for "Routing Tags"*, provisioned ASD digits will be used if S-Port Subscriber Differentiation and Service Portability are ON.

**Table 6: Recommended Provisioning for "Routing Tags"**

| Requested Tagging | | | Recommended Feature Configuration for NPP and S-Port Processing | | | | |
|---|---|---|---|---|---|---|---|
| **GSM (SP/any PT)** | **IS41 (RN/PT=0)** | **OLO** | **NPTYPE** | **SPORTTYPE** | **DFLTRN** | **SPFILL** | **NPP Formatting Action** |
| GRN | GRN | RN | RNSP | ALL | N/A | N/A | RN+DN |
| DFLTRN | GRN | RN | RNSP | IS41 | DFLTRN | N/A | RN+DN |
| SP | GRN | RN | RNSP | IS41 | None | No | RN+SP+DN |
| None | GRN | RN | RNSP | IS41 | None | N/A | RN+DN |
| GRN | DFLTRN | RN | RNSP | GSM | DFLTRN | N/A | RN+DN |
| DFLTRN | DFLTRN | RN | RNSP | None | DFLTRN | N/A | RN+DN |
| SP | DFLTRN | RN | Not supported: Use SP/GRN instead | | | | |
| None | DFLTRN | RN | Not supported: Use None/GRN instead | | | | |
| GRN | SP | RN | RNSP | GSM | None | No | RN+SP+DN |
| DFLTRN | SP | RN | Not supported: Use GRN/SP instead | | | | |
| SP | SP | RN | RNSP | None | None | N/A | RN+SP+DN |
| None | SP | RN | Not supported: NP does not differentiate tags for own-network subscribers | | | | |
| GRN | None | RN | RNSP | GSM | None | N/A | RN+DN |
| DFLTRN | None | RN | Not supported: Use GRN/None | | | | |
| SP | None | RN | Not supported: NP does not differentiate tags for own-network subscribers | | | | |
| None | None | RN | RN | N/A | N/A | N/A | RN+DN |
| GRN | GRN | None | SP | ALL | N/A | N/A | RN+DN |
| DFLTRN | GRN | None | SP | IS41 | DFLTRN | N/A | RN+DN |
| SP | GRN | None | SP | IS41 | None | No | RN+SP+DN |

| Requested Tagging | | | Recommended Feature Configuration for NPP and S-Port Processing | | | | |
|---|---|---|---|---|---|---|---|
| **GSM (SP/any PT)** | **IS41 (RN/PT=0)** | **OLO** | **NPTYPE** | **SPORTTYPE** | **DFLTRN** | **SPFILL** | **NPP Formatting Action** |
| None | GRN | None | SP | IS41 | None | N/A | RN+DN |
| GRN | DFLTRN | None | SP | GSM | DFLTRN | N/A | RN+DN |
| DFLTRN | DFLTRN | None | SP | None | DFLTRN | N/A | RN+DN |
| SP | DFLTRN | None | Not supported: Use SP/GRN instead | | | | |
| None | DFLTRN | None | Not supported: Use None/GRN instead | | | | |
| GRN | SP | None | SP | GSM | None | No | RN+SP+DN |
| DFLTRN | SP | None | Not supported: Use GRN/SP instead | | | | |
| SP | SP | None | SP | None | None | N/A | SP+DN |
| None | SP | None | Not supported: NP does not differentiate tags for own-network subscribers | | | | |
| GRN | None | None | SP | GSM | None | N/A | RN+DN |
| DFLTRN | None | None | Not supported: Use SP/GRN instead | | | | |
| SP | None | None | Not supported: NP does not differentiate tags for own-network subscribers | | | | |
| None | None | None | N/A | N/A | N/A | N/A | DN |

### Post-NPP Processing

IDP Relay verifies the encoding of the outgoing message.

IDP Relay updates measurements pegs and `rept-stat-sccp` statistics.

IDP Relay sends the message as indicated by the features and configuration options.

- IDP Relay passes the IDP message to GTT handling.
- IDP A-Party Blacklist generates either a Connect or a Continue message to the originator, and can relay the IDP query to the SCP.
- IDP A-Party Routing and IDP Service Key Routing route the message to a Prepaid server.

## IDP Relay Configuration Options

The TTROPTS table contains configuration option values for the IDP Relay feature, the IDP A-Party Blacklist feature, the IDP A-Party Routing and Service Key Routing features, and the Service Portability feature when it is used with IDP Relay. The TTROPTS option data is loaded to the LIM cards and to Service Module cards that contain the RTDB database. The configuration option values influence number conditioning, response message formatting and generation, and Service Portability processing.

The SCCPOPTS table contains:

- System option values that are used by IDP Relay services in NPP Conditioning Action execution
- The SUBDFRN option that is used to turn on and off the operation of the S-Port Subscriber Differentiation function in the system

TTROPTS options and the SCCPOPTS options for IDP Relay Conditioning Actions can be provisioned after the IDP Relay feature is enabled and before the feature is turned on.

The S-Port Subscriber Differentiation feature must be enabled and turned on before the SCCPOPTS SUBDFRN option can be provisioned.

*Table 7: TTROPTS Configuration Options* describes the TTROPTS options.

*Table 8: SCCPOPTS Options for IDP Relay Conditioning Action Execution* describes the SCCPOPTS options used for IDP Relay Conditioning Action execution.

*Table 9: SCCPOPTS Option for the S-Port Subscriber Differentiation Feature* describes the SCCPOPTS SUBDFRN option used for the S-Port Subscriber Differentiation feature.

**Table 7: TTROPTS Configuration Options**

| Parameter | Value | Description | Notes |
|---|---|---|---|
| NPTYPE - Entity type for CdPN RTDB lookup.<br>Specifies the CdPN entity type for which the lookup is considered a success. | SP | Service Provider | |
| | RN | Routing Number | |
| | RNSP | Routing Number or Service Provider | |
| | ANYMATCH | RN, SP, or match with any entity | The value is also used as the RN in the outgoing CgPN. |
| | ALWAYS | The lookup is always considered successful. | |
| | RNSPDN | RN, SP, or DN | |
| SNAI - CdPN Nature of Address Indicator<br>Specifies the CdPN NAI that is used during number conditioning. | INCOMING | The incoming CdPN NAI is used. | If a value other than INCOMING is used, then the`chg-npp-serv` command should not change the INTL, NATL, NAI1, NAI2, NA3 or UNKN values to non-default values for the IDPRCDPN service. |
| | INTL | A CdPN NAI of International is used. | |
| | NATL | A CdPN NAI of National is used. | |
| | UNKN | A CdPN NAI of Unknown is used. | |
| CGNPTYPE - CgPN entity type for RTDB lookup.<br>Specified the CgPN entity type for which | SP | Service Provider | |
| | RN | Routing Number | |
| | RNSP | Routing Number or Service Provider | |

| Parameter | Value | Description | Notes |
|---|---|---|---|
| the lookup is considered a success. | ANYMATCH | RN, SP, or no match with any entity | The value is also used as the RN in the outgoing CgPN. |
| | ALWAYS | The lookup is always considered successful. | |
| CGSNAI - Calling Party Number Nature of Address Indicator<br>Specifies the CgPN NAI that is used during number conditioning. | INCOMING | The incoming CgPN NAI is used. | If a value other than INCOMING is used, then the `chg-npp-serv` command should not change the INTL, NATL, NAI1, NAI2, NA3 or UNKN values to non-default values for the IDPRCDPN service. |
| | INTL | The CgPN NAI is set to International. | |
| | NATL | The CgPN NAI is set to National. | |
| | UNKN | The CgPN NAI is set to Unknown. | |
| DLMA - Delimiter A<br>Specifies the first delimiter that is used to format the outgoing TCAP dialed number. | 1-16 hex digits | | |
| | NONE | The delimiter is not used. | |
| DLMB - Delimiter B<br>Specifies the second delimiter that is used to format the outgoing TCAP dialed number. | 1-16 hex digits | | |
| | NONE | The delimiter is not used. | |
| DLMC - Delimiter C<br>Specifies the third delimiter that is used to format the outgoing TCAP dialed number. | 1-16 hex digits | | |
| | NONE | The delimiter is not used | |
| CGPACCCK - CgPA Country Code Check<br>Specifies whether the incoming CgPA is to be checked for presence of the country code defined in the STPOPTS DEFCC option. | ALWAYS | Always check for the DEFCC value | |
| | NONINTL | Check for the DEFCC value if the CDPN NAI is not International. | |
| | OFF | The DEFCC check is not performed. | |
| DFLTRN - Default Routing Number | 1-15 hex digits | | |
| | NONE | A default RN is not used. | |

| Parameter | Value | Description | Notes |
|---|---|---|---|
| Specifies the default RN that is used when a value of SP or RNSP is specified for the NPTYPE parameter, and the CdPN RTDB lookup finds entity type SP. | | | |
| DRAFRMT - DRA Digit Format<br>Specifies the format of the DRA digits in the outgoing message. | GRN | The format is GRN | (GRN = Generic Routing Number) |
| | GRNDN | The format is GRN + DN | (DN = Dialed Number) |
| | DNGRN | The format is DN +GRN | |
| | CCGRNDN | The format is CC + GRN + DN | (CC = Country Code) |
| | GRNCCDN | The format is GRN + CC + DN | |
| DRANAI - DRA Nature of Address Indicator<br>Specifies the DRA NAI that is used during number conditioning. | 1 127 | | The system default value is 3 = NATL |
| CgPNSKRTG - CgPN Service Key Routing<br>Specifies whether to execute IDP Service Key Routing if IDP A-Party Routing fails. | YES | Execute IDP Service Key Routing if IDP A-Party Routing fails | Can be provisioned only when the IDP A-Party Routing feature and the IDP Service Key Routing feature are enabled. |
| | NO | Do not execute IDP Service Key Routing if IDP A-Party Routing fails | |
| SPORTTYPE - Service Portability Type<br>Specifies whether Service Portability is performed for the feature. | NONE | Service Portability is not performed for IDP Relay | Can be provisioned only when the Service Portability feature is enabled. |
| | GSM | Apply Service Portability prefix ( RTDB GRN entity ID) for own-network GSM subscribers | |
| | IS41 | Apply Service Portability prefix ( RTDB GRN entity ID) for own-network IS41 subscribers | |
| | ALL | Apply Service Portability prefix ( GRN from RTDB entity) for all own-network subscribers | |

| Parameter | Value | Description | Notes |
|---|---|---|---|
| SPFILL - SP entity type population for NPP processing<br>Specifies whether the SP entity type is populated if the value specified for the DFLTRN or GRN parameter is used for NPP processing. | OFF | Do not populate the SP entity type | |
| | ON | Populate the SP entity type | |
| RNSPFILL - Set RN and SP entities for certain conditions<br>Specifies whether the RN and SP entities are set to the value of the RN or SP digits from the RTDB when certain conditions are met. | OFF | If the NPTYPE parameter value is RNSP, ANYMATCH, or ALWAYS, and the DFLTRN=NONE parameter is specified, then the RN entity is NOT set to the value of the RN digits from the RTDB.<br>If the NPTYPE parameter value is RNSP, ANYMATCH, or ALWAYS, then the SP entity is NOT set to the value of the RN digits from the RTDB. | |
| | ON | If the NPTYPE parameter value is RNSP, ANYMATCH, or ALWAYS, and the DFLTRN=NONE parameter is specified, then the RN entity IS set to the value of the RN digits from the RTDB.<br>If the NPTYPE parameter value is RNSP, ANYMATCH, or ALWAYS, then the SP entity IS set to the value of the RN digits from the RTDB. | |

The following `chg-sccpopts` command parameters are used to provision the values in the SCCPOPTS table for IDP Relay Conditioning Action execution:

**Table 8: SCCPOPTS Options for IDP Relay Conditioning Action Execution**

| Parameter | Value | Description | Notes |
|---|---|---|---|
| ACLEN | 0-8 | Length of the Area Code extracted from the CgPN. | Used in ACCGPN Conditioning Action execution for IDP Relay. |

| Parameter | Value | Description | Notes |
|---|---|---|---|
| CCLEN | 0-3 | Length of the Country Code extracted from the CgPN. | Used in CCCGPN Conditioning Action execution for IDP A-Party Routing. |
| INTLUNKNNAI | yes, no | indicates that the Unknown NAI contains International NAIs and needs processing during Country Code conditioning. | Used for Country Code conditioning in CCCGPN Conditioning Action execution for IDP A-Party Routing. |

The following `chg-sccpopts` command parameter is used to set the operation of the S-Port Subscriber Differentiation function to ON or OFF:

**Table 9: SCCPOPTS Option for the S-Port Subscriber Differentiation Feature**

| Parameter | Value | Description | Notes |
|---|---|---|---|
| SUBDFRN | on, off | Turns on and off the operation of the S-Port Subscriber Differentiation function | Feature must be enabled and on before parameter can be provisioned. |

## IDP Relay Additional Subscriber Data Feature

The IDP Relay Additional Subscriber Data (IDPR ASD) feature allows for the insertion of Additional Subscriber Data (ASD) from the incoming CgPN and CdPN digit strings into the CdPN of an outgoing IDP query message.

Typical uses for IDP Relay use of ASD are for CNL information and for triggerless equal access information.

IDPR ASD uses the ASDLKUP and CgPNASDRqd Service Actions for the IDPRCDPN service in NPP processing. The CgPNASDRqd Service Action Handler performs an RTDB lookup for the DN in the CgPN indicated by the ASDLKUP Service Action, and populates the value for the ASD Formatting Action with the found ASD.

IDPR ASD uses the ASDLKUP and CgPNASDRqd Service Actions for the IDPRCDPN service in NPP processing.

- The ASDLKUP Service Action Handler uses the ASDLKUP Service Action to perform an individual or range RTDB lookup on the conditioned CdPN, to find an entry containing an ASD digit string.
- The CgPNASDRqd Service Action Handler performs an RTDB lookup for the DN in the CgPN indicated by the ASDLKUP Service Action, and populates the value for the ASD Formatting Action with the found ASD

The ASDLKUP Service Action or CgPNASDRqd Service Action can coexist in the same Service Action group with any other Service Actions used by IDP Relay. The ASDLKUP Service Action and the CgPNASDRqd Service Action are mutually exclusive in the same Action Set.

Depending on the Formatting Action configuration for the selected NPP rule, the NPP Formatting Action execution can use the ASD in formatting the CdPN digit string in the outgoing message.

## IDP Relay Generic Routing Number Feature

The IDP Relay Generic Routing Number (IDPR GRN) feature allows for the insertion of Generic Routing Number data (GRN) from the incoming CgPN and CdPN digit strings into the CdPN of an outgoing IDP query message.

IDPR GRN uses the GRNLKUP and CgPNGRNRqd Service Actions for the IDPRCDPN service in NPP processing.

- The GRNLKUP Service Action Handler uses the GRNLKUP Service Action to perform an individual or range RTDB lookup on the conditioned CdPN, to find an entry containing a GRN digit string.
- The CgPNGRNRqd Service Action Handler performs an RTDB lookup for the DN in the CgPN indicated by the GRNLKUP Service Action, and populates the value for the GRN Formatting Action with the found GRN.

The GRNLKUP Service Action or CgPNGRNRRqd Service Action can coexist in the same Service Action group with any other Service Actions used by IDP Relay. The GRNLKUP Service Action and the CgPNGRNRRqd Service Action are mutually exclusive in the same Action Set.

Depending on the Formatting Action configuration for the selected NPP rule, the NPP Formatting Action execution can use the GRN in formatting the CdPN digit string in the outgoing message.

## EAGLE 5 ISS Commands

This section describes commands that can be used for the configuration and maintenance of the Prepaid IDP Query Relay feature (IDP Relay) feature and related features.

Refer to the *Commands Manual* for complete descriptions of the commands listed in *Table 10: Commands used for IDP Relay and Related Features*, including parameter names, valid values, and output examples for the commands.

**Table 10: Commands used for IDP Relay and Related Features**

| Type | Commands |
|---|---|
| System Serial Number | ent/rtrv-serial-num |
| Card | ent/dlt/rtrv/alw/inh/init/rept-stat-card |
| Numbering Plan Processor (NPP) | ent/chg/dlt/rtrv-npp-as, ent/chg/dlt/rtrv-npp-srs, chg/rtrv-npp-serv |
| Feature Control | chg/rtrv-feat, enable/chg/rtrv-ctrl-feat |
| STP Options | chg/rtrv-stpopts |
| TTR Options | chg/rtrv-ttropts |

| Type | Commands |
|---|---|
| SCCP Options | chg/rtrv-sccpopts |
| Common Screening List | chg/rtrv-csl |
| Service Selector | chg/dlt/ent/rtrv-srvsel |
| Test Tool | chg/rtrv-ttr-msg, tst-msg |
| Retrieve, Report Status, and Maintenance | chg-th-alm, ent-trace, init-network, init-sys, rept-stat-alm, rept-stat-db, rept-stat-mps, rept-stat-sccp, rept-stat-sys, rep-stat-trbl, rtrv-data-rtdb, rtrv-tbl-capacity |

**ent / chg / dlt / rtrv-npp-as, ent / chg / dlt /rtrv-npp-srs, chg / rtrv-npp-serv**

The NPP commands are used to provision and display the values for components that are used in NPP processing.

**enable-ctrl-feat / chg-ctrl-feat / rtrv-ctrl-feat**

These commands are used to enable, turn on, and display the on/off status of IDP-related features and the Service Portability feature.

**chg-stpopts / rtrv-stpopts**

The STP Options commands are used to provision system options for the EAGLE 5 ISS. The options are used to control system-level processing. Features can check the option values to determine what processing to apply.

**chg-ttropts / rtrv-ttropts**

The TTR Options commands are used to provision the configuration options for the IDP Relay feature. The options control number portability and Service Portability processing for IDP messages and response message formatting.

**chg / rtrv-sccpopts**

The SCCP Options commands are used to provision the following options:

- SCCP options that are used in NPP Conditioning Action Execution for the IDP Relay and DP A-Party Routing features
- The SCCPOPTS SUBDFRN option that is used to turn on and off the operation of the S-Port Subscriber Differentiation function in the system

**ent-csl / chg-csl / dlt-csl / rtrv-csl**

Common screening list commands are used to define, change, and display screening requirements of various features. The screenings are performed on digit strings. For the IDP Relay feature, 3 screening lists are required. Each screening list is based on digit strings.

- GT screening list - The SCCP CdPA GT from the incoming message is compared to this list. If not found, the message falls to GTT handling.

- SKBCSM screening list - The concatenated SK + BCSM from the incoming message is compared to this list. If not found, the message falls to GTT handling.

#### ent-srvsel / dlt-srvsel / chg-srvsel / rtrv-srvsel

The IDP Relay (IDPR) service selector commands are used to provision and display service selector information for the idpr service.

#### chg / rtrv-ttr-msg, tst-msg

The `chg/rtrv-ttr-msg` commands are used to enter and display up to 10 test messages in the TESTMSG table. The messages can be sent by the `tst-msg` command to the provisioned IDP-related features to verify call flow.

## Maintenance Commands

The following commands can be used for maintenance when an EPAP-related feature is on.

Refer to the command descriptions in the *Commands Manual* for complete descriptions of the commands, including parameters, valid values, and output examples.

**Table 11: Maintenance Commands**

| Command | Description |
|---|---|
| rept-stat-sys | Reports the status of system entities, including cards. The output includes the number of Service Module cards that are in service (IS-NR) and how many are in another state (IS-ANR, OOS-MT, OOS-MT-DSBLD). |
| rept-stat-sccp | Reports subsystem operating status, CPU usage, and Service Module card status. When the loc parameter is specified, the command displays detailed card traffic statistics. See the section in this manual for each feature that describes the use of the `rept-stat-sccp` command for that feature. |
| rept-stat-mps | Displays the overall status of the application running on the MPS (multi-purpose server). Command output for the various reports of this command include overall MPS alarm status and card status, and status for a specific Service Module card when a feature is on. |
| rept-stat-trbl | Includes a summary of any trouble notifications (UAMs) for local subsystems, cards, and linksets. The severity of each alarm is indicated in the output report. |
| rept-stat-alm | Displays the alarm counts and totals for local subsystems and DSM/EPAP IP links. |
| rept-stat-db | Displays the status information for the EAGLE 5 ISS databases. This includes the level information for each Service Module card, and for the active and standby EPAP databases. It reports database exception status such as corrupted, incoherent, or inconsistent, as well as providing the birth dates and levels. It shows the status of the PDB and RTDB databases when an EPAP-based feature is enabled. |
| rtrv-tbl capacity | Retrieves table use capacity summary information. For each table listed, the number of table entry elements in use and the total allowed number of table |

| Command | Description |
|---|---|
| | elements is presented, along with a percent (%) full value. Information is shown for some tables only if the feature that uses the table is enabled. |
| inh-card/alw-card | Used to change the operating state of the card from In-Service Normal (IS-NR) to Out-of-Service Maintenance-Disabled (OOS-MT-DSBLD). A craftsperson then can test the card or physically remove it from the shelf.<br>The `alw-card` command is used to change the card from OOS-MT-DSBLD (Out-of-Service Maintenance-Disabled) to IS-NR (In-Service Normal) if card loading is successful. |
| inh-alm/unhb-alm | Used to allow and inhibit alarms on the Service Module card ports. The commands allow both Port A and Port B to be specified. |
| rtrv-data-rtdb | Retrieves Entity data, DN data, IMEI data, IMSI data, TN data, NPANXX data, and LRN data from the RTDB on an active Service Module card.<br>If the loc parameter is specified and the target card is an active Service Module card, the RTDB data is retrieved from that card.<br>If the loc parameter is not specified, the RTDB data is retrieved on the active Service Module card that has the lowest IMT address.<br>The RTDB status on the active Service Module card can be coherent or incoherent. |

### rept-stat-sccp

The `rept-stat-sccp` command provides statistics for Service Module cards and for the services that execute on the cards. The statistics can be displayed for all Service Module cards, or for a specified card.

**IDP Relay Feature Statistics**

The following statistics are updated for the GTT service when the IDP Relay feature is turned on:

- FORWARD TO GTT = total number of messages sent for GTT processing
- SUCCESS = the IDPRSUCC measurements register count.
- ERRORS = the total of the IDPRERR and IDPRFAIL measurements register counts
- FAIL RATIO = ERRORS divided by the total of ERRORS plus SUCCESS
- REROUTE/WARNINGS = number of UIMs generated
- TOTAL = ERRORS plus SUCCESS plus REROUTE/WARNINGS

**Statistics Affected by IDP-Related Features**

The following IDP Relay statistics are updated for the TTR service when one or more of the IDP A-Party Blacklist, IDP A-Party Routing, and IDP Service Routing features are enabled and turned on. *Table 13: IDP Relay Counters Updated for IDP A-Party Blacklist* and *Table 12: IDP Relay Counters Updated for IDP A-Party Routing and IDP Service Key Routing* summarize the updates.

- Depending upon provisioning configuration, feature status, Service Action outcome, and feature results, the IDP and IDPSMS messages that are successfully processed by IDP A-Party Routing,

IDP Service Key Routing, or IDP A-Party Blacklist Query or Relay will not result in updating the Forward to GTT counters.

- If message processing results in success, the Success counters for the TTR service are updated, and the Forward to GTT counters are not updated.
- If message processing results in an encoding or routing error, the Error counters for the TTR service are updated, and the Forward to GTT counters are not updated.
- If message processing results in a fall-through to GTT due to insufficient feature data or success match criteria, the TTR Forward to GTT counters are updated
- The TTR Total count is updated for every message serviced (resulting in success or failure) through the IDPR service.

The number of messages handled by any IDP Relay-related feature that did not go through to GTT can be derived from the difference between the TTR Total and Forward to GTT counters.

The TTR Error counter is updated in the case of routing failure for the IDP A-Party Routing and IDP Service Key Routing features, and in the case of Connect/Continue Encoding failure for the IDP A-Party Blacklist feature.

**Table 12: IDP Relay Counters Updated for IDP A-Party Routing and IDP Service Key Routing**

| **IDP A-Party Routing** | | | **IDP Service Key Routing** | |
|---|---|---|---|---|
| Success | No Match/incomplete data | | Success | Fall-through to GTT |
| | SK Routing success | Fall-through to GTT | | |
| Update:<br>TTR:Success<br>TTR:Total | Update:<br>TTR:Success<br>TTR:Total | Update:<br>TTR:Success<br>TTR:Forward to GTT<br>TTR:Total | Update:<br>TTR:Success<br>TTR:Total | Update:<br>TTR:Success<br>TTR:Fall-through to GTT<br>TTR:Total |

**Table 13: IDP Relay Counters Updated for IDP A-Party Blacklist**

| **IDP A-Party Blacklist Query** | | **IDP A-Party Blacklist Relay** | |
|---|---|---|---|
| Match (Connect response) | No Match/incomplete data (Continue response) | Match (Connect response) | No Match/incomplete data (fall-through to GTT) |
| Update:<br>TTR:Success<br>TTR:Total | Update:<br>TTR:Success<br>TTR:Total | Update:<br>TTR:Success<br>TTR:Total | Update:<br>TTR:Success<br>TTR:Forward to GTT<br>TTR:Total |

## Prepaid IDP Query Relay Measurements

The EAGLE 5 ISS Measurements system supports the collection and retrieval of measurements related to the IDP Relay feature. The IDP Relay measurements can be collected and reported with the following collection methods:

- OAM-based (UI) measurements collection
- The Measurements Platform feature enabled and the Measurements Platform collection option on
- The E5-OAM Integrated Measurements feature enabled and on and the E5-OAM Integrated Measurements collection option on

15 Minute Measurements can be used with the Measurements Platform or E5-OAM Integrated Measurements.

Refer to the *Measurements* manual for for descriptions of collection methods, measurements, and measurements reports.

Refer to the *Commands Manual* for descriptions of the commands used to enable and turn on features, turn on measurements collection options, and schedule and generate measurements reports.

Refer to the procedures in the *Database Administration Manual - System Management* to configure the Measurements Platform feature or E5-OAM Integrated Measurements feature for use with IDP Relay.

The following IDPR measurements registers are defined for the IDP Relay feature IDPR service. All IDPR registers are reported in the STP System Total (SYSTOT-STP) report.

- **IDPRMSERR** The total number of MSUs selected for IDPR service that could not be processed due to errors in encoding, decoding, or formatting, or to IDP A-Part Routing or IDP Service Key Routing errors .
- **IDPRMSFAIL** Total number of MSUs that were selected for IDPR service and fell through to GTT due to the following conditions:
  - No match on MSISDN in the RTDB lookup
  - Match on MSISDN but no association to RN or SP for the CDPNNP or CGPNNP Service Actions
  - No match for IDP A-Party Blacklist query-response criteria
  - IDP A-Party Blacklist Relay resulted in falling through to GTT for routing
  - IDP A-Party Routing or IDP Service Key Routing resulted in falling through to GTT routing (due to no match on MSISDN or insufficient data)
- **IDPRMSRCV** Total number of MSUs received and selected for IDPR service. This register includes counts for MSUs that resulted in both successful and unsuccessful RTDB lookups.
- **IDPRMSSUCC** Number of MSUs selected for IDPR service for which the RTDB lookup resulted in a match on MSISDN with association to an RN or SP. This includes pegs to IDPAPTYRTD, IDPSKRTD, IDPBKLCONN, and IDPBKLCONT registers.

*Figure 3: IDP A-Party Routing Impact on IDP Relay Measurements* illustrates the impact of the IDP A-Party Routing feature measurements pegging on the IDPR registers.

**Figure 3: IDP A-Party Routing Impact on IDP Relay Measurements**

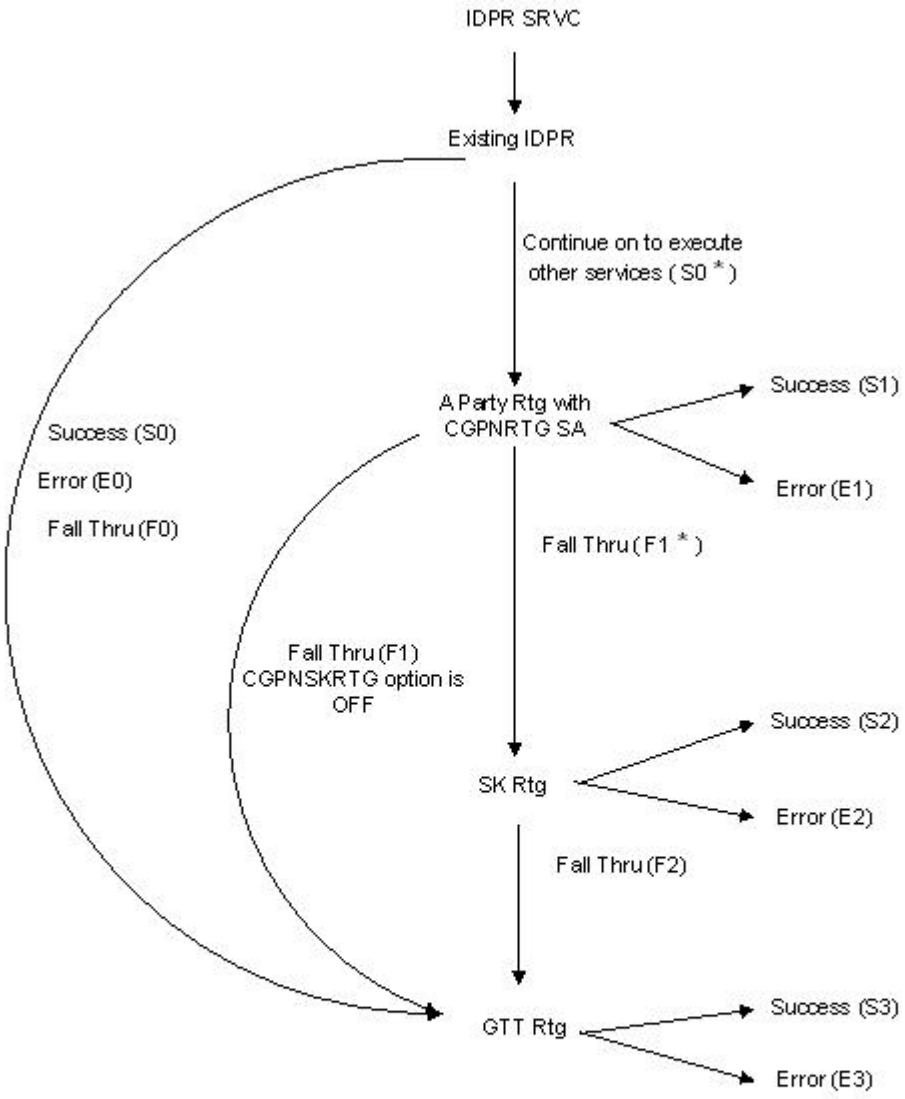



**Table 14: IDP A-Party Routing and IDP Relay Pegs**

| IDP A-Party Routing and Service Key Routing Pegs | IDP Relay Pegs |
|---|---|
| IDPAPTYRTD = S1 | IDPRMSERR = E0 + E1 +E2 |

| IDP A-Party Routing and Service Key Routing Pegs | IDP Relay Pegs |
|---|---|
| IDPAPTYSKR = S2<br>IDPAPTYGTT = F1 + F2 | IDPRMSFAIL = F0+ F1+ F2<br>IDPRMSSUCC = S0 + S1 + S2<br>IDPRMSRCV = IDPRMSERR + IDPRMSFAIL + IDPRMSSUCC |
| **Note:** GTT success (S3) and GTT failure (E3) measurements registers are pegged separately. | |

*Figure 4: IDP Service Key Routing Impact on IDP Relay Measurements* illustrates the impact of the IDP Service Key Routing feature measurements pegging on the IDPR registers.

**Figure 4: IDP Service Key Routing Impact on IDP Relay Measurements**

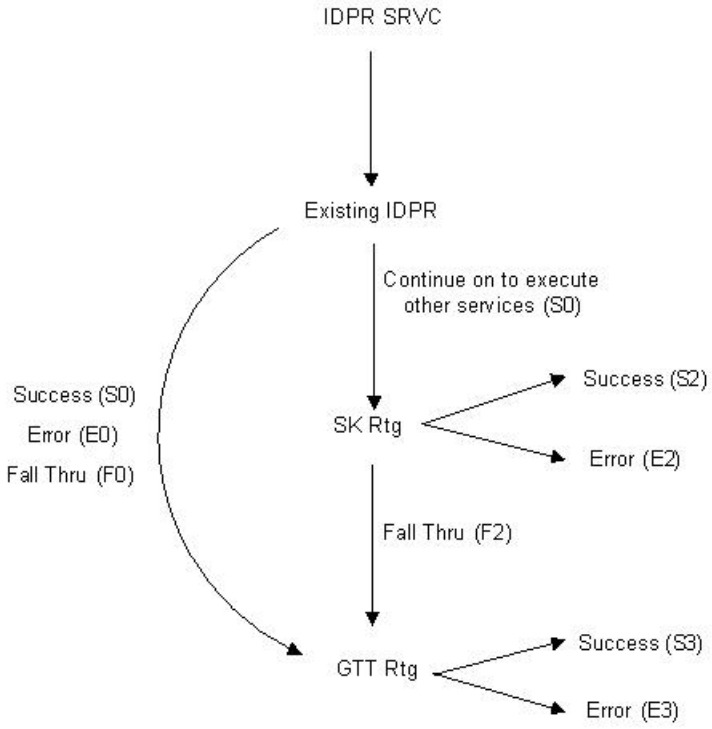


**Table 15: IDP Service Key Routing and IDP Relay Pegs**

| IDP Service Key Routing Pegs | IDP Relay Pegs |
|---|---|
| IDPSKRTC = S2<br>IDPSKGTT = F2 | IDPRMSERR = E0 + E2<br>IDPRMSFAIL = F0 + F2<br>IDPRMSSUCC = S0 + S2<br>IDPRMSRCV = IDPRMSERR +IDPRMSFAIL + IDPRMSSUCC |
| **Note:** GTT success (S3) and GTT failure (E3) measurement registers are pegged separately. | |

*Figure 5: IDP A-Party Blacklist (Query and Relay) Impact on IDP Relay Measurements* illustrates the impact of the IDP-A-Party Blacklist feature measurements pegging on the IDPR registers.

**Figure 5: IDP A-Party Blacklist (Query and Relay) Impact on IDP Relay Measurements**

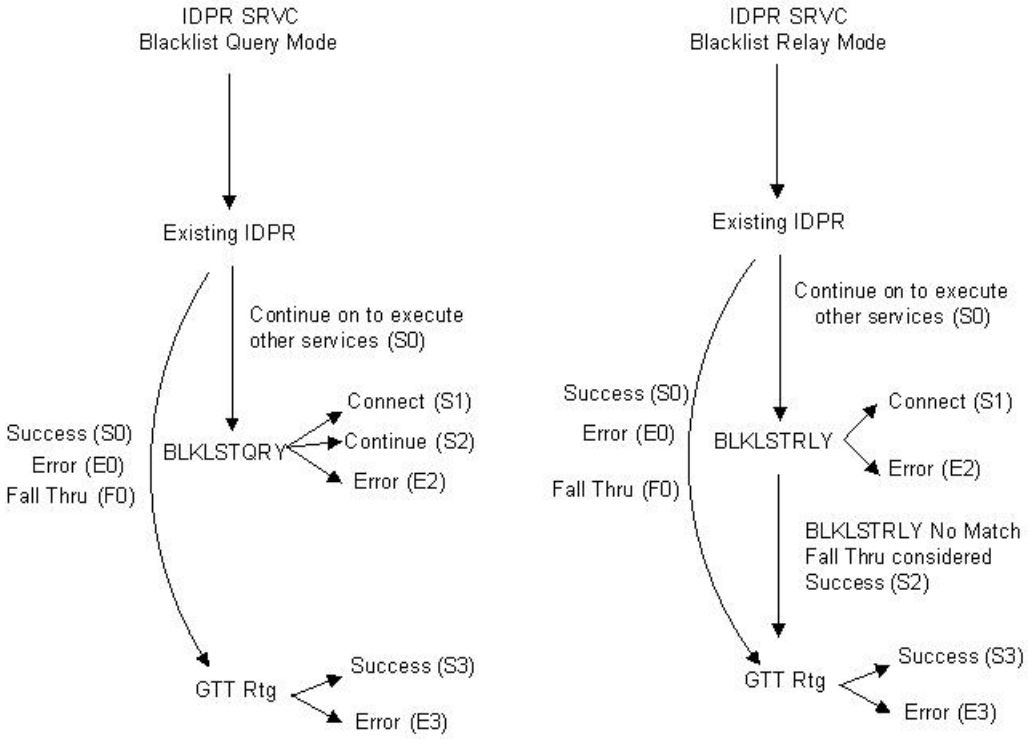


**Table 16: IDP A-Party Blacklist and IDP Relay Pegs**

| IDP A-Party Blacklist Pegs | IDP Relay Pegs |
|---|---|
| IDPBKLCONN = S1<br>IDPBKLCONT = S2 | IDPRMSERR = E0 + E2<br>IDPRMSFAIL = F0<br>IDPRMSSUCC = S0 + S1 + S2<br>IDPRMSRCV = IDPRMSERR + IDPRMSFAIL + IDPRMSSUCC |
| **Note:** GTT success (S3) and GTT failure (E3) measurements registers are pegged separately. | |

## IDP Relay-Related UIMs

The Unsolicited Information Messages (UIMs) in *Table 17: IDP Relay-Related UIMs* support the IDP Relay feature. The *Unsolicited Alarm and Information Messages* manual contains a complete description of UIMs, including text, output examples, and recovery procedures.

**Table 17: IDP Relay-Related UIMs**

| UIM | Text | Description | Action |
|---|---|---|---|
| 1392 | IDPRCDPN NPP SERVICE is Disabled | The status of the IDPRCDPN service is OFF while processing an IDP message. | Set the status of the IDPRCDPN service to ON. |
| 1393 | IDPRCGPN NPP SERVICE is Disabled | The status of the IDPRCGPN service is OFF while processing an IDP message. | Set the status of the IDPRCGPN service to ON. |
| 1426 | S-Port: Missing GRN for srvc prtd subs | The GRN data is not present that is needed for Service Portability processing. | Verify and correct the GRN data provisioning in the RTDB. |

**Note:** The EPAP does not have any UIM requirements.

## Hardware Requirements

EPAP-related features that perform an RTDB lookup require Service Module cards (DSM cards or E5-SM4G cards) running the VSCCP application. The EAGLE 5 ISS can be equipped with:

- Up to 25 (24+1) Service Module cards when EPAP is running in a T1000 AS
- Up to 32 (31+1) Service Module cards when EPAP is running in a T1200 AS

Features that do not perform an RTDB lookup require Service Module cards only for GTT processing that might be performed for the feature. These features can coexist in systems with EPAP, but do not require an EPAP connection.

# Chapter 3

# IDP A-Party Blacklist Feature

**Topics:**


- *Feature Description.....52*
- *IDP A-Party Blacklist Measurements.....56*
- *EAGLE 5 ISS Commands.....57*


The IDP A-Party Blacklist feature enhances the Prepaid IDP Query Relay feature to provide a generic framework to support subscriber blacklisting capability with a query-based or relay-based method. The feature supports the blacklist check on Calling Party (A-Party or CgPN) number in the IDP CAMEL or INAP message.

# Feature Description

The IDP A-Party Blacklist feature provides subscriber blacklisting capability on the Calling Party (A-Party or CGPN) number in the IDP CAMEL message. The blacklisting function is achieved using either a query-based mode, or a relay-based mode in conjunction with IDP Relay feature processing.

EAGLE 5 ISS receives an IDP query message destined to the EAGLE 5 ISS PC, or a prepaid IDP message sent to the EAGLE 5 ISS PC for translation to a prepaid SCP. MSCs are configured with a trigger point to send an IDP message for just post-paid, or prepaid, or all subscribers in the network, depending on the use case for a particular operator.

The necessary discrimination and pre-processing are performed by the prepaid IDP Relay functions (SCCP CdPA check, CgPA check and Common Screening List SKBCSM filter). The Calling Party Number (from the CgPN parameter in the message) is decoded. If the subscriber number is blacklisted, the number in the EPAP RTDB has a blacklist flag and any Routing Number information that is needed to re-route the call. If a blacklist match is found, a Connect message is returned with Routing Number (if provisioned). This Routing Number could be a service center number that receives the re-routed call and provides the necessary assistance. If the subscriber is not blacklisted, the IDP message continues normal processing for IDP A-Party Blacklist Relay, or a CONTINUE response is generated for IDP A-Party Blacklist Query.

The blacklisting function is achieved using either a query-based mode or a relay-based mode. The two modes are provided by two Numbering Plan Processor (NPP) Service Actions that are executed by the Prepaid IDP Query Relay (IDP Relay) IDPRCGPN NPP service:

- IDP A-Party Blacklist Query mode is provided by the BLKLSTQRY NPP Service Action, which is used when a query/response mode is desired for both blacklist-match and blacklist-no-match cases.
- IDP A-Party Blacklist Relay mode is provided by BLKLSTRLY NPP Service Action, which is used when a query/response mode is desired only for the blacklist-match case. In the blacklist-no-match case, the message is subject to other new or existing provisioned features, their status, and the results of any other Service Action Handler execution.

## IDP A-Party Blacklist Query

IDP A-Party Blacklist Query mode is provided by the BLKLSTQRY NPP Service Action, which is used when a query/response mode is desired for both the blacklist-match and blacklist-no-match cases.

The BLKLSTQRY Service Action is used only by the IDP Relay IDPRCgPN NPP service; it has the highest precedence and is mutually exclusive with the rest of the IDPRCgPN NPP SAs in the same rule. It is an IDPRCgPN terminating Service Action.

The BLKLSTQRY Service Action performs an RTDB lookup on the conditioned A-Party number.

- In the blacklist-match case, the CgPN lookup on the RTDB results in an entry in which the blacklist flag is on and GRN data is present.

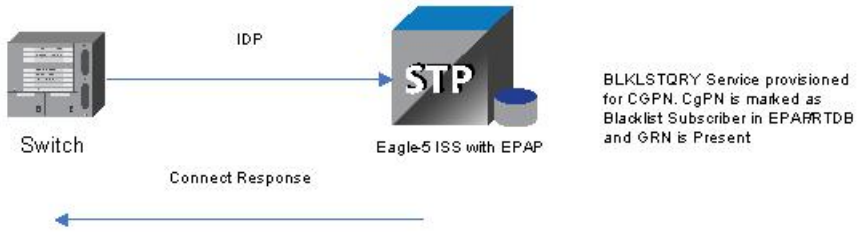
  A Connect response is encoded and sent back to originator of the IDP/IDPSMS message.

  The DRA parameter in the associated GRN entity digits are used to encode the DRA digits according to the TTROPTS DRAFRMT option value.

The TTROPTS DRANAI option value is used to encode the DRA NAI component of the DRAFRMT option format. If the NAI is International, the format must contain the Country Code (CC), If the NAI is National or Subscriber, the format does not contain the Country Code (CC).

The DRA NP value is always encoded as "e.164", and the DRA NAI will be encoded based on the TTROPTS DRANAI option value.

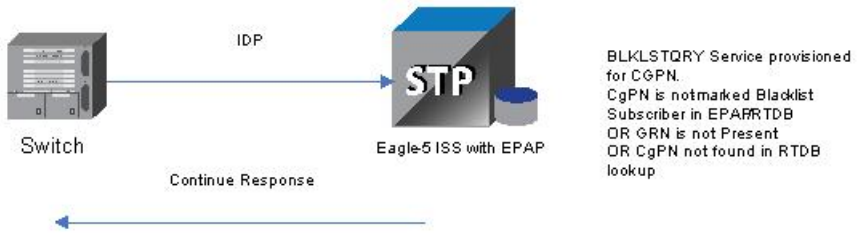
**Figure 6: IDP A-Party Blacklist Query Response - Connect**




- In the blacklist-no-match case, an RTDB entry is not found for the CgPN, or an entry is found but the blacklist flag is off or GRN data is not present.

  A Continue response is encoded and sent back to the originator of the IDP/IDPSMS message using the existing routing mechanism.

  **Figure 7: IDP A-Party Blacklist Query Response - Continue**




The IDP Relay feature post-NPP processing function handles IDP A-Party Blacklist post-NPP processing. Based on the IDP Relay feature status and the possible BLKLSTQRY Service Action Handler execution results, post-processing encodes the Connect or Continue response. On completion of feature specific handling, a generic translation can be applied to map success/failure results into required measurements pegs and `rept-stat-sccp` statistics.

In the post-processing handler for IDP A-Party Blacklist Query, network conversion is not allowed while sending the response. If the resulting PC is of a different network domain, or the Connect or Continue results in any encoding or decoding failures, then the IDP A-Party Blacklist Query processing is considered to be a failure. Based on the "return-on-error" flag in the incoming IDP message, either the UDTS will be sent back to the originator or the message is discarded. In case of any failures in message processing, feature specific post-processing will also set unique execution error codes that can be used to identify the processing applied to the IDP message.

## IDP A-Party Blacklist Relay

IDP A-Party Blacklist Relay mode is provided by the BLKLSTRLY NPP Service Action, which is used when a query/response mode is desired only for the blacklist-match case.

The BLKLSTRLY Service Action is used only by the IDP Relay IDPRCgPN NPP service; it has the highest precedence and is mutually exclusive with the BLKLSTQRY SA in the same rule. It is a terminating Service Action on a blacklist match.

The BLKLSTRLY Service Action performs an RTDB lookup on the conditioned A-Party number.

- In the blacklist-match case, the CgPN lookup on the RTDB results in an entry in which the blacklist flag is on and GRN data is present.

  A Connect response is encoded and sent back to originator of the IDP message (see part 1 on the left side of *Figure 8: IDP A-Party Blacklist Relay*).

  The DRA parameter in the associated GRN entity digits are used to encode the DRA digits according to the TTROPTS DRAFRMT option value.

  The TTROPTS DRANAI option value is used to encode the DRA NAI component of the DRAFRMT option format. If the NAI is International, the format must contain the Country Code (CC), If the NAI is National or Subscriber, the format does not contain the Country Code (CC).

  The DRA NP value is always encoded as "e.164", and the DRA NAI will be encoded based on the TTROPTS DRANAI option value. All other Service Action processing is ignored.
- In the blacklist-no-match case, the message is serviced through other applicable IDP Relay Service Actions, or falls through to GTT processing if there are no subsequent applicable Service Actions. (See part 2 on the right side of *Figure 8: IDP A-Party Blacklist Relay*.)

**Figure 8: IDP A-Party Blacklist Relay**


In the post-processing handler for IDP A-Party Blacklist Relay, network conversion is not allowed while sending the response. If the resulting PC is of different network type or the Connect results in any encoding failures, the IDP A-Party Blacklist Relay processing is considered to be a failure. Based on the "return-on-error" flag in the incoming IDP message, either the UDTS will be sent back to the originator or the message is discarded.

## IDP A-Party Blacklist Service Action Handlers

IDP A-Party Blacklist provides Service Action Handlers for the NPP Service Actions that are specific to the feature. IDP A-Party Blacklist and NPP perform the following functions:

- RTDB lookup
- Interpretation of results from RTDB lookups
- NPP processing of Service Actions that are used for IDP A-Party Blacklist

*Table 18: Summary of IDP A-Party Blacklist Service Actions* provides a summary of the Service Actions used for IDP A-Party Blacklist.

**Table 18: Summary of IDP A-Party Blacklist Service Actions**

| Service Action | Description | Function | Precedence |
|---|---|---|---|
| BLKLSTQRY | Blacklist Query | Provides query response mode handling for selected incoming IDP Query messages. | 90 |
| BLKLSTRLY | Blacklist Relay | Provides relay mode handling for selected incoming IDP Query messages. | 90 |
| CgPNSvcRqd | Calling Number Lookup | Sets a flag to cause the IDPRCgPN service to be invoked for the message. | 60 |

## BLKLSTQRY Service Action Handler

The BLKLSTQRY Service Action Handler performs an RTDB lookup on the conditioned CgPN digit string and indicates whether a Connect or Continue message should be sent to the originating SSP.

### Configuration Options Used

None.

### Action Performed

If the CgPN is found in the RTDB lookup, and the subscriber is blacklisted, and GRN data is present, a Connect message will be sent.

If the CgPN is not found in the RTDB lookup, or the subscriber is not blacklisted, or GRN data is not present, a Continue message will be sent.

The NPP Formatting Action processing will be skipped. One way to force formatting is to configure the CDIAL Service Action.

### Terminating Action?

This is a terminating action.

## BLKLSTRLY Service Action Handler

The BLKLSTRLY Service Action Handler performs an RTDB lookup on the conditioned CgPN digit string and indicates whether a Connect message will be sent to the originator, or the IDP query will be relayed to the SCP.

### Configuration Options Used

None

**Action Performed**

If the CgPN is found in the RTDB lookup, the subscriber is blacklisted, and GRN data is present, a Connect message will be sent.

If the CgPN is not found in the RTDB lookup, the subscriber is not blacklisted, and GRN data is not present, the IDP query will be relayed to the SCP.

The NPP Formatting Action processing will be skipped. One way to force formatting is to configure the CDIAL Service Action.

**Terminating Action?**

This is a terminating action only on a blacklist match.

## IDP A-Party Blacklist Measurements

Refer to the *Measurements* manual for descriptions of measurements and measurements reports for IDP A-Party Blacklist and IDP Relay.

See *Prepaid IDP Query Relay Measurements* for information about supported collection methods for IDP Relay-related measurements, and for a description of the relationship between IDP Relay and IDP A-Party Blacklist measurements.

The following measurement registers are defined for the IDP A-Party Blacklist feature. All registers for this feature are reported in the STP System Total (SYSTOT-STP) report.

- **IDPBKLCONN** Total number of IDP messages received that matched the blacklist criteria and a CONNECT response was generated.
- **IDPBKLCONT** Total number of IDP messages received that did not match the blacklist criteria and a CONTINUE response was generated.

The following existing IDP Relay registers are affected by the IDP A-Party Blacklist feature:

- **IDPRMSFAIL** Total number of MSUs that were selected for IDPR service and that fell through to GTT due to the following conditions:
  - No match on MSISDN in the RTDB
  - Match on MSISDN but no association to RN or SP for CDPNNP or CGPNNP
  - No match for IDP A-Party Blacklist query-response criteria
  - IDP Blacklist relay resulted in falling through to GTT for routing
- **IDPRMSERR** Total number of MSUs selected for IDPR service that could not be processed due to error in encoding, decoding, or formatting.
- **IDPRMSSUCC** Number of MSUs selected for IDPR service for which the requested IDPR feature set functions were executed successfully. This includes pegs to the IDPBKLCONN and IDPBKLCONT registers.

The measurements are available in 30-minute intervals, and in 15-minute intervals when 15-Minute Measurements collection is enabled.

# EAGLE 5 ISS Commands

*EAGLE 5 ISS Commands* describes commands that can be used for the configuration and maintenance of the IDP A-Party Blacklist feature.

Refer to the *Commands Manual* for complete descriptions of the commands, including parameter names, valid values, and output examples for the commands.

#### Maintenance Commands

See *Maintenance Commands* for a list of maintenance commands that can be used with the IDP A-Party Blacklist feature.

## rtrv-data-rtdb

The `rtrv-data-rtdb` command retrieves data from the RTDB on an active Service Module card. If the loc parameter is specified and the target card is an active Service Module card, the RTDB data is retrieved from that card. If the loc parameter is not specified, the data is retrieved on the active Service Module card that has the lowest IMT address.

#### IDP A-Party Blacklist Feature Data

The `rtrv-data-rtdb` command displays the blacklist indicator for a number that is blacklisted. The DN parameter must be entered to specify the DN to be displayed:

- A DN that is located in a non-ranged entry and is listed as an A-Party Blacklisted number
- A DN that is located in a ranged entry and is listed as an A-Party Blacklisted number

The `rtrv-data-rtdb` command with the DN parameter also displays an indicator for a number that is public or private.

# Chapter 4

# IDP A-Party Routing Feature

**Topics:**


- *Feature Description.....59*
- *EAGLE 5 ISS Commands.....64*
- *IDP A-Party Routing Measurements.....64*


The IDP A-Party Routing and IDP Service Key Routing components of the IDP A-Party Routing feature enhance the Prepaid IDP Query Relay feature to provide a routing alternative to the existing default SCCP GTA routing. An IDP or IDPSMS message can be routed to an available Prepaid Server.

- IDP A-Party Routing uses the A-Party (CgPN) parameter of an IDP or IDPSMS message
- IDP Service Key Routing uses the ServiceKey and EventTypeBCSM parameters in the incoming IDP or IDPSMS message.

## Feature Description

The IDP A-Party Routing feature has two components:

- IDP A-Party Routing - Part Number 893033301
- IDP Service Key Routing - Part Number 893033601

IDP A-Party Routing and IDP Service Key Routing are functions of the NPP IDPRCgPN service for IDP Relay that can be used independently and together. When used together, the IDP A-Party Routing function will be attempted first. If sufficient information is not available for routing, then execution of the IDP Service Key Routing function can be attempted as a fall-through option. The IDP Service Key Routing function is attempted as a fall-through option only if that desired behavior is configured. This allows both features to be enabled and turned on, yet only IDP A-Party Routing, only IDP SK Routing, or both can be selected.

Common Screening Lists, SCCP configuration options, and TTR configuration options control the operation of the two features. NPP processing for the features uses the IDP Relay feature IDPRCdPN and IDPRCgPN services and specific Conditioning Actions and Service Actions.

### IDP A-Party Routing

IDP A-Party Routing in the EAGLE 5 ISS is an extension of the Prepaid IDP Query Relay (IDP Relay) feature that uses the A-Party (CgPN) parameter of an IDP or IDPSMS message to provide a routing alternative to the default SCCP GTA routing.

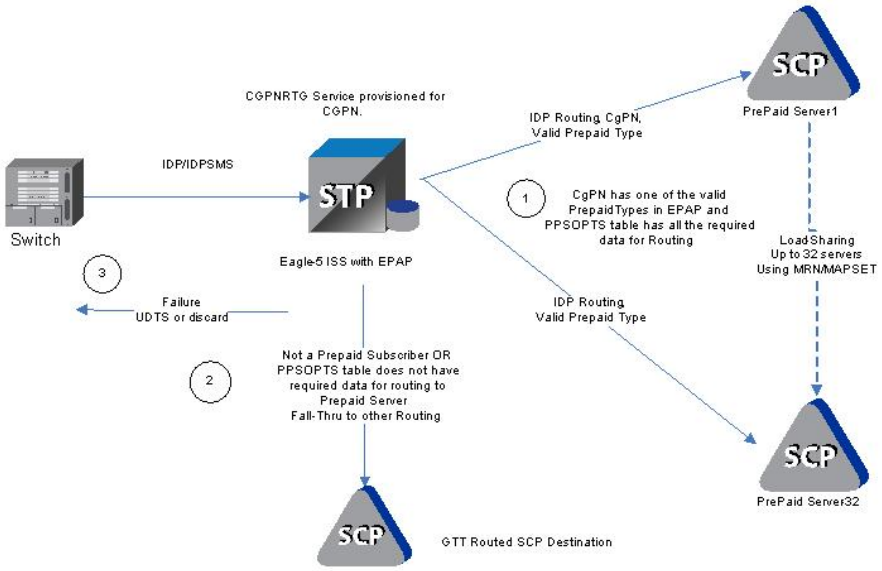
The IDP A-Party Routing function is provided by an NPP Service Action, and by routing algorithms used during post-NPP processing. The routing algorithms use Prepaid Short Message (PPSOPTS) table data and MRNSET or MAPSET table data.

If all of the required data for A-Party routing is provisioned, then IDP A-Party Routing is attempted. In the case of successful routing, an IDP or IDPSMS message can be routed to one of the available Prepaid Servers from a list of provisioned servers in the MRNSET or MAPSET loadshare table. In the case of a routing failure, either a UDTS is sent back to the originator, or the message is discarded. If all of the required data for A-Party routing is not provisioned, then routing will fall through to either IDP Service Key Routing or GTT routing.

*Figure 9: IDP A-Party Routing Message Flow* illustrates the following IDP A-Party Routing use cases:

1. Successful A-Party Routing to a prepaid server
2. Fall-through to IDP Service Key Routing or GTT routing when the A-Party is not a prepaid subscriber or A-Party Routing does not have the complete data required for routing to the prepaid server
3. Failed A-Party Routing; either a UDTS is sent back to the originator or the message is discarded

**Figure 9: IDP A-Party Routing Message Flow**




### IDP Service Key Routing

IDP Service Key Routing in the EAGLE 5 ISS is an extension of the Prepaid IDP Query Relay (IDP Relay) feature that provides a routing alternative to the default SCCP GTA routing during post-NPP processing, either independently or as a fall-through option for IDP A-Party Routing.

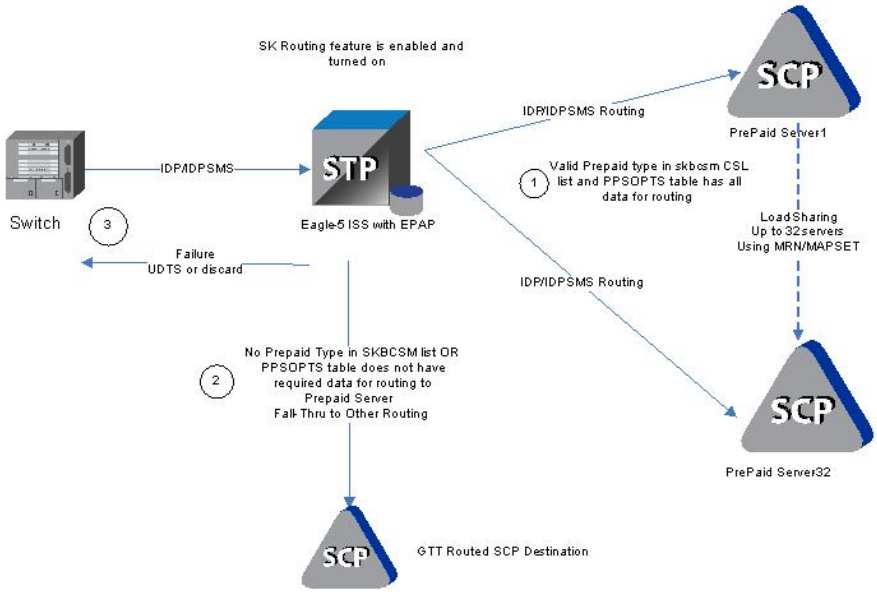
IDP Service Key Routing uses the Service Key and EventType BCSM parameters in the the incoming IDP or IDPSMS message, the provisioned prepaid type data in the SKBCSM Common Screening List, and data in the Prepaid Short Message (PPSOPTS), MRNSET, and MAPSET tables.

If all of the required data for Service Key routing is provisioned, then IDP Service Key Routing is attempted. In the case of successful routing, the IDP or IDPSMS message can be routed to one of the available Prepaid Servers from a list of provisioned servers in the MRNSET or MAPSET load share table. In the case of routing failure, either a UDTS is sent back to the originator, or the message is discarded. If all of the required data for Service Key routing is not provisioned, then routing will fall through to GTT routing.

*Figure 10: IDP Service Key Routing Message Flow* illustrates the following IDP Service Key Routing use cases:

1. Successful Service Key Routing to a prepaid server
2. Fall-through to GTT routing; either the SKBCSM list or the PPSOPTS table does not have the complete data required for routing to the prepaid server
3. Failed Service Key routing; either a UDTS is sent back to the originator or the message is discarded

**Figure 10: IDP Service Key Routing Message Flow**




## IDP A-Party Routing and Service Key Routing Interaction

The two features link together when both features are turned on and the A-Party Routing CGPNRTG NPP Service Action is provisioned.

The processing always attempts A-Party Routing first. If A-Party Routing is not attempted, Service Key Routing will be attempted depending on the CGPNSKRTG configuration option value in the TTROPTS table. Service Key Routing is considered only if both features are enabled and turned on.

- If the CGPNSKRTG option is ON, Service Key Routing will be considered if A-Party Routing is not attempted. A-Party Routing will not be attempted if sufficient data required for A-Party Routing is not provisioned.
- If the CGPNSKRTG option value is OFF, Service Key Routing will be skipped and the message falls through to GTT routing if A-Party Routing is not attempted.

Whether A-Party Routing or Service Key (SK) Routing is attempted, after a message attempts to route, no other routing method (including the regular SCCP GTA/GTT routing) is attempted. If routing fails, this is treated as an IDP Relay routing failure; a UDTS is sent and the message is discarded.

**Table 19: IDP A-Party Routing and IDP Service Key Routing Feature Interaction**

| A-Party Routing Turned On | CGPNRTG Service Action Provisioned | SK Routing Turned On | TTROPTS CGPNSKRTG | Routing Decision |
|---|---|---|---|---|
| No | N/A | No | N/A | Fall through to GTT |
| | | Yes | N/A | SK Routing |

| A-Party Routing Turned On | CGPNRTG Service Action Provisioned | | SK Routing Turned On | TTROPTS CGPNSKRTG | Routing Decision |
|---|---|---|---|---|---|
| | | | | | (Fail = UDTS, discard)<br>(Insufficient Data=Fall through to GTT) |
| Yes | No | | No | N/A | Fall through to GTT |
| | | | Yes | N/A | SK Routing<br>(Fail = UDTS, discard)<br>(Insufficient Data = Fall through to GTT) |
| Yes | Yes | Insufficient Data | No | N/A | Fall through to GTT |
| | | | Yes | Off | Fall through to GTT |
| | | | | On | Fall through to SK Routing<br>(Fail = UDTS, discard)<br>(Insufficient Data = Fall through to GTT) |
| | | Sufficient Data | N/A | N/A | A-Party Routing<br>(Fail = UDTS, discard) |

## IDP A-Party Routing Service Action Handlers

IDP A-Party Routing provides Service Action Handlers for the NPP Service Actions that are specific to IDP A-Party Routing. IDP A-Party Routing and NPP perform the following functions:

- RTDB lookup
- Interpretation of results from RTDB lookups
- NPP processing of Service Actions that are used for IDP A-Party Routing

*Table 20: Summary of IDP A-Party Routing Service Actions* provides a summary of the Service Actions used for IDP A-Party Routing.

**Table 20: Summary of IDP A-Party Routing Service Actions**

| Service Action | Description | Function | Precedence |
|---|---|---|---|
| CGPNRTG | CgPN A-Party or Service Key Routing | Determines whether CgPN routing and/or SK routing should be | 80 |

| Service Action | Description | Function | Precedence |
|---|---|---|---|
| | | attempted during post-NPP processing. | |
| CGPNSVCRQD | Calling Number lookup | Sets a flag to cause the IDPRCGPN service to be invoked for the message. | 60 |

## CGPNRTG Service Action Handler

The CGPNRTG Service Action Handler performs an RTDB lookup on the conditioned CgPN to find the Portability Type, and determines whether CgPN routing, or Service Key routing, or both should be attempted during post-NPP processing.

**Configuration Options Used**

If the IDP A-Party Routing feature and the IDP Service Key Routing feature are on, the TTROPTS CGPNSKRTG option is used to determine if Service Key Routing should be used as a fall-back option for A-Party Routing.

**Action Performed**

The Portability Type from the RTDB lookup is examined to identify a prepaid subscriber.

If the IDP Service Key Routing feature is on and the IDP Service Key Routing feature is not enabled, Service Key Routing will not be attempted in post-NPP processing.

If both features are on, the CGPNSKRTG configuration option is used to determine whether only A-Party Routing will be attempted, or Service Key Routing is available if A-Party Routing fails, in post-NPP processing.

**Terminating Action?**

This is not a terminating action.

## CGPNSVCRQD Service Action Handler

The CGPNSVCRQD Service Action Handler sets a flag to cause the IDPRCgPN service to be invoked for the message.

**Configuration Options Used**

None.

**Action Performed**

A flag is set to cause the IDPRCgPN service to be invoked for the message.

**Terminating Action?**

This is not a terminating action.

## EAGLE 5 ISS Commands

*EAGLE 5 ISS Commands* describes commands that can be used for the configuration and maintenance of the IDP A-Party Routing and IDP Service Key Routing features.

Refer to the *Commands Manual* for complete descriptions of the commands, including parameter names, valid values, and output examples for the commands.

### Maintenance Commands

See *Maintenance Commands* for a list of maintenance commands that can be used with the IDP A-Party Routing and IDP Service Key Routing features.

## IDP A-Party Routing Measurements

Refer to the *Measurements* manual for descriptions of measurements and measurements reports for IDP A-Party Routing, IDP Service Key Routing, and IDP Relay

See *Prepaid IDP Query Relay Measurements* for information about supported collection methods for IDP Relay-related measurements, and for a description of the relationship between IDP Relay, IDP A-Party Routing, and IDP Service Key Routing measurements.

The following measurement registers are defined for the IDP A-Party Routing and IDP Service Key Routing features. The registers are updated through the IDPR service processing. All registers for these features are reported in the STP System Total (SYSTOT-STP) report.

- **IDPSKGTT** Total number of IDP/IDPSSM messages that were selected for Service Key Routing (without having first gone to A-Party Routing), but fell through to GTT.
- **IDPSKRTD** Total number of IDP/IDPSSM messages that were selected for Service Key Routing (without having first gone to A-Party Routing), and were successfully routed based on SK/BCSM PPSOPTS data.
- **IDPAPTYRTD** Total number of IDP/IDPSSM messages that were selected for A-Party Routing service, and were successfully routed based on A-Party PPSOPTS routing data (routing data associated with the RTDB Prepaid Type assigned to the A-Party digits).
- **IDPAPTYSKR** Total number of IDP/IDPSSM messages that were selected for A-Party Routing service, but fell through to Service Key (SK) Routing, and were successfully routed based on SK/BCSM PPSOPTS data (routing data associated with the RTDB Prepaid Type assigned to the SK/BCSM entry).
- **IDPSKGTT** Total number of IDP/IDPSSM messages that were selected for Service Key Routing (without having first gone to A-Party Routing), but fell through to GTT.
- **IDPAPTYGTT** Total number of IDP/IDPSSM messages that were selected for A-Party Routing service, but fell through to GTT (with or without having attempted Service Key Routing first).

The following existing registers are affected by the IDP A-Party Routing and IDP Service Key Routing features:

- **IDPRMSFAIL** Total number of MSUs selected for IDPR service that fell through to GTT due to the following conditions:
  - No match on MSISDN in the RTDB
  - Match on MSISDN but no association to RN or SP for CDPNNP or CGPNNP
  - IDP A-Party or SK Routing resulted in falling through to GTT routing (due to no match on MSISDN or insufficient data)
- **IDPRMSERR** Total number of MSUs selected for IDPR service that could not be processed due to an error in encoding, decoding, formatting, or IDP A-Party Routing or IDP SK Routing.
- **IDPRMSSUCC** Number of MSUs selected for IDPR service for which the requested IDPR feature set functions were executed successfully. This includes pegs to the IDPAPTYRTD and IDPSKRTD registers.

The measurements are available in 30-minute intervals, and in 15-minute intervals when 15-Minute Measurements collection is enabled.

# Chapter 5

# IDP Screening for Prepaid Feature

**Topics:**


- *Feature Description.....67*
- *Call Flow.....68*
- *EAGLE 5 ISS Commands.....69*
- *IDP Screening for Prepaid Feature Measurements.....70*


The IDP Screening for Prepaid feature provides a mechanism to decide, prior to routing the calls to the prepaid engine, whether checking the credit status of prepaid subscribers is required.

## Feature Description

For a voice or text (short message) calls originated by prepaid subscribers, the serving MSC formulates an INAP IDP message, destined for a prepaid engine, to check subscriber credit status.

The IDP Screening for Prepaid feature provides a mechanism to intercept the IDP message and decide whether checking the credit status of prepaid subscribers is required before routing the calls to the prepaid engine.

In-network voice and text (short message) calls from prepaid subscribers, with specified "unlimited" call and texting plans, are not subjected to credit checks (routing to a prepaid engine) and are delivered by the MSC to the intended destination.

#### Voice Calls - Unlimited Call and Text

The EAGLE 5 ISS intercepts IDP messages and determines whether checking credit status is required prior to routing the calls to the prepaid engine.

Voice calls originated by prepaid subscribers with specified "unlimited" call and text plans are identified by a predefined Service Key value that differs from the one used for other originating voice calls (either originated by prepaid subscriber with specified "unlimited" text plans, or prepaid subscribers not subscribing to "unlimited" plans). The value assigned to the Service Key is set by the originating MSC when the call hits an Intelligent Network (IN) trigger.

For voice calls originated by prepaid subscribers with a specified "unlimited" call and text plan, the EAGLE 5 ISS examines whether the calls are in-network. In-network calls are calls from a subscriber to another subscriber, and are described by a list of prefixes. For in-network voice calls, the EAGLE 5 ISS returns an INAP Continue message to instruct the MSC to continue the calls (bypass the prepaid status check). For any other type of calls, the EAGLE 5 ISS relays the IDP message to the prepaid engine using Global Title Translation (GTT).

For voice calls that do not originate from prepaid subscribers with a specified "unlimited" call and text plan, the EAGLE 5 ISS relays the IDP message to its intended destination.

#### Text Calls - Unlimited Call and Text

Text calls (short messages) originated by prepaid subscribers with a specified "unlimited" call and text plan use the same Service Key as voice calls.

For text calls that do not originated from a “24/7 Call and Text Unlimited” or a “24/7 Text Unlimited” prepaid subscriber, the EAGLE 5 ISS relays the IDP message to its intended destination.

#### Text Calls - Unlimited and Text

Text calls originated by prepaid subscribers with a specified "unlimited" text plan will be identified by a predefined Service Key value that differs from the one used for calls originated by prepaid subscribers with a specified "unlimited" call and text plan or prepaid subscribers not subscribed to the specified " unlimited" calling plans.

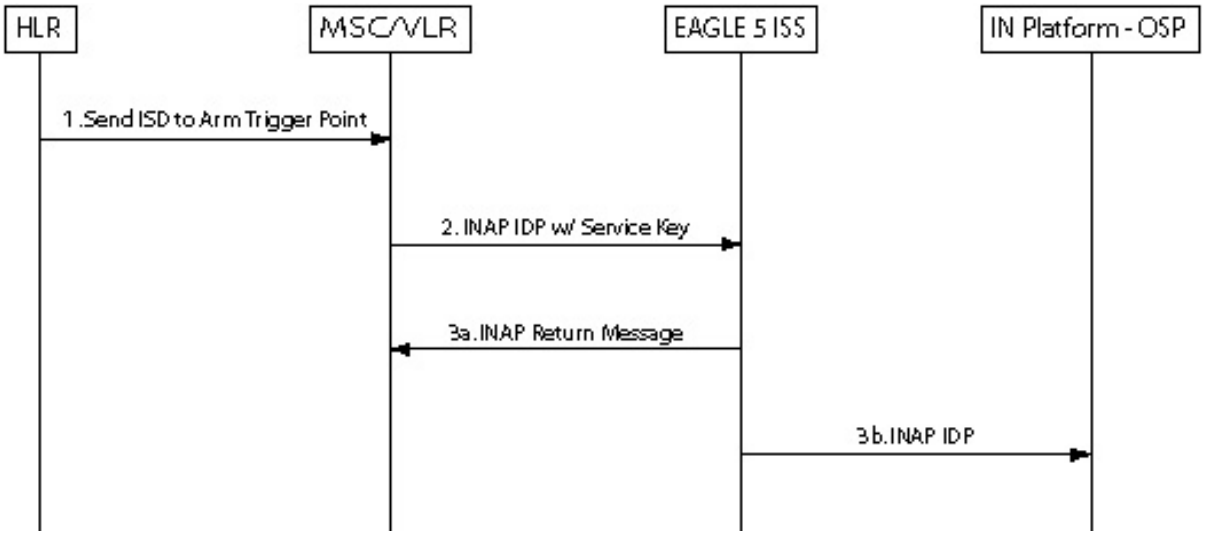
When text calls are originated from prepaid subscribers with a specified "unlimited" text or "unlimited" call and text plan, the EAGLE 5 ISS examines whether the call is an in-network call. If it is an in-network text call, the EAGLE 5 ISS returns an INAP Continue message to instruct the MSC to continue the call.

For any other types of calls, the EAGLE 5 ISS relays the IDP message to the prepaid engine.

## Call Flow

*Figure 11: IDP Message Subject to IDP Screening for Prepaid* illustrates an IDP message that is subject to IDP screening for prepaid.

**Figure 11: IDP Message Subject to IDP Screening for Prepaid**




1. HLR sends the MAP Insert_Subscriber_Data message to MSC to arm trigger points.
2. MSC formulates an INAP IDP message and sends it to EAGLE 5 ISS with a Service Key encoded as follows:
   - ServiceKey = xx for voice and text calls originated from prepaid subscribers with "unlimited" call and text plan
   - ServiceKey = yy for text calls originated from prepaid subscribers with "unlimited" call and text plan
   - ServiceKey = zz for all other types of prepaid calls

   EAGLE 5 ISS intercepts the INAP IDP message and determines the disposition of the call by examining the following values of the parameters encoded in the INAP IDP message:
   - ServiceKey
   - TeleService
   - CallingPartyNumber
   - CalledPartyBCDNumber
3. Based on the Service Key parameter values, the EAGLE 5 ISS performs on of the following:
   a. The EAGLE 5 ISS returns an INAP Continue Message to the MSC if any one of all the following 3 scenarios is identified:
      - Prepaid voice calls originated from prepaid subscribers with "unlimited" call and text that include:
        - ServiceKey = xx

- TeleService = Telephony (value = 17)
- Both Calling Party Number and CalledPartyBCDNumber are found in the In-Network Subscriber List

- Prepaid text calls originated from prepaid subscribers with "unlimited" call and text that include:
  - ServiceKey = xx
  - TeleService = Short MessageMO-PP (value = 34)
  - Both Calling Party Number and CalledPartyBCDNumber are found in the In-Network Subscriber List
- Prepaid text calls originated from prepaid subscribers with "unlimited" text that include:
  - ServiceKey = yy
  - TeleService = Short MessageMO-PP
  - Both Calling Party Number and CalledPartyBCDNumber are found in the In-Network Subscriber List

**b.** For all other scenarios, the EAGLE 5 ISS relays the INAP IDP message to its intended destination.

## EAGLE 5 ISS Commands

This section describes EAGLE 5 ISS commands that can be used for configuration and maintenance of the IDP Screening for Prepaid feature.

Refer to the *Commands Manual* for complete descriptions of the following commands, including parameter names, valid values, and output examples for the commands.

**Table 21: Commands used for IDP Screening for Prepaid**

| Type | Commands |
|---|---|
| System Serial Number | ent/rtrv-serial-num |
| Card | ent/dlt/rtrv/alw/inh/init/rept-stat-card |
| Feature Control | chg/rtrv-feat, enable/chg/rtrv-ctrl-feat |
| Common Screening List | chg/rtrv-csl |
| Service Selector | chg/dlt/ent/rtrv-srvsel |
| Retrieve, Report Status, and Maintenance | chg-th-alm, ent-trace, init-network, init-sys, rept-stat-alm, rept-stat-db, rept-stat-mps, rept-stat-sccp, rept-stat-sys, rep-stat-trbl, rtrv-data-rtdb, rtrv-tbl-capacity |

### `enable/chg/rtrv-ctrl-feat`

These commands are used to enable, turn on, and display the on/off status of the IDP Screening for Prepaid feature.

### ent/chg/dlt/rtrv-csl

Common screening list commands are used to define, change, delete, and display the screening requirements of various features. The following screening lists are required for the IDP Screening for Prepaid feature. Each screening is based on digit string.

- The In-Network Subscriber list (INSL) - used to determine whether a call is in-network.

  The INSL contains up to 50 digit string entries specifying prefixes to be compared with the CalledPartyBCDNumber and the CallingPartyNumber digits of the incoming IDP message. If the leading digits of both numbers are found in the INSL, the call is considered in-network. Otherwise, it is an off-network call. The INSL is keyed off of a string of 1-15 digits.
- Service Key + TeleService (SKTS) screening list - contains up to 25 digit string entries with digit strings that represent the service key + TeleService number in OCD format. The SKTS list is keyed off of a 4 digit string.

### ent/chg/dlt/rtrv-srvsel

The IDP Screening for Prepaid feature service selector (`srvsel`) commands are used to provision new selectors for the IDPS service, providing greater flexibility when provisioning the type of messages that require IDPS processing.

## IDP Screening for Prepaid Feature Measurements

The EAGLE 5 ISS Measurements system supports the collection and retrieval of measurements related to the IDP Screening for Prepaid feature. The IDP Screening for Prepaid measurements can be collected and reported with the following collection methods:

- OAM-based measurements collection
- The Measurements Platform feature enabled and the Measurements Platform collection option on
- The E5-OAM Integrated Measurements feature enabled and on and the E5-OAM Integrated Measurements collection option on

15 Minute Measurements can be used with the Measurements Platform or E5-OAM Integrated Measurements.

Refer to the *Measurements* manual for for descriptions of collection methods, measurements, and measurements reports.

Refer to the *Commands Manual* for descriptions of the commands used to enable and turn on features, turn on measurements collection options, and schedule and generate measurements reports.

Refer to the procedures in the *Database Administration Manual - System Management* to configure the Measurements Platform feature or E5-OAM Integrated Measurements feature for use with IDP Screening for Prepaid.

The following measurement registers are defined for the IDP Screening for Prepaid feature. All registers for this feature are reported in the STP System Total (SYSTOT-STP) report.

- **MSIDPNOMCH** The total number of IDP messages that did not fully meet the criteria of the IDP Screening for Prepaid feature. These messages are relayed to their destination by GTT.
- **MSIDPMATCH** The total number of IDP messages that fully met the criteria of the IDP Screening for Prepaid feature. Instead of sending the IDP message onward, a Continue message is sent to the

originating MSC. The criteria involve matching the following TCAP fields with EAGLE 5 ISS Common Screening Lists:

- The CalledPartyBCDNunber and Calling Party Number digits are provisioned in the In-Network Subscriber List (INSL).
- The TeleService and Service Key values are in the SKTS List.

# Chapter 6

# Feature Configuration

**Topics:**


- *Introduction.....73*
- *Prepaid IDP Query Relay Configuration.....74*
- *IDP A-Party Blacklist Configuration.....88*
- *IDP A-Party Routing and IDP Service Key Routing Configuration.....91*
- *IDP Screening for Prepaid Configuration.....97*
- *Service Portability Feature Configuration Procedures.....102*
- *S-Port Subscriber Differentiation Feature Configuration Procedures.....106*
- *Adding a Service Module Card.....109*
- *The 1100 TPS/DSM for ITU NP Feature.....113*
- *Activating the E5-SM4G Throughput Capacity Feature.....117*


This chapter provides procedures for configuring the following features for use in the EAGLE 5 ISS:

- Prepaid IDP Query Relay (IDP Relay)
- IDPR ASD
- IDPR GRN
- IDP A-Party Blacklist
- IDP A-Party Routing and IDP Service Key Routing
- IDP Screening for Prepaid

Procedures are included for configuration of the Service Portability feature for use with the IDP Relay feature, and for the S-Port Subscriber Differentiation feature for use with Service Portability.

# Introduction

This chapter describes prerequisites and procedures for the EAGLE 5 ISS configuration of the following features:

- Prepaid IDP Query Relay (IDP Relay)
- IDPR ASD
- IDPR GRN
- IDP A-Party Blacklist
- IDP A-Party Routing and IDP Service Key Routing
- IDP Screening for Prepaid

This chapter also provides procedures for configuration of the Service Portability feature for use with the IDP Relay feature and procedures for configuration of the S-Port Subscriber Differentiation feature for use with Service Portability.

Each section includes a configuration procedure that lists the steps for enabling and turning on each feature, and for the provisioning required for the features. Each step contains a link or reference to information and procedures to use to complete the step. Feature provisioning can be performed after the features are enabled and before the features are turned on.

**Note:** Controlled features are optional and must be purchased from Tekelec before they can be used in your system. If you are not sure whether you have purchased a specific feature, contact your Tekelec Sales or Account Representative.

Before any feature that is described in this manual can be enabled, the system prerequisites listed in *System Prerequisites* must be verified, and provisioned if needed.

## System Prerequisites

Before any feature that is described in this manual can be enabled, the prerequisites listed in *Table 22: System Prerequisites* are required in the system.

**Table 22: System Prerequisites**

| Prerequisite | Verification and Provisioning |
|---|---|
| The system serial number must be correct and locked.<br><br>For new installations, the system is shipped with an unlocked serial number. The serial number can be changed if necessary and must be locked after the system is on-site.<br><br>For systems that are being upgraded, the serial number is usually already verified and locked. | **Note:** The serial number cannot be changed after it is entered and locked in the system.<br><br>Locate the serial number for the system on a label affixed to the control shelf (1100).<br><br>Enter the `rtrv-serial-num` command to display the serial number and its locked status.<br><br>Verify that the displayed serial number is correct for the system.<br><br>If no serial number is displayed, enter the `ent-serial-num` command (without the lock parameter) to provision the serial number that |

| Prerequisite | Verification and Provisioning |
|---|---|
| | appears on the control shelf label. Enter the rtrv-serial-num command and verify that the serial number was entered correctly.<br>Enter the `ent-serial-num` command with the lock=yes parameter to lock the serial number in the system. |
| A sufficient number of Service Module cards must be equipped.<br>Some features require only E5-SM4G cards and cannot use DSM cards. See specific feature prerequisites, if any, in this section.<br>Refer to the *Dimensioning Guide for EPAP Advanced DB Features Technical Reference* for information on the dimensioning rules and the database capacity requirements for EPAP-related features. | Enter the `rept-stat-card:appl=vsccp` command to list the Service Module cards in the system.<br>If more cards or cards of a different type are needed, refer to the procedures in the *Database Administration Manual - GTT* to add Service Module cards or remove DSM cards. |
| The GTT feature must be on in the system.<br>Some features require an additional GTT-related feature such as EGTT. See the specific feature prerequisites in this section. | Enter the `rtrv-feat` command to display the GTT feature status.<br>If the GTT feature is on, the gtt=on entry appears in the output.<br>If the gtt=off entry appears in the output, use the procedures in the *Database Administration Manual - GTT* to turn on and provision the GTT feature and any other GTT-related features and functions that will be used in the system. |

## Prepaid IDP Query Relay Configuration

The Prepaid IDP Query Relay (IDP Relay) feature and related features are configured on the EAGLE 5 ISS. This section describes prerequisites and procedures for the configuration of the Prepaid IDP Query Relay (IDP Relay) feature and related features. This section also includes procedures for configuration of the Service Portability feature for use with IDP Relay, and for provisioning an SCCP option used by NPP for IDP Relay.

*Configuration Procedure for IDP Relay and Related Features* lists the steps for enabling and turning on IDP Relay-related features and the Service Portability feature, and for the provisioning required for the features. Each step contains a link or reference to information and procedures to use to complete the step.

Feature provisioning can be performed after the features are enabled and before the features are turned on.

**Note:** Controlled features are optional and must be purchased from Tekelec before they can be used in your system. If you are not sure whether you have purchased a specific feature, contact your Tekelec Sales or Account Representative.

The Test Tool for IDP Relay can be used to verify IDP Relay provisioning. See *TTR Test Tool*.

## IDP Relay-Related Feature Prerequisite

Before any IDP Relay-related feature can be enabled, the following prerequisites are required in the system:

**Table 23: IDP Relay-Related Feature Prerequisite**

| Prerequisite | Verification and Provisioning |
|---|---|
| The LNP feature cannot be on in the system | Enter the `rtrv-ctrl-feat` command.<br>If the LNP feature is on, shown with a quantity greater than zero for the LNP ported TNs entry in the command output, features described in this manual cannot be enabled. |

## Configuration Procedure for IDP Relay and Related Features

The EAGLE 5 ISS configuration of the Prepaid IDP Query Relay (IDP Relay) feature, IDPR ASD, IDPR GRN, Service Portability, and S-Port Subscriber Differentiation consists of the following steps. The steps contain links and references to detailed procedures and information needed to complete each step.

1. Verify, and provision if needed, the system prerequisites. See *System Prerequisites*.
2. Verify, and provision if needed, the feature prerequisites. See *IDP Relay-Related Feature Prerequisite*.
3. Provision NPP for IDP Relay. See *Provisioning NPP for IDP Relay*.
   - Provision NPP Action Sets and Service Rule Sets.
   - Provision NAI mapping values for each service.
   - Set the NPP service status to ON for each IDP service.
4. Enable the IDP Relay feature. See *Enabling IDP Relay-Related Features*.
5. Verify that the Default Country Code value for the STPOPTS DEFCC parameter is a value other than `none`. Refer to the `chg-stpopts` and `rtrv-stpopts` command descriptions in the *Commands Manual* to change and display the STPOPTS DEFCC value.
6. Turn on the IDP Relay feature. See *Turning On IDP Relay-Related Features*.
7. Provision IDP Relay TTROPTS options. See *Provisioning the TTR Options for IDP Relay*.
8. Provision the SCCPOPTS options for IDP Relay and related features. See *Provisioning SCCP Options for IDP Relay*.
9. Provision the required Common Screening List (CSL) entries. See *Provisioning the Common Screening List for IDP Relay*.

10. Enable and turn on any IDP-related features that will be used with IDP Relay. See *Enabling IDP Relay-Related Features* and *Turning On IDP Relay-Related Features*.
11. If the Service Portability feature will be used with IDP Relay,
    - Enable the Service Portability feature. See *Enabling the Service Portability Feature*.
    - Turn on the Service Portability feature. See *Turning On the Service Portability Feature*.
    - Provision the TTROPTS options for the Service Portability feature. See *Provisioning the TTR Options for IDP Relay*.
12. If the S-Port Subscriber Differentiation feature will be used with the Service Portability feature,
    - Enable the S-Port Subscriber Differentiation feature. See *Enabling the S-Port Subscriber Differentiation Feature*.
    - Turn on the S-Port Subscriber Differentiation feature. See *Turning On the S-Port Subscriber Differentiation Feature*.
    - Provision the SCCPOPTS SUBDFRN option for the S-Port Subscriber Differentiation feature. See *Provisioning the S-Port Subscriber Differentiation SCCPOPTS Option*.
13. Provision the IDP Relay service selector. See *Provisioning the IDPR Service Selector*.
14. Use the Test Tool to verify the IDP Relay provisioning. See *TTR Test Tool*
    - Provision IDP Relay test messages for use with the Test Tool.
    - Execute the `tst-msg` command for the provisioned test messages.
15. Configure measurements collection and reporting if measurements are to be collected for IDP Relay, IDP A-Party Blacklist, IDP A-Party Routing, and IDP Service Key Routing features.

    Refer to the procedures in the *Database Administration Manual - System Management* for configuring OAM-based measurements, the Measurements Platform feature, the E5-OAM Integrated Measurements feature, and the EAGLE OA&M IP Security feature in the EAGLE 5 ISS.

## Provisioning NPP for IDP Relay

Refer to the *Numbering Plan Processor (NPP) Overview* manual and the *Commands Manual*, and see the IDP Relay feature description in this manual for the required information and procedures to provision NPP components for IDP Relay services.

NPP provisioning is performed in the following sequence for the components that are used for the specified IDP Relay service.

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 that are to be used by IDP Relay, using the `ent-npp-as`.command.
3. Provision the Service Rule Sets (Rules that specify the filter values and Action Sets) that are to be used by IDP Relay. Enter the `ent-npp-srs` command.
4. Provision any delimiter values that are used in the outgoing digit string formatting. Enter the `chg-npp-serv` command.
5. Change the service Status to `on` to allow NPP processing for the specified service. Enter the `chg-npp-serv:srvn=<service name>:status=on` command.

## Enabling IDP Relay-Related Features

This procedure is used to enable IDP Relay-Related features in the EAGLE 5 ISS.

Each feature must be enabled using its feature part number and a feature access key.

- Prepaid IDP Query Relay (IDP Relay) - Part Number 893016001
- IDPR Additional Subscriber Data (IDPR ASD) - Part Number 893025701
- IDPR Generic Routing Number (IDPR GRN) - Part Number 893025601

**Note:** Controlled features must be purchased before you can receive the feature access key to use to enable the feature. If you are not sure if you have purchased a feature and received the feature access key, contact your Tekelec Sales Representative or Account Representative.

When an IDP Relay-related feature is enabled, it is permanently enabled. The IDP-related features cannot be temporarily enabled.

Provisioning of TTROPTS options and other information can be done after the feature is enabled and before the feature is turned on.

After an IDP Relay-related feature has been enabled and database provisioning is complete, the feature status must be set to on (the feature must be "turned on") See *Turning On IDP Relay-Related Features*.

1. Display the status of the features that are controlled with feature access keys. Enter the `rtrv-ctrl-feat` command. The output lists the enabled features in the system and shows the on/off status for each feature.

```
    rlghncxa03w 09-06-29 16:40:40 EST  EAGLE5 41.1.0
    The following features have been permanently enabled:
    Feature Name              Partnum    Status  Quantity
    HC-MIM SLK Capacity       893012707  on            64
;
```

   If the entry for the IDP Relay-related feature that you want to enable appears in the `rtrv-ctrl-feat` output with status on, performing this procedure is not necessary.

2. Enable the each IDP Relay-related feature, by entering the `enable-ctrl-feat` command and specify the part number and feature access key for the feature. The IDP Relay feature must be enabled before the IDPR ASD and IDPR GRN features can be enabled.

   `enable-ctrl-feat:partnum=<893xxxxx>:fak=<feature access key>`

3. Verify that each feature is enabled. Enter the `rtrv-ctrl-feat` command.

   When the feature is enabled, the entry for the enabled feature appears in the output of the `rtrv-ctrl-feat` command. The feature Status is off.

```
    rlghncxa03w 09-06-29 16:40:40 EST  EAGLE5 41.1.0
    The following features have been permanently enabled:
    Feature Name              Partnum    Status  Quantity
    HC-MIM SLK Capacity       893012707  on            64
    Prepaid IDP Query Relay   893016001  off         ----
    IDPR ASD                  893025701  off         ----
    IDPR GRN                  893025601  off         ----
;
```

4. Back up the database changes, by entering the following command.
   `chg-db:action=backup:dest=fixed`

The following messages appear; the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
BACKUP (FIXED) : MASP A - Backup starts on active MASP.
BACKUP (FIXED) : MASP A - Backup on active MASP to fixed disk complete.
BACKUP (FIXED) : MASP A - Backup starts on standby MASP.
BACKUP (FIXED) : MASP A - Backup on standby MASP to fixed disk complete.
```

## Turning On IDP Relay-Related Features

Before an IDP Relay-related feature can be turned on, the feature must be enabled in the EAGLE 5 ISS.

Provisioning of TTROPTS options and other information can be done after the feature is enabled and before the feature is turned on.

After a feature has been enabled and database provisioning is complete, the feature status must be set to on (the feature must be "turned on"). MSUs will not be processed by the feature until the feature is turned on.

This procedure is used to turn on IDP Relay-related features in the EAGLE 5 ISS. Each feature must be turned on using its feature part number.

- Prepaid IDP Query Relay (IDP Relay) - Part Number 893016001
- IDP Additional Subscriber Data (IDP ASD)- Part Number 893025701
- IDP Generic Routing Number (IDP GRN) - Part Number 893025601

After the IDP Relay feature is enabled and turned on, it cannot be turned off again.

The IDPR ASD and IDPR GRN features can be turned on and off after they are enabled.

1. Display the status of the features that are controlled with feature access keys. Enter the `rtrv-ctrl-feat` command. The output lists the enabled features in the system and shows the on/off status for each feature.

   ```
   rlghncxa03w 09-05-29 16:40:40 EST  EAGLE5 41.1.0
       The following features have been permanently enabled:
       Feature Name              Partnum    Status  Quantity
       HC-MIM SLK Capacity       893012707  on           64
       Prepaid IDP Query Relay   893016001  off         ----
       IDPR ASD                  893025701  off         ----
       IDPR GRN                  893025601  off         ----
   ;
   ```

   If the entry for the feature that you want to turn on appears in the `rtrv-ctrl-feat` output with status `on`, performing this procedure is not necessary.

   If the status of the feature in the output is `off`, continue with *Step 2*.

2. Turn on the feature, by entering the `chg-ctrl-feat` command.

   ```
   chg-ctrl-feat:partnum=<893xxxxxx>:status=on
   ```

3. Verify that each feature is turned on. Enter the `rtrv-ctrl-feat` command.

   When the feature is turned on, the feature status changes to on in the `rtrv-ctrl-feat` command output.

   ```
       rlghncxa03w 09-06-29 16:40:40 EST  EAGLE5 41.1.0
       The following features have been permanently enabled:
       Feature Name              Partnum    Status  Quantity
   ```

```
    HC-MIM SLK Capacity       893012707  on            64
    Prepaid IDP Query Relay   893016001  on          ----
    IDPR ASD                  893025701  on          ----
    IDPR GRN                  893025601  on          ----
;
```

4. Back up the database changes, by entering the following command.
   `chg-db:action=backup:dest=fixed`

   The following messages appear; the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
BACKUP (FIXED) : MASP A - Backup starts on active MASP.
BACKUP (FIXED) : MASP A - Backup on active MASP to fixed disk complete.
BACKUP (FIXED) : MASP A - Backup starts on standby MASP.
BACKUP (FIXED) : MASP A - Backup on standby MASP to fixed disk complete.
```

## Provisioning the IDPR Service Selector

The procedures in this section describe how to add, change, and remove a service selector. The information is indicated that is specific to the IDP Relay feature.

Refer to the *Commands Manual* for complete descriptions of the commands used in these procedures, including parameter names, valid values, and output examples for the commands.

### Adding an IDPR Service Selector

This procedure is used to add a service selector for the IDPR feature.

The IDP Relay feature must be enabled and turned on before an IDPR service selector can be added.

1. Verify that the IDP Relay feature is enabled and turned on, by entering the `rtrv-ctrl-feat` command.

   If the IDP Relay feature is enabled and turned on, the status of the Prepaid IDP Query Relay entry is on.

```
    rlghncxa03w 09-06-29 16:40:40 EST  EAGLE5 41.1.0
    The following features have been permanently enabled:
    Feature Name              Partnum    Status  Quantity
    HC-MIM SLK Capacity       893012707  on            64
    Prepaid IDP Query Relay   893016001  on          ----
;
```

   - If the IDP Relay feature is enabled and turned on, continue with *Step 2*.
   - If the IDP Relay feature is not enabled or turned on, go to *Enabling IDP Relay-Related Features* to enable and turn on the IDP Relay feature. Then continue with *Step 2*.

2. Display any existing IDPR service selectors in the database, by entering the `rtrv-srvsel:serv=idpr` command.

```
    rlghncxa03w 08-06-28 14:42:38 GMT  EAGLE 39.2.0

    GTII  TT   NP       NAI   SSN  SNP   SNAI   SERV

    4     1    e164     intl  3    ---   ---    idpr
    4     2    e164     intl  *    ---   ---    idpr

    GTIN  TT   NP       NAI   SSN  SNP   SNAI   SERV
```

```
    4     4    e164     natl  4    ---   ---    idpr

    SRV SELECTOR table is (3 of 20992) 1 % full
;
```

3. Add new idpr service selectors, using the `ent-srvsel` command. For example, enter commands like these:

   `ent-srvsel:serv=idpr:tt=35:ssn=100:gtin=4:np=e214:nai=natl`

   `ent-srvsel:serv=idpr:tt=57:ssn=75:gtin=2`

4. Verify the changes by entering the `rtrv-srvsel` command with the parameters and values used in *Step 3*.

```
    rlghncxa03w 08-06-28 14:42:38 GMT  EAGLE 39.2.0

    GTII  TT   NP       NAI   SSN  SNP   SNAI   SERV

    4     1    e164     intl  3    ---   ---    idpr
    4     2    e164     intl  *    ---   ---    idpr


    GTIN  TT   NP       NAI   SSN  SNP   SNAI   SERV

    4     4    e164     natl  4    ---   ---    idpr
    4     35   e214     natl  100  ---   ---    idpr
    2     57   ---      ---   75   ---   ---    idpr


    SRV SELECTOR table is (5 of 20992) 1 % full
;
```

5. Back up the changes using the `chg-db:action=backup:dest=fixed` command.

   The following messages appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
BACKUP (FIXED): MASP A - Backup starts on active MASP.
BACKUP (FIXED): MASP A - Backup on active MASP to fixed disk complete.
BACKUP (FIXED): MASP A - Backup starts on standby MASP.
BACKUP (FIXED): MASP A - Backup on standby MASP to fixed disk complete.
```

## Removing a Service Selector

This procedure is used to remove a service selector from the database.

The GTI, GTII, GTIN, tt, and ssn parameter values can be used to limit the amount of information displayed with the `rtrv-srvsel` command.

1. Display the service selectors in the database, by entering the `rtrv-srvsel` command.

```
    rlghncxa03w 08-06-28 14:42:38 GMT  EAGLE 39.2.0
    GTII  TT   NP       NAI   SSN  SNP   SNAI   SERV

    4     1    e214     intl  4    e164  intl   gport

    4     1    e214     intl  5    e164  intl   smsmr

    4     2    e214     intl  5    e164  intl   mnpsms

    4     2    e164     intl       ---   ---    vflex
```

```
   GTIN  TT   NP       NAI   SSN  SNP   SNAI   SERV

   4     4    e214     natl  75   e164  intl   gflex

   4     9    e214     natl  100  e164  intl   gflex

   4     35   e214     natl  100  ---   ---    idpr
   2     57   e214     natl  75   ---   ---    vflex


   SRV SELECTOR table is (8 of 20992)   1 % full

;
```

2. Remove the service selector from the database, using the `dlt-srvsel` command. For example, enter commands like these.

   `dlt-srvsel:serv=idpr:tt=35:ssn=100:gtin=4:np=e214:nai=natl`

   `dlt-srvsel:serv=idpr:tt=57:ssn=75:gtin=2`

   To remove a service selector, the GTI, GTII, GTIN, tt, and ssn parameter values must be entered as shown in the `rtrv-srvsel` command output.

3. Verify the changes by entering the `rtrv-srvsel` command with the parameters and values used in *Step 2*.

   `rtrv-srvsel:serv=idpr:tt=35:ssn=100:gtin=4:np=e214:nai=natl`

```
   rlghncxa03w 08-06-28 14:42:38 GMT  EAGLE 39.2.0


   GTIN  TT   NP       NAI   SSN  SNP   SNAI   SERV

   No SRV Selector found in range

;
```

   `rtrv-srvsel:serv=idpr:tt=57:ssn=75:gtin=2`

```
   tekelecstp 08-08-28 16:35:22 EST  EAGLE 39.2.0
   GTII  TT   NP       NAI   NPV  NAIV  SSN  SNP   SNAI   SERV
   No SRV Selector found in range

;
```

4. Back up the changes using the `chg-db:action=backup:dest=fixed` command.

   The following messages appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
BACKUP (FIXED): MASP A - Backup starts on active MASP.
BACKUP (FIXED): MASP A - Backup on active MASP to fixed disk complete.
BACKUP (FIXED): MASP A - Backup starts on standby MASP.
BACKUP (FIXED): MASP A - Backup on standby MASP to fixed disk complete.
```

## Changing an Existing Service Selector to Another Service Selector

This procedure is used to change an existing service selector to another service selector.

The only parameters that can be changed using this procedure are:

:nserv - New DSM service type, idpr

:nsnp -An IDP Relay service selector cannot contain an SNP value; if the service selector being changed contains an SNP value, this value must be changed to none with this parameter.

:nsnai - An IDP Relay service selector cannot contain an SNAI value; if the service selector being changed contains an SNAI value, this value must be changed to none with this parameter.

The `chg-srvsel` command requires that the the gtii/gtin/gtin24, tt, np, nai, npv, naiv, ssn, and serv parameters parameters be specified with the values shown in the `rtrv-srvsel` output for the service selector that is being changed. If any of these parameter values need to be changed for an IDP Relay service selector, use the procedure in *Removing a Service Selector* to remove the existing service selector. Then use the procedure in *Adding an IDPR Service Selector* to add the new service selector with the new parameter information.

1. Display the service selectors in the database, using the `rtrv-srvsel` command.

```
    rlghncxa03w 08-06-28 14:42:38 GMT  EAGLE 39.2.0

    GTII  TT   NP       NAI   SSN  SNP   SNAI   SERV

    4     1    e214     intl  4    e164  intl   gport

    4     1    e214     intl  5    e164  intl   smsmr

    4     2    e214     intl  5    e164  intl   mnpsms

    4     2    e164     intl  *    ---   ---    idpr


    GTIN  TT   NP       NAI   SSN  SNP   SNAI   SERV

    4     4    e214     natl  34   e164  intl   gflex

    4     9    e214     natl  ---  e164  intl   gflex


    SRV SELECTOR table is (6 of 20992)   1 % full

;
```

2. Verify that the IDP Relay feature is enabled and turned on, by entering the `rtrv-ctrl-feat` command. If the feature is enabled and turned on, the status in the feature entry is `on`.

```
    rlghncxa03w 09-08-29 16:40:40 EST  EAGLE5 41.1.0
    The following features have been permanently enabled:
    Feature Name              Partnum    Status  Quantity
    HC-MIM SLK Capacity       893012707  on            64
    Prepaid IDP Query Relay   893016001  on          ----
;
```

   - If the feature is enabled and turned on, continue with *Step 3*.
   - If the feature is not enabled or turned on, go to the *Enabling IDP Relay-Related Features*procedure to enable and turn on the IDP Relay feature. Then continue with *Step 3*.

3. Change the service selector, using a `chg-srvsel` command similar to the following example.
`chg-srvsel:gtin=4:tt=4:np=e214:nai=natl:ssn=34:nsnp=none:nsnai=none:nserv=idpr`

   If the SNP, or SNAI parameter values are shown as dashes in the `rtrv-srvsel` output, these parameters cannot be specified with the `chg-srvsel` command. If the gtii/gtin/gtin24 parameter

value is 2, the np, nai, npv, and naiv parameters cannot be specified with the `chg-srvsel` command.

If the gtii/gtin/gtin24 parameter value is 4, either the np and nai, or the npv and naiv parameters must be specified with the `chg-srvsel`command. The np and nai parameters can be specified in place of the npv and naiv parameters, and the npv and naiv parameters can be specified in place of the np and naiv parameters as long as parameter values be specified correspond to the values shown in the `rtrv-srvsel`output.

The gtii/gtin/gtin24, tt, ssn, np, nai, npv, or naiv parameters cannot be changed in this procedure. To change these parameters, use the *Removing a Service Selector* procedure to remove the service selector. Then use the *Adding an IDPR Service Selector* procedure to re-enter the service selector as an IDP Relay service selector.

4. Verify the changes by entering the `rtrv-srvsel` command with the serv parameter value for the new service selector and the values for the other parameter that were used in *Step 3*.

   `rtrv-srvsel:gtin=4:tt=4:np=e214:nai=natl:ssn=34:serv=idpr`

```
    rlghncxa03w 08-06-28 14:42:38 GMT  EAGLE 39.2.0

    GTIN  TT   NP       NAI   SSN  SNP   SNAI   SERV
    4     4    e214     natl  34   ---   ---    idpr

    SRV SELECTOR table is (6 of 20992)   1 % full

;
```

5. Back up the changes using the `chg-db:action=backup:dest=fixed` command.

   The following messages appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
BACKUP (FIXED): MASP A - Backup starts on active MASP.
BACKUP (FIXED): MASP A - Backup on active MASP to fixed disk complete.
BACKUP (FIXED): MASP A - Backup starts on standby MASP.
BACKUP (FIXED): MASP A - Backup on standby MASP to fixed disk complete.
```

## Provisioning the TTR Options for IDP Relay

This procedure is used to provision the TTROPTS configuration options for the Prepaid IDP Query Relay (IDP Relay) feature:

The IDP Relay feature must be enabled before the TTROPTS options can be provisioned.

1. Verify that the IDP Relay feature is enabled, and that any required IDP Relay-related features are enabled. Enter the `rtrv-ctrl-feat` command.

   If the required features have not been turned on, the status in the feature entry is off.

```
    rlghncxa03w 09-06-29 16:40:40 EST  EAGLE5 41.1.0
    The following features have been permanently enabled:
    Feature Name              Partnum    Status  Quantity
    HC-MIM SLK Capacity       893012707  on            64
    Prepaid IDP Query Relay   893016001  off         ----
;
```

   - If the required features are enabled, continue with *Step 2*.
   - If a required feature is not enabled (the entry does not appear in the output), go to *Enabling IDP Relay-Related Features* to enable each required feature. Then continue with *Step 2*.

2. Display the current settings of the TTR options, using the `rtrv-ttropts` command.
3. Change the TTR options to the required settings, by entering the `chg-ttropts` command with at least one of the option parameters specified.

   Refer to the `chg-ttropts` command description in the *Commands Manual* for valid parameter values, input examples, and rules for entering the command correctly.
4. Verify the changes, by entering the `rtrv-ttropts` command.
5. Back up the changes, using the `chg-db:action=backup:dest=fixed` command.

   These messages appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
BACKUP (FIXED) : MASP A - Backup starts on active MASP.
BACKUP (FIXED) : MASP A - Backup on active MASP to fixed disk complete.
BACKUP (FIXED) : MASP A - Backup starts on standby MASP.
BACKUP (FIXED) : MASP A - Backup on standby MASP to fixed disk complete.
```

## Provisioning SCCP Options for IDP Relay

This procedure is used to provision SCCPOPTS configuration options for IDP Relay and related features. The indicated feature must be enabled before the option can be provisioned.

- The ACLEN SCCPOPTS option is used for the IDP Relay feature.
- The CCLEN, and INTLUNKNNAI SCCPOPTS options are used for the IDP A-Party Routing and IDP Service Key Routing features.

1. Display the current settings of the SCCP options, using the `rtrv-sccpopts` command.
2. Change each SCCP option to the desired setting, by entering the `chg-sccpopts` command with the option parameter specified.
3. Verify the changes, by entering the `rtrv-sccpopts` command.
4. Back up the changes, using the `chg-db:action=backup:dest=fixed` command.

   These messages appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
BACKUP (FIXED) : MASP A - Backup starts on active MASP.
BACKUP (FIXED) : MASP A - Backup on active MASP to fixed disk complete.
BACKUP (FIXED) : MASP A - Backup starts on standby MASP.
BACKUP (FIXED) : MASP A - Backup on standby MASP to fixed disk complete.
```

## Provisioning the Common Screening List for IDP Relay

This procedure is used to provision the Common Screening List (CSL) digit string values for IDP Relay. The screenings are performed on digit strings. The following screening lists are used for IDP Relay:

- GT screening list - This list is used to compare the SCCP CDPA GT from the incoming message to the digit strings in this list. If not found, the message falls through to GTT handling. (The message GTI value must not be zero, and the SCCP NAI must be international.)
- CCNC screening list - This screening list is used to compare the conditioned TCAP DN in international format ito the digit strings in this list. If not found, the message falls through to GTT handling.

- SKBCSM screening list - This screening list is used to compare the concatenated Service Key (SK) and Basic Call State Model (BCSM) values from the incoming message ito the entires in this list. If not found, the message falls through to GTT handling.

1. Verify that the IDP Relay feature is enabled, by entering the `rtrv-ctrl-feat` command.

   If the IDP Relay feature has not been turned on, the status in the feature entry is off.

```
    rlghncxa03w 09-06-29 16:40:40 EST  EAGLE5 41.1.0
    The following features have been permanently enabled:
    Feature Name              Partnum    Status  Quantity
    HC-MIM SLK Capacity       893012707  on            64
    Prepaid IDP Query Relay   893016001  off         ----
;
```

   - If the IDP Relay feature is not enabled (the entry does not appear in the output), go to *Enabling IDP Relay-Related Features* to enable the feature. Then continue with *Step 2*.
   - If the IDP Relay feature is enabled, continue with *Step 2*.

2. Display the current Common Screening List settings, using the `rtrv-csl` command.
3. Enter the digit string value for each list, by entering the `chg-csl` command.

   Refer to *EAGLE 5 ISS Commands* in this manual and to the `chg-csl` command description in the *Commands Manual* for valid parameter values, input examples, and rules for entering the command correctly.

```
chg-csl:feature="Prepaid IDP Query Relay":list=ccnc:ds=<1-6 hex digits>
chg-csl:feature="Prepaid IDP Query Relay":list=gt:ds=<1-15 hex digits>
chg-csl:feature="Prepaid IDP Query Relay":list=skbcsm:ds=<1-10 hex digits>
```

4. Verify the changes, by entering the `rtrv-csl` command.
5. Back up the changes, using the `chg-db:action=backup:dest=fixed` command.

   These messages appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
BACKUP (FIXED) : MASP A - Backup starts on active MASP.
BACKUP (FIXED) : MASP A - Backup on active MASP to fixed disk complete.
BACKUP (FIXED) : MASP A - Backup starts on standby MASP.
BACKUP (FIXED) : MASP A - Backup on standby MASP to fixed disk complete.
```

## TTR Test Tool

The Test Tool can be used to send provisioned TTR (INAP and CAP) messages to test the number conditioning and formatting for the IDPRCDPN and IDPRCGPN services. The test message is used to modify the internal data structure of the service and to study the call flow behavior when the message in injected into the call path. The test message is never sent out to the network.

The Test Tool provides the following capabilities:

- Define up to 10 TTR test messages in the TSTMSG table.
- Invoke IDP Relay and NPP to process the a test message.
- Generate a report of the actions taken and the results of the test.

The Test Tool can be invoked as follows:

- After initial provisioning of IDP Relay and NPP to verify the provisioning
- During IDP Relay feature operation, to quickly debug an issue

The information shown in *Table 24: TTR Test Message Parameters* can be configured for each test message:

**Note:** CdPN represents either the INAP CS1 CalledPartyNumber parameter or the GSM Camel Application Part (CAP) CalledPartyBCDNumber parameter of the TTR message.

**Table 24: TTR Test Message Parameters**

| Parameter | | Range | Default |
|---|---|---|---|
| Message Number | MSGN | 1-10 | (Must be specified) |
| Service Key | SK | 8 hexadecimal digits | 00006b00 |
| Basic Call State Model | BCSM | 2 digits | 02 (Info Collected) |
| IDP Message Type | TCAPTYPE | INAP, CAP | INAP |
| Calling Party Address Global Title | CGPAGT | 0-15 | 2 (GT with Tr Type) |
| Calling Party Address Global Title NAI | CGPAGTNAI | 1-127 | 4 (International) |
| Calling Party Address Digits | CGPADGTS | 1-15 hexadecimal digits | 0123456789abcde |
| Called Party Address Global Title | CDPAGT | 0-15 | 2 (GT with Tr Type) |
| Called Party Address Global Title NAI | CDPAGTNAI | 0-127 | 4 (International) INAP |
| Called Party Address Digits | CDPADGTS | 1-15 hexadecimal digits | 0123456789abcde |
| Called Party Number NAI | CDPNNAI | 1-127 | 4 (International) INAP<br>Valid values for CAP messages are 0-7 |
| Called Party Number Digits | CDPNDGTS | 1-15 hexadecimal digits | 0123456789abcde |
| Calling Party Number NAI | CGPNNAI | 0-127 | 4 (International) INAP<br>Valid values for CAP messages are 0-7 |
| Calling Party Number Digits | CGPNDGTS | 1-32 hexadecimal digits | 0123456789abcde |
| Location Area Code Digits | LACDGTS | 1-6-hexadecimal digits | abcdef |
| Message Active (will be sent to the network card) | ACTIVE | yes, no | no |

| Parameter | | Range | Default |
|---|---|---|---|
| Reset values for MSGN message to defaults | RESET | yes | no |

The `chg-ttr-msg` command is used to configure the parameter values for each TTR test message. The command must specify the message number (one of up to 10 messages) for the message that is being configured.

The `rtrv-ttr-msg` command displays the configured messages in the Test Message table. Configured information for all messages or for one specified message number can be displayed.

The `tst-msg` command invokes the test. The command must specify the prot=ttr parameter, the message number for the test, the network card location (loc parameter), the feat=ttr parameter, and the mode for displaying the results (full, brief, debug). The most complete and accurate test result information is provided when debug mode is used.

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

Refer to the *Commands Manual* for descriptions of the commands, parameter values, and output examples.

## Turning Off IDP Relay-Related Features

Before an IDP Relay-related feature can be turned on and off, the feature must be enabled in the EAGLE 5 ISS.

This procedure is used to turn off the following IDP Relay-related features in the EAGLE 5 ISS. Each feature must be turned off using its feature part number.

- IDP Additional Subscriber Data (IDP ASD) - Part Number 893025701
- IDP Generic Routing Number (IDP GRN) - Part Number 893025601

1. Display the status of the features that are controlled with feature access keys. Enter the `rtrv-ctrl-feat` command. The output lists the enabled features in the system and shows the on/off status for each feature.

```
rlghncxa03w 09-05-29 16:40:40 EST  EAGLE5 41.1.0
    The following features have been permanently enabled:
    Feature Name              Partnum    Status  Quantity
    HC-MIM SLK Capacity       893012707  on           64
    Prepaid IDP Query Relay   893016001  on         ----
    IDPR ASD                  893025701  on         ----
    IDPR GRN                  893025601  on         ----
;
```

   If the entry for the feature that you want to turn off appears in the `rtrv-ctrl-feat` output with status `off`, performing this procedure is not necessary.

   If the status of the feature in the output is on, continue with *Step 2*.

2. Turn off the feature, by entering the `chg-ctrl-feat` command.

   `chg-ctrl-feat:partnum=<893xxxxxx>:status=off`

   When the feature is turned of, the feature status changes to `off` in the `rtrv-ctrl-feat` command output.

```
    rlghncxa03w 09-06-29 16:40:40 EST  EAGLE5 41.1.0
    The following features have been permanently enabled:
```

```
    Feature Name              Partnum    Status  Quantity
    HC-MIM SLK Capacity       893012707  on            64
    Prepaid IDP Query Relay   893016001  on          ----
    IDPR ASD                  893025701  off         ----
    IDPR GRN                  893025601  off         ----
;
```

3. Back up the database changes, by entering the following command.

   `chg-db:action=backup:dest=fixed`

   The following messages appear; the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
BACKUP (FIXED) : MASP A - Backup starts on active MASP.
BACKUP (FIXED) : MASP A - Backup on active MASP to fixed disk complete.
BACKUP (FIXED) : MASP A - Backup starts on standby MASP.
BACKUP (FIXED) : MASP A - Backup on standby MASP to fixed disk complete.
```

# IDP A-Party Blacklist Configuration

The IDP A-Party Blacklist feature is configured on the EAGLE 5 ISS. This section describes prerequisites and procedures for the configuration of the IDP A-Party Blacklist feature.

*IDP A-Party Blacklist Feature Configuration Procedure* lists the steps for enabling and turning on the IDP A-Party Blacklist feature, and for the provisioning required for the feature. Each step contains a link or reference to information and procedures to use to complete the step.

Feature provisioning can be performed after the feature is enabled and before the feature is turned on.

The Test Tool for IDP Relay can be used for IDP A-Party Blacklist. See *TTR Test Tool*..

**Note:** Controlled features are optional and must be purchased from Tekelec before they can be used in your system. If you are not sure whether you have purchased a specific feature, contact your Tekelec Sales or Account Representative.

## IDP A-Party Blacklist Feature Prerequisite

Before the IDP A-Party Blacklist feature can be enabled, the following prerequisite is required in the system:

**Table 25: IDP A-Party Blacklist Feature Prerequisite**

| Prerequisite | Verification and Provisioning |
|---|---|
| The Prepaid IDP Query Relay (IDP Relay) feature must be enabled and turned on. | Enter the `rtrv-ctrl-feat` command.<br>Verify that the entry for the Prepaid IDP Query Relay feature appears in the output and the Status is on.<br>• If the entry does not appear in the output, the Prepaid IDP Query Relay feature is not |

| Prerequisite | Verification and Provisioning |
|---|---|
| | configured in the system. Go to *Prepaid IDP Query Relay Configuration* to configure the IDP Relay feature in the system.<br>• If the entry appears and the Status is off, go to *Prepaid IDP Query Relay Configuration* to verify the IDP Relay configuration and turn on the IDP Relay feature. |

## IDP A-Party Blacklist Feature Configuration Procedure

The EAGLE 5 ISS configuration of the IDP A-Party Blacklist feature consists of the following steps. The steps contain links and references to detailed procedures and information needed to complete each step.

1. Verify, and provision if needed, the system prerequisites. See *System Prerequisites*.
2. Verify, and provision if needed, the feature prerequisites. See *IDP A-Party Blacklist Feature Prerequisite*.
3. Provision NPP Action Sets, Service Rule Sets, and Service data for the IDPRCGPN service and the BLKLSTQRY and BLKLSTRLY Service Actions. See *Provisioning NPP for IDP Relay* and the *Numbering Plan Processor Overview* manual.

   Set the NPP service status to on for the IDPRCGPN service. See *Provisioning NPP for IDP Relay*.
4. Enable and turn on the IDP A-Party Blacklist feature. See *Enable and Turn On the IDP A-Party Blacklist Feature*.
5. Provision the service selector for IDP Relay features (idpr) to support IDP A-Party Blacklist. See *Provisioning the IDPR Service Selector*.
6. Provision TTROPTS options that apply to IDP A-Party Blacklist. See *Provisioning the TTR Options for IDP A-Party Blacklist*, and refer to the Commands Manual for descriptions and valid values for the DRAFMT and DRANAI options.
7. Provision IDP Relay test messages for use with the Test Tool. See *TTR Test Tool*.

   The Test Tool for IDP Relay can be used for IDP A-Party Blacklist with the IDPRCGPN service and BLKLSTQRY or BLKLSTRLY Service Action provisioned.
8. Use the Test Tool to verify the IDP A-Party Blacklist provisioning. See *TTR Test Tool*.

## Enable and Turn On the IDP A-Party Blacklist Feature

This procedure is used to enable and turn on the IDP A-Party Blacklist feature in the EAGLE 5 ISS.

The feature must be enabled using its feature part number and a feature access key.

- IDP A-Party Blacklist - Part Number 893033201

**Note:** Controlled features must be purchased before you can receive the feature access key to use to enable the feature. If you are not sure if you have purchased a feature and received the feature access key, contact your Tekelec Sales Representative or Account Representative.

When the IDP A-Party Blacklist feature is enabled, it is permanently enabled. The IDP A-Party Blacklist feature cannot be temporarily enabled.

After the feature has been enabled, the feature status must be set to on (the feature must be "turned on").

Provisioning of TTROPTS options and other information can be done only after the feature is enabled and turned on.

1. Display the status of the features that are controlled with feature access keys. Enter the `rtrv-ctrl-feat` command. The output lists the enabled features in the system and shows the on/off status for each feature.

```
    rlghncxa03w 09-06-29 16:40:40 EST  EAGLE5 41.1.0
    The following features have been permanently enabled:
    Feature Name              Partnum    Status  Quantity
    HC-MIM SLK Capacity       893012707  on            64
    Prepaid IDP Query Relay   893016001  on          ----
;
```

   If the `rtrv-ctrl-feat` output shows a LNP ported TNs quantity entry, this procedure cannot be performed for IDP A-Party Blacklist .

   If the entry for the Prepaid IDP Query Relay feature does not appear in the rtrv-ctrl-feat output, or appears with status off, use the procedures in to configure the IDP Relay feature so that it is enabled, turned on, and fully operational in the system. Then continue with *Step 2*.

   If the entry for the Prepaid IDP Query Relay feature appears in the `rtrv-ctrl-feat` output with status on, continue with *Step 2*.

2. Enable the IDP A-Party Blacklist feature, by entering the `enable-ctrl-feat` command and specifying the part number and feature access key for the feature.
   `enable-ctrl-feat:partnum=<8930332001>:fak=<feature access key>`

   **Note:** The feature access key is provided by Tekelec when the feature is purchased. If you do not have the controlled feature part number or the feature access key for a feature, contact your Tekelec Sales Representative or Account Representative.

   When the feature is enabled, the entry for the IDP A-Party Blacklist feature appears in the output of the `rtrv-ctrl-feat` command. The feature Status is off.

```
    rlghncxa03w 09-06-29 16:40:40 EST  EAGLE5 41.1.0
    The following features have been permanently enabled:
    Feature Name              Partnum    Status  Quantity
    HC-MIM SLK Capacity       893012707  on            64
    Prepaid IDP Query Relay   893016001  off         ----
    IDP A-Party Blacklist     893033201  off         ----
;
```

3. Turn on the IDP A-Party Blacklist feature, by entering the `chg-ctrl-feat` command with the feature part number and the status=on parameter.
   `chg-ctrl-feat:partnum=893033201:status=on`

   When the feature is turned on, the status for the IDP A-Party Blacklist feature in the output of the `rtrv-ctrl-feat` command is on

4. Back up the database changes, by entering the following command.
   `chg-db:action=backup:dest=fixed`

   The following messages appear; the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
BACKUP (FIXED) : MASP A - Backup starts on active MASP.
BACKUP (FIXED) : MASP A - Backup on active MASP to fixed disk complete.
```

```
BACKUP (FIXED) : MASP A - Backup starts on standby MASP.
BACKUP (FIXED) : MASP A - Backup on standby MASP to fixed disk complete.
```

### Provisioning the TTR Options for IDP A-Party Blacklist

This procedure is used to provision the TTROPTS configuration options for the IDP A-Party Blacklist feature (DRAFRMT and DRANAI).

The IDP A-Party Blacklist feature must be enabled and turned on before the TTROPTS options can be provisioned.

1. Verify that the IDP A-Party Blacklist feature is enabled and turned on, by entering the `rtrv-ctrl-feat` command.

```
    rlghncxa03w 09-06-29 16:40:40 EST  EAGLE5 41.1.0
    The following features have been permanently enabled:
    Feature Name              Partnum    Status  Quantity
    HC-MIM SLK Capacity       893012707  on            64
    Prepaid IDP Query Relay   893016001  on          ----
    IDP A-Party Blacklist     893034301  on          ----
;
```

2. Display the current settings of the TTR options, using the `rtrv-ttropts` command.
3. Change the TTR options to the required settings, by entering the `chg-ttropts` command with at least one of the option parameters specified.

   Refer to *EAGLE 5 ISS Commands* in this manual and to the `chg-ttropts` command description in the *Commands Manual* for valid parameter values, input examples, and rules for entering the command correctly.
4. Verify the changes, by entering the `rtrv-ttropts` command.
5. Back up the changes, using the `chg-db:action=backup:dest=fixed` command.

   These messages appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
BACKUP (FIXED) : MASP A - Backup starts on active MASP.
BACKUP (FIXED) : MASP A - Backup on active MASP to fixed disk complete.
BACKUP (FIXED) : MASP A - Backup starts on standby MASP.
BACKUP (FIXED) : MASP A - Backup on standby MASP to fixed disk complete.
```

## IDP A-Party Routing and IDP Service Key Routing Configuration

The IDP A-Party Routing and IDP Service Key Routing features are configured on the EAGLE 5 ISS. This section describes prerequisites and procedures for the configuration of the features.

*IDP A-Party Routing and IDP Service Key Routing Features Configuration Procedure* lists the steps for enabling and turning on the IDP A-Party Routing and IDP Service Key Routing features, and for the provisioning required for each feature. Each step contains a link or reference to information and procedures to use to complete the step.

Feature provisioning can be performed after each feature is enabled and before each feature is turned on.

The Test Tool for IDP Relay can be used for IDP A-Party Routing and IDP Service Key Routing. See *TTR Test Tool*.

**Note:** Controlled features are optional and must be purchased from Tekelec before they can be used in your system. If you are not sure whether you have purchased a specific feature, contact your Tekelec Sales or Account Representative.

## IDP A-Party Routing and IDP Service Key Routing Feature Prerequisite

Before the IDP A-Party Routing or IDP Service Key Routing feature can be enabled, the following prerequisite is required in the system:

**Table 26: IDP A-Party Routing and IDP Service Key Routing Feature Prerequisite**

| Prerequisite | Verification and Provisioning |
|---|---|
| The Prepaid IDP Query Relay (IDP Relay) feature must be enabled and turned on. | Enter the `rtrv-ctrl-feat` command.<br>Verify that the entry for the Prepaid IDP Query Relay feature appears in the output and the Status is on.<br>• If the entry does not appear in the output, the Prepaid IDP Query Relay feature is not configured in the system. Go to *Prepaid IDP Query Relay Configuration* to configure the IDP Relay feature in the system.<br>• If the entry appears and the Status is off, go to *Prepaid IDP Query Relay Configuration* to verify the IDP Relay configuration and turn on the IDP Relay feature. |

## IDP A-Party Routing and IDP Service Key Routing Features Configuration Procedure

The EAGLE 5 ISS configuration of the IDP A-Party Routing feature and the IDP Service Key Routing feature consists of the following steps. The steps contain links and references to detailed procedures and information needed to complete each step.

1. Verify, and provision if needed, the system prerequisites. See *System Prerequisites*.
2. Verify, and provision if needed, the feature prerequisites. See *IDP A-Party Routing and IDP Service Key Routing Feature Prerequisite*.
3. Provision NPP Action Sets, Service Rule Sets, and Service data . See *Provisioning NPP for IDP Relay* and the *Numbering Plan Processor Overview* manual.

   Set the NPP service status to ON for each NPP service. See *Provisioning NPP for IDP Relay*.
4. Enable and turn on one or both of the following features.
   - IDP A-Party Routing feature. See *Enable and Turn On the IDP A-Party Routing Feature*
   - IDP Service Key Routing. See *Enable and Turn On the IDP Service Key Routing Feature*

5. Provision the required Common Screening List (CSL) entries. See *Provisioning the Common Screening List for IDP Service Key Routing*.
6. Provision the TTR, SCCP, and PPSMS configuration options required for IDP A-Party Routing. See *Provisioning the Configuration Options for IDP A-Party Routing and IDP Service Key Routing*.
7. Provision IDP Relay test messages for use with the Test Tool. See *TTR Test Tool*.

   The Test Tool for IDP Relay can be used for IDP A-Party Routing and IDP Service Key Routing with the IDPRCGPN service and CGPNRTG Service Action provisioned.
8. Use the Test Tool to verify the IDP A-Party Routing and IDP Service Key Routing provisioning. See *TTR Test Tool*.

## Enable and Turn On the IDP A-Party Routing Feature

This procedure is used to enable and turn on the IDP A-Party Routing feature in the EAGLE 5 ISS.

The feature must be enabled using its feature part number and a feature access key.

- IDP A-Party Routing - Part Number 893033301

**Note:** Controlled features must be purchased before you can receive the feature access key to use to enable the feature. If you are not sure if you have purchased a feature and received the feature access key, contact your Tekelec Sales Representative or Account Representative.

When the IDP A-Party Routing feature is enabled, it is permanently enabled. The IDP A-Party Routing feature cannot be temporarily enabled.

After the feature has been enabled, the feature status must be set to on (the feature must be "turned on"). After the feature is turned on, it cannot be turned off.

Provisioning of TTROPTS options and other information can be done only after the feature is enabled and turned on.

1. Display the status of the features that are controlled with feature access keys. Enter the `rtrv-ctrl-feat` command. The output lists the enabled features in the system and shows the on/off status for each feature.

```
    rlghncxa03w 09-06-29 16:40:40 EST  EAGLE5 41.1.0
    The following features have been permanently enabled:
    Feature Name              Partnum    Status  Quantity
    HC-MIM SLK Capacity       893012707  on            64
    Prepaid IDP Query Relay   893016001  on          ----
;
```

   If the entry for the IDP Relay feature does not appear in the rtrv-ctrl-feat output, or appears with status off, use the procedures in *Prepaid IDP Query Relay Configuration*to configure the IDP Relay feature so that it is enabled, turned on, and fully operational in the system. Then continue with *Step 2* .

   If the entry for the Prepaid IDP Query Relay feature appears in the `rtrv-ctrl-feat` output with status on, continue with *Step 2*.
2. Enable the IDP A-Party Routing feature, by entering the `enable-ctrl-feat` command and specifying the part number and feature access key for the feature.

   When the feature is enabled, the entry for the IDP A-Party Blacklist feature appears in the output of the `rtrv-ctrl-feat` command. The feature Status is off.

```
    rlghncxa03w 09-06-29 16:40:40 EST  EAGLE5 41.1.0
    The following features have been permanently enabled:
```

```
    Feature Name              Partnum    Status  Quantity
    HC-MIM SLK Capacity       893012707  on            64
    Prepaid IDP Query Relay   893016001  on          ----
    IDP A-Party Routing       893033301  off         ----
;
```

3. Turn on the IDP A-Party Routing feature, by entering the `chg-ctrl-feat` command with the feature part number and the status=on parameter.
4. Verify that the feature status is on, by entering the `rtrv-ctrl-feat` command.
5. Back up the database changes, by entering the following command.
   `chg-db:action=backup:dest=fixed`

   The following messages appear; the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
BACKUP (FIXED) : MASP A - Backup starts on active MASP.
BACKUP (FIXED) : MASP A - Backup on active MASP to fixed disk complete.
BACKUP (FIXED) : MASP A - Backup starts on standby MASP.
BACKUP (FIXED) : MASP A - Backup on standby MASP to fixed disk complete.
```

## Enable and Turn On the IDP Service Key Routing Feature

This procedure is used to enable and turn on the IDP Service Key Routing feature in the EAGLE 5 ISS.

The feature must be enabled using its feature part number and a feature access key.

- IDP Service Key Routing - Part Number 893033601

**Note:** Controlled features must be purchased before you can receive the feature access key to use to enable the feature. If you are not sure if you have purchased a feature and received the feature access key, contact your Tekelec Sales Representative or Account Representative.

When the IDP Service Key Routing feature is enabled, it is permanently enabled. The IDP Service Key Routing feature cannot be temporarily enabled.

After the feature has been enabled, the feature status must be set to on (the feature must be "turned on"). After the feature has been turned on, it cannot be turned off.

Provisioning of TTROPTS options and other information can be done only after the feature is enabled and turned on.

1. Display the status of the features that are controlled with feature access keys. Enter the `rtrv-ctrl-feat` command. The output lists the enabled features in the system and shows the on/off status for each feature.

```
    rlghncxa03w 09-06-29 16:40:40 EST  EAGLE5 41.1.0
    The following features have been permanently enabled:
    Feature Name              Partnum    Status  Quantity
    HC-MIM SLK Capacity       893012707  on            64
    Prepaid IDP Query Relay   893016001  on          ----
;
```

   If the entry for the Prepaid IDP Query Relay feature does not appear in the rtrv-ctrl-feat output, or appears with status off, use the *Configuration Procedure for IDP Relay and Related Features* to configure the IDP Relay feature so that it is enabled, turned on, and fully operational in the system. Then continue with *Step 2*.

   If the entry for the Prepaid IDP Query Relay feature appears in the `rtrv-ctrl-feat` output with status on, continue with *Step 2*.

2. Enable the IDP Service Key Routing feature, by entering the `enable-ctrl-feat` command and specifying the part number and feature access key for the feature.

   When the feature is enabled, the entry for the IDP Service Key Routing feature appears in the output of the `rtrv-ctrl-feat` command. The feature Status is `off`.

```
    rlghncxa03w 09-06-29 16:40:40 EST  EAGLE5 41.1.0
    The following features have been permanently enabled:
    Feature Name              Partnum    Status  Quantity
    HC-MIM SLK Capacity       893012707  on            64
    Prepaid IDP Query Relay   893016001  off         ----
    IDP Service Key Routing   893033601  off         ----
;
```

3. Turn on the IDP Service Key Routing feature, by entering the `chg-ctrl-feat` command with the feature part number and the status=on parameter.

   When the feature is turned on, the status for the IDP Service Key Routing feature in the output of the `rtrv-ctrl-feat` command is `on`.

4. Verify that the feature status is `on`, by entering the `rtrv-ctrl-feat` command.
5. Back up the database changes, by entering the following command.
   `chg-db:action=backup:dest=fixed`

   The following messages appear; the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
BACKUP (FIXED) : MASP A - Backup starts on active MASP.
BACKUP (FIXED) : MASP A - Backup on active MASP to fixed disk complete.
BACKUP (FIXED) : MASP A - Backup starts on standby MASP.
BACKUP (FIXED) : MASP A - Backup on standby MASP to fixed disk complete.
```

## Provisioning the Common Screening List for IDP Service Key Routing

This procedure is used to provision the Common Screening List (CSL) digit string values for IDP Service Key Routing. The screenings are performed on digit strings. The following screening list is used for IDP Service Key Routing:

- SKBCSM screening list - This screening list is used to compare the concatenated Service Key (SK) and Basic Call State Model (BCSM) values from the incoming message to the entires in this list. If not found, the message falls through to GTT handling.

1. Verify that the IDP Service Key Routing feature is enabled and turned on, by entering the `rtrv-ctrl-feat` command.

   If the IDP Service Key Routing feature has not been turned on, the status in the feature entry is off.

```
    rlghncxa03w 09-06-29 16:40:40 EST  EAGLE5 41.1.0
    The following features have been permanently enabled:
    Feature Name              Partnum    Status  Quantity
    HC-MIM SLK Capacity       893012707  on            64
    Prepaid IDP Query Relay   893016001  on          ----
    IDP Service Key Routing   893022601  on          ----
;
```

   - If the IDP Service Key Routing feature is not enabled and turned on, go to *Enable and Turn On the IDP Service Key Routing Feature* to enable and turn on the feature. Then continue with *Step 2*.
   - If the IDP Service Key Routing feature is enabled and turned on, continue with *Step 2*.

2. Display the current Common Screening List settings, using the `rtrv-csl` command.
3. Enter the Portability Type values for the SKBCSM list, by entering the `chg-csl` command.

   Refer to the `chg-csl` command description in the *Commands Manual* for valid parameter values, input examples, and rules for entering the command correctly.

   ```
   chg-csl:feature=" IDP Service Key Routing":list=skbcsm:ds=<1-6 hex digits>
   ```
4. Verify the changes, by entering the `rtrv-csl` command.
5. Back up the changes, using the `chg-db:action=backup:dest=fixed` command.

   These messages appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

   ```
   BACKUP (FIXED) : MASP A - Backup starts on active MASP.
   BACKUP (FIXED) : MASP A - Backup on active MASP to fixed disk complete.
   BACKUP (FIXED) : MASP A - Backup starts on standby MASP.
   BACKUP (FIXED) : MASP A - Backup on standby MASP to fixed disk complete.
   ```

## Provisioning the Configuration Options for IDP A-Party Routing and IDP Service Key Routing

This procedure is used to provision the following configuration options:

- The TTROPTS CGPNSKRTG configuration options for the IDP Service Key Routing feature.

  The IDP Service Key feature must be enabled and turned on before the TTROPTS CGPNSKRTG option can be provisioned.
- The SCCPOPTS CCLEN and INTLUNKNNAI configuration options used for number conditioning in NPP processing.
- Prepaid Short Message (PPSOPTS) data accessed by the IDP A-Party Routing feature feature or the IDP Service Key feature.

1. Verify that the IDP Relay feature is enabled, and that any required IDP Relay-related features are enabled, and that the Service Portability feature is enabled if it will be used, by entering the `rtrv-ctrl-feat` command.

   If the required features have not been turned on, the status in the feature entry is off.

   ```
      rlghncxa03w 09-06-29 16:40:40 EST  EAGLE5 41.1.0
      The following features have been permanently enabled:
      Feature Name              Partnum    Status  Quantity
      HC-MIM SLK Capacity       893012707  on            64
      Prepaid IDP Query Relay   893016001  off         ----
      Service Portability       893034301  off         ----
   ;
   ```

   - If a required feature is not enabled (the entry does not appear in the output), go to *Enabling IDP Relay-Related Features* or *Enabling the Service Portability Feature* to enable each required feature. Then continue with *Step 2*.
   - If the required features are enabled, continue with *Step 2*.
2. Display the current settings of the TTR options, using the `rtrv-ttropts` command.
3. Change the TTR CGPNSKRTG option to the required setting, by entering the `chg-ttropts` command with the option parameter specified.

Refer to *EAGLE 5 ISS Commands* in this manual and to the `chg-ttropts` command description in the *Commands Manual* for valid parameter values, input examples, and rules for entering the command correctly.

4. Verify the change, by entering the `rtrv-ttropts` command.
5. Display the current settings of the SCCP options, using the `rtrv-sccpopts` command.
6. Change the SCCP CCLEN option and the INTLUNKNNAI option to the desired setting, by entering the `chg-sccpopts` command with the option parameters specified.
7. Verify the changes, by entering the `rtrv-sccpopts` command.
8. Display the current PPSOPTS data, by entering the `rtrv-ppsopts` command.
9. Provision the required PPSOPTS data for the IDP A-Party Routing feature, the IDP Service Key Routing feature, or both. Enter the `chg-ppsopts` command.
10. Verify the changes by entering the `rtrv-ppsopts` command.
11. Back up the changes, using the `chg-db:action=backup:dest=fixed` command.

    These messages appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
BACKUP (FIXED) : MASP A - Backup starts on active MASP.
BACKUP (FIXED) : MASP A - Backup on active MASP to fixed disk complete.
BACKUP (FIXED) : MASP A - Backup starts on standby MASP.
BACKUP (FIXED) : MASP A - Backup on standby MASP to fixed disk complete.
```

# IDP Screening for Prepaid Configuration

The IDP Screening for Prepaid feature is configured on the EAGLE 5 ISS. This section describes prerequisites and procedures for the configuration of the IDP Screening for Prepaid.

*IDP Screening for Prepaid Feature Configuration Procedure* lists the steps for enabling and turning on the IDP Screening for Prepaid feature, and for the provisioning required for the feature. Each step contains a link or reference to information and procedures to use to complete the step. Feature provisioning can be performed after the feature is enabled and before the feature is turned on.

Controlled features are optional and must be purchased from Tekelec before they can be used in your system. If you are not sure whether you have purchased a specific feature, contact your Tekelec Sales or Account Representative.

## IDP Screening for Prepaid Feature Prerequisite

Before the IDP Screening for Prepaid feature can be enabled, the following prerequisite is required in the system:

**Table 27: IDP Relay-Related Feature Prerequisite**

| Prerequisite | Verification and Provisioning |
|---|---|
| The LNP feature cannot be on in the system | Enter the `rtrv-ctrl-feat` command.<br>If the LNP feature is on, shown with a quantity greater than zero for the LNP ported TNs entry |

| Prerequisite | Verification and Provisioning |
|---|---|
| | in the command output, features described in this manual cannot be enabled. |

## IDP Screening for Prepaid Feature Configuration Procedure

The EAGLE 5 ISS configuration of the IDP Screening for Prepaid feature consists of the following steps. The steps contain links and references to detailed procedures and information needed to complete each step.

1. Verify, and provision if needed, the system prerequisites. See *System Prerequisites*.
2. Verify, and provision if needed, the feature prerequisites. See *IDP Screening for Prepaid Feature Prerequisite*.
3. Enable the IDP Screening for Prepaid feature. See *Enable the IDP Screening for Prepaid Feature*.
4. Provision the required Common Screening List (CSL) entries. See *Provisioning the Common Screening List for IDP Screening for Prepaid*.
5. Provision the IDPS service selector. See *Provisioning the IDPS Service Selector*.
6. Turn on the IDP Screening for Prepaid feature. See *Turn On the IDP Screening for Prepaid Feature*.

## Enable the IDP Screening for Prepaid Feature

This procedure is used to enable and turn on the IDP Screening for Prepaid feature in the EAGLE 5 ISS.

The feature must be enabled using its feature part number and a feature access key.

- IDP Screening for Prepaid - Part Number 893015501

**Note:** Controlled features must be purchased before you can receive the feature access key to use to enable the feature. If you are not sure if you have purchased a feature and received the feature access key, contact your Tekelec Sales Representative or Account Representative.

When the IDP Screening for Prepaid feature is enabled, it is permanently enabled. The IDP Screening for Prepaid feature cannot be temporarily enabled.

After the feature has been enabled, the feature status must be set to on (the feature must be "turned on").

1. Display the status of the features that are controlled with feature access keys. Enter the `rtrv-ctrl-feat` command. The output lists the enabled features in the system and shows the on/off status for each feature.

```
    rlghncxa03w 09-06-29 16:40:40 EST  EAGLE5 41.1.0
    The following features have been permanently enabled:
    Feature Name              Partnum    Status  Quantity
    HC-MIM SLK Capacity       893012707  on           64
    Prepaid IDP Query Relay   893016001  on         ----
;
```

   If the entry for the Prepaid IDP Query Relay feature does not appear in the rtrv-ctrl-feat output, or appears with status off, use the procedures in to configure the IDP Relay feature so that it is enabled, turned on, and fully operational in the system. Then continue with *Step 2*.

If the entry for the Prepaid IDP Query Relay feature appears in the `rtrv-ctrl-feat` output with status on, continue with *Step 2*.

2. Enable the IDP Screening for Prepaid feature, by entering the `enable-ctrl-feat` command and specifying the part number and feature access key for the feature.

   **Note:** The feature access key is provided by Tekelec when the feature is purchased. If you do not have the controlled feature part number or the feature access key for a feature, contact your Tekelec Sales Representative or Account Representative.

3. Verify the feature status, by entering the `rtrv-ctrl-feat` command.

   When the feature is enabled, the entry for the IDP Screening for Prepaid feature appears in the output of the `rtrv-ctrl-feat` command. The feature Status is off.

```
    rlghncxa03w 09-06-29 16:40:40 EST  EAGLE5 41.1.0
    The following features have been permanently enabled:
    Feature Name              Partnum    Status  Quantity
    HC-MIM SLK Capacity       893012707  on           64
    Prepaid IDP Query Relay   893016001  off         ----
    IDP Screening for Prepaid 893015501  off         ----
;
```

4. Back up the database changes, by entering the following command.
   `chg-db:action=backup:dest=fixed`

   The following messages appear; the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
BACKUP (FIXED) : MASP A - Backup starts on active MASP.
BACKUP (FIXED) : MASP A - Backup on active MASP to fixed disk complete.
BACKUP (FIXED) : MASP A - Backup starts on standby MASP.
BACKUP (FIXED) : MASP A - Backup on standby MASP to fixed disk complete.
```

## Provisioning the IDPS Service Selector

The procedures in this section describe how to add, change, and remove a service selector. The information is indicated that is specific to the IDP Screening for Prepaid feature.

Refer to the *Commands Manual* for complete descriptions of the commands used in these procedures, including parameter names, valid values, and output examples for the commands.

### Adding an IDPS Service Selector

This procedure is used to add a service selector for the IDP Screening for Prepaid feature.

The IDP Screening for Prepaid feature must be enabled before an IDPS service selector can be added.

1. Verify that the IDP Screening for Prepaid feature is enabled, by entering the `rtrv-ctrl-feat` command.

   If the IDP Screening for Prepaid feature is enabled, the status of the IDP Screening for Prepaid entry is off.

```
    rlghncxa03w 09-06-29 16:40:40 EST  EAGLE5 41.1.0
    The following features have been permanently enabled:
    Feature Name              Partnum    Status  Quantity
    HC-MIM SLK Capacity       893012707  on           64
    Prepaid IDP Query Relay   893016001  on          ----
```

```
    IDP Screening for Prepaid 893015501  off         ----
;
```

- If the IDP Screening for Prepaid is enabled, continue with *Step 2*.
- If the IDP Relay feature is not enabled or turned on, go to *Enabling IDP Relay-Related Features* to enable and turn on the IDP Relay feature. Then continue with *Step 2*.

2. Display any existing IDPS service selectors in the database, by entering the `rtrv-srvsel:serv=idps` command.

```
    rlghncxa03w 08-06-28 14:42:38 GMT  EAGLE 39.2.0

    GTII  TT   NP       NAI   SSN  SNP   SNAI   SERV

    4     1    e164     intl  3    ---   ---    idps
    4     2    e164     intl  *    ---   ---    idps

    GTIN  TT   NP       NAI   SSN  SNP   SNAI   SERV

    4     4    e164     natl  4    ---   ---    idps

    SRV SELECTOR table is (3 of 20992) 1 % full
;
```

3. Add new idps service selectors, using the `ent-srvsel` command. For example, enter commands like these:

   `ent-srvsel:serv=idps:tt=35:ssn=100:gtin=4:np=e214:nai=natl`

   `ent-srvsel:serv=idps:tt=57:ssn=75:gtin=2`

4. Verify the changes by entering the `rtrv-srvsel` command with the parameters and values used in *Step 3*.

```
    rlghncxa03w 08-06-28 14:42:38 GMT  EAGLE 39.2.0

    GTII  TT   NP       NAI   SSN  SNP   SNAI   SERV

    4     1    e164     intl  3    ---   ---    idps
    4     2    e164     intl  *    ---   ---    idps


    GTIN  TT   NP       NAI   SSN  SNP   SNAI   SERV

    4     4    e164     natl  4    ---   ---    idps
    4     35   e214     natl  100  ---   ---    idps
    2     57   ---      ---   75   ---   ---    idps


    SRV SELECTOR table is (5 of 20992) 1 % full
;
```

5. Back up the changes using the `chg-db:action=backup:dest=fixed` command.

   The following messages appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
BACKUP (FIXED): MASP A - Backup starts on active MASP.
BACKUP (FIXED): MASP A - Backup on active MASP to fixed disk complete.
BACKUP (FIXED): MASP A - Backup starts on standby MASP.
BACKUP (FIXED): MASP A - Backup on standby MASP to fixed disk complete.
```

## Provisioning the Common Screening List for IDP Screening for Prepaid

This procedure is used to provision the Common Screening List (CSL) digit string values for the IDP Screening for Prepaid feature. The screenings are performed on digit strings. The following screening lists are used for the IDP Screening for Prepaid feature:

- INSL screening list - This list is used to compare the CalledPartyBCDN number and the CgPN digits from the incoming message to the prefixes in this list. If the leading digits of both numbers are found, the call is considered to be in-network. Otherwise, the call is considered to be off-network.
- SKTS screening list - This screening list is used to compare the concatenated Service Key (SK) nd TeleService (TS) number from the incoming message into the entires in OCD format in this list.

1. Verify that the IDP Screening for Prepaid feature is enabled, by entering the `rtrv-ctrl-feat` command.

   If the IDP Screening for Prepaid feature has not been turned on, the status in the feature entry is off.

```
    rlghncxa03w 09-06-29 16:40:40 EST  EAGLE5 41.1.0
    The following features have been permanently enabled:
    Feature Name              Partnum    Status  Quantity
    HC-MIM SLK Capacity       893012707  on            64
    IDP Screening for Prepaid 893015501  off         ----
;
```

   - If the IDP Screening for Prepaid feature is not enabled (the entry does not appear in the output), go to *Enabling IDP Relay-Related Features* to enable the feature. Then continue with *Step 2*.
   - If the IDP Screening for Prepaid feature is enabled, continue with *Step 2*.

2. Display the current Common Screening List settings, using the `rtrv-csl` command.
3. Enter one or more digit string values for each list, by entering the `chg-csl` command.

   Refer to *EAGLE 5 ISS Commands* in this manual and to the `chg-csl` command description in the *Commands Manual* for valid parameter values, input examples, and rules for entering the command correctly.

```
chg-csl:feature="IDP Screening for Prepaid":list=insl:ds=<1-15 hex digits>
chg-csl:feature="IDP Screening for Prepaid":list=skts:ds=<4 hex digits>
```

4. Verify the changes, by entering the `rtrv-csl` command.
5. Back up the changes, using the `chg-db:action=backup:dest=fixed` command.

   These messages appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
BACKUP (FIXED) : MASP A - Backup starts on active MASP.
BACKUP (FIXED) : MASP A - Backup on active MASP to fixed disk complete.
BACKUP (FIXED) : MASP A - Backup starts on standby MASP.
BACKUP (FIXED) : MASP A - Backup on standby MASP to fixed disk complete.
```

## Turn On the IDP Screening for Prepaid Feature

This procedure is used to turn on the IDP Screening for Prepaid feature in the EAGLE 5 ISS.

After the feature has been enabled, the feature status must be set to on (the feature must be “turned on”).

1. Display the status of the features that are controlled with feature access keys. Enter the `rtrv-ctrl-feat` command. The output lists the enabled features in the system and shows the on/off status for each feature.

```
    rlghncxa03w 09-06-29 16:40:40 EST  EAGLE5 41.1.0
    The following features have been permanently enabled:
    Feature Name              Partnum    Status  Quantity
    HC-MIM SLK Capacity       893012707  on            64
    Prepaid IDP Query Relay   893016001  on          ----
    IDP Screening for Prepaid 893015501  off         ----
;
```

2. Turn on the IDP Screening for Prepaid feature, by entering the `chg-ctrl-feat` command and specifying the part number for the feature.
3. Verify that the feature status is on, by entering the rtrv-ctrl-feat command.

   When the feature is turned on, the entry for the IDP Screening for Prepaid feature appears in the output of the `rtrv-ctrl-feat` command. The feature Status is on.

```
    rlghncxa03w 09-06-29 16:40:40 EST  EAGLE5 41.1.0
    The following features have been permanently enabled:
    Feature Name              Partnum    Status  Quantity
    HC-MIM SLK Capacity       893012707  on            64
    Prepaid IDP Query Relay   893016001  off         ----
    IDP Screening for Prepaid 893015501  on          ----
;
```

4. Back up the database changes, by entering the following command.
   `chg-db:action=backup:dest=fixed`

   The following messages appear; the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
BACKUP (FIXED) : MASP A - Backup starts on active MASP.
BACKUP (FIXED) : MASP A - Backup on active MASP to fixed disk complete.
BACKUP (FIXED) : MASP A - Backup starts on standby MASP.
BACKUP (FIXED) : MASP A - Backup on standby MASP to fixed disk complete.
```

## Service Portability Feature Configuration Procedures

The procedures in this section are used for configuration of the Service Portability (S-Port) feature.

### Enabling the Service Portability Feature

If Service Portability can be applied to the messages processed by a feature described in this manual, use this procedure to enable the Service Portability feature in the EAGLE 5 ISS.

The Service Portability feature must be enabled using the feature part number 893034301 and a feature access key.

**Note:** Controlled features must be purchased before you can receive the feature access key to use to enable the feature. If you are not sure if you have purchased a feature and received the feature access key, contact your Tekelec Sales Representative or Account Representative.

When the S-Port feature is enabled, it is permanently enabled. The S-Port feature cannot be temporarily enabled. After the S-Port feature is enabled and turned on, the S-Port feature can be turned off again.

Provisioning of S-Port options can be done after the feature is enabled and before the feature is turned on.

After the S-Port feature has been enabled and database provisioning is complete, the S-Port feature status must be set to on (the feature must be "turned on") before S-Port processing will occur.

1. Display the status of the features that are controlled with feature access keys. Enter the `rtrv-ctrl-feat` command. The output lists the enabled features in the system and shows the on/off status for each feature.

```
   rlghncxa03w 09-06-29 16:40:40 EST  EAGLE5 41.1.0
   The following features have been permanently enabled:
   Feature Name              Partnum    Status  Quantity
   HC-MIM SLK Capacity       893012707  on            64
;
```

   If the Service Portability entry appears in the `rtrv-ctrl-feat` output, performing this procedure is not necessary.

2. Enable the S-Port feature, by entering the `enable-ctrl-feat` command.
`enable-ctrl-feat:partnum=893034301:fak=<feature access key>`

   When the feature is enabled, the Service Portability entry appears in the output of the `rtrv-ctrl-feat` command.

```
   rlghncxa03w 09-06-29 16:40:40 EST  EAGLE5 41.1.0
   The following features have been permanently enabled:
   Feature Name              Partnum    Status  Quantity
   HC-MIM SLK Capacity       893012707  on            64
   Service Portability       893034301  off         ----
 ;
```

3. Back up the database changes, by entering the following command.
`chg-db:action=backup:dest=fixed`

   The following messages appear; the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
BACKUP (FIXED) : MASP A - Backup starts on active MASP.
BACKUP (FIXED) : MASP A - Backup on active MASP to fixed disk complete.
BACKUP (FIXED) : MASP A - Backup starts on standby MASP.
BACKUP (FIXED) : MASP A - Backup on standby MASP to fixed disk complete.
```

## Provisioning the TTR SPORTTYPE Option for Service Portability

This procedure is used to provision the TTROPTS SPORTTYPE configuration option for uisng the Service Portability feature with IPD Relay:

The IDP Relay feature and the Service Portability feature must be enabled before the TTROPTS SPORTTYPE option can be provisioned.

1. Verify that the IDP Relay feature is enabled, and that any required IDP Relay-related features are enabled, and that the Service Portability feature is enabled. Enter the `rtrv-ctrl-feat` command.

   If the required features have not been turned on, the status in the feature entry is off.

```
   rlghncxa03w 09-06-29 16:40:40 EST  EAGLE5 41.1.0
   The following features have been permanently enabled:
   Feature Name              Partnum    Status  Quantity
   HC-MIM SLK Capacity       893012707  on            64
   Prepaid IDP Query Relay   893016001  off         ----
```

```
    Service Portability       893034301  off         ----
;
```

- If the required features are enabled, continue with *Step 2*.
- If a required feature is not enabled (the entry does not appear in the output), go to *Enabling IDP Relay-Related Features* or *Enabling the Service Portability Feature* to enable each required feature. Then continue with *Step 2*.

2. Display the current settings of the TTR options, using the `rtrv-ttropts` command.
3. Change the TTR SPORTTYPE option to the required setting, by entering the `chg-ttropts` command with the SPORTTYPE parameter specified.

   Refer to the `chg-ttropts` command description in the *Commands Manual* for valid parameter values, input examples, and rules for entering the command correctly.
4. Verify the change, by entering the `rtrv-ttropts` command.
5. Back up the changes, using the `chg-db:action=backup:dest=fixed` command.

   These messages appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
BACKUP (FIXED) : MASP A - Backup starts on active MASP.
BACKUP (FIXED) : MASP A - Backup on active MASP to fixed disk complete.
BACKUP (FIXED) : MASP A - Backup starts on standby MASP.
BACKUP (FIXED) : MASP A - Backup on standby MASP to fixed disk complete.
```

## Turning On the Service Portability Feature

This procedure is used to turn on the Service Portability feature in the EAGLE 5 ISS, using the feature part number 893034301.

Before the Service Portability (S-Port) feature can be turned on, the feature must be enabled in the EAGLE 5 ISS.

Provisioning of S-Port options can be done after the feature is enabled and before the feature is turned on.

After the S-Port feature has been enabled and database provisioning is complete, the Service Portability feature status must be set to on (the feature must be “turned on”). MSUs will not be processed by the Service Portability feature until the feature is turned on.

After the Service Portability feature is enabled and turned on, it can be turned off again. Service Portability processing can occur only when the Service Portability feature is on and a feature that uses S-Port is on.

1. Display the status of the features that are controlled with feature access keys. Enter the `rtrv-ctrl-feat` command. The output lists the enabled features in the system and shows the on/off status for each feature.

   - If the entry for the Service Portability feature appears in the `rtrv-ctrl-feat` output with status on, performing this procedure is not necessary.
   - If the status of the Service Portability feature in the output is off, continue with *Step 2*.
2. Turn on the S-Port feature, by entering the `chg-ctrl-feat` command.
   `chg-ctrl-feat:partnum=893034301:status=on`

When the feature is turned on, the feature status changes to on in the `rtrv-ctrl-feat` command output.

```
    rlghncxa03w 09-08-29 16:40:40 EST  EAGLE5 41.1.0
    The following features have been permanently enabled:
    Feature Name              Partnum    Status  Quantity
    HC-MIM SLK Capacity       893012707  on           64
    ATINP                     893022101  on         ----
    Service Portability       893034301  on         ----
;
```

3. Back up the database changes, by entering the following command.
`chg-db:action=backup:dest=fixed`

   The following messages appear; the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
BACKUP (FIXED) : MASP A - Backup starts on active MASP.
BACKUP (FIXED) : MASP A - Backup on active MASP to fixed disk complete.
BACKUP (FIXED) : MASP A - Backup starts on standby MASP.
BACKUP (FIXED) : MASP A - Backup on standby MASP to fixed disk complete.
```

## Turning Off the Service Portability Feature

Before the Service Portability (S-Port) feature can be turned on and off, the feature must be enabled in the EAGLE 5 ISS.

This procedure is used to turn off the Service Portability feature, using its feature part number 8930343001.

**Note:** MSUs will not be processed by a feature when the feature is turned off in the system.

1. Display the status of the features that are controlled with feature access keys. Enter the `rtrv-ctrl-feat` command. The output lists the enabled features in the system and shows the on/off status for each feature.

```
    rlghncxa03w 09-06-29 16:40:40 EST  EAGLE5 41.1.0
    The following features have been permanently enabled:
    Feature Name              Partnum    Status  Quantity
    HC-MIM SLK Capacity       893012707  on           64
    TIF Number Portability    893018901  on         ----
    Service Portability       893034301  on         ----
;
```

   If the entry for the Service Portability feature appears in the `rtrv-ctrl-feat` output with status off, performing this procedure is not necessary.

   If the status of the Service Portability feature in the output is on, continue with *Step 2*.

2. Turn off the S-Port feature, by entering the `chg-ctrl-feat` command.
`chg-ctrl-feat:partnum=<893034301>:status=off`

   When the feature is turned off, the feature status changes to off in the `rtrv-ctrl-feat` command output.

```
    rlghncxa03w 09-05-29 16:40:40 EST  EAGLE5 41.1.0
    The following features have been permanently enabled:
    Feature Name              Partnum    Status  Quantity
    HC-MIM SLK Capacity       893012707  on           64
    TIF Number Portability    893018901  on         ----
    Service Portability       893034301  off        ----
;
```

3. Back up the database changes, by entering the following command.
   `chg-db:action=backup:dest=fixed`

   The following messages appear; the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
BACKUP (FIXED) : MASP A - Backup starts on active MASP.
BACKUP (FIXED) : MASP A - Backup on active MASP to fixed disk complete.
BACKUP (FIXED) : MASP A - Backup starts on standby MASP.
BACKUP (FIXED) : MASP A - Backup on standby MASP to fixed disk complete.
```

## S-Port Subscriber Differentiation Feature Configuration Procedures

The procedures in this section are used for configuration of the S-Port Subscriber Differentiation feature.

### Enabling the S-Port Subscriber Differentiation Feature

If S-Port Subscriber Differentiation will be used with Service Portability for the messages processed by a feature described in this manual, use this procedure to enable the S-Port Subscriber Differentiation feature in the EAGLE 5 ISS.

The S-Port Subscriber Differentiation feature must be enabled using the feature part number 893037901 and a feature access key.

**Note:** Controlled features must be purchased before you can receive the feature access key to use to enable the feature. If you are not sure if you have purchased a feature and received the feature access key, contact your Tekelec Sales Representative or Account Representative.

When the S-Port Subscriber Differentiation feature is enabled, it is permanently enabled. The S-Port Subscriber Differentiation feature cannot be temporarily enabled.

After the S-Port Subscriber Differentiation feature has been enabled, the S-Port Subscriber Differentiation feature status must be set to `on` (the feature must be "turned on"). See *Turning On the S-Port Subscriber Differentiation Feature*. The S-Port Subscriber Differentiation feature cannot be turned off again.

Provisioning of the S-Port Subscriber Differentiation SCCPOPTS configuration option can be done only after the feature is enabled and turned on. See *Provisioning the S-Port Subscriber Differentiation SCCPOPTS Option*.

Before S-Port Subscriber Differentiation processing of MSUs can occur, the Service Portability feature, the S-Port Subscriber Differentiation feature, the S-Port Subscriber Differentiation option, and a feature that uses Service Portability must be on.

1. Display the status of the features that are controlled with feature access keys. Enter the `rtrv-ctrl-feat` command. The output lists the enabled features in the system and shows the on/off status for each feature.

```
    rlghncxa03w 10-06-29 16:40:40 EST  EAGLE5 42.0.0
    The following features have been permanently enabled:
    Feature Name              Partnum    Status  Quantity
    HC-MIM SLK Capacity       893012707  on            64
    Service Portability       893034301  off         ----
;
```

If the `S-Port Sub Dfrntiation` entry appears in the `rtrv-ctrl-feat` output, performing this procedure is not necessary.

2. Enable the S-Port Subscriber Differentiation feature, by entering the `enable-ctrl-feat` command.
`enable-ctrl-feat:partnum=893037901:fak=<feature access key>`

   When the feature is enabled, the `S-Port Sub Dfrntiation` entry appears in the output of the `rtrv-ctrl-feat` command.

```
   rlghncxa03w 10-06-29 16:40:40 EST  EAGLE5 42.0.0
   The following features have been permanently enabled:
   Feature Name              Partnum    Status  Quantity
   HC-MIM SLK Capacity       893012707  on           64
   Service Portability       893034301  off         ----
   S-Port Sub Dfrntiation    893037901  off         ----
;
```

3. Back up the database changes, by entering the following command.
`chg-db:action=backup:dest=fixed`

   The following messages appear; the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
BACKUP (FIXED) : MASP A - Backup starts on active MASP.
BACKUP (FIXED) : MASP A - Backup on active MASP to fixed disk complete.
BACKUP (FIXED) : MASP A - Backup starts on standby MASP.
BACKUP (FIXED) : MASP A - Backup on standby MASP to fixed disk complete.
```

## Turning On the S-Port Subscriber Differentiation Feature

This procedure is used to turn on the S-Port Subscriber Differentiation feature in the EAGLE 5 ISS, using the feature part number 893037901.

Before the S-Port Subscriber Differentiation feature can be turned on, the feature must be enabled in the EAGLE 5 ISS.

After the S-Port Subscriber Differentiation feature has been enabled, the S-Port Subscriber Differentiation feature status must be set to on (the feature must be "turned on"). After the S-Port Subscriber Differentiation feature is enabled and turned on, it cannot be turned off again.

Provisioning of the S-Port Subscriber Differentiation option can be done only after the feature is enabled and turned on. The S-Port Differentiation option can be turned on and off.

MSUs will not be processed by the S-Port Subscriber Differentiation feature until the feature and the option are turned on. S-Port Subscriber Differentiation processing can occur only when the Service Portability feature, the S-Port Subscriber Differentiation feature, the S-Port Differentiation option, and a feature that uses Service Portability are all on.

1. Display the status of the features that are controlled with feature access keys. Enter the `rtrv-ctrl-feat` command. The output lists the enabled features in the system and shows the on/off status for each feature.

```
rlghncxa03w 10-06-29 16:40:40 EST  EAGLE5 42.0.0
   The following features have been permanently enabled:
   Feature Name              Partnum    Status  Quantity
   HC-MIM SLK Capacity       893012707  on           64
   Info Analyzed Relay Base  893034201  off         ----
   Service Portability       893034301  off         ----
   S-Port Sub Dfrntiation    893037901  off         ----
;
```

If the `S-Port Sub Dfrntiation` entry appears in the `rtrv-ctrl-feat` output with Status of `on`, performing this procedure is not necessary.

If the status of the S-Port Subscriber Differentiation feature in the output is `off`, continue with *Step 2*.

2. Turn on the S-Port Subscriber Differentiation feature, by entering the `chg-ctrl-feat` command.
   `chg-ctrl-feat:partnum=893037901:status=on`

   When the feature is turned on, the feature status changes to on in the `rtrv-ctrl-feat` command output.

```
    rlghncxa03w 10-08-29 16:40:40 EST  EAGLE5 42.0.0
    The following features have been permanently enabled:
    Feature Name              Partnum    Status  Quantity
    HC-MIM SLK Capacity       893012707  on            64
    Info Analyzed Relay Base  893034201  off         ----
    Service Portability       893034301  off          ----
    S-Port Sub Dfrntiation    893037901  on          ----
;
```

3. Back up the database changes, by entering the following command.
   `chg-db:action=backup:dest=fixed`

   The following messages appear; the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
BACKUP (FIXED) : MASP A - Backup starts on active MASP.
BACKUP (FIXED) : MASP A - Backup on active MASP to fixed disk complete.
BACKUP (FIXED) : MASP A - Backup starts on standby MASP.
BACKUP (FIXED) : MASP A - Backup on standby MASP to fixed disk complete.
```

## Provisioning the S-Port Subscriber Differentiation SCCPOPTS Option

This procedure is used to provision the SCCPOPTS configuration option for the S-Port Subscriber Differentiation feature.

The S-Port Subscriber Differentiation feature must be enabled and turned on before SCCPOPTS SUBDFRN option can be provisioned.

1. Verify that the S-Port Subscriber Differentiation feature is enabled and on, by entering the `rtrv-ctrl-feat` command.

```
    rlghncxa03w 10-06-29 16:40:40 EST  EAGLE5 42.0.0
    The following features have been permanently enabled:
    Feature Name              Partnum    Status  Quantity
    HC-MIM SLK Capacity       893012707  on            64
    Info Analyzed Relay Base  893034201  off         ----
    Service Portability       893034301  off         ----
    S-Port Sub Dfrntiation    893037901  on          ----
;
```

   - If the S-Port Sub Dfrntiation feature is enabled and turned on, continue with *Step 2*.
   - If the S-Port Sub Dfrntiation entry does not appear in the output, go to *Enabling the S-Port Subscriber Differentiation Feature* and *Turning On the S-Port Subscriber Differentiation Feature* to enable and turn on the feature. Then continue with *Step 2*.
   - If the feature is enabled but not turned on (the entry shows Status `off`), go to *Turning On the S-Port Subscriber Differentiation Feature*to turn on the feature. Then continue with *Step 2*.

2. Display the current settings of the SCCPOPTS options, using the `rtrv-sccpopts` command.
3. Change the SCCPOPTS SUBDFRN option to the required setting (`on` or `off`), by entering the `chg-sccpopts` command with the subdfrn option parameter specified.

   Refer to the `chg-sccpopts` command description in the *Commands Manual* for valid parameter values, input examples, and rules for entering the command correctly.
4. Verify the changes, by entering the `rtrv-sccpopts` command.
5. Back up the changes, using the `chg-db:action=backup:dest=fixed` command.

   These messages appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
BACKUP (FIXED) : MASP A - Backup starts on active MASP.
BACKUP (FIXED) : MASP A - Backup on active MASP to fixed disk complete.
BACKUP (FIXED) : MASP A - Backup starts on standby MASP.
BACKUP (FIXED) : MASP A - Backup on standby MASP to fixed disk complete.
```

## Adding a Service Module Card

This procedure is used to add Service Module cards to the database to support GTT-related features and EPAP-related features.

EPAP-based features require Service Module cards running the VSCCP application. The following cards can be used as Service Module cards running the VSCCP application in the system:

- DSM 4G – a DSM card with 4 gigabytes of memory
- E5-SM4G - an EPM-based card with 4 gigabytes of memory

The system can contain a maximum number of Service Module cards for EPAP-related features:

- Up to 25 (24+1) Service Module cards if EPAP is running in a T1000 AS
- Up to 32 (31+1) Service Module cards if EPAP is running in a T1200 AS
  - The following Warning appears when more than 25 Service Module cards have been provisioned in the system and the `enable-ctrl-feat` command is entered to enable the first EPAP-related feature in the system:

```
Warning: The Eagle must be connected to an EPAP T1200 or higher
```

  - The following Caution appears when the `ent-card` commend is entered to add the 26th Service Module card to the database and any EPAP-related feature is enabled in the system:

```
CAUTION: Please ensure EPAP Application Server is running on
          hardware supporting 32 SCCP cards e.g.: T1200.
          Re-enter command within 30 seconds to confirm change.
```

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

A Service Module card occupies two card slots. A Service Module card can be inserted only in an odd/even numbered pair of empty card slots of an EAGLE 5 ISS shelf. The even-numbered card slot to the right of the odd-numbered slot where the Service Module card is to be inserted must be empty. A Service Module card cannot be inserted in slots 09 and 10 because slots 09 and 10 of each shelf

contain HMUX cards, HIPR cards, or HIPR2 cards. The Service Module card is connected to the network through the odd-numbered card slot connector.

**Note:** Service Module cards can be inserted only in slots 01, 03, 05, 07, and 11 of the control shelf (1100).

**Table 28: Service Module Card Locations**

| Location of the Service Module Card | Empty Card Location |
|---|---|
| Slot 01 | Slot 02 |
| Slot 03 | Slot 04 |
| Slot 05 | Slot 06 |
| Slot 07 | Slot 08 |
| Slot 11 | Slot 12 |
| Slot 13 | Slot 14 |
| Slot 15 | Slot 16 |
| Slot 17 | Slot 18 |

**Prerequisites**

Before a Service Module card can be added, the prerequisites in *Table 29: System Prerequisites for Adding a Service Module Card* must be present in the system.

**Table 29: System Prerequisites for Adding a Service Module Card**

| Prerequisite | Verification and Actions |
|---|---|
| The shelf to which the card is to be added must already be provisioned in the database. | Enter the `rtrv-shlf` command.<br>If the shelf is not in the database, refer to the procedure for adding a shelf in the *Database Administration Manual – System Management*. |
| The odd/even slots in which the card will be inserted must not have a card already assigned in the database. | Enter the `rtrv-card` command.<br>If a slot has a card assigned to it, use the dlt-card command to remove the card from the database. Refer to the `dlt-card` command description in the *Commands Manual*. |

| Prerequisite | Verification and Actions |
|---|---|
| The GTT feature must be on. | Enter the `rtrv-feat` command to display the GTT feature status.<br>If the GTT feature is on, the gtt=on entry appears in the output.<br>If the gtt=off entry appears in the output, use the procedures in the *Database Administration Manual - GTT* to turn on and provision the GTT feature and any other GTT-related features and functions that will be used in the system. |
| To add more than 25 Service Module cards to the database, the EPAP that is connected to the EAGLE 5 ISS must be running on a T1200 AS. | Use visual inspection or contact the *Customer Care Center* for assistance to determine the EPAP hardware type. |

Before an E5-SM4G Service Module card can be added, the prerequisite in *Table 30: Prerequisite for Adding an E5-SM4G Service Module Card* must be present in the system.

**Table 30: Prerequisite for Adding an E5-SM4G Service Module Card**

| Prerequisite | Verification and Actions |
|---|---|
| Slots 09 and 10 in the shelf to which the E5-SM4G card will be added must contain either HIPR cards or HIPR2 cards. | Enter the `rept-stat-gpl:gpl=hipr` command and the `rept-stat-gpl:gpl=hipr2` command to list the installed HIPR cards and HIPR2 cards in the system.<br>If the shelf does not contain HIPR cards or HIPR2 cards, refer to procedures in the *Installation Manual - EAGLE 5 ISS* to install HIPR cards or HIPR2 cards in the shelf. |

Refer to the *Commands Manual* for complete descriptions of the commands that are used in this procedure. The complete descriptions include all valid parameter values and output examples.

1. Display the cards in the system by entering the `rtrv-card` command. Odd-even pairs of card locations that do not contain cards (are not listed in the output) and do not contain HMUX, HIPR, or HIPR2 cards can be used for Service Module cards.

```
   rlghncxa03w 08-03-15 16:34:56 EST  EAGLE 39.2.0
   CARD   TYPE      APPL      LSET NAME     LINK SLC LSET NAME     LINK SLC
   1201   LIMDS0    SS7ANSI   LS1           A    0   LS1           B
   1102   DSM       VSCCP     ------------  A    --  ------------  B    --
   1113   GPSM      OAM
   1114   TDM-A
   1115   GPSM      OAM
   1116   TDM-B
   1117   MDAL

;
```

2. Verify that the Service Module card to be added has been physically installed in the correct card location.

   **CAUTION:** If the version of the BPDCM GPL on the Service Module card does not match the BPDCM GPL version in the database when the Service Module card is inserted into the card slot, UAM 0002 is generated indicating that these GPL versions do not match. If UAM 0002 has been generated, perform the alarm clearing procedure for UAM 0002 in the *Unsolicited Alarm and Information Messages* manual before proceeding with this procedure.

3. Perform this step only if the card being added will be the 26th Service Module card in the system.

   If the card is NOT the 26th Service Module card, continue to *Step 4*.

   **Note:** The same `ent-card` command must be entered twice within 30 seconds to complete the provisioning of the card.

   a) Enter the `ent-card` command the first time for the 26th card.

   ```
   ent-card:loc=<card location>:type=dsm:appl=vsccp
   ```

   When the command executes the first time and any EPAP-related feature is enabled, the following caution appears :

   ```
   CAUTION: Please ensure EPAP Application Server is running on
            hardware supporting 32 SCCP cards e.g.: T1200.
            Re-enter command within 30 seconds to confirm change.
   ```

   b) Enter the same `ent-card` command the second time for the 26th card to complete the provisioning of the card.

   c) Go to *Step 5*.

4. Add the Service Module card to the database, using the `ent-card` command.

   ```
   ent-card:loc=<card location>:type=dsm:appl=vsccp
   ```

5. For an E5-SM4G card, verify the temperature threshold settings by performing the "Changing the High-Capacity Card Temperature Alarm Thresholds" procedure in *Database Administration Manual - SS7*.

6. Verify the change by entering the `rtrv-card` command with the card location specified.

   ```
   rtrv-card:loc=<card location>
   ```

   ```
      rlghncxa03w 08-03-15 16:34:56 EST  EAGLE 39.2.0
      CARD   TYPE      APPL      LSET NAME     LINK SLC LSET NAME     LINK SLC
      1301   DSM       VSCCP     ------------  A    --  ------------  B
   ;
   ```

7. Change the IP Address to MPS for the added card.

   ```
   chg-ip-lnk:port=<a/b>:submask=255.255.255.0:mcast=yes:speed=100:loc=<odd-numbered
   card location>:ipaddr=<EPAP DSM IP address>:duplex=full
   ```

8. Allow the added card to begin operation in the system.

   ```
   alw-card:loc=<odd-numbered card location>
   ```

9. Back up the database changes, by entering the following command.

   ```
   chg-db:action=backup:dest=fixed
   ```

The following messages should appear; the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
BACKUP (FIXED) : MASP A - Backup starts on active MASP.
BACKUP (FIXED) : MASP A - Backup on active MASP to fixed disk complete.
BACKUP (FIXED) : MASP A - Backup starts on standby MASP.
BACKUP (FIXED) : MASP A - Backup on standby MASP to fixed disk complete.
```

10. Repeat this procedure for each Service Module card that needs to be added to the system.

## The 1100 TPS/DSM for ITU NP Feature

When only DSM cards or a mixture of DSM cards and E5-SM4G cards (Service Module cards) are equipped in the system, all of the cards are normally rated at 850 transactions per second (TPS). The 1100 TPS/DSM for ITU NP feature increases the TPS rate for a Service Module card from 850 TPS to 1100 TPS.

The feature can be enabled when the equipped Service Module cards include DSM cards and one or more of the EPAP-related features listed in *Table 32: Feature Prerequisites* are enabled and turned on.

When the maximum number of Service Module cards is installed in the EAGLE 5 ISS, the maximum processing capacity of SCCP traffic for an EAGLE 5 ISS processing traffic for EPAP-related features is increased to 34,100 TPS.

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

The 1100 TPS/DSM for ITU NP feature must be enabled using the feature part number 893018001 and a feature access key (FAK). Based on the feature part number and the serial number of the EAGLE 5 ISS, the feature access key is site-specific.

**Note:** The feature access key for the 1100 TPS/DSM for ITU NP feature is provided by Tekelec when the feature is purchased. Contact your Tekelec Sales Representative or Account Representative before beginning the feature configuration procedure if you do not have the feature access key for this feature. The 1100 TPS/DSM for ITU NP feature cannot be enabled with a temporary feature access key.

After the 1100 TPS/Service Module card for ITU NP feature has been enabled, the feature must be turned on to begin operation in the system. The feature is an On/Off feature, it can be turned off again after it has been turned on.

### System Prerequisites

Before the 1100 TPS/DSM for ITU NP feature can be enabled, the prerequisites listed in *Table 31: System Prerequisites* are required in the system.

**Table 31: System Prerequisites**

| Prerequisite | Verification and Provisioning |
|---|---|
| For new installations, the system serial number must be verified and locked. The system is | Enter the `rtrv-serial-num` command to display the serial number and its lock status. |

| Prerequisite | Verification and Provisioning |
|---|---|
| shipped with an unlocked serial number. The serial number can be changed if necessary and must be locked after the system is on-site.<br>For systems that are being upgraded, the serial number has already been verified and locked. | Verify that the displayed serial number is correct for the system. The serial number is shown on a label affixed to the control shelf (shelf 1100).<br>If no serial number is displayed, or if the displayed serial number is not locked, refer to the `ent-serial-num` command description in *Commands Manual* for instructions to enter and lock the serial number. |
| The GTT feature must on in the system. | Enter the `rtrv-feat` command.<br>If the GTT feature is on, the `gtt=on` entry appears in the output.<br>If the `gtt=off` entry appears in the output, use the procedures in *Database Administration Manual – Global Title Translation* to turn on and provision the GTT feature and any related features and functions. |

**Feature Prerequisites**

Before the 1100 TPS/DSM for ITU NP feature can be enabled, the prerequisites shown in *Table 32: Feature Prerequisites* are required in the system.

**Table 32: Feature Prerequisites**

| Prerequisite | Verification and Provisioning |
|---|---|
| Service Module cards running the VSCCP application must be equipped. The cards can be all DSM cards, or a mixture of DSM cards and E5-SM4G cards. There must be at least one DSM card. | Enter the `rept-stat-gpl:gpl=vsccp` command and the `rept-stat-gpl:gpl=sccphc` command to list the Service Module cards in the system.<br>If the number of cards is not sufficient, use the procedure *Adding a Service Module Card* to add Service Module cards. |
| The ANSIGFLEX system option cannot be set to Yes. | Enter the `rtrv-stpopts` command.<br>Verify that the ANSIGFLEX entry does not appear in the command output or that the ANSI GFLEX entry shows a value of No. |
| The LNP feature cannot be on in the system. | Enter the `rtrv-ctrl-feat` command.<br>If the LNP feature is on, shown with a quantity greater than zero for the `LNP ported TNs` entry in the command output, the 1100 TPS/DSM for ITU NP feature cannot be enabled |

| Prerequisite | Verification and Provisioning |
|---|---|
| At least one of the following EPAP-related features must be enabled and turned on:<br>• G-Port<br>• A-Port<br>• INP<br>• AINPQ<br>• IGM<br>• EIR<br>• IDP Relay<br>• V-Flex<br>• IAR (NP, ASD, GRN)<br>• MO-based GSM SMS NP<br>• MO-based IS41SMS NP<br>• TIF (NP, ASD, GRN, Number Substitution) | Enter the `rtrv-ctrl-feat` command and verify that an entry for at least one of the listed EPAP-related features with Status `on` is present in the output.<br>If no listed EPAP-related features are on, use the procedures in this manual or another Feature Manual for an EPAP-related feature that you will use in the system, to enable and turn on the EPAP-related feature. |

This section provides the following procedures for the 1100 TPS/DSM for ITU NP feature:

- *Enable the 1100 TPS/DSM for ITU NP Feature*
- *Turn On the 1100 TPS/DSM for ITU NP Feature*
- *Turn Off the 1100 TPS/DSM for ITU NP Feature*

Refer to the *Commands Manual* for descriptions of the commands used in the procedures, including parameter names and valid values, rules for using the command correctly, and output examples.

## Enable the 1100 TPS/DSM for ITU NP Feature

This procedure is used to enable the 1100 TPS/DSM for ITU NP feature.

1. Enable the 1100 TPS/DSM for ITU NP feature with part number 893018001 and the feature access key.

   ```
   enable-ctrl-feat:partnum=893018001:fak=<feature access key>
   ```

2. Verify the change by entering the `rtrv-ctrl-feat` command with the 1100 TPS/DSM for ITU NP feature part number 893018001.

   ```
   rtrv-ctrl-feat:partnum=893018001
   ```

   ```
   rlghncxa03w 09-08-24 21:15:37 EST EAGLE 40.1.0
   The following features have been permanently enabled:
   Feature Name              Partnum    Status  Quantity
   HC-MIM SLK Capacity       893012707  on            64
   Prepaid SMS Intercept Ph1 893006701  on          ----
   1100 TPS/DSM for ITU NP   893018001  off         ----
   ;
   ```

3. Back up the changes using the `chg-db:action=backup:dest=fixed` command.

   The following messages appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

   ```
   BACKUP (FIXED) : MASP A - Backup starts on active MASP.
   BACKUP (FIXED) : MASP A - Backup on active MASP to fixed disk complete. BACKUP
   ```

```
(FIXED) : MASP A - Backup starts on standby MASP.
BACKUP (FIXED) : MASP A - Backup on standby MASP to fixed disk complete.
```

## Turn On the 1100 TPS/DSM for ITU NP Feature

This procedure is used to turn on the 1100 TPS/DSM for ITU NP feature, after it has been enabled or turned off.

**Note:** If the EPAP-based traffic is higher than 70% of all traffic on the EAGLE 5 ISS, the DSM card performance may not reach 1100 TPS per DSM card.

1. Enter the `chg-ctrl-feat` command the first time and specify the 1100 TPS/DSM feature part number 893018001and the `status=on` parameter value.

   ```
   chg-ctrl-feat:partnum=893018001:status=on
   ```

   The following message is displayed:

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

2. Re-enter the command the second time within 30 seconds to turn on the 1100 TPS/DSM for ITU NP feature.

   ```
   chg-ctrl-feat:partnum=893018001:status=on
   ```

3. Verify the change by entering the `rtrv-ctrl-feat` command with the 1100 TPS/DSM for ITU NP feature part number.

   ```
   rtrv-ctrl-feat:partnum=893018001
   ```

   ```
   rlghncxa03w 09-08-24 21:15:37 EST EAGLE 40.1.0
   The following features have been permanently enabled:
   Feature Name              Partnum    Status  Quantity
   HC-MIM SLK Capacity       893012707  on           64
   Prepaid SMS Intercept Ph1 893006701  on         ----
   1100 TPS/DSM for ITU NP   893018001  on         ----
   ;
   ```

4. Back up the database changes using the `chg-db:action=backup:dest=fixed` command.

   The following messages appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

   ```
   BACKUP (FIXED): MASP A - Backup starts on active MASP.
   BACKUP (FIXED): MASP A - Backup on active MASP to fixed disk complete.
   BACKUP (FIXED): MASP A - Backup starts on standby MASP.
   BACKUP (FIXED): MASP A - Backup on standby MASP to fixed disk complete.
   ```

## Turn Off the 1100 TPS/DSM for ITU NP Feature

This procedure is used to turn off the 1100 TPS/DSM for ITU NP feature, after it has been enabled and turned on.

1. Enter the `chg-ctrl-feat` command the first time and specify the 1100 TPS/DSM feature part number 893018001 and the status=off parameter value.

   ```
   chg-ctrl-feat:partnum=893018001:status=off
   ```

The following message is displayed:

```
CAUTION: This command decreases the total TPS of the SCCP system from 1100 to
850 TPS for each DSM card.
```

2. Re-enter the command the second time within 30 seconds to turn off the 1100 TPS/DSM for ITU NP feature.
3. Back up the database changes using the `chg-db:action=backup:dest=fixed` command.

   The following messages appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
BACKUP (FIXED): MASP A - Backup starts on active MASP.
BACKUP (FIXED): MASP A - Backup on active MASP to fixed disk complete.
BACKUP (FIXED): MASP A - Backup starts on standby MASP.
BACKUP (FIXED): MASP A - Backup on standby MASP to fixed disk complete.
```

## Activating the E5-SM4G Throughput Capacity Feature

The E5-SM4G Throughput Capacity feature quantities are used to increase the processing capacity of the E5-SM4G card and of system SCCP traffic for an EAGLE 5 ISS that contains E5-SM4G cards only (no DSM cards). The achievable TPS maximums are shown in *Table 33: Maximum E5-SM4G Card and System TPS Capacity*.

**Table 33: Maximum E5-SM4G Card and System TPS Capacity**

| Feature Quantity Part Number | Maximum TPS Capacity per E5-SM4G Card | Maximum System TPS Capacity |
|---|---|---|
| 893019101 - Feature Quantity 5000 | 3125 | • 75,000 TPS with one or more EPAP-related features and 24+1 cards<br>• 96,875 TPS with one or more EPAP-related features and 31+1 cards (EPAP running on T1200 AS) |
| | 5000 | • 150,000 TPS with no EPAP-related or ELAP-related feature traffic and 31+1 cards<br>• 120,000 TPS with G-Flex and the ANSIGFLEX STP option and 24+1 cards<br>• 155,00 TPS with G-Flex and the ANSIGFLEX STP option and 31+1 cards (EPAP running on T1200 AS)<br>• 40,000 TPS with ELAP and 8+1 cards<br>• 85,000 TPS with ELAP and 17+1 cards |
| 893019102 - Feature Quantity 6800 | 6800 | • 210,800 TPS with no EPAP-related or ELAP-related feature traffic and 31+1 cards<br>• 163,200 TPS with one or more EPAP-related features and 24+1 cards |

| Feature Quantity Part Number | Maximum TPS Capacity per E5-SM4G Card | Maximum System TPS Capacity |
|---|---|---|
| | | • 210,800 TPS with one or more EPAP-related features and 31+1 cards (EPAP running on T1200 AS)<br>• 54,400 TPS with ELAP and 8+1 cards<br>• 115,600 TPS with ELAP and 17+1 cards |

An E5-SM4G Throughput Capacity quantity feature must be enabled using an E5-SM4G Throughput Capacity feature part number (893019101 or 893019102) and a feature access key.

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

**Note:** The E5-SM4G Throughput Capacity quantity feature must be purchased to receive the feature access key used to enable the feature. Contact your Tekelec Sales Representative or Account Representative before beginning this procedure if you have purchased the E5-SM4G Throughput Capacity quantity feature, but do not have the feature access key. A temporary feature access key is not available for this feature.

After an E5-SM4G Throughput Capacity feature is enabled and turned on, the E5-SM4G Throughput Capacity feature cannot be turned off. When the E5-SM4G Throughput Capacity feature is enabled, it is permanently enabled. The E5-SM4G Throughput Capacity feature cannot be temporarily enabled.

**System Prerequisites**

Before the E5-SM4G Throughput Capacity feature can be enabled, the prerequisites listed in *Table 34: System Prerequisites* are required in the system.

**Table 34: System Prerequisites**

| Prerequisite | Verification and Provisioning |
|---|---|
| For new installations, the system serial number must be verified and locked. The system is shipped with an unlocked serial number. The serial number can be changed if necessary and must be locked after the system is on-site.<br>For systems that are being upgraded, the serial number has already been verified and locked. | Enter the `rtrv-serial-num` command to display the serial number and its lock status.<br>Verify that the displayed serial number is correct for the system. The serial number is shown on a label affixed to the control shelf (shelf 1100).<br>If no serial number is displayed, or if the displayed serial number is not locked, refer to the `ent-serial-num` command description in the *Commands Manual* for instructions to enter and lock the serial number. |
| The GTT feature must on in the system. | Enter the `rtrv-feat` command.<br>If the GTT feature is on, the gtt=on entry appears in the output. |

| Prerequisite | Verification and Provisioning |
|---|---|
| | If the gtt=off entry appears in the output, use the procedures in the *Database Administration Manual – Global Title Translation* to turn on and provision the GTT feature and any related features and functions. |

### E5-SM4G Throughput Capacity Feature Prerequisite

Before the E5-SM4G Throughput Capacity feature can be enabled, the prerequisite shown in *Table 35: E5-SM4G Throughput Capacity Feature Prerequisite* is required in the system.

**Table 35: E5-SM4G Throughput Capacity Feature Prerequisite**

| Prerequisite | Verification and Provisioning |
|---|---|
| E5-SM4G cards running the VSCCP application must be equipped.<br><br>The required number of cards depends on the desired total system TPS to be achieved by the cards. See *Table 33: Maximum E5-SM4G Card and System TPS Capacity*. | Enter the `rept-stat-gpl:gpl=sccphc` command to list the E5-SM4G cards in the system.<br><br>If the number of cards is not sufficient, use the procedure in *Adding a Service Module Card* to add E5-SM4G cards. |

The following procedure explains how to enable an E5-SM4G Throughput Capacity quantity feature.

**Note:** After a quantity feature has been enabled, a feature for a higher quantity can be enabled; a feature for a lower quantity cannot be enabled. Quantity features are automatically turned on when they are enabled.

Refer to the *Commands Manual* for descriptions of the commands used in the procedure, including parameter names and valid values, rules for using the command correctly, and output examples.

1. Display the status of the features that are controlled by feature access keys. Enter the `rtrv-ctrl-feat` command.

```
    rlghncxa03w 09-07-29 16:40:40 EST  EAGLE5 41.1.0
    The following features have been permanently enabled:
    Feature Name              Partnum    Status  Quantity
    HC-MIM SLK Capacity       893012707  on            64
    E5-SM4G Throughput Cap    893019101  on          5000
;
```

   - If the `rtrv-ctrl-feat` output shows that the correct E5-SM4G Throughput Capacity quantity feature is enabled and its status is on, no further action is necessary.
   - If no E5-SM4G Throughput Capacity feature quantity is enabled or a higher quantity needs to be enabled, continue with step *Step 2*.

2. Enable the E5-SM4G Throughput Capacity quantity feature by entering the `enable-ctrl-feat` command with the correct part number and FAK for the desired quantity.
3. Verify the status of the E5-SM4G Throughput Capacity quantity feature by entering the `rtrv-ctrl-feat` command with the feature part number that was just enabled (893033501 or 893019102).

```
rtrv-ctrl-feat:partnum=893019102
```

```
    rlghncxa03w 09-08-29 16:40:40 EST  EAGLE5 41.1.0
    The following features have been permanently enabled:
    Feature Name              Partnum    Status  Quantity
    HC-MIM SLK Capacity       893012707  on            64
    E5-SM4G Throughput Cap    893019102  on          6800
;
```

4. Back up the changes using the `chg-db:action=backup:dest=fixed` command.

   The following messages appear, the active Maintenance and Administration Subsystem Processor (MASP) appears first.

```
BACKUP (FIXED): MASP A - Backup starts on active MASP.
BACKUP (FIXED): MASP A - Backup on active MASP to fixed disk complete.
BACKUP (FIXED): MASP A - Backup starts on standby MASP.
BACKUP (FIXED): MASP A - Backup on standby MASP to fixed disk complete.
```

# Glossary

**A**

| | |
|---|---|
| AC | Alternating Current<br>Application Context<br>Authentication Center<br>Area Code |

**B**

| | |
|---|---|
| BCSM | Basic Call State Model |

**C**

| | |
|---|---|
| CAMEL | Customized Applications for Mobile networks Enhanced Logic |
| CAP | Communication & Application Processor |
| CdPA | Called Party Address<br>The field in the SCCP 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. |

**D**

| | |
|---|---|
| DN | Directory number<br>A DN can refer to any mobile or wireline subscriber number, and can include MSISDN, MDN, MIN, or the wireline Dialed Number. |
| DPC | Destination Point Code |

**D**

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.

**E**

EPAP

EAGLE Provisioning Application Processor

EPAP-related features

Features that require EPAP connection and use the Real Time Database (RTDB) for lookup of subscriber information.

- ANSI Number Portability Query (AINPQ)
- ANSI-41 AnalyzedInformation Query – no EPAP/ELAP (ANSI41 AIQ)
- Anytime Interrogation Number Portability (ATI Number Portability, ATINP)
- AINPQ, INP, G-Port SRI Query for Prepaid, GSM MAP SRI Redirect, IGM, and ATINP Support for ROP
- A-Port Circular Route Prevention (A-Port CRP)
- Equipment Identity Register (EIR)
- G-Flex C7 Relay (G-Flex)
- G-Flex MAP Layer Routing (G-Flex MLR)
- G-Port SRI Query for Prepaid
- GSM MAP SRI Redirect to Serving HLR (GSM MAP SRI Redirect)
- GSM Number Portability (G-Port)
- IDP A-Party Blacklist
- IDP A-Party Routing

**E**

- IDP Relay Additional Subscriber Data (IDPR ASD)
- IDP Relay Generic Routing Number (IDPR GRN)
- IDP Service Key Routing (IDP SK Routing)
- IDP Screening for Prepaid
- INAP-based Number Portability (INP)
- Info Analyzed Relay Additional Subscriber Data (IAR ASD)
- Info Analyzed Relay Base (IAR Base)
- Info Analyzed Relay Generic Routing Number (IAR GRN)
- Info Analyzed Relay Number Portability (IAR NP)
- INP Circular Route Prevention (INP CRP)
- IS41 Mobile Number Portability (A-Port)
- IS41 GSM Migration (IGM)
- MNP Circular Route Prevention (MNPCRP)
- MO-based GSM SMS NP
- MO-based IS41 SMS NP
- MO SMS Generic Routing Number (MO SMS GRN)
- MO- SMS B-Party Routing
- MO SMS IS41-to-GSM Migration
- MT-based GSM SMS NP
- MT-based GSM MMS NP
- MT-based IS41 SMS NP
- MTP Routed Messages for SCCP Applications (MTP Msgs for SCCP Apps)
- MTP Routed Gateway Screening Stop Action (MTPRTD GWS Stop Action)
- Portability Check for MO SMS
- Prepaid IDP Query Relay (IDP Relay, IDPR)
- Prepaid SMS Intercept Phase 1 (PPSMS)
- Service Portability (S-Port)

**E**

- S-Port Subscriber Differentiation
- Triggerless ISUP Framework Additional Subscriber Data (TIF ASD)
- Triggerless ISUP Framework Generic Routing Number (TIF GRN)
- Triggerless ISUP Number Portability (TIF NP)
- Triggerless ISUP Framework Number Substitution (TIF NS)
- Triggerless ISUP Framework SCS Forwarding (TIF SCS Forwarding)
- Triggerless ISUP Framework Simple Number Substitution (TIF SNS)
- Voice Mail Router (V-Flex)

**G**

| | |
|---|---|
| GSM | Global System for Mobile Communications |
| GT | Global Title Routing Indicator |
| GTA | Global Title Address |
| GTI | Global Title Indicator |
| GTT | Global Title Translation<br>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 |

**G**

network by a point code and a subsystem number.

**H**

| | |
|---|---|
| HLR | Home Location Register |

**I**

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|---|---|
| IDP | Initial Detection Point |
| IEC | International Escape Code |
| INAP | Intelligent Network Application Part |

**M**

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|---|---|
| MSC | Mobile Switching Center |
| MSISDN | Mobile Station International Subscriber Directory Number<br>The MSISDN is the network specific subscriber number of a mobile communications subscriber. This is normally the phone number that is used to reach the subscriber. |
| 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**

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|---|---|
| NAI | Nature of Address Indicator<br>Standard method of identifying users who request access to a network. |
| NEC | National Escape Code |
| NP | Number Plan |

**N**

Number Conditioning

Conversion of incoming digits into subscriber format prior to RTDB lookup and conversion of outgoing RTDB digits into a format matching the original incoming digits.

**P**

PC

Point Code

The identifier of a signaling point or service control point in a network. The format of the point code can be one of the following types:

- ANSI point codes in the format network indicator-network cluster-network cluster member (**ni-nc-ncm**).
- Non-ANSI domestic point codes in the format network indicator-network cluster-network cluster member (**ni-nc-ncm**).
- Cluster point codes in the format network indicator-network cluster-* or network indicator-*-*.
- ITU international point codes in the format **zone-area-id**.
- ITU national point codes in the format of a 5-digit number (**nnnnn**), or 2, 3, or 4 numbers (members) separated by dashes (**m1-m2-m3-m4**) as defined by the Flexible Point Code system option. A group code is required (**m1-m2-m3-m4-gc**) when the ITUDUPPC feature is turned on.
- 24-bit ITU national point codes in the format main signaling area-subsignaling area-service point (**msa-ssa-sp**).

PPSCP

Prepaid Service Control Point

**R**

**R**

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|---|---|
| RI | Routing Indicator |
| RN | Routing Number |
| RTDB | Real Time Database |

**S**

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|---|---|
| SCCP | Signaling Connection Control Part |
| SCP | Service Control Point<br>Service Control Points (SCP) are network intelligence centers where databases or call processing information is stored. The primary function of SCPs is to respond to queries from other SPs by retrieving the requested information from the appropriate database, and sending it back to the originator of the request. |
| SK | South Korea<br>Service Key |
| S-Port | Service Portability<br>A number portability extension which allows a subscriber to retain the same subscriber number when moving from one network type or service technology to another within the network of a single operator. Service Portability provides different routing number digits for formats that require routing numbers. Service Portability does not affect message flows. |
| SRF | Service Resource Function<br>Provide resources to a call, such as announcements, voice prompting, |

**S**

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|---|---|
| | and voice recognition. An example of a SRF is a Voice Recognition Unit (VRU). |
| SSN | Subsystem Number<br>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 the LNP subsystem of the EAGLE 5 ISS.<br>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. |

**T**

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|---|---|
| TCAP | Transaction Capabilities Application Part |
| TT | Translation Type.<br>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**

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| UIM | Unsolicited Information Message<br>A message sent to a user interface whenever there is a fault that is not service-affecting or when a previous problem is corrected. Each message has a trouble code and text associated with the trouble condition. |

**V**

## V

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|---|---|
| VLR | Visitor Location Register<br><br>A component of the switching subsystem, within a GSM network. The switching subsystem includes various databases which store individual subscriber data. One of these databases is the HLR database or Home Location Register; and the VLR is another. |